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Property as a Management Institution

Lynda L. Butler[†]

INTRODUCTION

The institution of property serves an important management function for society, guiding the use of resources among its members by delegating to the owner the power to decide how and when to use a resource. Under the dominant American approach, this delegation recognizes broad decision-making powers in the individual property owner. Grounded in an exclusion-based view of property, the dominant approach treats each property owner as a gatekeeper, with important in rem rights that bind all others in the legal system, requiring them to respect the property—even those not in a direct relationship with the owner.¹ Over time, courts and other lawmakers have developed doctrines and rules to guide and sometimes constrain the exercise of gatekeeping powers. For the most part, these guiding legal principles address direct

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¹ See JAMES E. PENNER, *THE IDEA OF PROPERTY IN LAW* 23 (1997). Leading scholars who have promoted the exclusion-based view in recent years include Richard Epstein, Tom Merrill, and Henry Smith. See Richard A. Epstein, *Takings, Exclusivity and Speech: The Legacy of PruneYard v Robins*, 64 U. CHI. L. REV. 21, 22 (1997); Thomas W. Merrill, Essay, *Property and the Right to Exclude*, 77 NEB. L. REV. 730, 730 (1998) [hereinafter Merrill, *Right to Exclude I*]; Henry E. Smith, *Exclusion Versus Governance: Two Strategies for Delineating Property Rights*, 31 J. LEGAL STUD. S453, S454–55 (2002) [hereinafter Smith, *Exclusion Versus Governance*]; see also Lynda L. Butler, *The Governance Function of Constitutional Property*, 48 U.C. DAVIS L. REV. 1687, 1692–93 (2015) [hereinafter Butler, *Governance Function*] (defining the exclusion strategy); Lynda L. Butler, *The Resilience of Property*, 55 ARIZ. L. REV. 847, 879 (2013) [hereinafter Butler, *Resilience of Property*] (explaining the mainstream economic justification for the exclusion-based view); Thomas W. Merrill, *Property and the Right to Exclude II*, 3 BRIGHAM-KANNER PROP. RTS. CONF. J. 1 (2014) [hereinafter Merrill, *Right to Exclude II*] (offering additional justification for the exclusion-based view).

relationships that basic economic and fairness perspectives suggest the property owner should consider in making decisions about the property.² Relationships between the property owner and others having rights in the same property, between the property owner and successors-in-interest, and, to a lesser extent, between the property owner and close neighbors, raise the types of issues addressed by the traditional doctrines and rules. Topics of concern include tangible spillovers borne by owners of neighboring property,³ cost problems affecting buyers and sellers of real estate,⁴ and wasteful, unauthorized, or excessive uses that affect other rights in the same resource.⁵

² The do-no-harm principle, for example, defines the scope of ownership rights in a way that considers the interests of neighboring landowners, forcing the decision-maker to internalize foreseeable and tangible spillovers. This principle is at the core of the nuisance doctrine. A landowner is liable for a nuisance if her conduct would cause significant harm to a hypothetical “normal person in the community or by property in normal condition and used for a normal purpose.” RESTATEMENT (SECOND) OF TORTS § 821F (AM. LAW INST. 1979). This standard makes a particular neighbor’s sensitivity to the spillovers from the landowner’s conduct irrelevant to the question of liability. *See id.* § 821F cmt. d (explaining that unless the conduct would significantly harm a normal person in the community, there is no liability for interference with the use and enjoyment of a hypersensitive neighbor’s property, but there is liability if the standard is met, even though the landowner’s particular neighbors are desensitized to, and incur no harm from, the landowner’s conduct). By making liability for a nuisance dependent on actual harm caused, the law incentivizes a landowner to consider *ex ante* the consequences of her conduct on neighboring property.

³ Nuisance law, for example, governs unreasonable and substantial interference with another’s use and enjoyment of her property. *See id.* §§ 821F, 822. Under the Restatement approach, nuisance law focuses on the extent of the harm to the use and enjoyment of property, rather than the conduct that caused such harm. *Id.* § 822 cmt. b. The Restatement requires that the gravity of the harm be balanced against the utility of the conduct causing the harm, *id.* § 822 cmt. k, based on the premise that there are costs to living in an organized society, which include putting up with some amount of interference from others, *id.* § 822 cmt. g.

⁴ Laws governing real estate transactions have established certain default rules that define the rights and obligations of sellers and purchasers of real estate. For example, in states that have adopted the doctrine of equitable conversion, the purchaser has equitable title and therefore assumes the risk of loss to the land in the period between execution of the contract for sale and closing. 27A AM. JUR. 2D *Equitable Conversion* § 13 (2016); 1 TIFFANY REAL PROP. §§ 309, 310a (3d ed. 2016); RESTATEMENT (THIRD) OF RESTITUTION § 47 cmt. d (AM. LAW INST. 2011). Today, sellers of real property may also be required to disclose any defects of quality or title that a buyer could not learn by inspecting the property. *See, e.g.*, RESTATEMENT (SECOND) OF CONTRACTS § 161 cmt. d (AM. LAW INST. 1981); 4 TIFFANY REAL PROP. § 986.20 (3d ed. 2016). In addition, different types of deeds provide varying levels of protection to the purchaser from present or future claims. *See, e.g.*, JOSEPH WILLIAM SINGER, PROPERTY § 11.4.3 (4th ed. 2014) [hereinafter SINGER, PROPERTY] (discussing the different types of deeds and their warranties of title). And even when third-party interests encumber a seller’s land, the seller still may have marketable title if the buyer had notice of the encumbrances or a reasonable buyer could accept the title. *Id.* § 11.3.3.3, at 519–20, 522–23.

⁵ The doctrine of waste, for instance, restricts a tenant’s use of property to protect the landlord’s reversionary interest. RESTATEMENT (SECOND) OF PROP.: LANDLORD & TENANT § 12.2 (AM. LAW INST. 1977); *see also id.* § 12.2 cmt. c (“It must not be lost sight of, however, that the landlord has a reversionary interest in the leased property and that the physical changes in the leased property that are reasonably

The dominant approach to the management function works well much of the time. It is a low-cost approach that relies on the incentives of the marketplace to reward the productive gatekeeper or replace the wasteful one. With a simple delegation, ownership rights and powers are placed in the gatekeeper and protected from encroachment or interference through the power to exclude.⁶ As long as the owner follows applicable rules and regulations, decisions about the property generally will be good against society at large.⁷

Perhaps because of how property is defined in terms of an allocation of rights and interests in resources, the management role of property has largely been ignored by scholars and jurists adhering to the exclusion-based or mainstream economic theory of property—except in the context of the owner’s narrow self-interests.⁸ Defining property in terms of its allocation function puts the emphasis on the individual right holder. Reliance on the marketplace to effectuate the right holder’s decisions then promotes efficiency as the guiding norm. The focus on the individual gatekeeper and the economic incentives shaping her decisions narrowly frames the management calculus, ignoring collective or societal interests that also have shaped the operation of our property system. Developed through our fundamental political institutions, these collective interests provide an important counterweight to the self-interests driving the decisions of the individual gatekeeper.⁹ Thinking of property as a management institution more broadly provides a different lens

necessary to enjoy those uses must be determined in the light of the eventual resumption of possession by the landlord.”).

⁶ See Butler, *Resilience of Property*, *supra* note 1, at 879–80; Larissa Katz, *The Regulative Function of Property Rights*, 8 *ECON J. WATCH* 236, 239–40 (2011); Merrill, *Right to Exclude I*, *supra* note 1, at 747–52; Thomas W. Merrill, *The Property Strategy*, 160 *U. PA. L. REV.* 2061, 2063–71 (2012) [hereinafter Merrill, *Property Strategy*]; see also Merrill, *Right to Exclude II*, *supra* note 1, at 21–25 (rebutting criticisms of the exclusion-based view).

⁷ See Butler, *Resilience of Property*, *supra* note 1, at 861–62; Merrill, *Property Strategy*, *supra* note 6, at 2068–71; Henry E. Smith, *Property as the Law of Things*, 125 *HARV. L. REV.* 1691, 1702–08 (2012) [hereinafter Smith, *Law of Things*].

⁸ See, e.g., Merrill, *Property Strategy*, *supra* note 6, at 2063–71 (defining the property strategy as placing decentralized control over a valuable, discrete resource in an identifiable owner having the capacity to manage the resource and the right to exclude others generally from capturing the value resulting from management); Smith, *Law of Things*, *supra* note 7, at 1693–94, 1698–99, 1702–08 (developing a theory of property that revolves around delineation of costs through the exclusion strategy as the primary platform of property’s structure); see also *infra* notes 52–57 and accompanying text (discussing how property law uses the exclusion strategy to promote the efficient allocation of property rights).

⁹ Joe Singer, for example, maintains that the fundamental political values of our democracy impose structural constraints on our property system. See Joseph William Singer, *Property as the Law of Democracy*, 63 *DUKE L.J.* 1287, 1303–24 (2014) [hereinafter Singer, *Law of Democracy*].

for examining the exercise of property rights, revealing other dimensions that are important to the survival of a property system existing within a democratic society and a world of finite resources.

One consequence of ignoring property's management function is that much of the infrastructure of property—that part of property that makes it work—has been misunderstood. As efforts to import Western property systems have demonstrated, it is not enough to formally recognize private property rights.¹⁰ In his intriguing book *The Mystery of Capital*, Hernando de Soto proclaimed the “hour of capitalism’s greatest triumph” to be “its hour of crisis.”¹¹ He lamented the failure of developing and transitioning countries to adopt successful capitalist economies despite their recognition of capitalism as the “only feasible way rationally to organize a modern economy.”¹² Instead of peace and posterity, their people have faced “economic and political disaster”—rioting, looting, and starvation.¹³ His book probed the reasons for this failure, ultimately concluding that reform efforts have taken for granted the way capital is produced, especially through the property system. They have taken for granted the “legal infrastructure hidden deep within their property systems . . . [O]wnership is but the tip of the iceberg. The rest of the iceberg is an intricate man-made process that can transform assets and labour into capital”¹⁴ and promote social welfare. Successful reform efforts must understand that process.

In recent years, the scholarship of Tom Merrill and Henry Smith has done much to rediscover and understand the forgotten structure of property—how it works, how it manages

¹⁰ *E.g.*, HERNANDO DE SOTO, *THE MYSTERY OF CAPITAL* 1–13 (2000). Michael Heller’s description of Russian kiosks provides a striking example. Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621, 622–24 (1998). In the late 1990s, the Russian government sought to legitimize the transition away from communism by granting private property rights to broad segments of political society. *Id.* at 637–38. Individual rights in the bundle of rights that collectively constitute the ownership rights of a single owner in the West were split up and distributed among several different economic actors. *Id.* The result was a collective action problem that Heller called a “tragedy of the anticommons”—i.e., so many actors had the right to exclude with respect to any given resource that no one, in effect, could make productive use of it. *Id.* at 623–24. In the case of storefronts on Russian city streets, one entity may have had a right to determine what types of businesses could use the space, while another had the right to lease it, and still another had a right to collect on the occupants’ revenues, etc. *Id.* at 637–39, 638 fig.2. Vendors could not collect all the necessary permissions to use the storefronts, so they sold their wares from street-side kiosks, while the storefronts remained vacant. *Id.* at 622–23.

¹¹ DE SOTO, *supra* note 10, at 1.

¹² *Id.*

¹³ *Id.* at 2.

¹⁴ *Id.* at 8–9.

resources and rights, how it regulates use.¹⁵ In a series of jointly and individually authored pieces, they have identified key concepts shaping the framework of property and have explained how property's conceptual framework delineates rights.¹⁶ Merrill, in particular, has developed an exclusion-based theory of property and explained how exclusion works by supporting both the "residual managerial authority"—the discretion to make decisions about a resource—and the "residual accessionary rights" of property—the right to capture changes in value as well as emergent resources.¹⁷ Smith, in turn, described the structure of property through the development of an information-cost theory of property. He explained how property is organized around "lumpy packages" or "modules" that regulate the flow of information to promote efficient transactions and manage for complexity.¹⁸ A complex system has "many interdependencies" and can only function effectively when the flow of information is controlled.¹⁹ A modular structure manages the flow of information by walling off information irrelevant to a particular situation and limiting interconnections between packages of property rights, fostering standardization.²⁰ Property's modules thus minimize the costs of interactions.²¹

Merrill's and Smith's works have greatly advanced thinking about property as a complex system. Their scholarship, however, focuses primarily on property as a source of individual rights—as a way to optimally allocate those rights. Management,

¹⁵ See, e.g., Merrill, *Property Strategy*, *supra* note 6, at 2063–71 (describing the basic elements of the strategy for regulating the use of things that underpins property laws in most historical and contemporary human societies); Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1, 9–23 (2000) [hereinafter Merrill & Smith, Numerus Clausus] (recognizing that under the common law, the set of possible arrangements of rights in an item of property is limited to a certain number of standard forms and identifying those forms); Smith, *Law of Things*, *supra* note 7, at 1700–16 (advancing a theory of property under which the particular rights of owners in things are defined so as to minimize information costs vis-à-vis third parties). Others have also contributed much to the debate. See, e.g., Katz, *supra* note 6, at 240–44 (offering a unique approach to understanding private property rights under which owners are given the exclusive right to determine property's use on behalf of the general public).

¹⁶ See sources cited *supra* note 15; see also Henry E. Smith, *The Persistence of System in Property Law*, 163 U. PA. L. REV. 2055, 2055 (2015) (maintaining that the basic features of property law reflect its basic architecture as a system).

¹⁷ See Merrill, *Property Strategy*, *supra* note 6, at 2067–70; see also Merrill, *Right to Exclude I*, *supra* note 1, at 740–45 (explaining that logically other property rights may be derived by initially granting the owner the right to exclude, but not vice versa); Merrill, *Right to Exclude II*, *supra* note 1, at 2–8 (defending his argument that the right to exclude is a necessary precondition to other private property rights).

¹⁸ Smith, *Law of Things*, *supra* note 7, at 1693, 1716, 1725.

¹⁹ *Id.* at 1701.

²⁰ See *id.* at 1701–02.

²¹ See *id.* at 1709–10.

more often than not, is treated as a stepchild of the allocation system, guided by the allocative norm of efficiency.²² Other values and functions of property tend to be ignored. What embeds the management function into the allocation system under their approach is the very feature that makes our property system work on its own much of the time: the exclusion-based theory of property. What limits their approach is the assumed subordination of the more outward-regarding governance strategy for managing property.²³

Though the exclusion strategy is a low-cost way to manage a property system, it can lead to significant problems, especially in transitioning countries with incomplete economies and political structures. In certain situations, the exclusion-based approach produces high transaction costs, fails to consider existing third-party interests, and ignores the interests of future generations.²⁴ It also defines the scale of use too narrowly to allow consideration of cumulative impact or diffused harm and thus provide meaningful accountability.²⁵

What is missing from the dominant model is a more comprehensive management approach that not only takes care of the individual owner, allowing him to reap the reasonable rewards of his efforts, but also considers society (broadly defined) and the larger natural system. What is missing is an outward-

²² See Merrill, *Property Strategy*, *supra* note 6, at 2068–69 (discussing restrictions on a property owner as exceptions to the owner’s right to manage); Smith, *Law of Things*, *supra* note 7, at 1709–10, 1718–20 (describing exclusion as property’s decision-making platform and the governance strategy as an exception or limitation).

²³ In one article, for example, Smith explains how the exclusion strategy provides the platform—the everyday default rules—while the governance strategy identifies when exceptions are needed to provide fairness in particular settings. Smith, *Law of Things*, *supra* note 7, at 1705, 1710. Merrill also regards governance strategy rules as exceptions to a fundamental right to exclude in the private property owner. See, e.g., Merrill, *Property Strategy*, *supra* note 6, at 2068–69, 2069 n.24 (characterizing statutory and common law restrictions on an owner’s use of property as “subtractions” from the owner’s basic right to manage the property).

²⁴ See, e.g., Gregory S. Alexander, *Governance Property*, 160 U. PA. L. REV. 1853, 1876–82, 1887 (2012) (arguing that “[g]overnance property promotes human flourishing in ways that exclusion property does not,” by protecting a sense of community—for example, preventing a party from unilaterally exiting a tenancy by the entirety, or sharing rights to possess, enjoy, or consume); Henry E. Smith, *Governing Water: The Semicommons of Fluid Property Rights*, 50 ARIZ. L. REV. 445, 458–60 (2008) (arguing that an exclusion-based property view as applied to water may lead to misuse, preventing use by other parties and protecting the owner’s decisions on how to or how not to use his privileges); Henry E. Smith, *Property and Property Rules*, 79 N.Y.U. L. REV. 1719, 1733, 1755–58 (2004) (contrasting exclusion-based and governance strategies under a “transaction structure,” and their respective tradeoffs between marginal costs and precision); see also Shi-Ling Hsu, *A Two-Dimensional Framework for Analyzing Property Rights Regimes*, 36 U.C. DAVIS L. REV. 813, 816–20, 830–32 (2003) (discussing Heller’s tragedy of the anticommons as applied to global resources and climate change).

²⁵ See *infra* notes 92–98 and accompanying text (discussing property’s scale of use).

regarding perspective that encompasses a broader sense of responsibility for the impacts of property use on society and nature, and that recognizes the role of collection action in managing the exercise of property rights. In our democratic system, collective management occurs through decision making based on debate, rhetoric, persuasion, voting, and engagement with interested parties. The individual rights focus of the exclusion theory tends to ignore the relationship between property owners and future generations, between property owners and indiscriminate members of the public, and between property owners and fundamental biophysical systems. Problems arising from these interactions can be quite serious, involving resource hoarding, excessive fragmentation of resources, and serious, sometimes irreversible, degradation of the environment.²⁶ Collective decision making brings in the relational dimensions of property that would otherwise be ignored.

A property management system should be able to govern the use of resources in ways that promote individual well-being, social cohesion, and the integrity of political, economic, and natural systems. A good theory frames what matters and is not just reactive. It has predictive value and enables generalization.²⁷ Our institution of property involves a continuum of possible property arrangements, ranging from almost absolute private property rights to government ownership of property.²⁸ A management system should offer tools for governing different property arrangements, not just exclusion-based arrangements.

²⁶ For further discussion of the limitations of the exclusionary approach to property, see *infra* Section II.A.

²⁷ See Smith, *Law of Things*, *supra* note 7, at 1695 (“A theoretical description [of property] should have some predictive value in that it should correctly lead us to expect certain property systems under a new set of conditions and to predict what if anything should be invariant across legal systems. In other words, a parsimonious and accurate description of the existing property system or systems should generalize in a straightforward way to new circumstances.”).

²⁸ Though analysis of property or resource disputes traditionally involved consideration of two possible solutions—centralized government ownership or private property rights—Elinor Ostrom and other scholars have demonstrated that a number of alternatives, like managed commons, may at times be preferable. See ELINOR OSTROM, *GOVERNING THE COMMONS* 8–21 (1990) (explaining that information costs may make government ownership and private property rights less efficient than an internally created solution to managing commons); see also Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 U. CHI. L. REV. 711, 774 (1986) (concluding that the value of certain types of property is maximized when ownership is vested in the public and finding that, historically, custom alone was sometimes sufficient to maintain such a system); cf. Butler, *Resilience of Property*, *supra* note 1, at 854–55 (describing the relational frameworks within which people have conceived of property over time); Lee Anne Fennell, *Common Interest Tragedies*, 98 NW. U. L. REV. 907, 912–13 (2004) (pointing out that even informal systems of managing property based on social norms have mitigated the factors that theory suggests inevitably lead to tragedies of the commons or anticommens).

