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Property Beyond Exclusion

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LECTURE

PROPERTY BEYOND EXCLUSION

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ABSTRACT

Property rights have long been associated with a simple and distinctive technology: exclusion. But technologies can become outdated as conditions change, and exclusion is no exception. Recent decades have featured profound changes that have made exclusion a less useful, less necessary, and more expensive way of regulating access to resources. This Article surveys the prospects for a post-exclusion understanding of real and personal property. It proceeds from the premise that property is built upon complementarities, the nature and scale of which have undergone seismic shifts. Physical boundaries and lengthy claims on resources are designed to group complementary elements together in time and space in order to generate value. But many of the most important complementarities are now found not within a given owner's holdings but among the holdings of different owners. Moreover, as slices of on-demand access increasingly

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replace lumpy long-term possessory interests, the presumed strong complementarity associated with temporal continuity and spatial contiguity begins to break down. This Article shows how these trends have made property lines an increasingly poor mechanism for grouping together complements. It then considers how property rights might move beyond exclusion, and addresses some implications and objections.

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INTRODUCTION

Property rights have long been associated with a distinctive technology: exclusion.[1] The idea is intuitive and the architecture is straightforward.[2] The owner can keep out others, which enables her to use her property as she likes, and enjoy or suffer whatever consequences follow.[3] Yet if we understand property as a human invention designed to optimize access to resources, then exclusion is not an inevitable defining feature of property, but just one possible mechanism for carrying out property's work. And, like any other technology, it can become outdated as conditions change. Recent decades have featured profound changes in technologies for managing resources.[4] Increasing urbanization has also dramatically altered how property generates value and imposes costs. These changes have made exclusion a less useful, less necessary, and more expensive way of regulating access to resources and the streams of benefits they produce.

This Article examines the prospects for a post-exclusion understanding of real and personal property.[5] I proceed from the premise that property is built upon complementarities,[6] the nature and scale of which have undergone seismic shifts. Physical boundaries and lengthy claims on resources are designed to group together, in time and space, elements that work together in producing value.[7] Doing

1. *See, e.g.*, William Blackstone, 2 Commentaries on the Laws of England 2 (1766); Thomas W. Merrill, *Property and the Right to Exclude*, 77 NEB. L. REV. 730 (1998).

2. *See, e.g.*, Henry E. Smith, *Property as the Law of Things*, 125 HARV. L. REV. 1691, 1692-94, 1699-1700 (2012) (proposing an "architectural" understanding of property).

3. *See, e.g.*, Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347, 356 (1967).

4. *See, e.g.*, Nestor M. Davidson & John J. Infranca, *The Sharing Economy as an Urban Phenomenon*, 34 YALE L. & POL'Y REV. 215, 224-25 (2016).

5. I will not take on intellectual property here, although some of what I say about exclusion applies in that context as well.

6. Goods are complements if they are more valuable when consumed together, like left and right shoes. *See, e.g.*, ROBERT COOTER & THOMAS ULEN, LAW & ECONOMICS 184 (6th ed. 2012). Likewise, some property entitlements and attributes gain value when combined. *See* Smith, *supra* note 2, at 1703 (observing that "[p]roperty clusters complementary attributes" within pieces of land and owned objects).

7. *See* Smith, *supra* note 2, at 1693 ("Property organizes this world into lumpy packages of legal relations—legal things—by setting boundaries around useful attributes that tend to be strong complements.").

so allows owners to internalize the effects of that consolidated value-production system.[8] But many of the most important complementarities are found not within a given owner's holdings, but among the holdings of different owners.[9] Moreover, as time-slices of on-demand access increasingly replace enduring lumps of possession,[10] the presumed strong complementarity between possession today and possession tomorrow begins to break down. As a result of these trends, property lines have become an increasingly poor technology for grouping together complements.

My analysis proceeds in four parts. Part I considers how boundary exclusion works. I frame exclusion as a prophylactic mechanism designed to simultaneously enable and disable human endeavors by controlling entry into a boundary-defined space. Exclusion enables projects and investments by protecting resources in temporally continuous and spatially contiguous chunks. Exclusion also disables uninvited others from using the property, or any portion thereof, for their own projects. This arrangement works well when the resources located within the property's lines are more tightly connected to each other than they are to resources lying outside those lines. Increasingly, however, a boundary exclusion strategy turns out to be both underinclusive and overinclusive in grouping together complements.

