
NOTES

A JUSTIFICATION FOR ALLOWING FRAGMENTATION IN COPYRIGHT

Imagine a writer who after a flash of inspiration conceives of a poem and commits it to paper. Copyright law grants the author a standard bundle of rights — rights to copy, create derivatives of, distribute, publicly perform, and publicly display the poem.¹ Before 1976, the writer could have transferred these rights only by transferring the full bundle;² she could not, for instance, have sold to separate buyers the rights to print and to perform the poem.³ As part of a comprehensive copyright revision in 1976,⁴ however, Congress allowed owners to assign individual rights or subdivisions thereof.⁵ A poet, for example, may now sell separately the rights to print, perform, and create derivative works based on her poem. In real property law, by contrast, the *numerus clausus* principle limits the types, though not the number, of packages into which owners may divide their rights.⁶

It might seem odd that copyright owners are freer to fragment their rights than are landowners. Indeed, Professor Molly Van Houweling contends that copyright law is too permissive of fragmentation.⁷ Professors Michael Heller,⁸ Thomas Merrill, and Henry Smith⁹ argue against free fragmentation generally in ways that apply especially to

¹ See 17 U.S.C. § 106 (2006). Copyright law distinguishes between intellectual works, such as novels, and copies of works — the “tangible medium[s] of expression” in which the works are “fixed” — such as physical books. *Id.* § 102(a); see also 1 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 2.03[C] (2007). Copyrights, comprising the rights listed in § 106, vest in owners of “works,” not owners of “copies.” See 17 U.S.C. §§ 106, 201–202.

² See Act of Mar. 4, 1909, ch. 320, § 42, 35 Stat. 1075, 1084; 3 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 10.01[A] (2006).

³ The writer could, however, have licensed these uses individually to other parties. See, e.g., *Manners v. Morosco*, 252 U.S. 317 (1920) (applying a license of a copyrighted work).

⁴ Copyright Act of 1976, Pub. L. No. 94-553, 90 Stat. 2541 (codified as amended at 17 U.S.C.).

⁵ See 17 U.S.C. § 201(d)(2); 3 NIMMER & NIMMER, *supra* note 2, § 10.02[A].

⁶ See Nestor M. Davidson, *Standardization and Pluralism in Property Law*, 61 VAND. L. REV. 1597, 1605–10 (2008); Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1, 6 (2000); cf. RESTATEMENT (THIRD) OF PROP.: WILLS & OTHER DONATIVE TRANSFERS ch. 24, intro. note (Tentative Draft No. 6, 2010) (identifying the available present interests in property as the fee simple absolute, fee simple defeasible, life estate, fee tail, and term of years). Professor Nestor Davidson counts “copyright” as a “form” of intellectual property. See Davidson, *supra*, at 1608. However, this Note does not consider copyright a “form” because the rights initially composing a copyright may be fragmented freely, such that copyrights do not constitute a category with fixed legal content.

⁷ See Molly Shaffer Van Houweling, *Author Autonomy and Atomism in Copyright Law*, 96 VA. L. REV. 549, 553–55 (2010).

⁸ See Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621 (1998); *infra* pp. 1765–66.

⁹ See Merrill & Smith, *supra* note 6; *infra* pp. 1763–65.

copyright. Finally, Professors Julie Cohen,¹⁰ Lawrence Lessig,¹¹ and Smith¹² advance theories that can be extended to oppose fragmentation. In short, the literature seems opposed to the law as it stands.

This Note defends the law's acceptance of fragmentation. The analysis centers on the two characteristics of copyrighted works with the greatest implications for fragmentation: first, the uncertain range of works' potential uses and, second, the high number and interactivity of these uses. For each of the characteristics, the Note seeks to build the strongest case against allowing fragmentation and then to demonstrate why fragmentation should be allowed. The argument makes three broad moves: First, because works vary in their optimal structures, mandating one uniform structure generates "frustration costs"¹³ by frustrating owners' ability to pursue efficient uses. Second, however much fragmentation increases the "measurement costs"¹⁴ third parties face in determining the boundaries of property rights, this effect will likely be outweighed by averted frustration costs. Third, owners are better placed than government is to determine works' structures. Finally, the Note argues that to the extent fragmentation imposes costs, a "safety valve" protecting against excessive costs exists in the first sale doctrine¹⁵ and in the prohibition of copyright servitudes.¹⁶

The Note proceeds in three parts. Part I compares how real property and copyright law treat fragmentation. Parts II and III seek to justify the law's allowance of fragmentation, Part II with regard to works' uncertainty and Part III with regard to their high number of uses and interactions. A brief conclusion follows.

I. LEGAL BACKGROUND

A. Real Property

Landowners are constrained in the types of packages into which they can divide their rights. This constraint operates through the *numerus clausus* — "a deeply entrenched assumption of the common-law

¹⁰ See Julie E. Cohen, *Creativity and Culture in Copyright Theory*, 40 U.C. DAVIS L. REV. 1151 (2007); *infra* p. 1755.

¹¹ See Lawrence Lessig, *Re-crafting a Public Domain*, 18 YALE J.L. & HUMAN. (SPECIAL ISSUE) 56 (2006); *infra* pp. 1763, 1765.

¹² See Henry E. Smith, *Intellectual Property as Property: Delineating Entitlements in Information*, 116 YALE L.J. 1742 (2007); *infra* pp. 1755–57.

¹³ Merrill & Smith, *supra* note 6, at 38.

¹⁴ *Id.* at 26.

¹⁵ 17 U.S.C. § 109(a) (2006).

¹⁶ See *Bobbs-Merrill Co. v. Straus*, 210 U.S. 339, 350–51 (1908); Yonatan Even, *Appropriability and Property*, 58 AM. U. L. REV. 1417, 1447–48 (2009). *But cf.* Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 1040 n.242 (1997) (noting that courts "have held that any use or transfer of a work in electronic form involves" copying).

system of property rights” mandating that courts recognize only a small set of established property forms.¹⁷ For example, present possessory interests in land are generally limited to the fee simple absolute, defeasible fee simple, life estate, and lease.¹⁸ Courts have traditionally refused to create new property categories, instead forcing any nonconforming property interest into an enumerated form.¹⁹ Proffered justifications for the *numerus clausus* include the inherent value of the forms’ substantive content,²⁰ the value of rules around which expectations have settled,²¹ and various theories between these extremes.²²

B. Copyright

When Congress overhauled copyright law in 1976, it allowed owners to fragment their bundles of rights freely. Owners may now transfer separately any right listed in 17 U.S.C. § 106 or any subdivision thereof.²³ Section 106 includes the rights to copy, create derivatives of, distribute, publicly perform, and publicly display a work.²⁴

Whereas this change increases owners’ freedom to tailor rights packages, the first sale doctrine and prohibition of copyright servitudes restrict this freedom. The first sale doctrine allows any lawful owner of a lawfully made copy of a work, which was initially transferred under the copyright owner’s authority,²⁵ “to sell or otherwise dispose of the possession of that copy” without the copyright owner’s authorization.²⁶ Copyright owners thus may not craft packages that limit future copy owners’ ability to sell, rent, lease, or lend those copies. Similarly, the prohibition of copyright servitudes prevents owners from imposing post-sale restrictions on the use of copies beyond the § 106 rights.²⁷

¹⁷ Merrill & Smith, *supra* note 6, at 20.

¹⁸ *Id.* at 12–13; *see also* Davidson, *supra* note 6, at 1606.

¹⁹ *See* Merrill & Smith, *supra* note 6, at 20–23 (explaining this practice while acknowledging that future courts may “defer to the parties’ intention to create a new” property form, *id.* at 22).