The management system should, in appropriate situations, be public- or outward-regarding as well as owner-focused. It should recognize the connections between Smith's property module and the outside world. "Property law does more than manage the complexity of human interactions" with a thing.²⁹ It also provides a form of "governance"³⁰ that affects political, economic, social, and natural systems, framing what counts and making "value choices."³¹

This article examines property as a management institution and argues that a broader, more sustainable approach is needed to deal with the serious problems and limitations of the dominant exclusion-based approach. Defining the exclusion strategy as *the* platform for managing property rights ignores important relations and interests adversely affected by this owner-centric approach. The article first examines the basics of how and why property manages, asking what is being managed, who is affected, and for what purpose. After laying out the foundation of property's management role in Section I.A, the article discusses different models of management and the legal rules, doctrines, and policy tools for management in Section I.B. Serious problems with the dominant approach are examined and a broader, more sustainable approach to property's management role is advanced in Part II. This broader approach recognizes that management occurs not only through individual action but also through collective action. More particularly, it recognizes the governance strategy as a separate and coequal model of management that is more effective when the exclusion-based approach cannot overcome serious externalities caused by its individual rights focus and affecting collective interests in shared resources. The governance strategy considers the interconnectedness of property rights and collective interests and is especially effective in dealing with complex situations found in the real world. Those situations might involve a mix of property arrangements, public goods needing more management, new uses or resources made possible through technological advances, and imminent public crises involving property's impact on the integrity of social, political, or natural systems.

²⁹ See Singer, *Law of Democracy*, *supra* note 9, at 1303–04.

³⁰ Singer actually describes property norms as "a form of political governance." *Id.* at 1322. My use of the term "governance" is broader, encompassing nonpolitical forms like common interest communities and the courts.

³¹ *Id.* at 1291.

I. PROPERTY'S MANAGEMENT ROLE

Understanding the importance of property's management role requires consideration of two basic questions: (1) what relationships should be managed when property rights are recognized and exercised? (2) what norms, goals, or purposes are guiding the management process? The answers will shape and affect the resulting management scheme. A system like the dominant exclusion-based model that only covers relationships directly and closely tied to the individual property owner will draw a tighter circle around the management zone of property. Under such an owner-centric system, the norms and purposes of management will promote, primarily, the rights of individual owners and, secondarily, certain societal interests through the creation of wealth. Absent a broader imperative, the narrow lens of the property owner's self-interests generally would guide decisions about investment, use, and transfers of the property. To the extent that the owner's decisions increase social welfare and not just individual welfare, third parties could benefit as well. Unless constrained by law, though, adverse spillovers resulting from a property owner's decisions will occur without any accountability.³²

A system, on the other hand, that broadens the management zone to include impacts on indirect and even future relationships will allow greater consideration of temporal, spatial, and societal scales of use. Under such a system, the management zone and the actual reach of an owner's gatekeeping powers are more likely to overlap. This broader approach will require consideration of values important to the larger circle of accountability. The relational and normative foundations of the management function are discussed in Section I.A, while different models of management are explored in Section I.B.

A. *Relational and Normative Foundations of Property's Management Function*

Property's management system should govern individual rightholders and stakeholders as they exercise their rights and promote their interests without substantially impairing the interests of others. Managing involves a number of activities, including planning, organizing, directing, controlling, and

³² See *supra* notes 2–5 and accompanying text (discussing some of the legal constraints affecting property owners under a narrower, exclusion-based approach).

coordinating.³³ Two key qualities define the reach or magnitude of property's management system: the relational nature of rights and the importance of goals and norms.

1. The Relational Dimension: What Does Property Manage?

Identifying what a property system manages is a critical first step. Is it just the affected thing or something more? Even traditional systems have recognized that property at least manages the relationship between the individual owner and the thing and, by implication, the rest of the world.³⁴ By making decisions about how the thing is used, the owner necessarily affects and limits the options of third parties generally.³⁵

Tom Merrill explored the relationship between owners and their resources in the article *The Property Strategy*.³⁶ He observed that the property owner has both residual managerial authority and residual accessionary rights.³⁷ Residual managerial authority entitles the owner, by default, to make decisions that affect the resource and that have an in rem or binding effect on third parties even when the third parties have no connection with the property.³⁸ Though the law may constrain the owner's discretionary authority, the owner does "have the last word about what will be done" with the property.³⁹ Residual accessionary rights, in turn, allow the owner to keep the added value in the property, even when the added value is not due to the owner's efforts but rather to the surrounding community or to government support.⁴⁰ When, for example, the value of a tract

³³ *Managing*, WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 1372 (2002); see generally LINDA K. STROH ET AL., ORGANIZATIONAL BEHAVIOR: A MANAGEMENT CHALLENGE (3d ed. 2002) (examining issues in managing behavior in organizations).

³⁴ In their casebook on property, Merrill and Smith introduce first-year students to this traditional view right away. See THOMAS W. MERRILL & HENRY E. SMITH, PROPERTY: PRINCIPLES AND POLICIES 1 (2d ed. 2012) [hereinafter PROPERTY: PRINCIPLES AND POLICIES].

³⁵ Scholars describe this impact on the rest of the world as the *in rem* character of property. *E.g., id.* at 19 (noting that the *in rem* right of property reflects "the recognition of duties in a large and indefinite class of others not to interfere with some *thing*").

³⁶ Merrill, *Property Strategy*, *supra* note 6, at 2065–67.

³⁷ *Id.* at 2068.

³⁸ *Id.* (explaining that managerial authority is "pretty straightforward. Start with an owner and a discrete resource. The owner is the manager of the resource. The owner has broad discretionary authority to decide who gets to enter or touch it, what it will be used for, what it looks like, and whether or to what extent it will be combined with other things in some larger enterprise. To exercise managerial authority is to be in charge of the resource and to have the last word about what will be done with it.").

³⁹ *Id.*

⁴⁰ *Id.* at 2067–70 (Residual accessionary rights "mean[] that as the value of the resource changes, the owner automatically captures this change in value—gain or loss. The property strategy requires that the owner—the person or entity who exercises

of land increases due to market conditions or government subsidies, the owner of the tract “captures this change in value.”⁴¹ A property owner’s accessory rights also include rights to emergent resources like crops grown on land or the offspring of domestic animals.⁴²

Traditional systems also manage some horizontal and vertical property relationships that are closely tied to, or directly affected by, the individual owner’s exercise of rights. Vertical relationships involve rights shared among multiple parties at a given point in time (for example, concurrent estates)⁴³ or rights shared in varying degrees in the same property at a given point in time (such as an easement and the burdened estate).⁴⁴ Vertical property arrangements that are directly affected by a property owner’s exercise of rights generally are covered by the traditional management system. Some horizontal relationships involving the division of ownership over time also are managed by a traditional approach. Examples include arrangements where one rightholder has a present interest (such as a life estate), while another holds a future interest (such as a remainder) or where the owner has taken successively through a voluntary transaction from the prior owner.⁴⁵ Finally, some relationships between the owner and third parties are managed in a limited manner by the traditional system when the relationship involves a shared common interest arrangement (such as a subdivision subject to restrictive covenants)⁴⁶ or the

residual managerial authority—also be the one who captures changes in the value of the thing over time.”) *But cf.* Eric T. Freyfogle, *Property and Liberty*, 34 HARV. ENVTL. L. REV. 75, 88 (2010) (explaining that historically in the United States, “[i]n many land-use settings, for instance, colonies and states authorized their citizens or governments to condemn rights of way across neighboring lands or even to seize lands” that had become particularly valuable).

⁴¹ Merrill, *Property Strategy*, *supra* note 6, at 2069–70.

⁴² *Id.* at 2070.

⁴³ For sources discussing how the traditional system manages interests in concurrent estates, see John V. Orth, *Concurrent Estates*, in THOMPSON ON REAL PROPERTY § 31.01 (David A. Thomas ed., 2d ed. 2016); SINGER, PROPERTY, *supra* note 4, § 8.4.

⁴⁴ For sources discussing how the traditional system manages lands subject to easements, see THOMPSON ON REAL PROPERTY, *supra* note 43, at ch. 60; SINGER, PROPERTY, *supra* note 4, §§ 5.3, 5.5.

⁴⁵ For sources discussing how the traditional system manages present and future estates in the same land, see David A. Thomas, *Transferability of Remainders*, in THOMPSON ON REAL PROPERTY, *supra* note 43, § 23.06; SINGER, PROPERTY, *supra* note 4, §§ 7.3–7.4, 7.6–7.7. For sources discussing how the traditional system manages the relationship between the buyer and seller of real estate through covenants of title, marketable title, and other doctrines, see THOMPSON ON REAL PROPERTY, *supra* note 43, at chs. 82, 91; SINGER, PROPERTY, *supra* note 4, §§ 11.3–11.4.

⁴⁶ For sources discussing how the traditional system manages the interests of neighboring landowners in a planned subdivision subject to restrictive covenants, see David A. Thomas, *Ownership as an Element of Property*, in THOMPSON ON REAL PROPERTY, *supra* note 43, § 14.02; SINGER, PROPERTY, *supra* note 4, § 8.5.

owner's use causes foreseeable harm to neighboring land (for instance, under common law nuisance).⁴⁷

Traditional systems, however, do not generally manage the relationships between the owner and the community at large, especially not when the owner's use indirectly harms a community over time either by itself or in combination with other similar uses.⁴⁸ Nor does a traditional approach effectively cover relationships between property owners and future generations or between property owners and natural systems.⁴⁹ Instead, the traditional approach largely denies the accountability of property owners for many significant spillovers affecting others over time or undermining the integrity of biophysical systems.⁵⁰

How the management zone of property is drawn affects the relational dimensions of a property system. As Figure 1 illustrates, the traditional, exclusion-based approach, with its owner-centric focus, limits property's relational dimension mostly to the decision-making zone of the individual property owner. This owner-centric zone includes third parties violating the owner's rights and powers over a resource (e.g., through trespass or conversion) as well as parties in a direct, transactional relationship with the owner (e.g., in leasehold estates or as a

⁴⁷ For sources discussing how the traditional law of nuisance imposes rights and duties on neighboring landowners to manage harmful uses, see Alan M. Weinberger, *Restrictions on Tenant's Use of Premises*, in THOMPSON ON REAL PROPERTY, *supra* note 43, § 44.03; SINGER, PROPERTY, *supra* note 4, §§ 3.2–3.5.

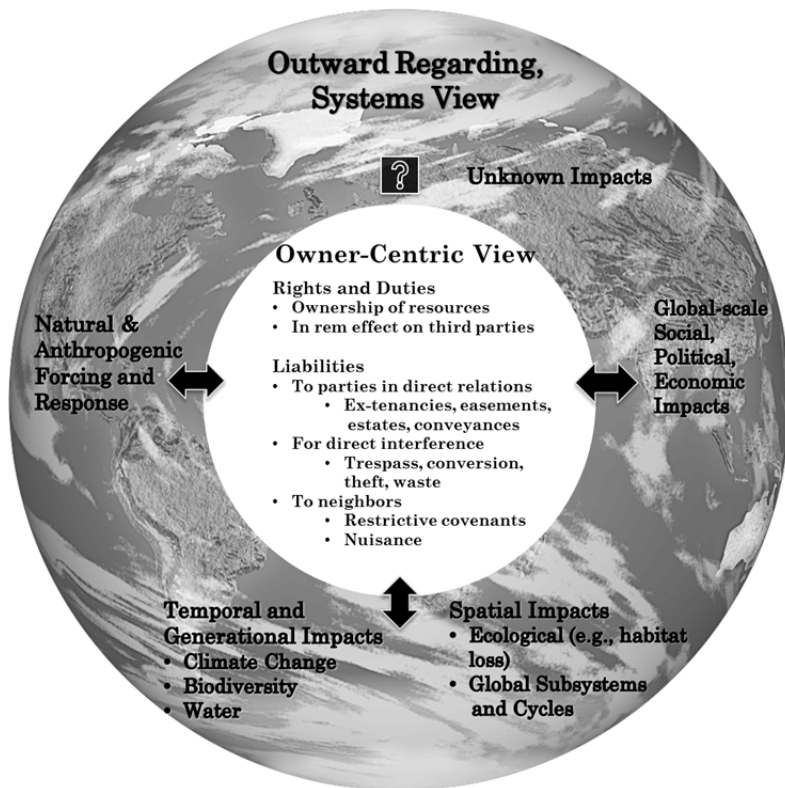
⁴⁸ See, e.g., *Am. Elec. Power Co. v. Connecticut (AEP)*, 564 U.S. 410 (2011). In *AEP* eight states, the City of New York, and three separate land trusts sued several electric power corporations under common law nuisance for their greenhouse gas emissions, arguing that those emissions contributed to climate change and substantially and unreasonably affected the public. *Id.* at 418–19. The Court held that the Clean Air Act authorized EPA to regulate greenhouse gases as a pollutant and therefore displaced federal common law rights. *Id.* at 424.

⁴⁹ Almond growers in California provide one example of this spillover effect. Covering 860,000 acres, almond orchards provide \$11 billion annually to California's economy. Felicity Barringer, *Water Source for Almonds in California May Run Dry*, N.Y. TIMES (Dec. 27, 2014), <http://www.nytimes.com/2014/12/28/us/water-source-for-almonds-in-california-may-run-dry.html> [<https://perma.cc/X629-6AAT>]. While lucrative, though, almond farms require more water than other crops and are a permanent crop. *Id.* In years of drought, then, they cannot lie fallow “without losing years of investment.” *Id.* Despite the major drain on California's surface and groundwater supplies, farmers are fighting restrictions on water use in order to protect their livelihoods. *Id.* Another example comes from private and public responses to climate change. Those who aggressively oppose responding to climate change through a conservative precautionary approach “have assumed that the only meaningful way in which to think about and react to potential hazards is to compare their likelihood and magnitude against the cost of averting them; in other words, to evaluate the consequences of action or inaction.” Douglas A. Kysar, *Climate Change, Cultural Transformation, and Comprehensive Rationality*, 31 B.C. ENVTL. AFF. L. REV. 555, 566–67 (2004). Under this assumption, “resort to the precautionary principle appears to be an abandonment of the quest to maximize some overall desideratum solely in light of expected consequences.” *Id.* at 567.

⁵⁰ See Butler, *Resilience of Property*, *supra* note 1, at 870; Singer, *Law of Democracy*, *supra* note 9, at 1297.

buyer or seller). The traditional zone is expanded a little to account for third parties owed a common law or statutory duty by the property owner (e.g., neighbors directly harmed by the owner's land use or violation of a restrictive covenant). For the most part, though, the traditional, exclusion-based approach reflects the cost calculus of the individual property owner.

FIGURE 1. Two Views of Property's Relational Dimensions



Broadening the management focus of property to include more cooperative, shared, and outward-regarding arrangements better reflects the actual breadth of property's relational dimensions.⁵¹ Such an approach would consider property's

⁵¹ In a famous work on fundamental legal conceptions, Hohfeld demonstrated how property entitlements can be repackaged to reflect social and individual obligations, duties, rights, and privileges. See Wesley Newcomb Hohfeld, *Fundamental Legal Conceptions as Applied in Judicial Reasoning*, 26 YALE L.J. 710, 710, 720, 729–30, 733–34, 745–47 (1917); see also Hanoch Dagan, *Property's Structural Pluralism: On Autonomy, the Rule of Law, and the Role of Blackstonian Ownership*, 3 BRIGHAM-KANNER PROP. RTS. CONF. J. 27, 30 (2014) (mentioning how Hohfeld's analysis "makes it (at least potentially) an exercise in legal optimism, with lawyers and judges attempting to explicate and develop existing property forms by accentuating their normative desirability while remaining attuned to their social context").

relationship with the natural environment and with future generations. A broader zone of management would take into account the true scales of use, enabling property to check the exercise of rights and correct for significant spillovers not adequately handled by transaction cost, information cost, or other economic tools of analysis.

The traditional, exclusion-based approach reflects a cost calculus that primarily promotes efficiency. As Henry Smith's information-cost theory of property explains, the structure of property enables our system to work well. Features like the right to exclude, the in rem power of ownership, formal property rules, and pre-set packages of rights produce a cost-effective scheme.⁵² Smith explains that "[i]nformation costs and the need to manage complexity shape property in its implementation."⁵³ Pre-set packages of rights, for example, limit the number of choices and information interested parties must consider, while formal rules provide much-needed clarity for potential investors.⁵⁴ Smith has problems with any norm-based approach that leaves out delineation costs, and prefers instead the traditional focus on the cost calculus of the individual owner.⁵⁵ In Smith's view, any needed refinement of decision making can occur with exceptions or limitations to the exclusion-based approach reached through a governance strategy.⁵⁶ Exclusion thus is taken as the "platform" and subsequently modified as needed to deal with problems of fairness or efficiency through tools like nuisance, restrictive covenants, and regulation.⁵⁷

Consider the latest assaults on the Grand Canyon, which demonstrate how narrowly property's traditional zone of management is drawn. They demonstrate how the cost calculus of the traditional approach totally ignores the public interest in public resources, especially those based on noneconomic values.

⁵² See Smith, *Law of Things*, *supra* note 7, at 1709–11; see also Singer, *Law of Democracy*, *supra* note 9, at 1292–99 (discussing Smith's approach and the lessons it highlights).

⁵³ Smith, *Law of Things*, *supra* note 7, at 1716.

⁵⁴ See *id.* at 1707–08, 1711–12, 1720–21, 1725–26.

⁵⁵ *Id.* at 1716–17 (discussing how information costs and modular theory shape the content of our property system, not theories of property that ignore costs for other values); see also Singer, *Law of Democracy*, *supra* note 9, at 1300 (describing Smith's normative goal as "mak[ing] property systems work well at minimum cost, given the realities of human life"). Smith defines "delineation" as "defining the object of property, specifying the legal interests in it, and providing notice to the relevant parties." Smith, *Law of Things*, *supra* note 7, at 1698.

⁵⁶ See Smith, *Law of Things*, *supra* note 7, at 1718.

⁵⁷ See *id.* at 1709–10. Smith is vague in describing when the governance strategy should control decision making. One example he gives involves restrictive covenants, which reflect a governance approach to solving a serious free-rider problem. See *id.* at 1709–12.

Two separate development projects now seriously threaten what has been called “America’s cathedral . . . without a roof.”⁵⁸

The first involves a developer and a landowner who are planning a housing and retail development for Tusayan, a community of less than 1000 people located two miles from the park’s entrance on the Southern Rim.⁵⁹ The town approved their plan to build over 2000 residential units and approximately 3 million square feet of commercial development near the Southern Rim.⁶⁰ In addition to other infrastructure demands, the plan would require water that probably could only be provided by tapping into the aquifer feeding the Grand Canyon.⁶¹ According to projections, the proposed development would cause Tusayan’s water use to nearly quadruple, increasing “from 175 acre-feet [of water]⁶² per year to 681 acre-feet per year.”⁶³ Tusayan’s town manager responded that no final decision had been made about the source of the water, stressing his town’s inability to predict the options available to a developer.⁶⁴ Most locals, however, remain convinced that the water would have to come from drilled wells.⁶⁵ More wells could, in turn, lead to a reduction in spring flow, degradation of local ecosystems, and a shift in the area’s “poorly defined groundwater divides” that could slow or even completely stop the flow of smaller springs.⁶⁶

⁵⁸ Kevin Fedarko, *A Cathedral Under Siege: Two Development Projects Threaten the Grand Canyon*, N.Y. TIMES (Aug. 9, 2014), <http://www.nytimes.com/2014/08/10/opinion/sunday/two-development-projects-threaten-the-grand-canyon.html> [<https://perma.cc/J8Y9-HE7F>].

⁵⁹ *Id.*; see FAQ, TOWN OF TUSAYAN, ARIZ., <http://tusayan-az.gov/faq> [<https://perma.cc/4AZ8-XN73>].

⁶⁰ Fedarko, *supra* note 58. The plan originated in the 1990s with the Stilo Group. *Id.* Based in Italy, the group began buying land in the area and partnering with local business owners to incorporate the town of Tusayan. *Id.* Eventually they succeeded in gaining “a majority of seats on the town council and control” of the zoning process. *Id.*

⁶¹ *Id.*

⁶² An acre-foot is a measurement of volume: “the amount of water required to cover one acre of area to the depth of one foot.” *Arizona’s Water: Uses and Sources*, ARIZONAEXPERIENCE.ORG, <http://arizonaexperience.org/people/arizonas-water-uses-and-sources> [<https://perma.cc/M4YV-WZPD>]. One acre-foot is equal to 325,851 gallons and is generally sufficient to meet the needs of a five-member family for a year. *Id.*

⁶³ Felicia Fonseca, *Tiny Town Outside Grand Canyon Outlines Its Future*, GAZETTE (Feb. 28, 2014), <http://gazette.com/tiny-town-outside-grand-canyon-outlines-its-future/article/feed/95180> [<https://perma.cc/VPT9-9N7U>]; Eric Betz, *Park Service to Tusayan: Where Is the Water?*, ARIZ. DAILY SUN (Feb. 28, 2014), http://azdailysun.com/news/local/govt-and-politics/park-service-to-tusayan-where-is-the-water/article_f4e96ff2-a043-11e3-bbf0-0019bb2963f4.html [<https://perma.cc/RC8J-8MZQ>].