Part II examines the problems that interdependence *among* property holdings pose for a boundary exclusion strategy.[11] As property values come to depend primarily on activities occurring outside the owned parcel, exclusion becomes less effective in encouraging property investments and in discouraging harmful property-related behaviors. For similar reasons, one of the primary implications of an exclusion-centric model—the owner's right to veto any proposed transfer—has become more socially costly. Complementarities

8. *See id.*

9. For example, a group of shops together generates more foot traffic than they would if widely separated, a close-knit neighborhood produces benefits for the residents that would be lost if the neighborhood were broken up, and an access path that crosses a set of beachfront properties is far more valuable if it is contiguous.

10. *See, e.g.*, Davidson & Infranca, *supra* note 4, at 216.

11. Although these problems can be largely cast as ones of underinclusiveness (boundaries fail to capture the full set of complements), overinclusiveness is also implicated insofar as property rights grant owners broader and more durable vetoes than would be socially optimal given the interdependence among properties.

among properties allow owners to monopolize resources that represent crucial inputs to the projects of others. Examples include holdout problems that thwart efforts at land assembly, as well as deadlocks between neighbors over resources or rights that each controls. The resulting costs have prompted exercises of eminent domain and other changes in the way that property rights are protected against involuntary transfer.

Part III turns to the connections *within* property holdings that an exclusion strategy presupposes. Lumpy, long-term ownership rights are premised on complementarities over time and across space with respect to possession of an asset. New technologies for transacting over excess capacity are beginning to make continuity of ownership less important, however, and may also change the physical scale at which property is best held. Examples can be found in the "sharing economy" (better termed the "slicing economy"),[12] and in new forms of "smart property" capable of self-executing conditional claims on resources.[13] Yet continuity and contiguity remain important in many contexts; there are latent advantages to full-strength ownership and limits to new on-demand models.

Part IV considers how property rights might move beyond exclusion, and addresses some implications and objections. One concern is worth flagging at the outset: an inquiry like mine risks entangling functional questions about how best to arrange access to resources with semantic questions about the scope of words such as "exclusion" and "property." Although the Article's framing (and title) depend on the particular definitional choices I make, my ultimate concern is with the former. Whether or not one's concept of "property" logically contains a region "beyond exclusion," there is no question that changes are afoot in how people derive value from

12. There has been much discussion in the literature about the inaptness of the term "sharing economy," although many writers continue to use it because it has gained such currency in the United States. *See, e.g.*, Davidson & Infranca, *supra* note 4, at 216 & n.1. "Slicing" better captures market transactions that deliver thin, sequential servings of access.

13. *See, e.g.*, Kevin Werbach & Nicolas Cornell, *Contracts* Ex Machina, 67 DUKE L.J. 313, 335-37 (2017) (noting the potential for "dynamic transactions around physical objects (smart property)" and describing examples of automatic changes in access); Nick Szabo, *Smart Contracts: Building Blocks for Digital Markets* (1996), http://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart_contracts_2.html [https://perma.cc/PN3V-WDWP] (discussing how to "extend the concept of smart contracts to property").

resources. This Article is concerned with how best to respond to those changes.

I. UNDERSTANDING EXCLUSION

An exclusion strategy places a sharp discontinuity at the property line.[14] This setup is premised on the boundary doing a reasonably good job of bundling together complementary elements.[15] Like the boundaries of a firm, property lines are designed to mark off resources that are most efficiently managed together.[16] As that analogy suggests, property lines do not imply isolation; transactions can and do occur across boundaries.[17] Moreover, property law supplements exclusion with governance strategies such as nuisance law, as Henry Smith has emphasized.[18] But the core move of exclusion presumes that there is something significant about boundary crossings that makes preventing them a good proxy for protecting what gives property value.[19]

Although this Article suggests that exclusion is becoming less efficacious and more costly, it remains a workhorse strategy. Highlighting what exclusion is meant to do makes it easier to see how it can misfire or fail. Section A below describes how the boundary exclusion approach works, and Section B examines the purposes it might serve.