²⁰ *See, e.g.*, Hanoch Dagan, *Property and the Public Domain*, 18 YALE J.L. & HUMAN. (SPECIAL ISSUE) 84, 86 (2006) (justifying the *numerus clausus* as an optimal default framework for interpersonal interaction); Daphna Lewinsohn-Zamir, *The Objectivity of Well-Being and the Objectives of Property Law*, 78 N.Y.U. L. REV. 1669, 1674 (2003) (justifying the *numerus clausus* as a means of ensuring that property forms retain certain core elements needed to advance welfare).

²¹ *See, e.g.*, Davidson, *supra* note 6, at 1635. Indeed, a primary justification for property is its role in consolidating owners’ expectations and thereby allowing owners to plan for their property’s future use. *See* Hanoch Dagan, *The Craft of Property*, 91 CALIF. L. REV. 1517, 1562 (2003).

²² *See, e.g.*, Merrill & Smith, *supra* note 6, at 38–40 (arguing that the *numerus clausus* moves the property system toward an optimal balance of measurement, frustration, and administrative costs); *see also infra* pp. 1763–65 (applying this account to copyright fragmentation).

²³ 17 U.S.C. § 201(d)(2) (2006).

²⁴ *Id.* § 106.

²⁵ 2 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 8.12[B][1] (2006).

²⁶ 17 U.S.C. § 109(a).

²⁷ *See* sources cited *supra* note 16.

The first sale doctrine and prohibition of servitudes are limited. The first sale doctrine modifies only the copyright owner's exclusive distribution right, not his right to copy, create derivatives of, publicly perform, or publicly display his work.²⁸ Moreover, courts increasingly allow copyright owners to circumvent both doctrines by licensing copies of their works instead of selling them.²⁹ Nonetheless, licenses doctrinally remain an exception, which owners must opt into by satisfying several requirements.³⁰ Although copyright owners' ability to employ licenses to restrict the uses of copies might seem to make fragmentation irrelevant, the evidence shows that owners have indeed split up their rights and have done so in increasingly idiosyncratic ways.³¹

II. UNCERTAINTY

Copyright owners have far greater latitude in fragmenting their ownership interests than do landowners. However, given that copyrighted works' potential uses are often uncertain, numerous, and highly interactive, one might argue that the opposite should be true. The remainder of this Note addresses these characteristics in turn to defend the law as it stands.

This Part addresses copyrighted works' fundamental uncertainty. Although landowners cannot perfectly predict what the efficient uses of their property will be or how their property will interact with other property over time, the uncertainty characterizing real property is less than that characterizing copyrighted works. Granted, creative works need not be novel or unanticipated to gain copyright protection.³² But they must be "original works of authorship,"³³ requiring both independent creation and a "minimal degree of creativity."³⁴ Because each work results from an independent creative process, copyright owners and purchasers are probably often uncertain about a work's future uses, likely more than are owners and purchasers of land.

²⁸ See 17 U.S.C. § 106.

²⁹ See, e.g., *Vernor v. Autodesk, Inc.*, 621 F.3d 1102, 1116 (9th Cir. 2010); Juliet M. Moringiello, *What Virtual Worlds Can Do for Property Law*, 62 FLA. L. REV. 159, 191 (2010) ("[C]ourts defer to freedom of contract when faced with license agreements."). These license agreements have proliferated. See Glen O. Robinson, *Personal Property Servitudes*, 71 U. CHI. L. REV. 1449, 1451-52 (2004); see also Moringiello, *supra*, at 169 (noting that licenses are especially common online).

³⁰ The contract must specify that the user is granted a license, significantly restrict the user's ability to transfer the product, and impose notable restrictions on the use of the product. See *Vernor*, 621 F.3d at 1110-11.

³¹ Van Houweling, *supra* note 7, at 564, 625-26. For an example of idiosyncratic fragmentation, see *Gardner v. Nike, Inc.*, 279 F.3d 774 (9th Cir. 2002), involving the exclusive license to a cartoon character that Nike granted Sony. See *id.* at 776. The law equates exclusive licenses and simple transfers. See 17 U.S.C. § 101; 3 NIMMER & NIMMER, *supra* note 2, § 10.02[A].

³² See *Sheldon v. Metro-Goldwyn Pictures Corp.*, 81 F.2d 49, 53-54 (2d Cir. 1936) (L. Hand, J.).

³³ 17 U.S.C. § 102(a).

³⁴ *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 345 (1991).

Uncertainty partly derives from the nature of the creative process. Cohen argues that creativity entails “a *not knowing* in advance”; “creators encounter unforeseen inputs, arrive at unanticipated inspiration, and generate unpredicted and unpredictable outputs.”³⁵ Developing new uses or interactions of a work is creative, so these uses and interactions will be uncertain to the work’s buyers and sellers.³⁶ Additionally, works’ efficient uses depend on available technologies, and as technology develops, it often interacts with works in unanticipated ways.³⁷ Copyrighted works thus feature Knightian uncertainty: their potential uses and interactions do not fit a known probability distribution and may be unknowable.³⁸ Indeed, Justice Holmes realized long ago the peril of predicting copyrighted works’ value: the “very novelty” of “some works of genius . . . would make them repulsive until the public had learned the new language in which their author spoke.”³⁹

A. *The Case Against Fragmentation*

The uncertainty inherent in copyrighted works initially seems to argue against fragmentation. Because buyers and sellers cannot anticipate works’ optimal modularity, allowing fragmentation might lead to structures that are less valuable and less alienable. “Modularity” refers to the extent to which nonowners confront property as a black box: property is fully modular if owners can exclude nonowners entirely and partially modular if owners’ exclusion rights are limited by nonowners’ rights to use the property in certain ways.⁴⁰ This account rests on Merrill and Smith’s theory that property is regulated by a baseline “exclusion strategy,” modified as necessary by a “governance strategy.”⁴¹ For example, the law permits landowners to exclude others from their property entirely and regulates particular uses, such as through nuisance law, only when exclusion would be especially cost-

³⁵ Cohen, *supra* note 10, at 1178.

³⁶ Cf. Molly Shaffer Van Houweling, *The New Servitudes*, 96 GEO. L.J. 885, 940 (2008) (advancing an analogous argument in the context of copyright licensing).

³⁷ See Van Houweling, *supra* note 7, at 625.

³⁸ See Henry E. Smith, *Institutions and Indirectness in Intellectual Property*, 157 U. PA. L. REV. 2083, 2088 (2009) (citing FRANK H. KNIGHT, RISK, UNCERTAINTY AND PROFIT 19–20, 197–232 (1921)).

³⁹ *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239, 251 (1903); see also Clarisa Long, *Information Costs in Patent and Copyright*, 90 VA. L. REV. 465, 512 (2004) (arguing that information goods are most likely to display “qualities of thin but emergent information and variable value over time”).

⁴⁰ See Smith, *supra* note 38, at 2095–96.