⁶⁴ Betz, *supra* note 63 (noting that project developers have even considered using an old coal slurry pipe to pump in water).

⁶⁵ See generally GRAND CANYON NAT’L PARK, DIV. OF SCI. & RES. MGMT., ISSUES AND CONCERNS REGARDING PROPOSED GROUNDWATER DEVELOPMENTS NEAR THE SOUTH RIM, GRAND CANYON NATIONAL PARK (2012), <http://images.edocket.azcc.gov/docketpdf/000137832.pdf> [<https://perma.cc/KD7K-TMCE>] [hereinafter GROUNDWATER ISSUES AND CONCERNS].

⁶⁶ *Id.* at 4.

Beautiful oases such as Elves Chasm and Mystic Springs—some of the only unaltered springs in the west—would then simply cease to exist.⁶⁷

About 25 miles away, a property developer and the leader of the Navajo Nation have proposed building an entertainment and shopping complex, along with a 1.6 mile tramway descending to Navajo-owned land on the floor of the Canyon. As reported in 2015, the project would include a tramway station, a food pavilion, a wastewater package plant, and elevated walkways to be located very close to an area known as the Confluence.⁶⁸ Sacred to several Native American tribes,⁶⁹ this spot presents a visual array of colors, from the turquoise waters of the Little Colorado River to the emerald waters of the Colorado.⁷⁰ The proposed Confluence project would bring an estimated 10,000 visitors a day into the Canyon and has caused a divide within the Navajo Nation.⁷¹ Opponents argue that the

⁶⁷ Fedarko, *supra* note 58. Though federal authorities rejected the plan in March 2016 because of the threat to the area's water supply, other environmental concerns, and widespread opposition, many fear the threat remains. Joanna Walters, *Grand Canyon Threatened Despite Win Against Developers, Conservationists Say*, GUARDIAN (Mar. 13, 2016), <https://www.theguardian.com/us-news/2016/mar/13/grand-canyon-commercial-development-tusayan-conservation> [<https://perma.cc/GBE4-L8YM>]; William Yardley, *Federal Authorities Reject Plan for Development with 2,200 Homes Near Grand Canyon*, L.A. TIMES (Mar. 4, 2016), <http://www.latimes.com/nation/la-na-sej-grand-canyon-mall-20160304-story.html> [<https://perma.cc/YXC6-L333>].

⁶⁸ Chiara Sottile & Kristen Dahlgren, *Grand Canyon Development Plan Sparks Dispute Among Navajo*, NBC NEWS (Feb. 8, 2015), <http://www.nbcnews.com/nightly-news/grand-canyon-development-plan-sparks-dispute-among-navajo-n302521> [<https://perma.cc/T2BG-NKPL>].

⁶⁹ Members of the Hopi tribe have made religious pilgrimages in the area down an ancient salt trail. Rosanda Suetopka, *Opponents of Grand Canyon Escalade Meet at Confluence Project Site*, NAVAJO-HOPI OBSERVER (July 22, 2014), <https://www.nhnews.com/news/2014/jul/22/opponents-of-grand-canyon-escalade-meet-at-conflu> [<https://perma.cc/DX9B-HZJH>]. The Navajo Nation also attributes deep spiritual meaning to the Confluence, which, under their beliefs, is the place where life begins and where the spirits of the dead return. Julie Cart, *National Park Service Calls Development Plans a Threat to Grand Canyon*, L.A. TIMES (July 6, 2014), <http://www.latimes.com/nation/la-na-grand-canyon-20140706-story.html> [<https://perma.cc/J9CL-27AD>]. The spiritual significance of the Confluence is not surprising, given its raw, unrivaled beauty. The Little Colorado spills out of Marble Canyon, where sheer rock cliffs of polished limestone shine in white, gray, pink, and purple. Mark Buchanan, *Marble Canyon*, ARIZ. ST. UNIV., http://grandcanyonhistory.clas.asu.edu/sites_coloradorivercorridor_marblecanyon.html [<https://perma.cc/P2LH-EKFR>]. White salt deposits that are a half billion years old mark sandstone cliffs some two hundred feet thick. Yolanda Youngs, *Little Colorado River*, ARIZ. ST. UNIV., http://grandcanyonhistory.clas.asu.edu/sites_coloradorivercorridor_confluence.html [<https://perma.cc/88UV-W9QB>]. Bright Angel Shale and mauve limestone cap the cliff tops to create a stunning, incomparable natural wonder. *Id.*

⁷⁰ Martin Fletcher, *Grand Canyon Cable Cars Threaten Grandeur of One of World's Natural Wonders, Say Campaigners*, TELEGRAPH (July 26, 2014), <http://www.telegraph.co.uk/news/worldnews/northamerica/usa/10993027/Grand-Canyon-cable-cars-threaten-grandeur-of-one-of-worlds-natural-wonders-say-campaigners.html> [<https://perma.cc/4CW8-A3WU>].

⁷¹ *About*, SAVE THE CONFLUENCE, <http://savetheconfluence.com/about> [<https://perma.cc/88Q6-UHU5>].

project would endanger the Canyon's fragile ecosystem and the lifestyle of tribal members in the area.⁷² With only 300 feet separating the tourist attractions and the Confluence, opponents are concerned that tourists will wander from the tourist attractions and desecrate their sacred sites, and that wastewater or sewage runoff will irreparably harm the area.⁷³ Despite these concerns, the lead developer has argued that the project would improve the Canyon experience by providing the average person the ability "to feel the canyon from the bottom."⁷⁴

Both projects would irreversibly harm the Grand Canyon—one by depleting much of the water needed for the Canyon's ecosystems and the other by destroying the transcendence of the Canyon experience. Both would free-ride on the common American heritage and on government support of the Canyon. The Tusayan Project would tap valuable and scarce water resources without accounting for the impact on the Canyon's ecosystems. The area's aquifers and dependent seeps and streams are extremely delicate. Despite the efforts of many researchers, some of the hydrogeological elements of the Southern Rim still remain unknown. Experts worry that aquifers may not be able to sustain current water needs for much longer, let alone an increased demand.⁷⁵ One study, for example, found that the Indian Springs well, drilled in the 1980s, had already resulted in a ten percent decrease in spring flow at Indian Gardens.⁷⁶ Increased groundwater withdrawals could cause further reductions⁷⁷ or even make some flows seasonal.⁷⁸ This change could harm or even eliminate species of flora and fauna that cannot spread or relocate to another water source.⁷⁹ Seasonal

⁷² *Id.*

⁷³ Sam Seiniger, *Indigenous Religious Traditions*, COLO. COLL., <http://sites.coloradocollege.edu/indigenoustraditions/sacred-lands/3285-2> [<https://perma.cc/GB2A-38WB>]; Rhiannon Edwards, *Grand Canyon 'Threatened' by Development*, TELEGRAPH (July 25, 2014), <http://www.telegraph.co.uk/travel/destinations/northamerica/usa/10989189/Grand-Canyon-threatened-by-development.html> [<https://perma.cc/XZC6-JH2A>]. The Hopi tribe also has opposed the development and the Navajo Nation leadership. Laurel Morales, *Proposed Gondola for Grand Canyon's Rim Has Community on Edge*, NPR (Aug. 4, 2014), <http://www.npr.org/2014/08/04/337144825/proposed-gondola-for-grand-canyons-rim-has-community-on-edge> [<https://perma.cc/X4Q6-MKWA>].

⁷⁴ Cart, *supra* note 69 ("The park service offers nothing more than 'a drive-by wilderness experience,' Whitmer said. 'The average person can't ride a mule to the bottom of the canyon. We want them to feel the canyon from the bottom.'"). The Confluence Project also has been put on hold. See Walters, *supra* note 67.

⁷⁵ See GROUNDWATER ISSUES AND CONCERNS, *supra* note 65, at 24–25.

⁷⁶ See *id.* at 17; Betz, *supra* note 63.

⁷⁷ See Fedarko, *supra* note 58; GROUNDWATER ISSUES AND CONCERNS, *supra* note 65, at 23–24.

⁷⁸ See GROUNDWATER ISSUES AND CONCERNS, *supra* note 65, at 24.

⁷⁹ See *id.*

springs could also make water sources unreliable, posing a danger to hikers and visitors.⁸⁰

The Confluence Project would free ride on the Grand Canyon's visual and raw beauty, drawing many visitors to a secluded and unique natural wonder that would be forever changed. Multicolored cliffs 3200 feet high, touched only by nature and a few dedicated hikers, wall in the Canyon.⁸¹ If the project proceeds, these walls would be draped in 1.6 miles of cable.⁸² The sacred place where the green and blue waters meet would be surrounded by two elevated walkways, an amphitheater, a shop, and a food pavilion.⁸³ The development would also include hotels, restaurants, shops, and a cultural center.⁸⁴ Even if tourists follow the rules and remain only on the walkways, the sounds of thousands of visitors each day would surely pollute the once silent site,⁸⁵ and the lighting required by the proposed amphitheater would illuminate one of the most naturally dark places in the continental United States.⁸⁶ In addition to this visual marring, the project would produce air and water pollution, sewage flow, and waste-water runoff that would not only scar the pristine beauty of the Confluence, but also threaten endangered fish indigenous to the Little Colorado River.⁸⁷

What both projects ignore is the uniqueness of the Grand Canyon—its irreplaceable grandeur, its compelling testament to the planet's history, and its spiritual lessons for humanity. People have experienced the Canyon for thousands of years—from the earliest human use 13,000 years ago, to the settlers and miners in the late 1800s, to the present day.⁸⁸ The walls of the Canyon plunge more than a mile down and consist

⁸⁰ *See id.*

⁸¹ *See* Fedarko, *supra* note 58. For a description of the Grand Canyon's geological features, see Sarah Bohl Gerke & Paul Hirt, *Geology*, ARIZ. ST. UNIV., http://grandcanyonhistory.clas.asu.edu/history_science_geology.html [<https://perma.cc/L9KX-72GF>].

⁸² Fletcher, *supra* note 70.

⁸³ *Id.*

⁸⁴ *Id.*

⁸⁵ *See* Edwards, *supra* note 73; Seiniger, *supra* note 73.

⁸⁶ *See* Edwards, *supra* note 73.

⁸⁷ Michael Kuhne, *Critics Say Multi-million Dollar Development Will Mar Grand Canyon's Grandeur, Threaten Ecosystem*, ACCUWEATHER.COM (Aug. 10, 2014), <http://www.accuweather.com/en/weather-news/grand-canyon-development-criticized/31732037> [<https://perma.cc/TZH3-TZJT>].

⁸⁸ *See* Patricia Biggs & Paul Hirt, *Humans at Grand Canyon*, ARIZ. ST. UNIV., http://grandcanyonhistory.clas.asu.edu/history_humansatgrandcanyon.html [<https://perma.cc/BH3L-RCDN>]; *see generally* *Archeological Resources*, NAT'L PARKS SERV., <http://www.nps.gov/grca/historyculture/arch.htm> [<https://perma.cc/2SUM-LCPC>] (discussing human history at the Grand Canyon).

of at least twenty distinct layers of stone.⁸⁹ These layers represent more than a third of Earth's life span, extending back 1.8 billion years.⁹⁰ What both projects discard is each American's birthright and responsibility.⁹¹ The owner-centric focus of the exclusion-based approach allows—even encourages—this discarding to occur.

Under an exclusion-based approach, property owners generally need only manage for their own rights and self-interests. The focus on exclusion as the core of property narrows the institution of property to an individualistic, owner-centric system.⁹² Exclusion-based thinking encourages a property owner to use property in ways that maximize value even when those uses impact cherished and publicly shared resources like the Grand Canyon. Exclusion-based thinking incentivizes a water-rights holder to withdraw surface water with little, if any, thought given to the instream-flow needs or ecological integrity of the watercourse; and if the rights holder is part of the Western prior appropriation system, they might even face the pressure of the “use it or lose it” mentality.⁹³ Such an approach marginalizes the governance management strategy, overlooking property arrangements that are more cooperative, shared or outward-regarding.⁹⁴ Broadening the management approach to

⁸⁹ Fedarko, *supra* note 58; *see also* Gerke & Hirt, *supra* note 81 (discussing the Canyon's geology). The cliffs, infused with ancient mineral deposits, reflect hues of red, yellow, and green. *See Geology Fieldnotes*, NAT'L PARKS SERV., <http://www.nature.nps.gov/Geology/parks/grca/index.cfm> [<https://perma.cc/28ZG-ZXDD>].

⁹⁰ *Greater Grand Canyon Region*, AZWILD.ORG, <http://www.azwild.org/regions/grandcanyon.php> [<https://perma.cc/4WRB-EVZG>]. The Canyon walls reveal the history of the Colorado River and an ancient sea. ANNABELLE FOOS, GEOLOGY DEP'T, UNIV. OF AKRON, GEOLOGY OF GRAND CANYON NATIONAL PARK, NORTH RIM 5–6, <http://www.nature.nps.gov/geology/education/foos/grand.pdf> [<https://perma.cc/VCU3-2FJZ>]. Only six million years old, the river carved its place through stone that has been there for nearly two billion years. *See Grand Canyon Field Notes*, *supra* note 89.

⁹¹ In 1903, Theodore Roosevelt eloquently expressed his impressions of the Grand Canyon as he toured the Western states and visited Arizona for the first time. In a speech at the South Rim of the Canyon, Roosevelt celebrated the unique, natural beauty of the Grand Canyon. Theodore Roosevelt, *The Natural Wonder of the Grand Canyon* (May 6, 1903), in *GREAT SPEECHES OF THE TWENTIETH CENTURY* 1–2 (Bob Blaisdell ed., 2011). He expressed his hope that man would not place “a building of any kind . . . to mar the wonderful grandeur, the sublimity, the great loneliness and beauty of the canyon.” *Id.* at 2. He urged all to “[l]eave it as it is. You cannot improve on it. The ages have been at work on it, and man can only mar it.” *Id.*

⁹² *See* Dagan, *supra* note 51, at 29–30.

⁹³ *See* A. DAN TARLOCK, *LAW OF WATER RIGHTS AND RESOURCES* § 5:87 (2010) (discussing loss of prior appropriation rights due to non-use); Lynda L. Butler, *Environmental Water Rights: An Evolving Concept of Public Property*, 9 VA. ENVTL. L.J. 323, 365–66 (1990) (explaining that the prior appropriation doctrine does not “offer much hope for the public interest in instream use. Due to the doctrine's actual diversion and beneficial use requirements, consumptive uses clearly are favored over nonconsumptive interests.”).

⁹⁴ *See* Dagan, *supra* note 51, at 29–30 (describing how a market approach ignores property arrangements involving cooperative interactions between spouses and

consider actual spatial and temporal impacts would mean that the scope of the first project would look much smaller and the second might not even occur.

To be effective in the long-term, property's management system must organize a society's resources among its members—present and future—in ways that promote social cohesion, political and economic stability, social-ecological systems integrity, and consistency with the society's core values.⁹⁵ Without such a focus, property is at best a loosely anchored system of individual rights, inherently self-serving, with no internal and few external checks to monitor the exercise of rights. Without such constraints, property lacks the mechanisms for gathering feedback on the full scale of use and for making the adjustments necessary for system integrity.⁹⁶ If property does not promote the integrity of core systems along with the rights of individual owners, property eventually will cease to function as a protector of individual liberty, defeated by its own adverse impacts on natural and social systems. As Joseph Singer explains, if property “shape[s] the character of [human] interactions. . . ., then property law should reflect and shape our deepest values.”⁹⁷ A discussion of property's management role then necessarily must involve consideration of core norms and values.⁹⁸

2. Property's Norms and Goals

One response to the position that property should manage not only to coordinate among owners and their resources, as Smith maintains,⁹⁹ but also to promote core values is that the institution of property takes no position on

within common interest communities). Hanoch Dagan emphasizes the importance of “recogniz[ing] the significant role that our social values play in our conception of property.” *Id.* at 31.

⁹⁵ Singer defines property as providing “a baseline for social relations compatible with democracy.” Singer, *Law of Democracy*, *supra* note 9, at 1304 (emphasis omitted). My definition of property's management function is broader in the sense that it includes ecological and physical systems affected by adverse property uses. The implications of my approach for political systems also could differ because of this broader approach.

⁹⁶ See Butler, *Resilience of Property*, *supra* note 1, at 889–91.

⁹⁷ Singer, *Law of Democracy*, *supra* note 9, at 1299.

⁹⁸ See *id.* at 1320–21 (Singer explains that governance strategies do not simply “represent a gloss on a core exclusion strategy.” For example, a property owner's “right to be free from expropriation . . . embodies fundamental normative choices about the powers that go along with ownership in a free and democratic society.”).

⁹⁹ Smith, *Law of Things*, *supra* note 7, at 1698–99 (describing the function of property as the delineation of interests, which “involves defining the object of property, specifying the legal interests in it, and providing notice to the relevant parties, including duty bearers and enforcers”).

what those values should be.¹⁰⁰ Yet some norms must be guiding the institutional choices made. Smith's information-cost analysis, for example, can only be relevant within the normative framework of the marketplace, which he assumes without acknowledging or justifying.¹⁰¹ Smith recognized that the norms of fairness, justice, virtue, and efficiency are at play in particular contexts when serious problems of injustice, unfairness, or inefficiency arise.¹⁰² He, however, viewed these values as "emergent properties" of the property system applicable only to specific situations, but not to the whole in defining each rule or doctrine.¹⁰³ As he explained, each part of the system or attribute of property need not promote all of these values.¹⁰⁴ Instead, under his approach, specific problems of unfairness, inefficiency, and injustice trigger use of the governance strategy.¹⁰⁵ When no serious problem exists, however, the cost calculus of the individual gatekeeper drives the operation of property as a system, with cost considerations and wealth maximization motivating the self-interested, rational actor.¹⁰⁶

Efficiency values thus are given a dual role—both under the exclusion-based decisions of the individual owner and, when triggered, under the governance strategy for dealing with specific problems of inefficiency and possibly unfairness and injustice. The dominant approach to property rights implicitly recognizes that the marketplace norm of efficiency guides the individual owner's decisions. Other norms fundamental to a democratic political structure are ignored for the purpose of delineating and defining property rights. Yet these other norms and values should matter in defining an institution like property that is so central to political and economic systems. Other fundamental values and norms should matter when the singular use of the efficiency norm raises serious integrity issues for other vital systems. The focus of the exclusion-based approach on the property owner's self-interests omits much of the owner's relationships with society. The narrow approach, in particular, ignores the distributive consequences of property, which can either promote or tear apart

¹⁰⁰ *Id.* at 1717 (expressing problems with a normative-based approach because it leaves out delineation costs); *see also* Singer, *Law of Democracy*, *supra* note 9, at 1300 (describing Smith's approach as making property work well at minimal cost).

¹⁰¹ *See* Singer, *Law of Democracy*, *supra* note 9, at 1302–03 (describing Smith as assuming a normative framework).

¹⁰² Smith, *Law of Things*, *supra* note 7, at 1719.

¹⁰³ *Id.* at 1718–20.

¹⁰⁴ *Id.* at 1719.

¹⁰⁵ *See id.* at 1710, 1718.

¹⁰⁶ *See id.* at 1691 (describing the baselines found in property as shaped by information costs); *id.* at 1694 (noting that information costs shape the architecture and structure of property).

social cohesion. It also ignores the owner's relationship with larger natural systems, such as the atmosphere and climate, on which property and life depend. To promote system integrity, property's normative framework should integrate other relational planes or perspectives—planes involving the spectrum of property arrangements in relation to natural systems, in relation to political and economic systems, and so on.¹⁰⁷

A number of leading scholars have considered how to identify these core norms and values. Some of their responses have focused on a singular value, identifying a particular norm as critical to our property system.¹⁰⁸ Others have taken a more complicated approach, envisioning property as promoting a range of values critical to life in a pluralistic society¹⁰⁹ or, more particularly, to life in a democracy.¹¹⁰

Joseph Singer's scholarship exemplifies the latter. He argued that our fundamental political values of democracy and liberty impose structural constraints on our property system.¹¹¹ In a recent article, he explored what those constraints are by asking a series of questions.¹¹² Through those questions, Singer identified core values and norms—such as dispersed ownership, equality, and freedom—that reflect his theory of property law as “a quasi-constitutional framework for social life” in a democracy.¹¹³ “Property law is designed to spread freedom,

¹⁰⁷ See Butler, *Resilience of Property*, *supra* note 1, at 899–908 (discussing the dialectical process through which contemporary property regimes have evolved).