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14. Henry Smith has described this discontinuity as an "on/off" binary. Henry E. Smith, *Property and Property Rules*, 79 N.Y.U. L. REV. 1719, 1753-54 (2004). Yet it may at times work as a less absolute "inflection point." David A. Dana & Nadav Shoked, *Property's Edges*, 60 B.C. L. REV. 753, 757-58 (2019); *see also* LEE ANNE FENNELL, THE UNBOUNDED HOME 13 (2009) (observing that despite robust protection for the home, "strong exclusion from the parcel's edges would be unworkable, even ludicrous").

15. *See, e.g.*, Smith, *supra* note 2, at 1693, 1703.

16. *See* R. H. Coase, *The Nature of the Firm*, 4 ECONOMICA 386, 390-92 (1937) (discussing efficient firm boundaries). For the application of analogous ideas to real property, see, for example, Robert C. Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1332-34 (1993).

17. *See, e.g.*, Ellickson, *supra* note 16, at 1333-34; Demsetz, *supra* note 3, at 356-58.

18. *See* Henry E. Smith, *Exclusion Versus Governance: Two Strategies for Delineating Property Rights*, 31 J. LEGAL STUD. S453, S455 (2002).

19. *See* FENNELL, *supra* note 14, at 12-13.

A. How Boundary Exclusion Works

Boundary exclusion, as I use the term, corresponds to popular notions of what it means to own property—the capacity to keep everyone else off. It is perhaps best signified by the image of a fence surrounding a parcel of real property.[20] No fence can keep out all intruders, but as Carol Rose's work emphasizes, the fence communicates a message: "This is *mine*."[21] Or, more bluntly, "Keep out!"[22] Where property rights are formalized and made a matter of public record, property lines communicate the same thing, even without a fence.[23] In a legal regime that protects private property rights, that message is not just cheap talk; it is backed by the force of law.[24] The law can coercively stop interlopers or impose penalties large enough to deter entry.

An important feature of property boundaries is that they operate in rem—"against the world"—locking out all but those whom the owner chooses to admit.[25] The in rem character of property rights generates great savings in transaction costs: it is not necessary to strike a deal with every person in the universe about not entering the property, because the fact of ownership automatically generates a broad-based right to exclude everyone else.[26] This generalized right of exclusion leaves the owner free to pursue her own projects in peace, to reap the rewards from good investments or lucky gambles, to bear the losses from any experiments that go awry, and, above all, to stay put for however long she chooses to wait for her bets to pay off.[27]

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20. *See, e.g.*, CAROL M. ROSE, PROPERTY AND PERSUASION 1 (1994) (noting that a fence is one of the "common images" that property brings to mind).

21. *Id.*

22. *See* Henry E. Smith, *Exclusion and Property Rules in the Law of Nuisance*, 90 VA. L. REV. 965, 978 (2004).

23. Some form of posting or physical marking may, however, be required in order for the owner to fully vindicate her exclusion right. *See* Richard M. Hynes, *Posted: Notice and the Right to Exclude*, 45 ARIZ. ST. L.J. 949, 951-53 (2013).

24. *See* Smith, *supra* note 22, at 974.

25. *See, e.g.*, Yun-chien Chang & Henry E. Smith, *An Economic Analysis of Civil Versus Common Law Property*, 88 NOTRE DAME L. REV. 1, 33 (2012); Thomas W. Merrill & Henry E. Smith, *The Property/Contract Interface*, 101 COLUM. L. REV. 773, 790-97 (2001).

26. *See, e.g.*, Chang & Smith, *supra* note 25, at 33; Merrill & Smith, *supra* note 25, at 790-97.

27. *See* Smith, *supra* note 14, at 1729 ("[O]wners make bets in situations of uncertainty

Boundary exclusion is inherently prophylactic. Interference with the uses of the owner by the activities of other parties could be addressed in other ways, and different arrangements could be made to pair inputs with outcomes.[28] Exclusion attempts to block interference before it has a chance to begin by preventing the simultaneous presence of parties who might have conflicting agendas for the same resource.[29] This strategy does not always work, for reasons discussed below.[30] But where it does succeed, it does so through the broad-brush tactic of keeping people from being physically present, rather than by regulating the things that they do while present.[31]

By focusing on presence rather than acts, boundary exclusion is overbroad by design.[32] The degree of overbreadth depends on how completely and permanently boundaries exclude. At a fine enough grain, presence becomes an almost perfect proxy for interference, without any need to inquire into the nature of the competing acts. When your fingers are physically present in a gripping configuration on an apple in my orchard at the very moment I am trying to pick that same apple, that presence is an interference. It matters little whether your goal in gripping the apple is to assess its weight and ripeness, adjust its angle for a better view for a picture you are drawing of it, or, indeed, pluck it for immediate consumption—you are in my way, regardless. A form of exclusion that was so finely specified as to keep grasping fingers off individual apples at particular apple-harvesting moments would not be notably overbroad in

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and are rewarded or punished depending on how those bets turn out later when the uncertainty is resolved."); *see also infra* Part I.B. (detailing the purposes of exclusion).