⁴¹ Thomas W. Merrill & Henry E. Smith, *The Property/Contract Interface*, 101 COLUM. L. REV. 773, 790 (2001); see *id.* at 797–98; Smith, *supra* note 38, at 2086. See generally Henry E. Smith, *Exclusion Versus Governance: Two Strategies for Delineating Property Rights*, 31 J. LEGAL STUD. S453 (2002).

ly.⁴² Insofar as property rights are based on exclusion, they are modular: all of owners' rights — an undefined number of rights that are not explicitly identified — constitute a "module" that appears to outsiders as an undifferentiated right to exclude others from the thing owned.⁴³ This setup minimizes information costs: because property rights operate in rem — against the world — nonowners must be able to respect property without investing substantially in learning about it. The modular exclusion strategy satisfies this condition by simplifying the "interface conditions"⁴⁴ that nonowners face when interacting with property: nonowners can respect property by knowing merely that it is property protected by exclusion.⁴⁵ Where the harms of imprecise exclusion outweigh the benefits of simple interface conditions, a governance regime, using more complex interface conditions, is justified.⁴⁶

In setting modular boundaries, information costs are again relevant. Modularity's main purpose is managing complexity, so boundaries are drawn to include intense interactions within the module and to limit costly interactions among modules to the relatively sparse transactions that could not efficiently be included in the module.⁴⁷ For instance, if each of a property's many interacting uses were owned separately, the owner of each use would need to learn about many other uses. This ownership structure would be very costly. A more efficient structure would consolidate highly interactive uses within one module. That way, only the module owner would need expertise in the property's many uses. Outsiders would need to know only the interface conditions governing interaction with the module as a whole.

The modularity concern seems at first to oppose fragmentation. Because creative works are so uncertain, they involve a particularly large number of embedded options — the owner's options to acquire information about the work, to develop its uses, and to generate further options to learn about and develop it.⁴⁸ For instance, embedded in a song copyright might be options to acquire expertise in television opportunities, to enter business relationships with potential users, and to invest in creating further options in television or other industries.

⁴² See Smith, *supra* note 38, at 2086.

⁴³ See *id.* at 2088–90.

⁴⁴ Smith, *supra* note 12, at 1765.

⁴⁵ See Henry E. Smith, *The Language of Property: Form, Context, and Audience*, 55 STAN. L. REV. 1105, 1115–16 (2003).

⁴⁶ See Smith, *supra* note 12, at 1765.

⁴⁷ See Smith, *supra* note 38, at 2096–97. This theory builds on Professor Ronald Coase's transaction-cost theory of the firm, see R.H. Coase, *The Nature of the Firm*, 4 ECONOMICA 386 (1937), as well as on Professors Henry Hansmann and Reinier Kraakman's asset-partitioning theory, see Henry Hansmann & Reinier Kraakman, *The Essential Role of Organizational Law*, 110 YALE L.J. 387 (2000).

⁴⁸ See Smith, *supra* note 38, at 2101–03.

The large number of embedded options might support broad, unfragmented modules for three reasons. First, the options interact intensely.⁴⁹ For instance, exercising the option to release a song as a single will affect the options to release the song on an album, to use the song in a movie sound track, and to develop a derivative of the song. Exercising any of these options will generate an array of new interacting options. Because none of the work's options may be exercised effectively without knowledge of all the other options, information costs can be minimized by consolidating the options into one singly owned module. Second, the interactivity of options suggests that allocating returns to rival inputs would be costly with fragmented ownership.⁵⁰ Whether the song is used in a movie might make releasing it on CD more or less profitable, and vice versa. If separate persons owned movie rights and CD rights, attributing returns to inputs accurately would require each owner to learn about the inputs to both uses.⁵¹ Information costs would be minimized by treating the song as a module.⁵² Third, exercising works' options in the face of uncertainty requires "highly specialized and local knowledge,"⁵³ and a copyright owner is more likely to develop such knowledge if his rights are modular. Modularity gives the owner access to all relevant uses, allows the owner to focus on the module at hand and to ignore information in other modules,⁵⁴ and incentivizes the owner to learn about the work by allowing him to appropriate the benefits of investing in information.⁵⁵

Given that narrow modules might generally be less valuable than broad ones and that buyers often cannot predict a particular work's optimal modularity, allowing fragmentation might inhibit alienability. Society has a strong interest in promoting alienability of property — that is, owners' ability to dispose of their property however they wish, including in fragmented parts.⁵⁶ Scholars have argued that alienability is necessary for property to achieve its highest-value use and thus fur-

⁴⁹ Exercising options is thus "polycentric." *Id.* at 2106 (citing Lon L. Fuller, *The Forms and Limits of Adjudication*, 92 HARV. L. REV. 353, 394–95 (1978)) (internal quotation marks omitted).

⁵⁰ *Cf.* Smith, *supra* note 12, at 1768 (describing how exclusion rights help creators appropriate the returns from their rival inputs of time and other resources).

⁵¹ Even if the owners could cheaply measure the value each input contributed to each use, contracting over how to divide the profits deriving from each use might be costly.

⁵² *See* Smith, *supra* note 12, at 1751–98.

⁵³ Smith, *supra* note 38, at 2109. This point is related to, but distinct from, the previous two. The previous points argued for reducing the number of persons — ultimately to one — who need to invest in learning about the work. The present point is that significant expertise is required to exploit the work effectively, and this expertise is best ensured if the work is owned by one person.

⁵⁴ *Id.* at 2097–98.

⁵⁵ *Cf.* Even, *supra* note 16 (presenting an account of property centered on appropriability).

⁵⁶ *See, e.g.*, RESTATEMENT (THIRD) OF PROP.: SERVIDITUDES § 3.4 (2000).

ther social welfare.⁵⁷ An inherent tension exists, however, between present and future alienability: rights fragmented today might be unmarketable tomorrow if they are undesirable in themselves and costly to reassemble into more useful packages.⁵⁸ This tension may be resolved if buyers can predict goods' efficient modular structures. Buyers will pay less for goods whose structures will later make them unmarketable, so sellers will internalize the costs of fragmentation.⁵⁹

Introducing uncertainty aggravates the tension between present and future alienability. If a buyer cannot predict works' optimal modularity and so will not know when a particular work's fragmentation pattern will reduce its future alienability, he will not demand a lower price for that work. The seller accordingly will not internalize the costs of suboptimally fragmenting her property, so she might create inefficiently narrow modules that will later be unmarketable.

The risk that owners will inefficiently fragment their property suggests that government may be justified in mandating broad modularity. Specifically, limitations on fragmentation may be necessary to balance the present benefits of free fragmentation and the future costs of inalienability.⁶⁰ Although the narrow modules that owners might craft could sometimes be warranted, owners and buyers will probably have insufficient information at the time of contracting to identify these cases and design modules efficiently. And even if, given current information, narrowly tailored packages maximize a work's expected value, this tailoring might be inefficient if a different modular structure turns out to be superior. Once a modular structure is set, of course, transaction costs might entrench that structure.⁶¹

B. *The Case for Fragmentation*

Although the argument that uncertainty favors mandating broad modules has merit, letting the market determine each work's modular structure is more efficient. To start, recognize that all works need some modular structure, yet the efficient structure of works will vary across works and time. Optimal structures vary among copyrighted

⁵⁷ See, e.g., John Henry Merryman, Comment, *Policy, Autonomy, and the Numerus Clausus in Italian and American Property Law*, 12 AM. J. COMP. L. 224, 226 (1963); cf. Richard A. Epstein, *Why Restrain Alienation?*, 85 COLUM. L. REV. 970, 971-72 (1985) (presenting this argument for free alienability before considering possible exceptions to the principle).

⁵⁸ See Michael A. Heller, *The Boundaries of Private Property*, 108 YALE L.J. 1163, 1199 (1999).

⁵⁹ See Bernard Rudden, *Economic Theory v. Property Law: The Numerus Clausus Problem*, in OXFORD ESSAYS IN JURISPRUDENCE 239, 253-54, 256 (John Eekelaar & John Bell eds., 1987).

⁶⁰ For one way to strike this balance, see Frank I. Michelman, *Ethics, Economics, and the Law of Property*, in ETHICS, ECONOMICS, AND THE LAW 3 (J. Roland Pennock & John W. Chapman eds., 1982).