¹⁰⁸ See, e.g., JAMES W. ELY, JR., *THE GUARDIAN OF EVERY OTHER RIGHT: A CONSTITUTIONAL HISTORY OF PROPERTY RIGHTS* 3 (3d ed. 2008) (focusing on property's role in promoting liberty and freedom); ERIC T. FREYFOGLE, *THE LAND WE SHARE: PRIVATE PROPERTY AND THE COMMON GOOD* 7–9 (2003) (examining private property through an environmental ethic); Richard A. Epstein, *Property as a Fundamental Civil Right*, 29 CAL. W. L. REV. 187, 188–94 (1992) (viewing efficiency as a fundamental norm of a system of private property).

¹⁰⁹ See, e.g., Hanoch Dagan, *Essay, Pluralism and Perfectionism in Private Law*, 112 COLUM. L. REV. 1409, 1438–39 (2012) (describing property as differing sets of rights practically constructed to suit particular values of different social institutions).

¹¹⁰ See generally Singer, *Law of Democracy*, *supra* note 9, at 1303–24 (examining property in light of our fundamental democratic values).

¹¹¹ *Id.* at 1301, 1303.

¹¹² Among others, Singer asks: What types of property rights should a democracy allow? *Id.* at 1303. How should property ownership be dispersed in a democracy? That is, how much property should one person own? *Id.* at 1308. “Who [c]an [o]wn [p]roperty in a [d]emocracy”—anyone or just some classes of people? *Id.* at 1313. What types of obligations are consistent with property ownership in a democracy? *Id.* at 1319.

¹¹³ *Id.* at 1334–35. To illustrate the dispersed ownership norm, for example, he discusses the case of the Hawaiian island of Lanai. *Id.* at 1308–10. Though the island is inhabited by a few thousand people, it is almost entirely owned by one man. *Id.* at 1308. Singer suggests that Americans might find this situation troubling because property ownership is tantamount to self-determination under the American tradition. See *id.* at 1309. The American conception of democracy thus must be premised on dispersed ownership of property, allowing the people to make the decisions, instead of a king. See *id.* at 1309–10.

opportunity, security, and wealth, but it is also designed to prevent owners from inflicting harm on others and from acting in a manner that is incompatible with norms of propriety.”¹¹⁴ Under his theory, then, property norms provide “a form of political governance” that reflects “fundamental normative choices” about the allocation of power in a democracy.¹¹⁵

Singer’s discussion illustrates how property rights are implicitly shaped by a society’s structural foundation. Limits, and therefore obligations, become woven into the essence of property rights from the outside. More extensive use of the governance approach would bring these larger picture constraints into the calculus to manage the exercise of property rights in ways that are consistent with a society’s foundational principles. The governance strategy should not be viewed as an exception to the main management “platform” of property, the exclusion strategy,¹¹⁶ but rather as an independent tool for relating property to core systems in ways that promote their integrity and check the operation of the property system. If, for example, only Caucasians could own property under a state’s property law, the federal constitutional norm of equality would be violated,¹¹⁷ creating a fundamental conflict between the property and political systems. If, for instance, only one party owned all the land in a locality, the fundamental efficiency norm of America’s economic system would be violated, leading to serious economic problems and social unrest.¹¹⁸ If, for example, property owners were conducting uses that seriously polluted the atmosphere and drastically altered the global climate system, the integrity of Earth’s biophysical systems would be seriously threatened. The governance strategy can head off these crises by integrating norms critical to fundamental systems into the management of property rights. In a democracy, those values might include some sense of equality of freedom, meaningful economic opportunity, and long-term sustainability of natural systems.¹¹⁹

¹¹⁴ *Id.* at 1324.

¹¹⁵ *Id.* at 1321–22.

¹¹⁶ Smith, *Law of Things*, *supra* note 7, at 1710.

¹¹⁷ See Singer, *Law of Democracy*, *supra* note 9, at 1301–02, 1312–14.

¹¹⁸ See *id.* at 1309–10 (arguing that information costs are much higher when one person owns all of the land in a locality, making such a system less efficient than when property ownership is dispersed). In Singer’s example of the Hawaiian island of Lanai, he explains that the economic fortunes of the island turn on the sole owner’s decision of whether to install potentially lucrative wind turbines and risk destroying some of the island’s aesthetic value necessary for tourism. See *id.* at 1309. The issue has caused a rift between, and anxiety among, the residents, who have been left in the dark about the extent of the plan’s possible ramifications. *Id.*

¹¹⁹ Singer takes a broad approach, envisioning property as providing a “baseline for social relations compatible with democracy.” *Id.* at 1304 (emphasis omitted). Even he,

Property conflicts involving the first two norms—equality of freedom and meaningful economic opportunity—generally have been resolved in their favor.¹²⁰ Conflicts involving the third—long-term sustainability of natural systems—still have not been resolved in ways that bring a greater sense of environmental accountability into property's management system.¹²¹

Through its management role, property can become a system for organizing a society's resources among its members, present and future, in ways that promote social cohesion, economic and political stability, and sustainability of natural systems. The traditional, exclusion-based approach, with its owner-centric focus, leaves out the collective interest in the sustainability of vital natural systems and in the social cohesion promoted by fair distribution of meaningful economic opportunities. The traditional approach tends to subordinate the collective interest to private property interests, allowing significant resource hoarding and a great divide between the haves and the have-nots.¹²² Property owners are not usually accountable for harm that accumulates slowly over time, that affects public goods or other collective interests, or that seriously impacts future generations. The common law generally restricts the nuisance liability of landowners to substantial harm directly caused by a property owner's unreasonable interference.¹²³ Modern property law and theory also tend to ignore constraints related to the integrity of

though, ignores ecological integrity issues, focusing instead on political and economic governance. *Cf. id.* at 1300–01. For example, he defines core values embedded in our property system as including “protect[ing] the freedom of individuals, . . . treat[ing] each person with equal concern and respect, and . . . liv[ing] in a free and democratic society.” *Id.* at 1319.

¹²⁰ *See, e.g.,* *Shelley v. Kraemer*, 334 U.S. 1, 22–23 (1948) (ruling that the Fourteenth Amendment protects individuals from judicial enforcement of racially discriminatory covenants); *Buchanan v. Warley*, 245 U.S. 60, 82 (1917) (ruling that the Fourteenth Amendment protects individuals from state interference of property rights without due process of law); *see also, e.g.,* *Haw. Hous. Auth. v. Midkiff*, 467 U.S. 229, 241–43 (1984) (recognizing the purpose of dispersing land ownership as a public use under the Takings Clause); *Puerto Rico v. E. Sugar Assocs.*, 156 F.2d 316, 325 (1st Cir. 1946) (acknowledging the legitimacy of a land redistribution law under which large sugar cane plantations were divided and dispersed among squatters and small farmers to solve associated social and economic problems in Puerto Rico).

¹²¹ *See, e.g.,* *Am. Elec. Power Co. v. Connecticut (AEP)*, 564 U.S. 410, 423–24 (2011) (holding that the Clean Air Act displaces the federal common law doctrine of nuisance as a means for controlling environmental damage caused by fossil fuel emissions).

¹²² *See supra* notes 1–9, 34–49 and accompanying text (discussing the limitations of the traditional, exclusion-based approach to management).

¹²³ *See* RESTATEMENT (SECOND) OF TORTS § 821F (AM. LAW INST. 1979). For a discussion of the limits of common law nuisance in dealing with climate change and for an intriguing suggestion to apply the golden rules of transboundary nuisance disputes to determine the appropriate standard of liability, see Thomas W. Merrill, *Global Warming as a Public Nuisance*, 30 COLUM. J. ENVTL. L. 293, 328–32 (2005).

natural systems.¹²⁴ In addition to focusing on the property owner's self-interests, the analytical methods used to define property's management role need to consider the impact on natural, political, and economic systems to avoid serious challenges to their integrity.

B. How Property Manages

How, then, does property actually manage the relationships between rightholders, resources subject to the rights, and the rest of the world? Under the American property system, exclusion traditionally is the starting point, the motivator for action, and the initial guide for decision making.¹²⁵ Through various common law doctrines, rules, and policies, it incentivizes decision makers to maximize use of owned resources by allowing the owner to keep the reasonable return on investment and to count on the legal system to protect the owned resources from intruders and interlopers. It is the starting point, the gap-filler for tangible resources, but not the end game. Just as astronauts on a space shuttle need a rocket to thrust them into space and allow them to conduct their mission, property owners need to be propelled into action along a course that promotes social, as well as individual, welfare and that does not harm important, long-term public interests. The traditional governance strategy helps property owners to respond, in specific situations, to certain problems of injustice, unfairness, and inefficiency that are directly linked to the exercise of property rights. While the exclusion strategy effectively protects the core of property rights in physical resources, it becomes less effective managing rights in intangible resources, public goods, and shared or common resources. A broader governance strategy is needed to consider more complex resource situations and relational interests overlooked by the exclusionary approach.

1. The Exclusion Strategy: Protecting the Core

The exclusion strategy to property defines and allocates property rights by delegating decision-making power over a resource to a party, giving that party the general authority to decide about use and transfer of property interests in the

¹²⁴ *But see* FREYFOGLE, *supra* note 108, at 8–9, 203 (arguing for an approach to property ownership that includes an environmental ethic).

¹²⁵ *See supra* notes 1–7, 43–52 and accompanying text (describing the traditional American property system approach).

resource, to monitor the property, and to protect the party's rights from encroachment and interference.¹²⁶ Smith's information-cost theory of property provides an insightful explanation of how property operates under the exclusion strategy to protect the core of property. He discusses how an exclusion-based model manages by delegating broad powers to the gatekeeper owner, by enforcing in rem powers against third parties (for example, through common law and statutory notice doctrines), by using pre-set packages of rights to establish the basic units of property,¹²⁷ and by using "rough proxies" to implement the system.¹²⁸ Under Smith's theory, the exclusion strategy manages the complexity of interactions between property owners and the outside world through property modules, or "semiautonomous components."¹²⁹ The modular architecture regulates the interactions by limiting the interfaces, or portals of entry, between the internal world of property owners and the external world.¹³⁰ Information that is irrelevant to interactions with the external world is walled off, encapsulated within modular clusters through various property rules and features.¹³¹ According to Smith, the permitted connections or portals "correspond to the most important spillover[s]."¹³² This control over the interfaces streamlines the interactions and decreases the dependency of property owners

¹²⁶ Smith, *Exclusion Versus Governance*, *supra* note 1, at S454–55.

¹²⁷ See Smith, *Law of Things*, *supra* note 7, at 1709–12 (discussing the structure of property).

¹²⁸ *Id.* at 1718 (discussing rough proxies).

¹²⁹ *Id.* at 1703. Smith explains that modularity is the simplification of complex interactions into manageable clusters of information, physical features, or customary practices that serve as interfaces with the outside world. See *id.* at 1700–02. Smith describes modularity as "a key design principle in . . . evolutionary theory, cognitive science," engineering, architecture, and other systems. *Id.* at 1702. A growing body of literature, for example, is developing a modular theory of organizations. See, e.g., CARLISS Y. BALDWIN & KIM B. CLARK, *DESIGN RULES: THE POWER OF MODULARITY* 1–18 (2000); *MANAGING IN THE MODULAR AGE: ARCHITECTURES, NETWORKS, AND ORGANIZATIONS* 1–9 (Raghu Garud et al. eds., 2003); Richard N. Langlois, *Modularity in Technology and Organization*, 49 *J. ECON. BEHAV. & ORG.* 19–20 (2002); Ron Sanchez & Joseph T. Mahoney, *Modularity, Flexibility, and Knowledge Management in Product and Organization Design*, 17 *STRATEGIC MGMT. J.* 63, 63 (1996).

¹³⁰ See Smith, *Law of Things*, *supra* note 7, at 1707–08 (explaining how modularity of property works and how it allows for the standardization of property). Entity property—that is, more complex forms of property involving asset partitioning—reflects modularization with a hierarchical structure. *Id.* at 1722. Assets of a firm, for example, are partitioned off from the assets of its owners and of other firms. See *id.* Thus, the firm's creditors can evaluate the firm without having to consider the claims of the owners' and other firms' creditors. *Id.*; see also Henry Hansmann & Reinier Kraakman, *The Essential Role of Organizational Law*, 110 *YALE L.J.* 387, 390, 393, 440 (2000) (discussing the "essential role" of organizational law in "modern society" and describing organizational law, at "its essential core," as "property law, not contract").

¹³¹ Smith, *Law of Things*, *supra* note 7, at 1701–02.

¹³² *Id.* at 1710–11.

on the external world.¹³³ “The architecture of property [thus] emerges from the process of” delineating use interests in a cost-effective way.¹³⁴

Merrill and Smith provide a compelling case for how the architecture of property effectively controls the flow of information and the interactions among property owners and the outside world in their article on the *numerus clausus* doctrine.¹³⁵ They explain how the *numerus clausus* concept provides a list of choices for pre-set packages of property rights—basically acting like a drop-down menu on a web page. Prospective owners, for example, can choose between different types of fee simple estates, between fee simple estates and life estates, between different types of tenancies, and so on.¹³⁶ By limiting the available forms of property rights, the *numerus clausus* doctrine decreases the information costs facing parties deciding how or whether to invest.¹³⁷ The doctrine reduces network confusion over available options, assuring prospective investors that only a limited number of forms are possible.¹³⁸ Limiting property’s forms promotes standardization, controlling the interface with the outside world.¹³⁹ *Numerus clausus*, in other words, helps to maintain the building blocks of property at an optimal level.¹⁴⁰

This subtle architectural and operational structure of property is exactly what those urging greater use of contract principles in traditional property settings have missed.¹⁴¹ The

¹³³ See *id.* at 1702–03 (explaining how information irrelevant to the outside world remains within the capsule and the owner’s control); *id.* at 1707–08 (explaining how modularity leads to standardization of property, limiting “interconnections between packages of [property] rights” and creating network effects).

¹³⁴ *Id.* at 1704–05.

¹³⁵ See Merrill & Smith, *Numerus Clausus*, *supra* note 15, at 26–38.

¹³⁶ See *id.* at 12–20.

¹³⁷ *Id.* at 8, 26–27, 33.

¹³⁸ *Id.* at 45–48.

¹³⁹ See Smith, *Law of Things*, *supra* note 7, at 1707–08, 1711. The *numerus clausus* doctrine limits the forms of available packages of property rights, incorporating formalism into the structure of property to encourage standardization. *Id.* at 1706, 1711–13. Smith explains that formalism in property promotes alienability, persistence, and compatibility of property rights. *Id.* at 1710. For example, when the property rights of a landowner are standardized, it is much easier to sell (alienability), establish title to (persistence), and join adjacent parcels to the land (compatibility) than if third parties were left on their own to guess what rights the landowner has. *Id.* at 1710–13.

¹⁴⁰ See Merrill & Smith, *Numerus Clausus*, *supra* note 15, at 38–40 (discussing how *numerus clausus* produces optimal standardization); see also *id.* at 42–58 (rebutting potential objections to their *numerus clausus* theory).

¹⁴¹ See, e.g., RESTATEMENT (THIRD) OF PROP.: SERVIDITUDES § 2.1 & cmt. a (AM. LAW INST. 2000) (rejecting the traditional property approach of treating the doctrines of easements, profits, and covenants as distinct in favor of an integrative contracts approach); Thomas C. Grey, *The Disintegration of Property*, in 22 NOMOS: PROPERTY 69, 78–79 (J. Roland Pennock & John W. Chapman eds., 1980) (arguing that today, property ownership is conceived in terms of contractual arrangements and is incompatible with traditional property law); Susan F. French, *Toward a Modern Law of Servitudes*:

forgotten structure of property is exactly what Hernando de Soto bemoaned in calling for greater understanding of the mysteries of capital, especially of how western property systems tap into the “invisible” potential of assets.¹⁴² The hidden structure of property also explains how property has, in a social-systems sense, become a self-organizing system, set in motion by its structure and its networks of communication. It is self-organizing or self-regulating in the sense that the processes that shape property rights can occur endogenously, without external force, “dictated by the ‘internal rules’” of the property system.¹⁴³ The institution of property establishes behavioral rules by using its own infrastructure to shape and evaluate a series of interactions between people, rightholders, and their resources. The marketplace, the main network for economic communication, typically carries out the rightholders’ decisions, while the courts, the main network for legal communication, generally announce the rules and standards governing behavior.¹⁴⁴ Property, then, is the central legal and social device for integrating power over resources into daily life and promoting the emergence of new structures and behavioral rules to deal with more complex resource settings.¹⁴⁵

The concept of benefits and burdens running with the land demonstrates how property’s legal infrastructure works.¹⁴⁶ Long the bane of property students, the common law concept of running with the land serves the important function of giving an in rem effect, at low cost, to the rights of benefitted property owners and their successors against burdened landowners and their successors. Through the concept of running with the land, property manages rights in affected resources for the present and the future. Easements appurtenant, for instance, attach to the land and pass with a conveyance of the burdened and benefitted tracts even if

Reweaving the Ancient Strands, 55 S. CAL. L. REV. 1261, 1304–18 (1982) (arguing that a single body of law that adopts contract principles can replace the traditional property doctrines of easements, covenants, and equitable servitudes).

¹⁴² DE SOTO, *supra* note 10, at 7.

¹⁴³ See FRITJOF CAPRA & PIER LUIGI LUISI, *THE SYSTEMS VIEW OF LIFE: A UNIFYING VISION* 144–45 (2014) (defining scientific aspects of self-organization); see also Butler, *Resilience of Property*, *supra* note 1, at 886–90 (discussing how behavioral patterns and social norms frame choices and guide property owners along certain normative paths).

¹⁴⁴ See CAPRA & LUISI, *supra* note 143, at 308–09 (discussing how social systems may self-organize).

¹⁴⁵ See *id.* at 311–13 (discussing different types of power and the “central role” that power plays “in the emergence of social structures”).

¹⁴⁶ De Soto refers to the “implicit legal infrastructure hidden deep within” Western property systems in explaining why he believes Western nations have been able to create capital, while developing and formerly communist countries have not succeeded. DE SOTO, *supra* note 10, at 8–9.

the easement is not mentioned in the deed.¹⁴⁷ Restrictive covenants run with the land if they meet certain requirements, such as touch and concern, that act as sieves, distinguishing between restrictions that are bound up with the land and those that are the personal obligations of the landowner.¹⁴⁸ These property sieves prevent personal obligations from passing through to successor owners and allow the restrictions that are bound up with the land to persist—a feature of property’s architecture that is misunderstood or discounted by reformists advocating a contract approach to restrictive covenants.¹⁴⁹

Property manages relationships between owners and resources, owners and third parties, owners and society, and present and future owners through a variety of tools. Tom Merrill discusses some of these tools in a number of articles.¹⁵⁰ He notes how the doctrine of waste serves as the default rule for managing horizontal sharing of resources, balancing rights in resources over time when the holder of the present estate has less than the maximum collection of ownership rights.¹⁵¹ He explains how rules against direct restraints on alienation manage entry and exit, allowing changes in the gatekeeper through marketplace transactions.¹⁵² Relations with third parties are managed through trespass laws protecting the right to exclude,¹⁵³ common law and statutory notice rules protecting qualifying landowners,¹⁵⁴ and rules defining the nature and

¹⁴⁷ See RESTATEMENT (THIRD) OF PROP.: SERVIDUTES § 5.1 (AM. LAW INST. 2000); see also *id.* § 5.1 cmt. b, illus. 1 (discussing how the transfer of a recorded, appurtenant easement flows from the original owner of Blackacre granting the easement, burdening the subsequent owner, while benefiting the original and subsequent owners of Whiteacre).

¹⁴⁸ See SINGER, PROPERTY, *supra* note 4, § 6.1, at 226–27, § 6.2, at 235–36.