28. *See, e.g.*, Ellickson, *supra* note 16, at 1333-34.

29. *See* Smith, *supra* note 18, at S457-58.

30. *See infra* Part II.A.

31. This distinction tracks the one that Henry Smith draws between exclusion and governance. *See* Smith, *supra* note 18, at S454-56, S467-78; Lior Jacob Strahilevitz, *Wealth Without Markets?*, 116 YALE L.J. 1472, 1494 (2007) (book review) (discussing Smith's distinction and observing that "you can control what users of the resource do or, as a substitute, control what kinds of people get to use the resource"); *see also* William C. Powers, Jr., *A Methodological Perspective on the Duty to Act*, 57 TEX. L. REV. 523, 526 (1979) (book review) ("In their polar forms, ownership and reasonable use are contrary methods of allocating resources.").

32. *See, e.g.*, FENNELL, *supra* note 14, at 13. *But see* Arthur Ripstein, *Possession and Use*, *in* PHILOSOPHICAL FOUNDATIONS OF PROPERTY LAW 156, 157 (James Penner & Henry E. Smith eds., 2013) (rejecting the idea that possession backed by exclusion is "an overinclusive proxy for something else").

its operation. But that is not how boundary exclusion typically works.[33]

Instead, exclusion implies a categorical rather than fine-grained scope of operation, and a set of boundaries that endures over time rather than being continually drawn and redrawn moment by moment in response to the owner's unfolding plans. While it is not impossible to apply the word "exclusion" to a dynamic set of protocols keyed to specific circumstances, the term typically refers to a broad "keep out" strategy that is characterized by physical contiguity and spatial continuity.[34] Owners can of course allow others onto their properties as they choose. But the background right to exclude against which these arrangements are made typically confers control of some reasonably contiguous polygon of space over a relatively lengthy chunk of time.[35] Finer-grained, context-specific arrangements layered on top of that default generally travel under the heading of "governance."[36]

One might disagree as a definitional matter about when, or even whether, finer specification or slicing of interests ceases to count as exclusion. Nonetheless, the overbreadth described above characterizes property regimes on the ground, and it is something that modern technology and social conditions may increasingly squeeze out. The analysis here explores the implications of that potential squeeze-out. Although I use the term "exclusion" to refer to the feature of property's architecture that generates the overbreadth, nothing turns on whether one prefers to use a different and more specific term to refer to the strategy of demarcating an enduring area that the owner is entitled to control mere presence within, regardless of what interlopers mean to do there.

Although this vision of exclusion applies most naturally to real property, it can be adapted to personal property as well.[37] Valuable items are often protected through boundary exclusion by virtue of

33. *See* Smith, *supra* note 22, at 980-83 (rejecting an understanding of "exclusion" that would encompass fine-grained restrictions on use and noting the "roughness" of boundary exclusion as a proxy for harm).

34. *See id.* at 978-83.

35. *See* Ellickson, *supra* note 16, at 1362-65.

36. *See* Smith, *supra* note 14, at 1756 (observing the greater precision with which governance operates, relative to exclusion). *See generally* Smith, *supra* note 18.

37. *See* Smith, *supra* note 2, at 1702-04.

being placed within the footprint of the owner's real property holdings.[38] But even when the owner takes these items out into the world, they are effectively wrapped in a thin membrane of boundary protection that others are not to breach by touching, moving, or tampering with these items.[39] This imaginary membrane is much more tightly fitted to match the scope of interfering presences than in the land case.[40] Nonetheless, an owner is perfectly entitled to keep people from borrowing her goods, even when she is not using them, and even if she would not notice they had been borrowed.[41] In this way, the exclusion right remains broader than necessary to directly address interference with the owner's uses.

B. The Uses of Exclusion

In most economic accounts of property rights, exclusion is instrumental—a means to an end. But there are a variety of ends that exclusion can serve. Additionally, some implications of exclusion might either be characterized as unintended side effects or consciously pursued as ends in their own right. The Sections below survey the territory.