⁶¹ See Smith, *supra* note 38, at 2113.

works because works differ in the three elements that determine optimal modularity: the degree to which the work's options interact, the extent to which the interactivity of options requires modularity to allocate returns to rival inputs, and the amount of learning that efficient use of the work requires. Underlying each of these elements are several additional characteristics of a work. For example, works may differ in at least two ways regarding the need for expertise. First, works might differ in whether they need expertise at all. An owner, for instance, might be able to exploit a standard photograph of the Boston skyline with less expertise than one would need to exploit a complex software program. Second, works might differ in the number of experts necessary for the work's uses to be developed optimally. Whereas some works are exploited most efficiently if owned entirely by one entity that is expert in the work as a whole, other works are best owned by several entities, each of which is expert in one element of the work. For instance, rights to a sculpture might best be owned by one entity, while rights to a novel might best be split among an owner of publication rights, an owner of modification rights, and an owner of performance rights. Given this variance among the optimal structures of works, "[t]here is no guarantee that [a mandatory] off-the-rack pattern of ownership . . . is optimal" for any particular work.⁶² Allowing a variety of ownership structures therefore seems better than effectively imposing⁶³ one structure on all works.⁶⁴

The next issue is whether copyright owners or the government is better placed to determine works' optimal modular structures. Owners probably win this contest: they are better informed about their works⁶⁵ and better incentivized to maximize their works' value by crafting efficient structures. As discussed above, fragmentation might decrease owners' ability and incentive to gain expertise in and maximize the value of their works. However, such ability and incentive are preserved as long as works retain their default broad modularity, which extends at least through the point when owners decide whether to fragment their works. Indeed, by automatically granting owners a

⁶² *Id.* at 2119; *cf.* Lessig, *supra* note 11, at 81 (observing the wide variety of licenses that owners have attached, presumably rationally, to works through Creative Commons).

⁶³ Admittedly, parties can usually circumvent *numerus clausus* limitations through innovative contracting. *See* Merrill & Smith, *supra* note 6, at 35–36. But because such contracting is costly, parties will nonetheless face frustration costs if fragmentation is limited.

⁶⁴ One immediate problem with allowing such diversity of structures is the possible increase in measurement costs for observers. *See infra* pp. 1763–65. Section III.B below argues that these costs are probably minimal, *see infra* pp. 1767–68, and outweighed by reduced frustration costs, *see infra* pp. 1768–79; the present discussion brackets this issue.

⁶⁵ *See* Long, *supra* note 39, at 468 (“Intellectual property owners . . . will know more about their intellectual goods than will nonowners.”). Of course, copyright owners may not be objectively well informed about their works. *See id.* at 521 (citing Lemley, *supra* note 16, at 1050).

maximally modular set of rights and permitting them to opt out of this regime, the law reaps many of broad modularity's benefits while avoiding the frustration costs of mandating broad modularity.

Additionally, the optimal modular structure of any given work will likely vary across time. Each of the three factors affecting the efficiency of a modular structure might change. First, as new uses of a work develop and old uses become inefficient or otherwise disfavored, the extent of interaction among the work's uses will change. Second, as the uses of a work change, the rival inputs involved in developing the uses will interact differently, and so broad modularity may become more or less important in allocating returns. Third, as the original owner exercises the work's options and learns more about the work, a broadly modular structure may become less necessary for the owner to develop expertise in the work. Moreover, because fewer uses remain to be discovered, it is less important for later owners to be able to develop expertise. Even if a particular modular structure is optimal today, therefore, mandating the structure might generate future frustration costs. Similar reasoning applies to the alienability concern: Because optimal modularity varies among works and across time, works with a mandatory modular structure will likely be suboptimally alienable. Owners and buyers are well placed to determine works' optimal modular structures and thus to preserve alienability in the future.

Of course, if works are allowed to vary in their modular structures, structures chosen at any given time may later become inefficient and entrenched because of transaction costs.⁶⁶ However, note precisely what this point proves. The analysis above suggests that a government-mandated modular structure will have error costs because works' optimal structures change over time, and the present point demonstrates that allowing fragmentation might have error costs for the same reason. To break the tie, recall the argument above that owners seem best placed to choose works' modular structures. Owners not only have superior expertise in their works and incentive to maximize the works' value, but also are better able to respond expeditiously to informational and technological changes affecting their works' use.⁶⁷ They are thus particularly qualified to determine the point at which they know enough to set a modular structure and, at that point, to establish a structure given the uncertainty that remains.⁶⁸ In sum, the uncertainty of copyright seems to support allowing free fragmentation.

⁶⁶ See *infra* pp. 1765–66 (explaining the anticommons externality).

⁶⁷ Cf. Davidson, *supra* note 6, at 1616 (observing that, although the forms in the *numerus clausus* have changed over time, “[t]he forms in existence at any given time reflect a combination of legislative intervention, common law accretion, private ordering, and a dose of path dependence”).

⁶⁸ Owners' ability to account for uncertainty might be compromised if there is a structural bias causing owners to persistently underestimate the costs of fragmentation. By contrast, if own-

C. A Safety Valve

Rational owners will not divide their rights until they know enough about their works to determine the works' optimal structures with reasonable efficacy. However, even after rights are fragmented, technology will advance, new works will be developed, and social conditions will change. Uncertainty will therefore persist, and rational owners of copies of works will likely continue to invest in learning about the works. The remoteness of copyright owners from copy owners exacerbates fragmentation's costs.⁶⁹ Given that new information about works' efficient uses and optimal structures will likely emerge after owners fragment their rights and that owners might not know who will own copies of their works, the law should provide a safety valve to reduce the social costs of inefficient divisions of rights.

The first sale doctrine and the prohibition of copyright servitudes provide such a safety valve.⁷⁰ Imagine, for example, that a private collector buys a sculpture. The sculpture's efficient use might change over time,⁷¹ especially if the artist later gains critical acclaim, but uncertainty surrounding the sculpture's value could lead the copyright owner to craft modules prematurely and inefficiently. The prohibition of servitudes helps prevent such an inefficient modular structure from imposing excessive costs by protecting the collector's ability to pursue the use that is efficient at any given time. The first sale doctrine achieves a similar effect indirectly by protecting the collector's ability to sell the sculpture to its highest-value users.⁷² By facilitating the

ers persistently overestimate the costs of fragmentation, the government might be able to judge fragmentation costs more accurately, but this advantage of government would be insignificant because it is easier to split up a package of rights that turns out to be too broad than it is to reassemble rights that have been overly fragmented. See *infra* pp. 1765–66.

⁶⁹ Cf. Van Houweling, *supra* note 36, at 901 (noting the general problem for servitudes of the distance between benefited and burdened parties).

⁷⁰ The most prominent safety valve in copyright is arguably the fair use doctrine, which permits the use of a work for purposes such as criticism and scholarship without the owner's permission. See 17 U.S.C. § 107 (2006). This doctrine functions as an ex post safety valve: regardless of how rights are allocated prior to a user's pursuing a "fair use" of a work (ex ante), the doctrine shields the user from liability after he has pursued the use (ex post). Fair use might facilitate efficient uses that would otherwise be costly given the allocation of rights. A critical limitation on fair use as a safety valve, however, is that if the allocation of rights creates modules that impede the optimal exercise of embedded options, the work might never be developed intensely enough or distributed widely enough for many potential "fair" uses to be possible. Therefore, although both ex ante and ex post safety valves are important, ex ante safety valves are primary and are the exclusive focus here.