¹⁴⁹ See, e.g., Richard A. Epstein, *Notice and Freedom of Contract in the Law of Servitudes*, 55 S. CAL. L. REV. 1353, 1357–58 (1982) (arguing that individual choice and intent should control servitudes once the notice requirement is met); French, *supra* note 141, at 1309–10 (arguing that the touch and concern doctrine is not needed to protect purchasers of land from uncommon affirmative obligations, and instead, that a reasonableness inquiry into the intent of the original covenanting parties is sufficient). The *Restatement (Third) of Property* generally takes a contract approach to servitudes. PROPERTY: PRINCIPLES AND POLICIES, *supra* note 34, at 1040 (describing how the *Restatement (Third) of Property: Servitudes* “takes a more contractarian approach to servitudes”).

¹⁵⁰ See, e.g., Merrill, *Property Strategy*, *supra* note 6, at 2076–89; Thomas W. Merrill, *Trespass, Nuisance, and the Costs of Determining Property Rights*, 14 J. LEGAL STUD. 13, 35–45 (1985) [hereinafter Merrill, *Costs*].

¹⁵¹ Merrill, *Costs*, *supra* note 150, at 41–42.

¹⁵² Merrill, *Property Strategy*, *supra* note 6, at 2079–80.

¹⁵³ Merrill, *Costs*, *supra* note 150, at 13.

¹⁵⁴ See *id.* at 37–38 (explaining that a builder of a structure that encroaches on another’s land is deemed to be on notice of the property boundary before construction and is strictly liable for the encroachment); Merrill, *Property Strategy*, *supra* note 6, at 2078 (explaining that rules requiring the state to give landowners prospective notice of changes in land regulations help to protect landowners’ expectations).

scope of property rights.¹⁵⁵ Smith adds that what he describes as property's "modular structure" is managed by limitations on the unbundling of packages of rights.¹⁵⁶ Some of the limitations, for example, are built into the features of property rights¹⁵⁷ or into its formalistic structure, as reflected primarily in the *numerus clausus* doctrine.¹⁵⁸ Fee simple estates, for instance, have developed into several pre-set and strictly construed ownership packages that all are potentially infinite in duration but vary in their degrees of control.¹⁵⁹ Smith also notes that property's modular structure has even affected how property law adjusts and adapts to new resource uses through its incorporation of custom.¹⁶⁰

The exclusion strategy has played a central role in the emergence of property rights in physical resources, working well much of the time. It loses its conceptual power, however, as resources become more intangible, social networks become more complex, and important collective interests are ignored or, worse yet, harmed. In these situations, setting the boundaries of the reasonable expectations of property owners may require a strategy that more effectively taps into social networks and affirmatively takes into account collective interests. Important feedbacks, or inputs from natural or social systems, are overlooked by the exclusion strategy; they include aggregate or diffused harm from long-term property use, inequality or unfairness in the distribution of resources severe enough to undermine social cohesion, and sustainability of natural resources.¹⁶¹ These overlooked areas coincide with limitations of the exclusion strategy that are inherent in or not effectively

¹⁵⁵ See Merrill, *Property Strategy*, *supra* note 6, at 2069–70 (defining the nature of ownership rights as including the right to reasonable expectation of gain free from unlawful interference); Merrill, *Costs*, *supra* note 150, at 42–43 (defining the scope of use rights created by easements).

¹⁵⁶ Smith, *Law of Things*, *supra* note 7, at 1701, 1707–13.

¹⁵⁷ See *id.* at 1709–11 (discussing basic features like the right to exclude and in rem nature of property as well as secondary features like alienability).

¹⁵⁸ See *id.* at 1710–12.

¹⁵⁹ See PROPERTY: PRINCIPLES AND POLICIES, *supra* note 34, at 504–06.

¹⁶⁰ Smith, *Law of Things*, *supra* note 7, at 1720–21. Longstanding customary practices, for example, can provide lawmakers with helpful signals of when law and practice are at odds or when the law has failed to ratify the reasonable expectations of property owners or the community. See, e.g., ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES 65–81 (1991) (discussing the practice of farmers and cattle ranchers in Shasta County, California, of dismissing their entitlements under the law in favor of using informal norms to determine who should bear the costs of building boundary fences between their respective land); Smith, *Law of Things*, *supra* note 7, at 1720–21 (discussing how custom is incorporated into property law).

¹⁶¹ Climate change is probably the best example of an output of our property system that is totally ignored and, sometimes, even denied. See *infra* notes 197–207, 210–221 and accompanying text (discussing the problem of climate change).

handled by the strategy. Smith and Merrill deal with some of the limitations of the exclusion strategy through a more restricted governance strategy, but they define the exclusion-based approach as the primary platform and governance simply as focusing on “individuated uses of resources.”¹⁶² In Smith’s words, governance is the “golden rule” of property, coming into play in certain select situations raising fairness or efficiency concerns.¹⁶³ This subordinate, individuated approach is not robust enough to deal with the significant limitations of the exclusion-based model, much less with complex collective interests injured because of those limitations. A broader approach to the governance approach is needed.

2. The Governance Strategy: Complex Relational Considerations

A broader governance strategy to managing property rights would look beyond the owner-thing relation to consider collective interests and other complex relational interests that would be seriously harmed or affected by the exercise of property rights, sometimes even to the point of unsustainability.¹⁶⁴ Such a strategy would consider whether the exclusion-based approach is inherently unable to handle a serious societal or natural system problem like climate change. It would consider whether the externalities from the exercise of exclusion-based property rights are so serious that they threaten the integrity of one or more foundational systems. When important collective interests are at stake—for example, when the public shares vital resources with property owners—an exclusion-based approach ignores those interests unless an independent third-party manager (like the judiciary) steps in to resolve conflicts in a way that checks the decision making of the gatekeeper. Such a course correction would take into account resource conditions, societal norms, and the true scales of use.

Smith, Merrill, and other property theorists who see exclusion as the primary basis for delineating and managing property rights view the governance strategy simply as a tool for adjusting results in individual or particular contexts when

¹⁶² Smith, *Law of Things*, *supra* note 7, at 1705; *see also* Merrill, *Property Strategy*, *supra* note 6, at 2063–71 (explaining that the “right to exclude is a necessary condition of identifying something as being property,” and describing governance rules in any given property regime as varying between societies).

¹⁶³ Smith, *Law of Things*, *supra* note 7, at 1692–93, 1705.

¹⁶⁴ For application of the governance strategy to constitutional property, *see* Butler, *Governance Function*, *supra* note 1, at 1757–67.

the interface between modular components becomes too complex for the exclusion strategy.¹⁶⁵ Under this narrow view of the governance strategy, private governance principles can be found in custom, nuisance law, restrictive covenants, mistaken improver, and other doctrines that address some serious limitations of the exclusion strategy.¹⁶⁶ Public governance principles are primarily derived from land use regulation and zoning.¹⁶⁷ According to Smith, these principles are the exception rather than the rule, applying only in limited settings as a remedy or cure for inefficiencies, unfairness, and injustices resulting from the exclusion strategy.¹⁶⁸

The Smith and Merrill definition of the governance approach underestimates the role of governance as a management strategy in property. The governance model is much, much more than a response to the limitations of the exclusion strategy. In addition to helping to manage the “internal life of property,” the governance strategy shapes the social dimensions of property by mediating a variety of complex relationships and contexts.¹⁶⁹ Configurations of property entitlements may vary according to the social norm important to a particular property arrangement.¹⁷⁰ Norms of cooperation, for example, guide configurations geared toward family relationships.¹⁷¹ The Blackstonian exclusion norm shapes market-oriented packages of property rights,¹⁷² and stronger ethical

¹⁶⁵ See, e.g., Merrill, *Property Strategy*, *supra* note 6, at 2068–69 (explaining that the exclusion strategy includes an owner’s right to manage property, which is qualified by governance rules, such as nuisance); Smith, *Law of Things*, *supra* note 7, at 1693–94 (“[P]roperty defines things using an exclusion strategy of ‘keep off’ or ‘don’t touch’ and then enriches the system of domains of owner control with interfaces using governance strategies.”); *id.* at 1704–05 (explaining that exclusion strategies are necessary to abridge the number of property rules that would be required under a pure governance strategy); *id.* at 1726 (describing governance strategies as the interfaces between modules of property rights managed by exclusion strategies).

¹⁶⁶ See, e.g., Smith, *Law of Things*, *supra* note 7, at 1703 (noting that covenants, common interest communities, and trusts are governance strategies that facilitate coordination of owners’ use of property in light of spillovers); Henry E. Smith, *Exclusion and Property Rules in the Law of Nuisance*, 90 VA. L. REV. 965, 1047–48 (2004) [hereinafter Smith, *Exclusion*] (explaining that easements have been used to deal with harms caused by pollution).

¹⁶⁷ See, e.g., Smith, *Law of Things*, *supra* note 7, at 1714 (using zoning as an example of a public governance tool designed to solve problems arising out of different uses of neighboring land).

¹⁶⁸ See *id.* at 1704–05.

¹⁶⁹ Dagan, *supra* note 51, at 29.

¹⁷⁰ *Id.* at 29–30.

¹⁷¹ *Id.* at 34–35 (explaining that a structurally pluralistic property system promotes cooperative norms by, for example, allowing people to choose to share homeownership or engage in business together).

¹⁷² See *id.* at 30, 40 (explaining that the Blackstonian exclusion norm is crucial to individuals’ ability to sell their property free from the claims of third-parties). Blackstone famously declared property to be “that sole and despotic dominion which one

norms govern complex trust arrangements separating management powers from benefit entitlements.¹⁷³ The governance strategy allows these different norm-based configurations to operate in their own spheres.¹⁷⁴

The need for the governance strategy thus arises not only because of the limitations of the exclusionary approach but also because of other important social values and norms not reflected in the exclusion model.¹⁷⁵ It arises because of the nature of the resource being used and managed, which affects the ability of the exclusion strategy to even respond. The architecture supporting the exclusion strategy is limited by its reliance on physical boundaries to delineate and define rights.¹⁷⁶ Exclusion-based management is most effective with tangible physical resources easily valued in the marketplace and weakest with intangible resources or new uses made possible by technological advances and having uncertain impacts.¹⁷⁷ Not surprisingly, the scope of the exclusion model largely mirrors values and interests important to the market economy. This approach overlooks the breadth of the gatekeeping powers that are delegated through the allocation of property rights¹⁷⁸—a delegation that affects not only the rightholder's interests in identified, tangible resources (for example, land) but also in related intangible resources (such as air) and in associated resources suddenly made accessible through technological

man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe." 2 WILLIAM BLACKSTONE, COMMENTARIES *2. A strict interpretation of Blackstone's declaration thus would promote and protect a strong—almost absolute—right to exclude. See Butler, *Resilience of Property*, *supra* note 1, at 856–60 (discussing the strict individual rights or exclusion-based view of property).

¹⁷³ See Dagan, *supra* note 51, at 30, 33–34 (explaining that property law is necessary to ensure that people's expectations are met when dealing with others who have the incentive to engage in opportunistic behavior).

¹⁷⁴ Cooperation-based norms governing the property of married couples, for example, have led to rules and standards that differ from those applying to other shared ownership arrangements. Where recognized, a tenancy by the entirety may shield property from the creditors of the individual spouses. See Orth, *supra* note 43, § 33.07(e). By contrast, the creditors of one spouse can reach property held in joint tenancy with the other spouse. See *id.* § 31.07(e).

¹⁷⁵ See, e.g., Dagan, *supra* note 51, at 29 (noting that inclusion is an important value of property law, as demonstrated in the doctrines of fair use in copyright and fair housing in landlord-tenant law); Singer, *Law of Democracy*, *supra* note 9, at 1321 (explaining that a property owner's "right to be free from expropriation of his" or her property "embodies fundamental normative choices about the powers that go along with ownership in a free and democratic society").

¹⁷⁶ See Smith, *Law of Things*, *supra* note 7, at 1703–04, 1718 (describing the modularity of property as establishing boundaries between physical "things").

¹⁷⁷ Cf. Merrill & Smith, Numerus Clausus, *supra* note 15, at 45–51 (discussing the importance of standardization in a system of property rights).

¹⁷⁸ See ELY, *supra* note 108, at 3 (describing private property rights as consistent with protection from government power over individuals).

advances (for instance, shale gas deposits). The allocation of power also has significant relational implications for those excluded now and in the future. Because of its breadth, property's allocation of power needs to be managed to ensure that its exercise conforms to the rule of law, is not used coercively, and does not result in the unconstrained exercise of power.¹⁷⁹

One reaction to a more expansive view of the governance strategy is the argument that the institution of property should be confined to "what it does best."¹⁸⁰ Some property scholars have advanced this position in reaction to a call by progressive property scholars for recognition of a social-obligation norm in property.¹⁸¹ Such a duty to share would address the inequalities and injustices resulting from property's allocation of resources and, according to some proponents, could even require forced sharing of surplus wealth through property principles to help the less fortunate.¹⁸² While those property scholars opposing such a sharing obligation generally recognize distributive justice as a legitimate goal, they maintain that using our property system to achieve distributive goals would unnecessarily complicate the system in undesirable ways.¹⁸³ In addition to increasing the information costs of navigating the property world, a duty to share imposed on wealthy property owners would violate a principle of equity by treating a subgroup of property owners differently from other property owners and from other taxpayers more generally.¹⁸⁴ Serious questions of institutional competence also would arise if common law property decisions shaped social-insurance policy instead of elected legislators.¹⁸⁵

¹⁷⁹ See, e.g., JOHN KENNETH GALBRAITH, *THE ANATOMY OF POWER* 13, 53 (1983) (identifying property as being important to the "exercise of power, the submission of some to the will of others"); Dagan, *supra* note 51, at 36–39 (arguing that property's heterogeneity is steadfast in its commitment to the rule of law and the constraint of government power over private property owners).

¹⁸⁰ See Robert C. Ellickson, *The Affirmative Duties of Property Owners: An Essay for Tom Merrill*, 3 BRIGHAM-KANNER PROP. RTS. CONF. J. 43, 69–70 (2014).

¹⁸¹ E.g., Gregory S. Alexander, *The Social-Obligation Norm in American Property Law*, 94 CORNELL L. REV. 745, 748 (2009) (arguing that property promotes the value of human flourishing through a norm of social obligation); see also Ellickson, *supra* note 180, at 62–70 (discussing the Progressive position and ultimately concluding that its adoption would be a "grave mistake").

¹⁸² See Alexander, *supra* note 181, at 745–46, 748 (discussing the obligation to share).

¹⁸³ See Ellickson, *supra* note 180, at 61–62, 65–66, 69.

¹⁸⁴ See *id.* at 66–67.

¹⁸⁵ See *id.* at 65–68 (criticizing the social obligation norm based on "[c]onsiderations of efficiency, horizontal equity, and relative institutional competence"). Henry Smith adds that imposing a general duty to share on property owners would ask property law to do too much and would ignore the importance of "specialization of the parts in achieving the goals of the whole." Smith, *Law of Things*, *supra* note 7, at 1719. What these responses ignore is the practice of using public property or public control to subsidize residents' income (as in Alaska) or to provide public services (for example,

While property law admittedly would become more complex if a broader approach to the governance strategy were taken, the narrower exclusion-based approach ignores the management responsibilities of property. At the very least, the more limited approach passes the buck to a political branch that has no political appetite for tackling distributive justice problems and expanding the social safety net. It also espouses trickle-down economics as the solution to distributive justice problems despite the realities of its failure¹⁸⁶ and ignores much of the impact of property use on natural systems. A capitalist economy depends on the property system to provide for the lawful conversion of nature's processes into an exchange value that the marketplace can understand.¹⁸⁷ Once conversion occurs, capitalism takes over, shaping and reshaping the resource, as well as natural processes and systems.¹⁸⁸

Unless property takes responsibility for the limitations of the conversion process, the institution of property will overlook the importance of a broader systems management approach and undermine its ability to self-regulate. The exclusion strategy oversimplifies the noneconomic dimensions of property and directs people along its preferred paths.¹⁸⁹ Property's social dimension thus is effectuated in large part by property's in rem nature, affecting third parties generally, and by the networks supported by property's exclusion-based infrastructure. Yet just as natural self-organizing systems have developed principles to sustain themselves,¹⁹⁰ property has similarly developed features and dialectical processes that allow the system to evolve and promote resilience.¹⁹¹ The exclusion strategy ignores many of these features—traits like

education and electricity), often in exchange for lower taxes. For a discussion of conservative socialism in practice today, see Gar Alperovitz & Thomas M. Hanna, *Socialism, American-Style*, N.Y. TIMES (July 23, 2015), <http://www.nytimes.com/2015/07/23/opinion/socialism-american-style.html> [<https://perma.cc/J66D-5WBY>].

¹⁸⁶ See HA-JOON CHANG, 23 THINGS THEY DON'T TELL YOU ABOUT CAPITALISM 137–47 (2010); Paul Krugman, *Inequality Is a Drag*, N.Y. TIMES (Aug. 7, 2014), <http://www.nytimes.com/2014/08/08/opinion/paul-krugman-inequality-is-a-drag.html> [<https://perma.cc/VJ7G-QS7J>].

¹⁸⁷ See DAVID HARVEY, SEVENTEEN CONTRADICTIONS AND THE END OF CAPITALISM 41–42 (2014).

¹⁸⁸ See *id.* at 246–47.

¹⁸⁹ See Butler, *Resilience of Property*, *supra* note 1, at 885–90 (explaining how the economic vision of property embeds choices and assumptions in the gatekeeper's decision-making framework that direct the gatekeeper along certain normative paths).

¹⁹⁰ See generally CAPRA & LUISI, *supra* note 143, at 362–66 (discussing the importance of understanding how ecological systems sustain themselves).

¹⁹¹ See Butler, *Resilience of Property*, *supra* note 1, at 852–53 (explaining that property is a dynamic concept that adapts through time to fit ever-changing needs).

interdependence, redundancy, complexity, and feedback loops that promote resilience.¹⁹²

An expanded, co-equal governance model of management would provide a systems view of property that recognizes the boundaries of “discernible patterns” of connections between property owners and their resources as secondary to the relationships and systems in which they are embedded.¹⁹³ Air travel, for example, would have faced serious holdout problems had the exclusion-based view of owning up to the heavens prevailed. Instead, the courts upheld society’s interest in air travel by gradually reinterpreting the nature of an owner’s air rights.¹⁹⁴ This transition would have occurred more quickly had property recognized an expanded governance strategy that was triggered not only by limitations of the exclusionary approach but also by the public interest in technological advances enabling new uses of shared resources (here air travel). A broader approach to property’s management role would complement the exclusion strategy not only by addressing its limitations but also by providing a positive theory of property as a management institution. This theory would reflect the fundamental norms and principles of our political and natural systems to promote the systems’ integrity.

II. A BROADER APPROACH TO PROPERTY’S MANAGEMENT ROLE

What would a broader approach to property’s management role involve? When should a court apply a governance approach to resolve property disputes under the common law? When, if ever, should a governance approach be the primary management strategy? This part examines these questions, first, in a discussion of the limitations of the exclusionary approach and, second, in an opening dialogue about situations or contexts better handled

¹⁹² See *id.* at 871, 890, 899, 900 (explaining that these are features of human systems that are incorporated into property to ensure that it can be flexible to the human condition). Hanoch Dagan might explain the exclusion strategy as failing to recognize that different configurations of property reflect different norms and values. See Dagan, *supra* note 51, at 29–30.

¹⁹³ See CAPRA & LUISI, *supra* note 143, at 80.

¹⁹⁴ *E.g.*, *Hinman v. Pac. Air Transp.*, 84 F.2d 755, 758 (9th Cir. 1936) (deciding that a landowner did not have rights to that part of the column of airspace above his land that he could not use). The Supreme Court adopted this approach in *United States v. Causby*, concluding that the navigable airspace above a person’s land generally was public property unless air travel actually harmed the landowner below. *United States v. Causby*, 328 U.S. 256, 265–67 (1946). The Court explained that, with the advent of air travel, the airspace had become a “public highway Were that not true, every transcontinental flight would subject the operator to countless trespass suits.” *Id.* at 261.

under a governance strategy. This part argues that a broader governance strategy would take into account limitations of the exclusion-based approach. It would consider the nature of the resource to be used, the importance of noneconomic values to collective interests in the resource, the role of technological advances in enabling a private use, the importance of public rights to the resource, and the true scale of private use. Consideration of these and other factors would help to identify the types of contexts or problems that could threaten the integrity of fundamental political, legal, and natural systems.

A. *Limitations of an Exclusion-Based Approach to Management*

Although the exclusion strategy works well much of the time, a number of significant limitations have resulted in flawed decision making and have caused short- and long-term problems. Key limitations include: a false, foundational assumption of unlimited growth; critical omissions from the decision-making calculus; serious negative externalities resulting from or aggravated by an exclusion-based approach; overfragmentation of property rights and resources; significant problems of scale; and the coupling of common law and constitutional property through the mainstream economic theory of property.

1. The False Assumption of Unlimited Growth

Because of the interdependence of the exclusion-based approach to property and a capitalist economy, the limitations of the exclusion strategy of property management are, in some significant ways, limitations of capitalism. The goal of most capitalist economies is perpetual growth.¹⁹⁵ Politicians and economists alike profess the importance of continuing growth of the Gross Domestic Product through the production and sale of material goods, and offer growth as a cure for many serious social problems.¹⁹⁶ While this position might not be so problematic when resources are abundant, it has serious ramifications for a world of finite resources. According to one expert, capitalist economies face three significant obstacles to

¹⁹⁵ CAPRA & LUISI, *supra* note 143, at 56.

¹⁹⁶ See Krugman, *supra* note 186; Paul Krugman, *Where's My Trickle?*, N.Y. TIMES (Sept. 10, 2007), <http://www.nytimes.com/2007/09/10/opinion/10krugman.html> [<https://perma.cc/V2ZZ-RBQT>]; cf. Bruce Bartlett, *How Supply-Side Economics Trickled Down*, N.Y. TIMES (Apr. 6, 2007), http://www.nytimes.com/2007/04/06/opinion/06bartlett.html?_r=0 [<https://perma.cc/HK82-RJ93>] (explaining how supply-side economics has become "misleading and meaningless").

continuing growth: depletion of fossil fuels and other vital natural resources; climate change and other serious negative externalities “arising from the extraction and use of resources”; and systemic failures in financial and monetary systems that are highly dependent on growth.¹⁹⁷

The worsening problem of climate change and the systemic failures of our financial and monetary systems, in particular, have led some experts to call for a redefinition of growth—one that builds in a qualitative dimension to complement the quantitative one.¹⁹⁸ Their approach does not deny the importance of growth to living systems, but rather stresses that growth cannot be viewed as “linear and unlimited. While certain parts of organisms, or ecosystems, grow, others decline, releasing and recycling their components.”¹⁹⁹ Assumptions about the growth of economic and financial systems should similarly reflect the nonlinearity of growth in a complex society. A qualitative approach would define growth as “enhanc[ing] the quality of life” and leading to “an increase of complexity, sophistication, and maturity.”²⁰⁰

A systems view of life helps to identify principles that shape the concept of qualitative growth.²⁰¹ “[T]he qualities of a complex system refer to properties of the system that none of its parts exhibit”—properties like health, stress, and systems integrity.²⁰² These qualities arise from the “processes and patterns of relationships among the parts” and thus “cannot be expressed as the sum of properties of the parts.”²⁰³ Quantities measure properties of the parts (like their mass or energy), and their sum total measures the corresponding property of the whole.²⁰⁴ They do not, however, tell us about the stress or health of the system that results from interactions of the parts or

¹⁹⁷ CAPRA & LUISI, *supra* note 143, at 367.

¹⁹⁸ *Id.* at 368.

¹⁹⁹ *Id.*

²⁰⁰ *Id.*

²⁰¹ Systems-thinking stresses the view of systems as “integrated wholes.” *Id.* at 63. Essential properties of a living system are “properties of the whole, which none of the parts have.” *Id.* at 65. The essential properties arise from “interactions and relationships between the parts.” *Id.* “[P]roperties of the parts are not intrinsic properties, but can be understood only within the context of the larger whole.” *Id.* at 66. The parts are “understood only from the organization of the whole.” *Id.* “Systems thinking [thus] is ‘contextual’” and reverses the relationship between the whole and its parts. *Id.* For application of this thinking to global efforts to address climate change, see Sarah J. Adams-Schoen et al., *A Response to the IPCC Fifth Assessment*, 45 ENVTL. L. REP. 10027, 10035–36 (2015) (interpreting the IPCC’s *Fifth Assessment Report* as taking a systems approach).

²⁰² CAPRA & LUISI, *supra* note 143, at 368.

²⁰³ *Id.* at 368–69.

²⁰⁴ *Id.*

the processes of interaction. They cannot tell us about the complexity of a system, its networks, or its patterns of organization.²⁰⁵ To properly assess the health of a system and adequately define the management role of property, qualitative indicators of social-ecological systems must play a role. Quantitative measurements simply do not provide sufficient information or perspective.

Because of the rights-based focus of the exclusion strategy, the qualitative aspects of growth and property use are overlooked under an exclusionary approach to defining property rights and resolving property disputes. A governance strategy, with its context-based perspective, would allow consideration of qualitative indicators of the impacts of property use on the health of our interdependent systems.

2. Sins of Omission: Those Interests Left Behind

The exclusionary approach focuses on the individual property owner and grants the owner a monopoly of power over a particular resource.²⁰⁶ Public interests in common resources are typically viewed as inferior to private rights—and sometimes even illegitimate.²⁰⁷ Even when the resources are publicly owned, lawmakers and private rights advocates often question the public interests, downplaying the importance of the resources to the public or questioning the legitimacy of the government's ownership.²⁰⁸ Public goods are taken for granted or viewed with

²⁰⁵ *Id.*

²⁰⁶ See Merrill, *Property Strategy*, *supra* note 6, at 2090–91 (recognizing this weakness).

²⁰⁷ This view of inferiority results, in large part, from the rights-based focus of the exclusion strategy, which stresses promotion of self-interests and maximization of the individual owner's welfare. See Butler, *Resilience of Property*, *supra* note 1, at 856–63 (discussing the development and dominance of the individual rights vision of property).

²⁰⁸ In recent years, for example, this private rights bias has controlled the dialogue about much needed transportation improvements, resulting in a preference for public-private partnerships (PPPs) even when net savings are not evident. Virginia recently learned that it could save millions in costs and even net \$200 to \$500 million in revenues if the state controlled financing and construction of the proposed expansion of Interstate 66 instead of handing control over to private investors. Michael Laris, *State Control of I-66 Expansion Could Net Virginia Substantial Revenue*, WASH. POST (May 19, 2015), https://www.washingtonpost.com/local/trafficandcommuting/state-control-of-i-66-expansion-could-net-virginia-substantial-revenue/2015/05/18/a3629d58-fd7f-11e4-805c-c3f407e5a9e9_story.html [<https://perma.cc/6VLD-T7AK>]. Another ongoing debate involves challenges to federal ownership of lands out west and growing calls to sell all public lands that are not national parks. Martin Heinrich, *The Land Grab Out West*, N.Y. TIMES (Oct. 26, 2014), <http://nyti.ms/ZRW5ZV> [<https://perma.cc/AX97-DFRK>] (discussing recent efforts in western states to have federal lands sold to private parties or transferred to state governments to manage); Will Rogers, *Our Land, Up for Grabs*, N.Y. TIMES (Apr. 2, 2015), http://www.nytimes.com/2015/04/02/opinion/our-land-up-for-grabs.html?_r=0 [<https://perma.cc/TW9L-MAUH>] (discussing steps in Congress to buy and sell federal lands).

suspicion. Though the aggregate value of the public's interests may be high, the interests might be too diffused—too spread out among too many—to get the legal system's attention. Typical arguments made to stress the superiority of the private interests focus on how private ownership could produce so much more wealth for society than public ownership and management.²⁰⁹

The global climate system provides a poignant example of how collective interests are being left behind in the interest of maximizing wealth through private property. Even though an overwhelming percentage of climate scientists now agree that climate change can be attributed to humans and is occurring faster than predicted,²¹⁰ the United States still lacks a comprehensive federal approach to climate change.²¹¹ Humanity's primary contribution to climate change is the generation of greenhouse gas emissions (especially CO₂) from the burning of fossil fuels and land use changes like

²⁰⁹ One of the latest examples involves the movement to privatize air control. See Susan Carey & Andy Pasztor, *Sparks Fly on Privatizing Air-Traffic Control*, WALL ST. J. (Aug. 24, 2014), <http://www.wsj.com/articles/sparks-fly-on-privatizing-air-traffic-control-1408921476> [<https://perma.cc/CPM7-548Z>]; Andy Pasztor, *Rep. Bill Shuster Releases 'Principles' for Bill to Privatize U.S. Air-Traffic Control*, WALL ST. J. (June 15, 2015), http://www.wsj.com/articles/rep-bill-shuster-releases-principles-for-bill-to-privatize-u-s-air-traffic-control-1434398386?mod=rss_Politics_And_Policy [<https://perma.cc/5PHY-JF33>].

²¹⁰ See generally WORKING GROUP I, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS 4 (2013), <http://www.climatechange2013.org> [hereinafter IPCC FIFTH ASSESSMENT REPORT] (reporting on the science and impacts of climate change).

²¹¹ In his second term, President Obama made climate change a priority, taking a number of administrative actions to address the problem. Those actions included adoption of a Climate Action Plan, issuance of executive orders to federal agencies, and reaching an agreement with China to cut greenhouse gas emissions. See EXEC. OFFICE OF THE PRESIDENT, THE PRESIDENT'S CLIMATE ACTION PLAN (2013), <https://obamawhitehouse.archives.gov/sites/default/files/image/president27sclimateactionplan.pdf> [<https://perma.cc/5VHE-SP5W>]; Allie Malloy & Sunlen Serfaty, *Obama Unveils Major Climate Change Proposal*, CNN, <http://www.cnn.com/2015/08/02/politics/obama-climate-change-plan/index.html> [<https://perma.cc/RSG7-NY7S>] (last updated Aug. 3, 2015); Katie Valentine, *White House Announces Plan to Tackle the Health Threats of Climate Change*, THINKPROGRESS (Apr. 7, 2015), <http://thinkprogress.org/climate/2015/04/07/3643682/white-house-climate-health-initiatives> [<https://perma.cc/X6EV-NME9>]. More recently, President Obama helped to lead the effort on the global stage to pass a landmark climate deal that includes "holding the increase in the global average temperature to well below 2 °C above pre-industrial levels." Conference of the Parties, *Adoption of the Paris Agreement*, art. 2, U.N. Doc. FCCC/CP/2015/L.9/Rev.1 (Dec. 12, 2015), <http://unfccc.int/resource/docs/2015/cop21/eng/109r01.pdf> [<https://perma.cc/XB3G-UBZX>]. Only 10 of 195 nations declined to submit pledges addressing reductions in greenhouse gas emissions. See Dean Scott, *With Paris Accord in Hand, 195 Countries Look Ahead to Morocco and 2016 Talks*, 46 ENV'T REP. 3846, 3846 (2015); Alex Morales, *Only 10 Nations Decline to Submit Pledges at Paris Talks to Reach Climate Agreement*, 46 ENV'T REP. 3776, 3776 (2015); Sewell Chan, *Key Points of the Paris Climate Pact*, N.Y. TIMES (Dec. 12, 2015), <https://www.nytimes.com/interactive/projects/cp/climate/2015-paris-climate-talks/key-points-of-the-final-paris-climate-draft> [<https://perma.cc/7DND-4Q6K>].

deforestation that release greenhouse gases.²¹² Some of the impacts of climate change in the United States include more extreme weather events (such as heavier rain events, larger snowstorms, and longer droughts), shifting growing seasons, warmer temperatures, and sea level rise.²¹³ Despite the significance of these impacts for the public at large, federal and many state legislatures have refused to act, denied the problem, or even prohibited government agencies from taking action.²¹⁴ Instead, many elected officials have been persuaded to protect and promote the property interests of powerful oil and gas companies, which have tremendous reserves of fossil fuel.²¹⁵ A business-as-usual mentality grounded in mainstream economics pervades their lawmaking and policy development. Collective interests in a sustainable and healthy Earth are relegated to the back burner.

Approaching climate change through a systems view would help to break the destructive cycle fueled by the economic theory of property. The *Fifth Assessment Report* of the Intergovernmental Panel on Climate Change (IPCC) links the costs of maintaining infrastructure systems for the built environment with ecosystem services.²¹⁶ Sustaining the built environment through a systems view would involve examining the “relationship between essential services provision and ecosystem structure and function.”²¹⁷ As explained in a recent article on the normative implications of the IPCC’s report, the current commodity-based approach to property rights in natural resources focuses on “the market values of goods that can be

²¹² JOSEPH ROMM, CLIMATE CHANGE: WHAT EVERYONE NEEDS TO KNOW 20–22 (2016).

²¹³ See IPCC FIFTH ASSESSMENT REPORT, *supra* note 210, at 23–24.

²¹⁴ Senator Inhofe famously brought a snowball onto the floor to prove the absence of climate change. Ted Barrett, *Inhofe Brings Snowball on Senate Floor as Evidence Globe Is Not Warming*, CNN (Feb. 27, 2015), <http://www.cnn.com/2015/02/26/politics/james-inhofe-snowball-climate-change/index.html> [<https://perma.cc/CDS3-PXPX>]. The republican controlled Congress has refused to take action, while the North Carolina state legislature prohibited state agencies from using up-to-date flood data and the Virginia General Assembly insisted on referring to sea level rise as recurrent flooding. See Alon Harish, *New Law in North Carolina Bans Latest Scientific Predictions of Sea-Level Rise*, ABC NEWS (Aug. 2, 2012), <http://abcnews.go.com/US/north-carolina-bans-latest-science-rising-sea-level/story?id=16913782> [<https://perma.cc/6GLV-T59F>]; Rebecca Leber, *Virginia Lawmaker Says ‘Sea Level Rise’ Is a ‘Left Wing Term,’ Excises It from State Report on Coastal Flooding*, THINKPROGRESS (June 10, 2012), <http://thinkprogress.org/climate/2012/06/10/496982/virginia-lawmaker-says-sea-level-rise-is-a-left-wing-term-excises-it-from-state-report-on-coastal-flooding> [<https://perma.cc/C4HE-ZZ3K>].

²¹⁵ See ROMM, *supra* note 212, at 182–88 (discussing the partisan divide on climate change existing at the national level and the role of the fossil fuel industry in spreading misinformation on climate change).

²¹⁶ See Adams-Schoen et al., *supra* note 201, at 10035–36 (exploring the normative implications of the IPCC’s *Fifth Assessment Report*).

²¹⁷ *Id.* at 10036.

taken from ecosystems, without also accounting for the methods of sustaining the production of those goods or the loss of production in the future.”²¹⁸ This perspective has hastened “the decline of functionality throughout the natural systems. . . . [and] limited the ability of ecosystems to regenerate and sustain themselves.”²¹⁹ A systems view that considered ecosystem services would “break from commodity-based valuation” by appreciating “the manner in which ecosystems produce goods of value, the manner in which ecosystems provide services that are essential to human well-being, and the economic value that can be attributed to functioning ecosystems as the value of the services they provide.”²²⁰ This approach would not omit ecological interests, but would rather examine how ecosystem structures and processes provide clean air and water, temperature regulation, nutrient cycling, flood control, and so much more.²²¹

Another poignant example of the relational interests being left behind in the pursuit of wealth maximization by property owners under our current system is the widening divide between the haves and the have-nots.²²² The distribution spillovers of a property system based primarily on mainstream economics and reinforced by the exclusion strategy are now painfully obvious. Under mainstream economics, the distribution function of property is presumed to occur through trickle-down economics after property rights are exercised and greater wealth is generated.²²³ The benefits of supporting property owners through less regulation, lower tax rates, and other free market policies are supposed to be seen in a bigger pie that in the long run benefits ordinary people: the thinking is that more wealth earned leads to the creation of more jobs for lower income people and a larger surplus to be redistributed through social programs.²²⁴ This theory of trickle-down economics, however, assumes that those made wealthier invest their new wealth in job-creating activities and that elected officials have the political will to redistribute wealth.²²⁵

Those assumptions have not held up, and instead, the gap between the rich and poor has widened. From 1993 to

²¹⁸ *Id.*

²¹⁹ *Id.*

²²⁰ *Id.*

²²¹ *See id.*

²²² Even advocates of the exclusion strategy recognize the problem of income inequality as a consequence of our property system that ultimately could undermine the system. *See, e.g.,* Merrill, *Property Strategy*, *supra* note 6, at 2093–94.

²²³ *See supra* note 186 and accompanying text.

²²⁴ *See* CHANG, *supra* note 186, at 137–38, 142–47.

²²⁵ *See id.* at 145.

2012, 99% of earners in the United States had only a 6.6% growth in real income while the top 1% experienced an 86.1% growth.²²⁶ In 2012 the top 1% averaged over \$1.2 million in earnings with capital gains included, and over \$1 million without.²²⁷ The United States now has one of the largest income gaps found in nations with developed economies and even as compared to many developing economies.²²⁸ According to a 2014 report by the Federal Reserve, the “wealth share of the top 3 percent climbed from 44.8 percent in 1989 to 51.8 percent in 2007 and 54.4 percent in 2013.”²²⁹ Further, the “top 0.1 percent are now worth more than the entire bottom 90 percent of the U.S. population.”²³⁰ If allowed to continue, excessive wealth accumulation and unconstrained hoarding of resources eventually will tear the fabric of any stable society. When that society is based on principles of individual liberty and equality of opportunity, the threat posed by excessive wealth accumulation to that society is even more poignant.

A broader governance strategy, with its recognition of the importance of systems integrity, would allow consideration of the significant ecological and distributional interests ignored by the exclusion-based approach to property management.

3. Property’s Negative Externalities

Because the American property system divides resources into separately owned units, each owner has, as Tom Merrill explained, “built-in incentive[s]” to ignore the effects of management decisions on others.²³¹ When these effects or externalities become too great, Merrill recognizes that another system for managing resource use may be needed.²³² But even when the legal system internalizes some negative externalities and brings them home to the decision maker, the system will

²²⁶ JOINT ECON. COMM., INCOME INEQUALITY IN THE UNITED STATES 4 (2014), https://www.jec.senate.gov/public/_cache/files/d72ff522-e470-496d-90ff-b8f7ac9c4c2c/income-inequality-in-america.pdf [<https://perma.cc/3U29-L87F>].

²²⁷ *Id.*

²²⁸ *Id.*

²²⁹ Jesse Bricker et al., *Changes in U.S. Family Finances from 2010 to 2013: Evidence from the Survey of Consumer Finances*, FED. RES. BULL., Sept. 2014, at 10.

²³⁰ Joaquim Moreira Salles, *The Wealth Gap Between Rich and Poor Is the Widest Ever Recorded*, THINKPROGRESS (Dec. 18, 2014), <http://thinkprogress.org/economy/2014/12/18/3605137/us-wealth-gap-at-its-widest-in-decades> [<https://perma.cc/85LZ-FA7S>]; see also Richard Fry & Rakesh Kochhar, *America’s Wealth Gap Between Middle-Income and Upper-Income Families Is Widest on Record*, PEW RESEARCH CTR. (Dec. 17, 2014), <http://www.pewresearch.org/fact-tank/2014/12/17/wealth-gap-upper-middle-income> [<https://perma.cc/E82H-S5AK>].

²³¹ Merrill, *Property Strategy*, *supra* note 6, at 2089.

²³² *Id.* at 2090.

ignore, discount, or fail to recognize other spillovers of property use. Such situations are especially likely to arise when complex natural systems are affected over the very long-term (as, for example, with climate change).²³³ They also may arise when the spillovers adversely affect a great number of people, producing significant harm in the aggregate but relatively minor harm on an individual basis.²³⁴ Or the harm may be too intangible or difficult to measure quantitatively. The harms predicted to arise from the proposed Grand Canyon development projects, for instance, are virtually impossible to measure in dollars and cents.²³⁵ What would be the value of a not-so-grand Grand Canyon experience if the solemnity of nature's creation is not preserved? If the spiritual transcendence of the experience is marred by cable cars traversing the Canyon walls or by the lights of an amphitheater and restaurant complex?