⁷¹ See generally Van Houweling, *supra* note 36, at 900–04 (describing "the problem of the future," *id.* at 900 (citing Julia D. Mahoney, *Perpetual Restrictions on Land and the Problem of the Future*, 88 VA. L. REV. 739 (2002)) (internal quotation marks omitted)).

⁷² Smith observes that whether a resource will be used efficiently depends not just on which use the owner pursues, but also on who the owner is: "the process of discovering the attributes of a resource [involves] entrepreneurship," and "different actors will vary in their ability to handle

sculpture's continued efficient use even in the face of a suboptimal modular structure, these two principles help counteract the inefficiencies of fragmentation. Additionally, the principles incentivize the owners of copies to invest in learning about their copies and to pursue optimal uses because the owners are guaranteed the ability to profit from selling, renting, leasing, and lending the copies. In short, the first sale doctrine and prohibition of copyright servitudes function together as a safety valve against the risk of excessive costs from fragmentation.

III. HIGH NUMBER OF USES AND INTERACTIONS

Copyrighted works, more than real property, possess a tremendous number of potential simultaneous uses, interactions among uses, and interactions with other works. Recall the poem example. A poem has a wide variety of potential uses, each of which can be pursued in parallel: it might be published in print or online, set to music in a song, or recited in a movie. Each use could affect the efficiency of pursuing any other use: publishing the poem online might decrease demand for a print publication, whereas reciting the poem in a movie might increase such demand. When any use is pursued, many new uses arise: reciting the poem in a movie opens up uses such as showing the movie in theaters and distributing the movie on DVD. Finally, implicit in each use are countless interactions with other works: if the poem is set to music, it interacts with the copyrightable creative expression of the composer and of the performer.

Scholars have noted works' interactivity.⁷³ They have observed, for example, our "remix culture" or "recombinant culture," which is facilitated by technological developments such as the internet.⁷⁴ More fundamentally, they have argued that copyrighted works are inherently cumulative⁷⁵ and that much creativity emerges from collaboration and from the reworking of preexisting material.⁷⁶

the uncertainty" of embedded options. Smith, *supra* note 38, at 2106. The notion of embedded options was applied above to owners of copyrighted works, *see supra* p. 1756, but it applies as well to owners of copies of these works. Any given copy can have a number of uses, and owners might need to invest in learning about the copies to discover and pursue those uses.

⁷³ See, e.g., Justin Hughes, *Size Matters (or Should) in Copyright Law*, 74 *FORDHAM L. REV.* 575, 578–79 (2005); *cf.* Van Houweling, *supra* note 36, at 945 (arguing that the problem of incompatible servitudes is more severe for intangible property than it is for real property because of the larger number of ways that intangible property can combine and interact).

⁷⁴ Hughes, *supra* note 73, at 579 (internal quotation marks omitted). See generally LAWRENCE LESSIG, *REMIX* (2008).

⁷⁵ See, e.g., Lemley, *supra* note 16, at 997.

⁷⁶ See Cohen, *supra* note 10, at 1183 ("Across the spectrum of creative practice, manipulation of preexisting texts, objects, and techniques figures centrally in processes of cultural participation."); William W. Fisher III, *Reconstructing the Fair Use Doctrine*, 101 *HARV. L. REV.* 1659, 1729 (1988). See generally Peter Jaszi, *Toward a Theory of Copyright: The Metamorphoses of "Au-*

Society has a significant interest, beyond that accruing to private parties, in the creative development of these uses and interactions. Indeed, “the ultimate aim [of copyright] is . . . to stimulate artistic creativity for the general public good.”⁷⁷ Society also has an interest in fostering the public domain,⁷⁸ which Lessig understands functionally to be not the entire set of formally unowned rights but the narrower “lawyer-free zone” of freedoms that can be used effectively without counsel.⁷⁹ A robust public domain is important in part because it gives consumers valuable access to a diversity of works and uses of works.⁸⁰ Moreover, creativity itself depends on the wide availability of works to be improved and recombined⁸¹ and in particular on opportunities for “creative play” based on “serendipitous access to cultural resources and . . . unexpected juxtapositions of those resources.”⁸²

A. *The Case Against Fragmentation*

Copyrighted works’ high number of potential uses, the interactivity among those uses, and the interactivity with other works arguably oppose allowing fragmentation. First, works’ high number of potential uses raises issues of measurement cost externalities and excessively complex legal regimes. The notion of measurement cost externalities was developed by Merrill and Smith to explain the *numerus clausus*.⁸³ This account reasons that three types of third parties will be interested in learning about a property: those trying to avoid infringing the owner’s rights, those interested in acquiring the rights, and those seeking to improve on the property.⁸⁴ Each will need to learn about both the property and the legal relations surrounding it. If owners can customize their rights freely, observers will know that some property might be

thorship,” 1991 DUKE L.J. 455, 485–91; Martha Woodmansee, *On the Author Effect: Recovering Collectivity*, 10 CARDOZO ARTS & ENT. L.J. 279 (1992).

⁷⁷ Sony Corp. v. Universal City Studios, Inc., 464 U.S. 417, 432 (1984) (quoting Twentieth Century Music Corp. v. Aiken, 422 U.S. 151, 156 (1975)); see also Cohen, *supra* note 10, at 1151.

⁷⁸ See Lessig, *supra* note 11, at 57–58.

⁷⁹ *Id.* at 58–59.

⁸⁰ The ability to choose from many works might appeal to utilitarians by increasing the chance that individuals’ preferences will be satisfied, see generally RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 3–20 (7th ed. 2007), and might appeal to utopian, or “social planning,” theorists because the act of choosing the works with which one engages arguably furthers human flourishing, see Fisher, *supra* note 76, at 1748–50. See generally William Fisher, *Theories of Intellectual Property*, in *NEW ESSAYS IN THE LEGAL AND POLITICAL THEORY OF PROPERTY* 168 (Stephen R. Munzer ed., 2001) (exploring utilitarianism and social planning theory).

⁸¹ See Niva Elkin-Koren, *What Contracts Cannot Do: The Limits of Private Ordering in Facilitating a Creative Commons*, 74 FORDHAM L. REV. 375, 399 (2005) (“For creativity to thrive, creative works must be shared and individuals must be able to freely engage with them . . .”).

⁸² Cohen, *supra* note 10, at 1190.

⁸³ See Merrill & Smith, *supra* note 6, at 24–42.

⁸⁴ Smith, *supra* note 38, at 2112; see also Long, *supra* note 39, at 468; Merrill & Smith, *supra* note 6, at 26 (omitting, at an early stage in developing the theory, potential improvers).

associated with complex, unusual legal relations. However, third parties will not know which properties have such legal relations without investing in learning about each property's ownership structure.⁸⁵ These increased costs are an externality: though owners will, for instance, internalize buyers' costs of learning about their property, they will not internalize buyers' costs of learning about other owners' properties.⁸⁶ Merrill and Smith advocate balancing this externality against the frustration costs that fragmentation avoids.⁸⁷

The measurement cost externality is exacerbated in the copyright context. Processing copyrighted works' ownership structures is costly from the start because of the intangibility of works' boundaries, the subtle inquiries necessary to determine those boundaries,⁸⁸ and the paucity of accepted social meaning surrounding original works.⁸⁹ Allowing fragmentation might exacerbate these processing costs, given works' large number of uses: because rights can be divided in multitudinous ways, each observer will need to invest more to determine any work's structure. Because copyrighted works' many uses are nonexclusive, moreover, the increased processing costs from fragmentation

⁸⁵ Of course, third parties could respond by refusing to invest in learning about the goods. If this happened, however, the externality would simply take a different form. Potential buyers, for example, would discount all products of the relevant type to account for the possibility that any given product was customized. Uncertainty regarding works' ownership structures would thus impose costs on buyers by impairing their ability to make accurate decisions in the marketplace. See Wendy J. Gordon & Daniel Bahls, *The Public's Right to Fair Use: Amending Section 107 to Avoid the "Fared Use" Fallacy*, 2007 UTAH L. REV. 619, 649 n.120.

⁸⁶ Similarly with other types of observers: Owners will internalize higher measurement costs to potential infringers through the higher risk of infringement of their property and higher costs to potential improvers through the lower chance of mutually beneficial transactions. However, owners will not internalize measurement costs for infringers or improvers of other property.

⁸⁷ Merrill & Smith, *supra* note 6, at 24-42. The principal objection to Merrill and Smith's theory is that the measurement cost externality would be minimal if owners had to provide notice to third parties of any customization of their interests. See, e.g., Davidson, *supra* note 6, at 1628; Henry Hansmann & Reinier Kraakman, *Property, Contract, and Verification: The Numerus Clausus Problem and the Divisibility of Rights*, 31 J. LEGAL STUD. S373 (2002); Robinson, *supra* note 29, at 1486-87; cf. Richard A. Epstein, *Notice and Freedom of Contract in the Law of Servitudes*, 55 S. CAL. L. REV. 1353, 1354 (1982) ("[U]nder a unified theory of servitudes, the only need for public regulation . . . is to provide notice by recordation of the interests privately created."). However, these arguments insufficiently account for the processing costs attending notice, especially given the scarcity of attention. See Herbert A. Simon, *Designing Organizations for an Information-Rich World*, in *COMPUTERS, COMMUNICATIONS, AND THE PUBLIC INTEREST* 37, 40-41 (Martin Greenberger ed., 1971). Particularly if owners could incorporate other documents into notices by reference, see Hansmann & Kraakman, *supra*, at S393, allowing variation in ownership structures would increase the measurement costs of processing notice, see Merrill & Smith, *supra* note 6, at 45.

⁸⁸ For instance, one major limitation on the scope of a copyright is that the owner cannot prevent the fair use of the work, see 17 U.S.C. § 107 (2006), and fair use analysis relies on subtle and fact-intensive questions such as whether a new work is a parody of the original, see, e.g., *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569 (1994). Indeed, this analysis is so complex that "fair use in practice becomes the right to hire a lawyer." Lessig, *supra* note 11, at 60.

⁸⁹ Long, *supra* note 39, at 484. Copyrighted works' uncertainty aggravates these concerns.

will be incurred by a tremendous number of potential violators, purchasers, and improvers.⁹⁰ Note that a side effect of increased complexity is that transaction costs might be so high that only sophisticated parties can bear them, resulting in a market favoring sophisticated repeat players over potential market entrants. In short, the measurement cost externality seems to oppose allowing fragmentation.

Copyrighted works' high number of uses also creates the risk that fragmentation will facilitate excessively complex legal regimes. Alienability might be reduced, since owners will be more likely to design rights packages that turn out to be unmarketable. The creative process might suffer insofar as it requires the unimpeded circulation of creative works. Additionally, the wide range of possible ownership patterns shrinks the lawyer-free public domain by increasing the complexity of rights that owners might release.⁹¹ Finally, the proliferation of legal relations might "commodif[y] the creative process"⁹² and create an environment inhospitable to creative play.⁹³ It follows that, for reasons of measurement cost externalities and excessively complex legal regimes, works' high number of uses might argue against fragmentation.

Second, since uses of a single work interact with one another, fragmentation risks generating an anticommons. An anticommons exists where an efficient activity involves the use of many pieces of property, yet property rights are sufficiently fragmented that the transaction costs of aggregating rights to each necessary piece of property make it impossible to pursue the activity profitably.⁹⁴ Copyrighted works might be subject to an anticommons because certain uses of works involve many rights, each of which might be owned separately under a system of free fragmentation. If each of the rights necessary for an efficient use of a work is owned by a different entity, the transaction costs involved in aggregating these rights might make the efficient use impracticable. Fragmentation thus might generate an anticommons.

⁹⁰ See *id.* at 489–95.

⁹¹ Although all rights to a work will expire at the same time, see 17 U.S.C. § 302, certain rights might be released into the public domain sooner. Owners can release rights either fully or partially, through public licenses. See, e.g., *About the Licenses*, CREATIVE COMMONS, <http://creativecommons.org/licenses> (last visited Mar. 26, 2011). If works may be fragmented, the rights entering the public domain might be partial, complex, and not useable without counsel.

⁹² Lessig, *supra* note 11, at 80.

⁹³ Cf. Elkin-Koren, *supra* note 81, at 399 (worrying that the increased availability of copyright licenses might generate a "[r]eliance on property rights [that] may weaken the dialogic virtue of information that is a key to individuals' participation in the creation of culture"); Gordon & Bahls, *supra* note 85, at 633 ("Creative production may need a kind of freedom inconsistent with the bureaucratic record keeping that licensing requires."); Lessig, *supra* note 11, at 79 (noting that the increasing use of licenses "may change a creative ecology within which one creates and shares creativity without concern for underlying property rights into one in which property is central").

⁹⁴ See generally MICHAEL HELLER, *THE GRIDLOCK ECONOMY* (2008) (explaining the theory of the anticommons); Heller, *supra* note 8 (same).

Society might be harmed further insofar as it benefits from creativity involving the recombination of preexisting materials.

To illustrate, suppose a small movie studio owns the copyright to an independent film that has not gained widespread exposure. The company, desperate to reap a profit and unable itself to market the film effectively, assigns to different entities the rights to distribute and display the film in different regions. Several years after these assignments, an influential critic notices the film, and major studios become interested in rereleasing it nationwide. This socially valuable rerelease might be impossible if the transaction costs of consolidating the distribution rights are prohibitive. This outcome is likely if some owners hold out for disproportionate shares of the rerelease's value.

One might initially dismiss the anticommons concern because rational buyers will discount property that they anticipate will be subject to an anticommons, so owners will internalize anticommons costs.⁹⁵ However, the anticommons likely constitutes an externality: owners probably do not fully internalize anticommons costs, either because buyers cannot predict such costs accurately or because buyers' self-interest differs from society's interest.⁹⁶ In the film example, the anticommons costs would be an externality if the buyers did not predict the rerelease's commercial value or if the rerelease had noncommercial value that the buyers did not expect to internalize. Note that the anticommons concern is particularly salient where the entity wishing to pursue the new activity must interact with owners that are not only numerous, but also hard to identify.⁹⁷ This concern applies to copyright because copyright owners need not supervise any permanent physical space, as (rational) landowners must, and copyright ownership is not necessarily recorded.⁹⁸ Therefore, the interactivity of uses of any given work seems to oppose fragmentation.

Third, anticommons issues also emerge with regard to interactions among uses of the fragmented work and uses of other works.⁹⁹ Suppose, for example, that after the film is fragmented, a musician records a song that could generate social value if added to the sound track. The costs the musician would face in contracting with each owner of distribution rights to the film might be prohibitive, losing potential value for both the song and the film (and society as a whole). As with the rerelease, the buyers of distribution rights might not have predicted the movie's interaction with the song or might have failed to internalize the interaction's full social value and thus suboptimally insisted on

⁹⁵ See Robinson, *supra* note 29, at 1493.

⁹⁶ Cf. Heller, *supra* note 58, at 1165.

⁹⁷ See *id.* at 1198.

⁹⁸ See Lessig, *supra* note 11, at 67.