Under the mainstream economic theory of property, the owner generally lacks the incentives to manage for resilience. Such efforts require an understanding of the drivers that cause a social-ecological system to cross a threshold to a new regime, the variables that promote resilience, and the adaptive capacity of humans.²³⁶ A rational acting property owner will eliminate redundancies and focus narrowly on what is "directly and immediately beneficial" to the owner.²³⁷ The owner will simplify values and interests affecting the decision-making process, reducing them "to a few quantifiable and marketable ones."²³⁸ The value of beauty, the grandeur of the Grand Canyon, and the existence of species will be ignored or, at best, discounted.²³⁹ Property owners will unknowingly be guided by options and

²³³ Climate scientists have concluded that key impacts of climate change "are irreversible on a time scale of centuries and possibly millennia." ROMM, *supra* note 212, at 141. That is, even if humans were to stop all greenhouse gas emissions immediately, the effects of the increased greenhouse gas concentrations already in the atmosphere still would be felt for 1000 years. *Id.* at 143. The key impacts include sea level rise and reduction in dry-season rainfalls in some of the world's most productive agricultural areas. *Id.* For further discussion of the best- and worst-case scenarios for climate change, see *id.* at 131–145.

²³⁴ Suppose, for example, that air pollution affected a large, populated area and that each resident developed mild respiratory problems because of the pollution. The harm experienced on an individual basis would be relatively minor and probably would not be high enough to motivate an individual to sue the polluter. The aggregate harm, however, would be significant.

²³⁵ See *supra* notes 58–94 and accompanying text (discussing the proposed development projects).

²³⁶ BRIAN WALKER & DAVID SALT, *RESILIENCE THINKING: SUSTAINING ECOSYSTEMS AND PEOPLE IN A CHANGING WORLD* 59 (2006). For a discussion of some of those drivers and variables, see Butler, *Resilience of Property*, *supra* note 1, at 891–99.

²³⁷ See WALKER & SALT, *supra* note 236, at 7.

²³⁸ See *id.*

²³⁹ See *id.*

assumptions embedded in the exclusion-based property system to make decisions reflecting mainstream economic incentives.²⁴⁰ Political justifications for property rights generally will reinforce this incentive structure. Under those justifications, strong exclusion-based rights promote the liberty interests of the individual property owner; freedom from government and third-party interference thus intertwine the economic and political views.²⁴¹ The result is a decision-making process focused on the narrow self-interests of the individual property owner and not generally on noneconomic values or system integrity.

4. The Dangers of Overfragmentation

The gatekeeping powers of a property owner include the power to disaggregate and alienate portions of his interests in a spatial, temporal, and conceptual sense. An owner may transfer just a portion of a tract of land (for example, a subdivided lot), just a future interest in the title (such as a remainder interest), or just a particular stick in his bundle of rights (for instance, an easement). For the most part, these powers to disaggregate and alienate work well, providing a supply of segmented resources to meet demand by allowing landowners to tailor specific transfers. Sometimes, however, these powers lead to overfragmentation of interests and resources, setting up each new transferee-owner as an independent actor with the power to veto projects requiring the assembly of permissions or interests.²⁴² Buttressed by the exclusion strategy, each new owner has the right to deny a request to purchase her interests and the incentive to holdout for an exorbitant price.

In the 1980s Frank Michelman first spoke of such a regime where no one could use a resource without the permission of everyone else, calling it an anticommons.²⁴³ Michael Heller then applied the concept in ways that explained perplexing real-life

²⁴⁰ For further discussion of how mainstream economics now dominates property theory and how it guides decision making, see Butler, *Resilience of Property*, *supra* note 1, at 877–90.

²⁴¹ *See id.* at 856–60, 869, 878–81 (discussing Locke, Blackstone, and other origins of the political exclusionary view of private property).

²⁴² This problem of independence caused by segmentation has even affected land use and environmental reviews of development projects. *See infra* note 247 and accompanying text.

²⁴³ Frank I. Michelman, *Ethics, Economics, and the Law of Property*, in 24 NOMOS: ETHICS, ECONOMICS, AND THE LAW 3, 6, 9 (J. Roland Pennock & John W. Chapman eds., 1982); Lee Anne Fennell, *Commons, Anticommons, Semicommons*, in RESEARCH HANDBOOK ON THE ECONOMICS OF PROPERTY LAW 35, 41 (Kenneth Ayotte & Henry E. Smith eds., 2011).

situations.²⁴⁴ The efficiency concern underlying an anticommons situation is that “a value-enhancing assembly . . . will fail to occur as a result of strategic holdout behavior and other transaction costs.”²⁴⁵ Not all anticommons, however, produce such a result. Only those that involve “settings where good substitutes are absent” provide the possibility of an “assembly failure . . . attributable not to efficient fragmentation but to strategic behavior.”²⁴⁶

The exclusion strategy encourages segmentation not only among property owners but also among those government units tasked with the responsibility of reviewing proposed development projects for environmental harm or conducting large-scale planning.²⁴⁷ What is missing from the government’s and the property owner’s decision-making calculus is a view of the whole—of the larger picture. By the very act of separating resources into individually owned units, property builds the owner’s monopoly power into each unit. Further, once started, the disaggregation process takes on a life of its own. After natural resources are converted into individual units of ownership and then into goods or products having an exchange value, capitalism takes over, shaping and reshaping the natural processes.²⁴⁸ Property law legitimizes the conversion of natural resources into items having an exchange value in the marketplace, and capitalism then drives the demand for more.

Because of the social-ecological dynamic of our property system, a broader, macro view of property’s management role needs to be taken. Systems theory reveals that traits or properties of a system are eventually “destroyed when a system is dissected, either physically or conceptually, into isolated elements.”²⁴⁹ Under a systems view, the “boundaries . . . of the discernible patterns . . . are secondary” to the relationships formed by connections of the parts.²⁵⁰ Living systems involve a

²⁴⁴ See Heller, *supra* note 10, at 633–39; Fennell, *supra* note 243, at 41.

²⁴⁵ Fennell, *supra* note 243, at 41.

²⁴⁶ *Id.* at 42.

²⁴⁷ See, e.g., Long Island Pine Barrens Soc’y v. Planning Bd., 606 N.E.2d 1373, 1378 (N.Y. 1992) (denying the need for mandatory review of the cumulative impact of 224 separate development projects in an ecologically sensitive area); Forman v. Trs. of State Univ. of N.Y., 757 N.Y.S.2d 180, 181–82 (N.Y. App. Div. 2003) (rejecting a claim of improper segmentation when projects were not planned together and involved noncontiguous areas); ERIC T. FREYFOGLE, *Property’s Functions and the Right to Develop*, in ON PRIVATE PROPERTY: FINDING COMMON GROUND ON THE OWNERSHIP OF LAND 84, 88 (2007). For a discussion of the cooperation problem existing in commons and anticommons and of possible solutions, see Fennell, *supra* note 243, at 40–41, 45–46.

²⁴⁸ See HARVEY, *supra* note 187, at 42–44.

²⁴⁹ CAPRA & LUISI, *supra* note 143, at 80.

²⁵⁰ *Id.*

“nesting [of systems] within larger systems,”²⁵¹ yet we impose our social systems, including property, on natural systems without regard for the complexity of the natural systems or their interconnectedness. A governance strategy provides an opportunity to put the property system into the context of the larger whole.

5. Property’s Problem of Scale

Property’s focus on the individual owner under an exclusion strategy creates serious problems of scale. In making decisions, the owner will only consider the costs and benefits that directly affect him or her and will, as a rational actor, choose to ignore costs imposed on others or on external systems. The nature of these costs varies according to the type of scale. One category is due to the temporal scale of property decisions—in particular, their impact on future generations. Though economists attempt to measure at least some of these costs by discounting future costs to present value, many find this process problematic.²⁵² In addition to suggesting that future costs are measurable and that discounting is an adequate way to measure the impact on future generations, this method does not bring home the costs to the decision maker unless appropriate legal action exists and is taken.²⁵³

A second type of cost results from the spatial scale of property decisions. Property use often affects neighboring areas or resources. Although these costs may be integrated into the owner’s decision-making calculus to the degree that nuisance or other legal liability exists, legal concepts and principles limit the availability of relief. Diffused harm—that is, harm that may be substantial in the aggregate but not in isolation—is not likely to be integrated through common law nuisance because of the substantial harm requirement facing individual landowners.²⁵⁴ Long-term harm also is not likely to result in nuisance liability due to problems proving causation over long

²⁵¹ *Id.*

²⁵² See Douglas A. Kysar, *Sustainability, Distribution, and the Macroeconomic Analysis of Law*, 43 B.C. L. REV. 1, 40–44 (2001) [hereinafter Kysar, *Macro*]; Douglas A. Kysar, *Law, Environment, and Vision*, 97 NW. U. L. REV. 675, 688–91 (2003) [hereinafter Kysar, *Vision*].

²⁵³ For a discussion of the limitations of mainstream economic analysis of economic activities and the development of ecological economics, see Kysar, *Macro*, *supra* note 252, at 3–5, 8–17, 28–31; Kysar, *Vision*, *supra* note 252, at 678–83, 685–93.

²⁵⁴ See *supra* note 123 and accompanying text.

periods of time.²⁵⁵ A third type of cost arises from the ecological or natural systems scale of property decisions. Uses conducted by property owners affect larger natural systems in many ways. Withdrawing water, producing a waste stream, emitting pollutants, filling in wetlands, and converting natural resources to products all have impacts on ecosystems.²⁵⁶ A fourth type of cost arises from the social scale of property decisions. This scale includes both horizontal, distributive costs and vertical, hierarchical consequences.²⁵⁷

Property's problem of scale emanates from the narrow definition of scale currently used under the exclusion strategy. In discussing the structure of property law, Henry Smith identified one of the "[h]igher-level architectural features" of property as its scalability.²⁵⁸ He defined scalability as existing when "features of the whole are inherited from its parts," allowing rights and duties to "scale up and down."²⁵⁹ This definition focuses primarily on the property owner and on ways to facilitate the owner's individual choices, not on the scale of the impacts of the owner's decisions—their actual footprint over time, space, and systems. An owner-centric perspective fails to ensure consideration of cumulative impact, diffused harm, or the distributive consequences of owners' decisions. It also reveals little sense of temporal scale beyond the owner's line of title or of spatial scale beyond the immediate physical boundaries of the property.

Under such a limited approach, the owner's management unit is scaled too narrowly to manage for ecological resilience. By the very act of separating resources into independent and individually owned units, property builds in the owner's individual sense of scale shaped by exclusionary thinking. This act of subdivision or severance then enables the owner to convert nature's resources and processes into units with an exchange value, allowing the narrow scale perspective to be perpetuated in

²⁵⁵ For a discussion of some of the mismatch between nuisance liability and climate change, see David A. Dana, *The Mismatch Between Public Nuisance Law and Global Warming*, 18 SUP. CT. ECON. REV. 9 (2010).

²⁵⁶ See, e.g., NAT'L CTR. FOR ENVTL. ASSESSMENT, OFFICE OF RESEARCH & DEV., CLIMATE AND LAND-USE CHANGE EFFECTS ON ECOLOGICAL RESOURCES IN THREE WATERSHEDS: A SYNTHESIS REPORT (2012), https://cfpub.epa.gov/ncea/global/recor_display.cfm?deid=203462 (follow "Download" tab; then follow "Climate and Land-Use Change Effects on Ecological Resources in Three Watersheds: A Synthesis Report (PDF)") (discussing ecological impacts of land use change).

²⁵⁷ For an exploration of innovative solutions to the problem of inequality, see ANTHONY B. ATKINSON, *INEQUALITY: WHAT CAN BE DONE?* (2015).

²⁵⁸ Smith, *Law of Things*, *supra* note 7, at 1712–13 (emphasis omitted).

²⁵⁹ *Id.* at 1713.

smaller and smaller units.²⁶⁰ A dispersion of power over resources occurs, leading to a “diffusion of responsibility” and a loss of accountability for harm to the larger systems.²⁶¹ Because of the mismatch between the scales of a property owner’s decisions and the scales of the decisions’ impacts, courts, lawmakers, and regulators need to intervene and adjust the scales of decision making through the governance strategy and other management devices.

6. The Coupling Problem

Common law property has an inherent bias for the exclusion strategy.²⁶² By allocating all gatekeeping powers over a resource to an individual property owner, the common law assigns to the owner the right to exclude, the right to use the property to the exclusion of others, and the power to protect those rights. When an individual is the sole owner, no other individual can have the same rights, and the exercise of those rights binds all others. Through the exclusion strategy, then, the common law assumes that the decisions of the property owner generally promote social welfare.

When property owners seek constitutional protection of their property rights, courts often unintentionally rely on this bias in their constitutional analyses of the nature and scope of the rights.²⁶³ The assumptions of the exclusion strategy become embedded in the courts’ basic approach to defining constitutionally protected property,²⁶⁴ affecting how courts view the impacts of

²⁶⁰ Harvey’s analysis explains why property has a problem of scale: once the law allows the conversion of nature and its processes from use value to exchange value, capitalism begins to drive property owners and shape natural processes. See HARVEY, *supra* note 187, at 43–44.

²⁶¹ MARILYN A. BROWN & BENJAMIN K. SOVACOO, CLIMATE CHANGE AND GLOBAL ENERGY SECURITY 215–16 (2011).

²⁶² For further discussion of this bias and of the coupling of constitutional and common law property, see Butler, *Resilience of Property*, *supra* note 1, at 876–82.

²⁶³ In *Lucas v. South Carolina Coastal Council*, the majority stressed the importance to the owner of having an economically viable use in concluding that a law preventing the construction of a “permanent habitable structure” on an ecologically fragile beach constituted an unconstitutional taking. *Lucas v. South Carolina Coastal Council*, 505 U.S. 1003, 1003, 1007, 1016 (1992). Neither the importance of the public interest in protecting an ecologically sensitive area nor the profits already made by the landowner in developing other lots in the area mattered to the Court. See *id.* at 1015–16, 1028–31; Butler, *Resilience of Property*, *supra* note 1, at 862. The majority announced a per se rule for cases involving a total loss of economically viable use, which meant that the importance of the public interest could not be considered. *Lucas*, 505 U.S. at 1015–16; see also Butler, *Resilience of Property*, *supra* note 1, at 862 (discussing the influence of the individual rights approach to property on the Supreme Court).

²⁶⁴ See Butler, *Resilience of Property*, *supra* note 1, at 883–90 (discussing how options are embedded in the legal framework for property—the owner’s decision-making tree).

private property use and the legitimacy of government efforts to induce property owners to internalize their negative externalities. The public interest in the resources affected by the spillovers is viewed merely as a public exigency justifying the exercise of the police powers and not necessarily as a limitation of the private rights. Under the assumptions and logic of the traditional exclusion strategy, the adverse impact of the property owner's use on common resources generally does not figure into the constitutional calculus when courts evaluate the economic impact of the government regulation. This bias was evident, for example, in Justice Holmes's dismissal of the public interest in *Pennsylvania Coal Co. v. Mahon*.²⁶⁵ Though Justice Holmes conceded that a public exigency justified the passage of the coal act regulating the property owners, that public exigency did not figure into his analysis of the economic impact of the state law on the coal company under the Takings Clause.²⁶⁶ Such judicial analysis leaves little, if any, room for the possibility that the public quality of a resource would affect the choice of management strategy and the property arrangement.

Even a view that regards exclusion as the essence of property²⁶⁷ cannot justify ignoring serious externalities and constitutionalizing property's problem of scale. While capitalism probably works better in a democracy that has strong constitutional protections for property rights, the intertwining of constitutionally protected property and the exclusion strategy in a capitalist economy magnifies property's problem of scale in serious ways.²⁶⁸ If the governance strategy were made an equal partner in the management role of property, such action would help to correct this problem and would bring neglected social contexts and values to the table.

²⁶⁵ 260 U.S. 393, 413–14 (1922). In *Pennsylvania Coal Co. v. Mahon*, the coal company challenged the passage of the Kohler Act as an unconstitutional confiscation of its property. *Id.* at 412. The statute prevented coal companies from mining under another's surface land to the point of causing subsidence of the surface. *Id.* at 412–13. Writing for the majority, Justice Holmes concluded that the law went too far, confiscating the coal company's property right to the remaining coal by preventing the mining of that coal. *Id.* at 414–16. Though the public interest was important in determining the basic legitimacy of the act, it was not part of the Court's evaluation of the economic impact of the statute on the coal company's regulated property. *See id.* at 413–14.

²⁶⁶ *See id.*

²⁶⁷ *See* Merrill, *Right to Exclude II*, *supra* note 1, at 2–8; Merrill, *Right to Exclude I*, *supra* note 1, at 740–52.

²⁶⁸ *See* Butler, *Resilience of Property*, *supra* note 1, at 882–90 (discussing how the coupling of constitutional and common law property undermines the resilience of property).

B. *Neglected Social Contexts and Values*

The limitations of the exclusion strategy result in an incomplete management role for property—one that is defined primarily in the context of the marketplace and mainstream economics. A more complete role would require a greater range of perspective, more accurate consideration of social-ecological contexts, a better accounting of the costs of property use, and a more nuanced approach to complex resource settings. A more complete role would more effectively deal with unaccounted-for spillovers having significant adverse impacts (such as greenhouse gas emissions), mismatches of scale that go beyond neighbors (for instance, loss of system-wide ecological services), and coordination problems arising because of multiple stakeholders (like those facing a serious water shortage in a large watershed). A more complete role also would take a nuanced approach to handling resources subject to complex management forms (such as the trust or common interest community), resources subject to complex sharing arrangements (like navigable waters), and resources that are intangible and thus hard to touch, control or bound (such as air).

Setting the governance strategy as the default approach in certain defined, complex contexts would help meet these needs. Reliance on the governance strategy to manage interests in complex settings would not diminish the importance of private property rights, but rather would provide a more accurate and complete portrayal of the interests and resources at stake. The governance strategy would provide a “richer interface” not just “with other rights” but also with other values important to the integrity of social-ecological systems.²⁶⁹ Values like the public interest in the health of the global climate system and in the information commons also would be part of the discussion. These values generally are neglected under a privatized approach.²⁷⁰

A management strategy for property rights in information, for example, needs to recognize the inherent unboundedness of information. This unboundedness is so impalpable that it would be difficult and, in many cases,

²⁶⁹ Smith, *Law of Things*, *supra* note 7, at 1711 (only recognizing the importance of a “richer interface with other rights”). For a discussion of how other perspectives are considered in a dialectical process, see Butler, *Resilience of Property*, *supra* note 1, at 900–08.

²⁷⁰ Joe Singer argues that some norms—access to information, innovation, and equality—are fundamental to our democracy and to our advancement as a society, and should be part of the property calculus. See Singer, *Law of Democracy*, *supra* note 9, at 1299–1303, 1323–28.

prohibitively expensive to manage solely with the exclusion strategy.²⁷¹ Indeed, reliance on a traditional exclusion strategy could waste resources and stymie development of valuable alternatives for delivering information. Consider initial industry efforts to prevent unlawful copying and downloading of music CDs and albums through costly litigation against individual violators and through software that facilitated attacks by malware on the users' own computers.²⁷² Because the practice of unlawful copying had become widespread among consumers and because most violators were not caught, rationally acting consumers chose to engage in the practice.²⁷³ Eventually, the industry realized it could repackage the product by selling digital versions of individual songs, allowing consumers to buy their preferred songs instead of an entire album.²⁷⁴ This repackaging reduced the cost of the product to a point where many consumers were willing to forego unauthorized copying.²⁷⁵ A new way of delivering music was born. Applying a governance approach to digital music from the beginning of the conflict would have shifted the focus from enforcement of the right to exclude to consideration of competing interests in the public platform being used to transmit digital products—a public good called the Internet.

A governance strategy also would deal more effectively than the exclusionary approach with extreme distribution

²⁷¹ For a theory of a new type of externality associated with intellectual property and other intangible resources, see Peter S. Menell & Michael J. Meurer, *Notice Failure and Notice Externalities*, 5 J. LEGAL ANALYSIS 1, 1 (2013).