⁹⁹ See Van Houweling, *supra* note 7, at 621–29.

avoiding fragmentation. In sum, copyrighted works' interactions with other works might lead fragmentation to generate an anticommons.

B. *The Case for Fragmentation*

Once again, the strong arguments against fragmentation lose out to stronger arguments for it. First, the arguments deriving from works' high number of potential uses are unconvincing. To start, the measurement cost externality is not a major problem. As Professor Clarisa Long explains, third parties seeking to avoid infringing, to purchase a work, or to improve it must know two types of information: "the contours of the propertarian relationships within which they must navigate and the nature of the intellectual good . . . at the center of this relationship."¹⁰⁰ Allowing fragmentation makes processing the former information more costly, but observers need to invest in learning the latter regardless of fragmentation.

Persons seeking merely to avoid infringing will generally learn only about the nature of the work and will use this information as a proxy for the work's legal relations.¹⁰¹ This strategy works because someone seeking simply to avoid infringing need know only that the work is copyrighted, not how the rights are distributed. Such observers thus will not face higher measurement costs from fragmentation. Observers seeking to purchase or improve a work care about the work's legal relations, but even such observers will not face significantly higher costs from fragmentation. Copyrights that are valuable enough to buy and enforce will likely be owned by sophisticated commercial entities,¹⁰² which will, under competition, set ownership structures that converge around the structures that are optimal given works' underlying features.¹⁰³ Potential purchasers or improvers of a work will probably also be sophisticated in the work's field¹⁰⁴ and so will be able to reason from the features of the work to the optimal ownership structure and then to the actual ownership structure.¹⁰⁵ Therefore, once potential

¹⁰⁰ Long, *supra* note 39, at 468.

¹⁰¹ *See id.* at 492–93.

¹⁰² Corporations have more resources to invest in both producing high-value works and defending copyrights.

¹⁰³ In contrast, individual landowners often make donative transfers that are motivated more by social or psychological factors than by economic concerns. *See Merryman, supra* note 57, at 227.

¹⁰⁴ This group includes the purchasers' or improvers' agents, such as legal counsel. The argument is weakened to the extent that purchasers or improvers must incur additional costs to allow counsel to understand the work's legal relations. The argument stands insofar as entities specialized in a field employ agents who themselves have expertise in that field.

¹⁰⁵ The sophistication of the purchasers or improvers of a work, as well as of the owner of the work, might correlate with the value that the work is perceived to have at any given time. If the public has not yet "learned the new language in which [a work's] author spoke," *Bleistein v. Donaldson Lithographing Co.*, 188 U.S. 239, 251 (1903), the work might not attract expert buyers, and the owner herself might not be sophisticated enough to choose an optimal fragmentation pat-

buyers or improvers learn about the work itself, they will face relatively low costs to determine its legal relations.¹⁰⁶ Admittedly, fragmentation might disfavor buyers or improvers that are less sophisticated and thus less able to deduce a work's legal structure from its underlying properties. However, unsophisticated parties already face disadvantages, and additional costs must be balanced against frustration costs.

To whatever extent observers face increased measurement costs, these costs must be compared with the frustration costs of mandating inefficient packages.¹⁰⁷ As discussed in section II.B, works may differ in the interactivity of their options, the degree to which the interactivity of their options requires modularity to allocate returns to rival inputs, and the importance of expertise to their efficient exploitation.¹⁰⁸ That the characteristics affecting optimal modularity can differ in so many ways argues against mandating a single structure. Works' large number of uses and interactions magnifies the problem by increasing the number of possible modular structures and so raising the chance that any one structure will be inefficient for most works. The additional measurement costs of allowing fragmentation, which will likely be minimal, might be outweighed by the frustration costs of mandatory modularity.¹⁰⁹ This point is tempered if sophisticated parties face not only lower measurement costs, but also lower frustration costs because of their facility in contracting around mandatory structures.

tern. Valuable works might therefore be fragmented in inefficient and processing cost-intensive ways before their value is realized. However, purchasers' expertise in a field probably entails their ability to predict the value of works in that field with a reasonable degree of certainty, so works the public undervalues should, on the whole, be recognized by sophisticated purchasers. Truly low-value works might be ignored by sophisticated purchasers and fragmented inefficiently, but the works' low value entails that the consequences would be insignificant. Although it is true that owners of undervalued works might tend to be unsophisticated, there is no reason to believe that the government would be systematically more sophisticated than would be relatively unsophisticated, though locally informed, owners. At any rate, sophisticated buyers should effectively constrain the fragmentation patterns that owners choose. Finally, although allowing sophisticated buyers to purchase fragments from unsophisticated creators might result in buyers' extracting disproportionate shares of works' value, the same could occur if fragmentation were barred. Allowing fragmentation in fact benefits creators by freeing them to craft maximally profitable packages. In this way, free fragmentation furthers copyright's purpose of incentivizing creative production. See *Mazer v. Stein*, 347 U.S. 201, 219 (1954).

¹⁰⁶ Cf. Long, *supra* note 39, at 482 ("The familiarity of the concept of land lowers information costs for observers."). Works within a general type, such as paintings, undoubtedly have different optimal fragmentation patterns. The claim is simply that the underlying facts about a particular work, which observers must learn anyway, explain the work's optimal fragmentation pattern and thus go far in explaining the work's actual fragmentation pattern under competition.

¹⁰⁷ See Merrill & Smith, *supra* note 6, at 24-42.

¹⁰⁸ See section II.B, pp. 1758-60.

¹⁰⁹ Note also that the measurement cost externality is lessened (though not eliminated) by the fact that the highest-value buyer of a hard-to-process property interest will likely be well placed to bear the risk of infringement of that interest. Infringement might occur if observers choose to risk infringing rather than incur heightened measurement costs.

Similarly, the problem of excessively complex legal regimes is minimal and, to the extent it exists, likely outweighed by frustration costs. To start, the alienability argument is unconvincing. Imagine that an owner fragments her property into five packages, but the property would have been best divided into three packages. Although the chosen structure is certainly suboptimal, fragmentation should not necessarily be disallowed. The chosen pattern could still be better than no fragmentation.¹¹⁰ The chosen pattern created finer-grained packages that might target buyers' preferences more precisely, which is increasingly important as works have more uses and buyers might want ever-smaller subsets of those uses. Additionally, owners' fragmentation decisions likely account for the possibility of future changes in optimal structures. Even if one package (no fragmentation) might be better than five in any given case, works vary in whether they are better left unfragmented or suboptimally fragmented, so the possibility of suboptimal fragmentation does not itself oppose allowing fragmentation. Because owners know their works better than the government does, they should be able to decide when they know enough to determine their works' optimal structures and which structures to select. Of course, to the extent that works' value is noncommercial and thus externalized, there is less reason to entrust these decisions to owners.

Regarding commodification, recall that allowing fragmentation primarily affects owners sophisticated enough to fragment their rights and works commercially valuable enough to justify assignment and enforcement.¹¹¹ Even without fragmentation, owners and purchasers would likely focus on legal rights. Similarly, the threat to the lawyer-free zone seems minimal because corporations likely will not release rights into the public domain in the first place. To the extent this concern persists, it must be weighed against averted frustration costs.

Finally, works' large number of uses suggests that allowing fragmentation might strongly decentralize control over works and thus foster creativity. Increasing the number of persons (including corporate entities) who can meaningfully participate in creative processes furthers cultural richness and diversity.¹¹² As the culture becomes richer and more diverse, creativity flourishes. For all these reasons, works' high number of potential uses does not argue against fragmentation.