²⁷² Sony caused a scandal in 2005 when it developed and installed software on CDs to manage its digital rights by modifying the operating system of consumers' computers to prevent copying. Ingrid Marson, *Sony Settles 'Rootkit' Class Action Lawsuit*, CNET (Dec. 29, 2005), http://news.cnet.com/Sony-settles-rootkit-class-action-lawsuit/2100-1002_3-6012173.html [<https://perma.cc/3C3M-L6BW>]. The software was not easy to uninstall and made the affected computers vulnerable to other malware. *See id.*

²⁷³ *See Why Does the RIAA Hate Torrent Sites So Much?*, MUSIC BUS. WORLDWIDE (Dec. 6, 2014), <http://www.musicbusinessworldwide.com/why-does-the-riaa-hate-torrent-sites-so-much> [<https://perma.cc/4S4Z-7ZWZ>] (describing the scope of the piracy problem, including serious economic consequences that include a 47% drop in music sales from 1999 when file sharing began to 2009).

²⁷⁴ Abraham Bell & Gideon Parchomovsky, *The Evolution of Private and Open Access Property*, 10 THEORETICAL INQUIRIES L. 77, 94 (2008) (discussing the voluntary reconfiguration of their assets by copyright holders).

²⁷⁵ *Id.* According to the Recording Industry Association of America, digital music piracy remains a serious problem and costs the industry billions of dollars. *Resources & Learning*, RIAA, <https://www.riaa.com/resources-learning/for-students-educators/> [<https://perma.cc/Y2KY-WXEX>]. Revenues from digital sales increased 1000% from 2004 to 2010 but are not yet making up the difference. *Why Does the RIAA Hate Torrent Sites So Much?*, *supra* note 273. Despite the lower costs, some consumers still pirate music and have lost large judgments. *See* Amanda Nguyen, *Seriously, Don't Illegally Download Music!*, JETLaw (July 11, 2013), www.jetlaw.org/2013/07/11/seriously-dont-illegally-download-music [<https://perma.cc/Y2MV-4ATZ>].

problems. Those problems exist when a society has extreme wealth or extreme poverty. Like the exclusion strategy, the governance approach would accept the idea that the right to profit is not unlimited.²⁷⁶ Unlike the exclusion strategy, a governance approach would give that idea meaning under property law by considering ways to manage the exercise of property rights to prevent owners from extracting all of the value from a resource to the point of its depletion, overfragmentation, or overcapitalization. Such hoarding of wealth produces serious negative externalities and leads to social unrest.²⁷⁷ Profits made by investment brokers on Wall Street from selling short, for example, provide no tangible benefits to society at large; no goods are made that people can buy, and few, if any, jobs are created in the manufacturing or service industries.²⁷⁸ The governance strategy would be open to managing property rights based on the nature of the resources (tangible or intangible), on whether the resource is shared with many different stakeholders (for example, navigable waters), and on whether the property right being exercised simply involves profiting from others' finance capital by risky behavior or market manipulation.²⁷⁹

When, then, should a governance approach be used to manage property rights? What complex settings need a management approach that has more finesse than the exclusion strategy?²⁸⁰ Such complex situations exist when assets are held in a complicated manner, with the gatekeeping powers divided horizontally over time and with complex laws governing the

²⁷⁶ Penn Cent. Transp. Co. v. City of New York, 438 U.S. 104, 124–25, 136 (1978) (recognizing only a right to a reasonable return).

²⁷⁷ See HARVEY, *supra* note 187, at 59–60 (discussing the adverse relationship between the “revolt of the mass of the people in the name of inadequate access to fundamental use values” to a capitalist economy’s trend toward privatization of almost everything, even “war-making and . . . government itself”).

²⁷⁸ See *id.* at 132–33 (noting how financial policies and practices led to the creation of financial markets that lacked transparency and to excessive profits in times of market collapse); *id.* at 172–73 (explaining how, during recessions, capital surplus was more likely to be invested in the stock market, asset purchases, or unstable financial instruments than in production activities involving job creation); *id.* at 239–41 (discussing the creation of “fictitious capital” involving “investments in mortgages, public debt, urban and national infrastructures” that produced significant short-term gains even when the investments went bad over the long-term); see also Joseph William Singer, *Foreclosure and the Failures of Formality, or Subprime Mortgage Conundrums and How to Fix Them*, 46 CONN. L. REV. 497 (2013) [hereinafter Singer, *Subprime Mortgage Conundrums*] (discussing how investments that profited from the financial capital of others by market manipulation and creation of risky financial instruments led to significant gains for the investors and huge losses for many others).

²⁷⁹ For a discussion of the challenges of the subprime mortgage crisis for property law, see Singer, *Subprime Mortgage Conundrums*, *supra* note 278, at 512–22, 529–31.

²⁸⁰ For an introduction to these governance situations, see Butler, *Governance Function*, *supra* note 1, at 1757–67.

relationships (as in some large-scale commercial developments involving multiple parties and leasehold arrangements). They exist when gatekeeping powers are divided vertically among multiple owners (such as with concurrent estates), among parties with different responsibilities, risks, and interests (like in a trust), or among highly interdependent stakeholders (for example, in a common interest community). Or the situation could involve a resource subject to a complex sharing arrangement, with both private and public rights at stake. If the public rights are exercised by the unorganized public, the public would tend to lose to private owners under a straightforward exclusionary approach without active government management and affirmative judicial recognition of the public's rights.²⁸¹ In some states, for example, the public has had difficulty protecting its longstanding use of beaches against the efforts of private waterfront owners to close off access.²⁸² Though protection of public rights in tidelands varies among the coastal states, many favor private waterfront landowners in disputes with the public—especially when the source of the public rights is found in old common law traditions.²⁸³ A complex situation also exists when congestion caused by the unorganized public or changing natural conditions are affecting use of public goods or resources, requiring active government intervention.

A governance management strategy would be more effective than an exclusionary approach in many of these situations because they raise serious limitations to the exclusionary approach or involve other important societal values. In some of the identified situations, the legal system has already recognized the problem and responded over time with a more complex management approach. When, for example, a large-scale

²⁸¹ See Rose, *supra* note 28, at 750–55 (recognizing some resources, like navigable waters, as inherently public property because of increasing returns to scale from the exercise of public rights).

²⁸² See Andrew W. Kahrl, *The People's Beach*, N.Y. TIMES (Dec. 4, 2012), <http://www.nytimes.com/2012/12/05/opinion/beaches-belong-to-the-public.html> [<https://perma.cc/RQK2-NFCN>] (discussing the problem of privatizing beaches). The Texas Supreme Court, for example, has limited public beach rights in a series of cases. See Harvey Rice, *Texas Court Hits Open Beaches Law*, HOUS. CHRON. (Apr. 2, 2017), <http://www.chron.com/news/houston-texas/houston/article/Texas-Court-hits-open-beaches-law-4223948.php> [<https://perma.cc/N3KB-HWUQ>]; Forrest Wilder, *Beach Bummer: The Texas Supreme Court Guts the Open Beaches Act*, TEX. OBSERVER (Mar. 30, 2012), <https://www.texasobserver.org/beach-bummer-the-texas-supreme-court-guts-the-open-beaches-act> [<https://perma.cc/9ZUV-P6K3>].

²⁸³ Compare *Matthews v. Bay Head Improvement Ass'n*, 471 A.2d 355, 365–66 (N.J. 1984) (recognizing public access to dry sand areas of a beach under the public trust doctrine), and *State ex rel. Thornton v. Hay*, 462 P.2d 671, 677–78 (Or. 1969) (recognizing public rights based on custom), with *State ex rel. Haman v. Fox*, 594 P.2d 1093, 1094 (Idaho 1979) (rejecting efforts to declare beaches public property).

commercial development project raises significant land assembly problems because of the project's scope, a partnership with a government entity may allow the use of the eminent domain power²⁸⁴ or a locality's zoning laws to reduce other development costs and entice economic development.²⁸⁵ At one point, the courts also had to address the management problem confronted by property arrangements involving interdependent property owners in a common interest community.²⁸⁶ The courts overcame serious free-rider concerns by recognizing the power of property owners' associations to enforce the restrictive covenants even when the association did not own property benefited or burdened by the covenants.²⁸⁷ Had the courts not intervened and examined more closely the interests implicated by the property arrangement, the free-rider concerns would have posed significant economic disincentives to enforcement of restrictive covenants. Not many lot owners would have been willing to bear the enforcement costs for all of the other lot owners in the subdivision.

Situations involving resources shared by the unorganized public and private property owners are more complicated, from a property perspective, because of the nature of the resource and the number of parties involved. Navigable waters and their submerged beds, for example, are subject to a public navigational servitude that the Supreme Court recognized because of the important link between navigation and commerce.²⁸⁸ The waters are also subject to the rights of private waterfront landowners.²⁸⁹

²⁸⁴ Under the Takings Clause of the Fifth Amendment, private property may only be taken for "public use" with the payment of just compensation. U.S. CONST. amend. V. Under the United States Constitution, the exercise of the eminent domain power would have to satisfy the fairly lenient public use standard set forth by the Supreme Court in *Kelo v. City of New London*, 545 U.S. 469, 469 (2005). After *Kelo*, many states passed statutory or constitutional amendments imposing a higher standard for public use under their state law. See Ilya Somin, *The Limits of Backlash: Assessing the Political Response to Kelo*, 93 MINN. L. REV. 2100, 2120 (2009) (discussing the states' responses).

²⁸⁵ See JULIAN CONRAD JUERGENSMEYER & THOMAS E. ROBERTS, *LAND USE PLANNING AND DEVELOPMENT REGULATION LAW* § 4.10 (2d ed. 2007) (discussing the use of enterprise zones and tax incentives to encourage land redevelopment).

²⁸⁶ Courts questioned whether homeowner associations had standing to enforce restrictive covenants when the association did not own any land that was benefited by the covenants. SINGER, *PROPERTY*, *supra* note 4, § 6.2, at 253.

²⁸⁷ See, e.g., *Neponsit Prop. Owners' Ass'n v. Emigrant Indus. Sav. Bank*, 15 N.E.2d 793, 795 (N.Y. 1938). State legislatures have since passed property owners' association statutes governing some management issues raised by this new type of interdependent property arrangement. See generally SINGER, *PROPERTY*, *supra* note 4, § 8.5 (discussing common interest communities).

²⁸⁸ *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 195–97 (1824); see also Butler, *Governance Function*, *supra* note 1, at 1728 & n.240 (discussing the nature of the public and private rights in navigable waters).

²⁸⁹ See TARLOCK, *supra* note 93, § 3:74 (discussing the rights of private waterfront landowners).

Under the exclusion-based approach, the landowners would have every incentive to control use of the watercourse as it flowed by their waterfront land despite the general existence of public rights under federal law. If such a management approach were allowed, everyone else would have to pay for passage through the waters in front of each waterfront landowner's property. This toll or use fee approach would impose a huge assembly problem on others, who would need to gather permission from all waterfront landowners along their routes. In addition to discouraging use, the toll approach would fail to capture the increasing returns to scale that now occur with use by the unorganized public. As Carol Rose explained, the more people who engage in recreational or commercial activities on navigable waters, the more value created.²⁹⁰ At times, the number of users may lead to congestion, requiring more active management. But even then, the positive externalities of increasing public use should outweigh the costs of managing congestion of an intangible but valuable shared resource.²⁹¹

The complexity may also arise from a new use made possible by technological advances raising public health or safety concerns or serious transaction cost problems. The invention of the plane, for instance, raised questions about whether the *ad coelum* doctrine would be interpreted to prevent passage over privately owned land without the landowner's consent.²⁹² Under the traditional, exclusion-based version of the doctrine, a landowner owns up to the heavens and down to the depths of the earth, allowing him to prevent invasions of his column of airspace.²⁹³ Application of the traditional approach thus would require airlines to acquire or purchase countless rights of passage, creating the possibility of serious holdout problems. A governance approach, in contrast, recognizes the atmosphere as a complex shared resource subject not only to private interests but also to important public interests like air travel and clean

²⁹⁰ See Rose, *supra* note 28, at 750–55 (arguing that some resources, like navigable waters, should be recognized as inherently public property because of the increasing returns to scale of public use).

²⁹¹ See Yochai Benkler, *Commons and Growth: The Essential Role of Open Commons in Market Economies*, 80 U. CHI. L. REV. 1499, 1501, 1533–1547 (2013) (reviewing BRETT M. FRISCHMAAN, *INFRASTRUCTURE: THE SOCIAL VALUE OF SHARED RESOURCES* (2012)) (expanding on an argument about the role of open commons by explaining why open commons are important in complex societies when critical resources are involved). For further explanation of why the governance strategy would more effectively manage the complex property sharing arrangement in navigable waters and their submerged beds, see Butler, *Governance Function*, *supra* note 1, at 1729–30.

²⁹² See *Hinman v. Pac. Air Transp.*, 84 F.2d 755, 757–59 (9th Cir. 1936) (discussing the doctrine's meaning in light of the technological advances in air travel).

²⁹³ See *id.*

air. Early cases deciding the question of overflights struggled to reevaluate the traditional doctrine in light of technological advances, ultimately developing a modified version that interpreted landowner rights as existing only in airspace actually occupied or capable of being used.²⁹⁴ Recognizing the governance approach as the default management strategy for this complex situation would have provided a cleaner analysis that did not need to justify a departure from precedent. A similar situation arose when the broadcasting industry first developed, and courts faced new types of conflicts involving use of the airways.²⁹⁵ One court chose, for example, to recognize a right to broadcast over a wavelength without material interference based on priority in time even though no private rights in airwaves formally existed under the common law.²⁹⁶ A more robust governance strategy would allow more active government intervention when intangible shared resources are subject to private innovation.

New complexities also involve advancements in the extraction of oil and gas from shale deposits now being used without the consent of some surface landowners by companies holding oil and gas leases under traditional laws. These laws allow companies to force fracking on an unwilling surface landowner concerned about possible health consequences, environmental impacts, and other side effects of fracking operations.²⁹⁷ Under a governance approach, a court would evaluate whether the companies' exercise of their property rights adequately accounts for the impact on the public health and safety, on the public infrastructure, and on the environment.²⁹⁸

²⁹⁴ See, e.g., *id.* at 758 (deciding that a landowner did not have rights to the column of airspace above his land that he could not use).

²⁹⁵ See *Tribune Co. v. Oak Leaves Broad. Station, Inc.* (Ill. Cir. Ct. 1926), reprinted in 68 CONG. REC. 215, 215–19 (1926).

²⁹⁶ After noting the failure of Congress to regulate broadcasting, the court in *Tribune* recognized that chaos would result if it did not protect the first-in-time broadcasting station with the established programming and listeners from interference by a newcomer. The new broadcasting station had ignored generally accepted industry customs and broadcast over a wavelength very close to the established station's, making it difficult for listeners to hear the established station's broadcasts. The court concluded that priority in time created a right in the established station to broadcast over the wavelength it had been using without material interference. *Id.*

²⁹⁷ See Larry S. Eubanks & Michael J. Mueller, *An Economic Analysis of Oklahoma's Oil and Gas Forced Pooling Law*, 26 NAT. RESOURCES J. 469, 469 (1986) (describing and analyzing Oklahoma's forced pooling laws); Marie C. Baca, *Forced Pooling: When Landowners Can't Say No to Drilling*, PROPUBLICA (May 18, 2011), <https://www.propublica.org/article/forced-pooling-when-landowners-cant-say-no-to-drilling> [<https://perma.cc/5L2K-V922>] (discussing the contentious issues raised by forced pooling).

²⁹⁸ Fracking requires tons of water hauled in by heavy trucks and proper disposal of toxic wastewater. Environmental concerns include water contamination, air pollution, and a possible increase in earthquakes. For discussions of serious issues

Complex property settings also might involve private property that is affected with a public interest due to the essential nature of the services provided by the property or to a public emergency or crisis.²⁹⁹ Climate change presents the ultimate example of how our traditional property system disperses power over resources in ways that diffuse responsibility and diminish accountability—to the detriment of all. A multidimensional approach to scale is needed to impose responsibility on individual property owners, as well as global, national, state, and local actors.³⁰⁰

Simplistic rules focused primarily on private property rights do not work as well in complex settings. In such settings, the governance strategy would allow courts to better perform property's management role by considering the relational dimension of property rights and imposing limits that better reflect the scale of use. In these situations, the exclusion strategy generally is incapable of dealing with complex property holding arrangements, interdependent stakeholders, the mixing of public and private rights in shared resources, or intangible resources. In these situations at least—where cross-scale interactions are occurring—a broader, systemic view is needed to enhance the responsibility of property owners. Though the governance strategy is context-dependent and thus vaguer than the exclusionary approach, its vagueness and flexibility are due to the nature of the resources and the property arrangement being managed, and not to a particular rightholder. The governance strategy, in other words, would manage the exercise of property rights in ways that ensure greater accountability for the owners' decisions when important social contexts and values are being ignored.

CONCLUSION

The institution of property involves a continuum of possible property arrangements over resources, varying from an individual rights arrangement to shared resources to government ownership. The dominant, exclusion-based model of property focuses primarily on private property rights, limiting the management function of property to the gatekeeping powers

raised by fracking, see John Wihbey, *Pros and Cons of Fracking: 5 Key Issues*, YALE CLIMATE CONNECTIONS (May 5, 2015), <http://www.yaleclimateconnections.org/2015/05/pros-and-cons-of-fracking-5-key-issues> [<https://perma.cc/ZE6Z-ZMZK>].

²⁹⁹ For a provocative argument in favor of a common law duty of equal services owed by owners of property affected with a public character, see CHARLES M. HAAR & DANIEL WM. FESSLER, *THE WRONG SIDE OF THE TRACKS* 18–19 (1986). For further discussion of the public necessity or crisis setting, see Butler, *Governance Function*, *supra* note 1, at 1741–57.

³⁰⁰ BROWN & SOVACOO, *supra* note 261, at 215–39.

of the individual owner with occasional adjustments made through the governance strategy. The rational actor assumptions of the exclusion-based approach shape the choices of the gatekeeper owners to pursue their own self-interests. As discoveries and technological advances have enabled the private use of nontraditional and intangible assets, the limitations of the exclusion-based strategy have become more serious. Perhaps because of the new or intangible nature of the assets, the discoveries and advances have not produced a better understanding of the serious impacts on the environment and on others. Also, the owner-centric focus of the exclusionary approach has so effectively embedded its assumptions of the rational actor into the architecture of property, including constitutional property, that it has become very difficult to expand property's management function.

The limited, owner-centric approach of the dominant model is not sufficient, given growing environmental and wealth inequality problems. That approach does not manage the use of private property rights in ways that hold the property owners accountable for the serious negative externalities of their uses. Nor does it account for other values fundamental to the integrity of political, economic, and natural systems. Our property system already has a governance strategy in place that can look beyond the owner-thing relation. That strategy needs to be broadened to serve as the default management strategy for certain complex situations involving private property's relation to the world outside the property module. The broader governance strategy should kick in when the exclusion-based approach is inherently unable to handle serious environmental problems like climate change or threatening societal problems like extreme wealth or extreme poverty. Because of its owner-centric focus, the individual rights approach cannot, on its own, overcome the threats to collective interests. Unless a broader management strategy is adopted in the United States, the exclusion-based approach will continue to lead the country along a path of environmental disaster and destruction of its democracy. What good is zealous protection of individual property rights if the fabric of a society or the world is ultimately destroyed?

The American property system needs a broader management approach, with an outward-regarding focus, to avoid being defeated by its own adverse impacts on natural and socioeconomic systems. A broader approach would promote the integrity of core systems, along with the rights of property owners, by considering the full scales of use and making

adjustments through democratic institutions. The courts should play a vital role in making these adjustments as the key political entity that promotes the rule of law. Even if majoritarian influences perversely affect another branch of government, the courts have an independent role to play not only in protecting individual rights but also in promoting core democratic values.

A more comprehensive governance strategy would not displace the exclusion-based approach but rather complement and check it. In certain complex situations, a broader governance approach would be more effective than the exclusion strategy because of the broader governance strategy's focus on the context, not just on the rights of the individual property owner. Those complex situations could include complicated property holding arrangements, a large number of interdependent property owners, the mixing of public and private rights in shared resources, new uses of tangible resources made possible by technological advances with implications for others, and intangible resources. What must not happen is the continued application of the exclusion-based approach to these complex situations without consideration given to the interests left behind or the relations neglected by the dominant, owner-centric approach.