Second, the interactivity among uses of a work does not oppose fragmentation because averted frustration costs likely outweigh anti-

¹¹⁰ Although unbundling one package into three is easier than rebundling five packages into three, this point is irrelevant to the present argument for allowing fragmentation in the first place. If fragmentation were prohibited, moving from one bundle to three would be impossible.

¹¹¹ Precisely because fragmentation occurs only when works are sold, it may harm a creative culture less than does licensing, which can affect even works not valuable enough to sell.

¹¹² See Fisher, *supra* note 76, at 1751–52.

commons costs. Assuming that fragmenting a given work will yield an anticommons, averting the anticommons might be possible only at the potentially larger cost of preventing the work from reaching its highest-value users before the anticommons develops. For instance, though barring the studio from fragmenting rights to the film would have prevented an anticommons, it might also have blocked the studio from appropriating the full value of the film before the critic noticed it. As a result, the studio might have dissolved or the film might never have reached the critic. Relaxing the anticommons assumption, some works are probably more likely to face an anticommons than are others, and frustration costs regarding the latter works might outweigh the benefits of averting anticommons for the former works.

Under both of these cases, the balance between anticommons costs and frustration costs would be an empirical question. The buyers of rights are probably better placed to strike this balance than are government officials: not only must officials make rules for broad categories of works, but buyers have the local knowledge, incentive, and sophistication to evaluate the relevant considerations accurately.¹¹³ Admittedly, this calculus changes with regard to noncommercial social value, which buyers do not fully internalize. This consideration would justify a mandatory modular structure only if the benefits of accounting for noncommercial value exceeded the costs of a less precise and sophisticated calculation of efficient modular structure. Barring that situation, the interactivity of works' uses would not oppose fragmentation.

Third, the interactivity among works does not oppose fragmentation for the similar reason that frustration costs might outweigh anticommons costs. One might argue that anticommons costs would be higher here because buyers will probably have difficulty predicting interactions among uses of the purchased work and uses of other works that they might not understand or even know exist. This risk is tempered, however, by owners' ability to reduce the anticommons by assigning rights to entities focusing on particular uses. For example, even if the studio assigned reproduction and distribution rights to different buyers, the anticommons could be averted if one buyer purchased all distribution rights. Moreover, if a project demands only one use of each work, fragmentation will not exacerbate the anticommons that would exist anyway from the use of many works.

¹¹³ Although the original copyright owner is arguably best placed to make these decisions, that point is irrelevant here because a profit-maximizing owner will configure the rights to generate the greatest profit, so the owner would be motivated to configure the rights efficiently only if the buyer could predict the factors bearing on efficiency.

C. A Safety Valve

Despite the argument above, there is a risk that copyrighted works' large number of uses and interactions will yield inefficiencies. The first sale doctrine and prohibition of copyright servitudes function as a safety valve to prevent these inefficiencies from growing too large. First, the first sale doctrine reduces the costs that potential buyers of a copy face in determining with whom to contract. Buyers can contract with only the copy's current owner rather than searching for the possibly remote owner of the underlying work. This effect furthers alienability and ameliorates the measurement cost externality by reducing processing costs.¹¹⁴ The first sale doctrine also furthers alienability because the copy owner is arguably better placed than the copyright owner is to determine how to distribute the copy, given her more localized and current knowledge about the copy's efficient use. Finally, the doctrine furthers alienability and creativity by entrusting control of disposition of the copy to an entity interested in putting the copy to its most valuable use, not in maximizing the monopoly value of the underlying copyright.¹¹⁵ For example, if a person buys a DVD from a film producer who would want to block the DVD's efficient sale to a parodist, the doctrine would prevent the producer from imposing such a restriction on resale. In these ways, the first sale doctrine helps counteract the inefficiencies that fragmentation threatens to generate.

Second, the prohibition of servitudes promotes alienability and creativity by barring the original owner from burdening the property in a way that makes it unmarketable¹¹⁶ or unavailable for creative use. The rule also reduces measurement costs by constraining how packages may differ.¹¹⁷ In the sculpture example, the safety valve would, as a whole, reduce processing costs, entrust disposition of the sculpture to an entity well placed to maximize its value, and reduce the copyright owner's ability to impede the sculpture's future transfer and use.

The effects of these principles on the anticommons concern are more mixed. On the one hand, they reduce the anticommons by consolidating control over a copy's distribution and use in the copy's cur-

¹¹⁴ Cf. Van Houweling, *supra* note 7, at 603 (arguing that the first sale doctrine "limit[s] the complexity of the non-possessory rights attached to physical objects that embody . . . works").

¹¹⁵ Cf. Richard A. Epstein, *The Disintegration of Intellectual Property? A Classical Liberal Response to a Premature Obituary*, 62 STAN. L. REV. 455 (2010) (arguing that although the current first sale doctrine is incoherent, *see id.* at 505, the law should limit resale prohibitions that are "intended to bolster the monopoly position of a firm with market power," *id.* at 502); John A. Rothchild, *The Incredible Shrinking First-Sale Rule: Are Software Resale Limits Lawful?*, 57 RUTGERS L. REV. 1, 15–16 (2004) (arguing that copyright owners might seek to prevent transfers of already-sold copies to protect their own profits from selling copies of the work).

¹¹⁶ Cf. Van Houweling, *supra* note 36, at 902–03 (theorizing that servitudes divide property rights and so may generate an anticommons wherein buyers cannot acquire a useful interest).

¹¹⁷ *See id.* at 904–05.

rent owner rather than allowing control to be split between the copyright owner and the copy owner. On the other hand, the first sale doctrine might exacerbate the anticommons by decentralizing control over distribution of the underlying work. Although prospective buyers would need to contract with the current owners of the copies anyway, the buyers would face increased transaction costs if each of these owners could decide to dispose of possession of her copy on unique terms. In short, the effects of the first sale doctrine and the prohibition of servitudes on the anticommons are uncertain, though the principles seem to function as an effective safety valve for the alienability and measurement cost externality concerns.

CONCLUSION

Copyrights have become a ubiquitous part of contemporary society. Lessig has argued that in a world with the internet — “a distributed, digital network where every use of a copyrighted work produces a copy” — many commonplace activities are now copyright violations.¹¹⁸ Indeed, more than fifteen years ago, Professor Jessica Litman observed that “[m]ost of us can no longer spend even an hour without colliding with the copyright law.”¹¹⁹ Given this increasing prominence of copyright, it would be especially troubling if the law, as some scholarship suggests, facilitated owners’ committing their works to inefficient ownership structures that undermined copyright’s purposes.

The aspiration of this Note has been to demonstrate that this concern is misplaced. First, although the uncertainty of copyrighted works might seem to argue for mandatory broad modularity, free fragmentation is superior because of variance among works’ characteristics bearing on optimal modular structure, combined with owners’ superiority in determining the structure of their works over time. Second, although copyrighted works’ large number of uses and interactions might suggest that fragmentation generates measurement cost externalities, anticommons externalities, and alienability concerns, these costs are insubstantial and likely outweighed by the frustration costs of a mandatory modular structure. To the extent that fragmentation nonetheless risks generating a loss, the first sale doctrine and prohibition of copyright servitudes serve as a safety valve. In short, copyright law’s allowance of fragmentation is not nearly as harmful as much of the literature indicates. It is, to the contrary, good policy.

¹¹⁸ LAWRENCE LESSIG, *FREE CULTURE* 143 (2004); *see also id.* at 140 (arguing that, because this expansion of copyright is unintended and harmful, copying should not automatically trigger copyright liability).

¹¹⁹ Jessica Litman, *The Exclusive Right to Read*, 13 *CARDOZO ARTS & ENT. L.J.* 29, 34–35 (1994).