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38. Similarly, when owners hold, carry, wear, or drive pieces of personal property, background rights to bodily integrity offer protection against interference or dispossession. For the idea that rights may "effectively shield" other interests that lack their own protection, see Matthew H. Kramer, *Rights Without Trimmings*, *in* A DEBATE OVER RIGHTS: PHILOSOPHICAL ENQUIRIES 7, 11-13 (Matthew H. Kramer et al. eds., 1998); and Shyamkrishna Balganesh, *Demystifying the* Right *to Exclude: Of Property, Inviolability, and Automatic Injunctions*, 31 HARV. J.L. & PUB. POL'Y 593, 604-05, 605 nn.36-37 (2008) (citing Kramer, *supra* at 12-13 and discussing this "'shielding' thesis").

39. *See* Shyamkrishna Balganesh, *Property Along the Tort Spectrum: Trespass to Chattels and the Anglo-American Doctrinal Divergence*, 35 COMMON. L. WORLD REV. 135, 137-44 (2006) (discussing parallels and divergences between treatment of trespass to land and to chattels).

40. Indeed, not all touchings of personal property will result in liability. *See id.* at 149-51 (discussing the requirement under American law that there be some form of damage to make a trespass to chattels actionable).

41. *See, e.g.*, G.A. Cohen, *Illusions About Private Property and Freedom*, *in* IV ISSUES IN MARXIST PHILOSOPHY: SOCIAL AND POLITICAL PHILOSOPHY 223, 236 (John Mepham & David-Hillel Ruben eds., 1981) ("If *A* needs tools of a kind which only *B* has, then, private property being what it is, he is not free to take *B*'s one for a while, even if *B* does not need it during that while.").

1. Clearing a Space

At its most essential, exclusion performs a slate-clearing function. By keeping all but the owner (and her invitees) off the property, exclusion establishes a zone of noninterference. The value of this slate-clearing function depends on the things that the owner might wish to do on, or with, the property. But at the very least, it confers option value by removing the impediments that the presence of others might pose to various projects.[42] To put the point a little differently, the space-clearing function of exclusion makes the property physically available as an input into any activity of consumption or production that an owner might wish to undertake.

Because all activities must be performed *somewhere*,[43] ownership paired with exclusion rights delivers the owner a broad-spectrum complement to all manner of endeavors. And because exclusion clears the space entirely, the owner need not specify in advance what she might wish to do with the space.[44] Although the range of uses may be narrowed through laws and regulations, an owner's background freedom includes all uses that have not been forbidden to her. By default, ownership confers plenary rather than enumerated powers, encompassing even highly idiosyncratic uses.[45] The owner enjoys this freedom even if she has no desire to exploit her property's productive capacity in any ordinary sense.

2. Sowing and Reaping

A primary economic justification for property rights lies in their capacity to induce optimal investment by allowing people to reap

42. There are other impediments that do not depend on the presence of people on the land, however, and these are *not* cleared by boundary exclusion. *See infra* Part II.A.

43. *See* Jeremy Waldron, *Homelessness and the Issue of Freedom*, 39 UCLA L. REV. 295, 296 (1991) ("Everything that is done has to be done somewhere.").

44. *See, e.g.*, J.E. PENNER, THE IDEA OF PROPERTY IN LAW 72 (1997) (explaining that his "exclusion thesis.... characterizes property primarily as a protected sphere of indefinite and undefined activity").

45. *See* J.W. HARRIS, PROPERTY AND JUSTICE 65 (1996) (including in the potential reach of ownership's unspecified prerogatives the freedom "to paint the bedrooms a luminous green, or to keep coals in the bath, or to inscribe graffiti on the walls, or to breed spiders in the kitchen").

where they have sowed (whether literally or metaphorically).[46] It would be possible to pair the activity of sowing with a right to reap without making use of boundary exclusion, but this would require costly monitoring and record-keeping. Simply granting the person designated as owner a residual claim on the asset itself and keeping everyone else away is often a cheaper and simpler way of accomplishing the pairing.[47]

On this account, exclusion secures the connection between the owner's inputs and the outcomes that she enjoys or suffers. But, as we will see, it does not do so completely. It can only ensure a pairing of inputs and outcomes to the extent that physical presence on the property constitutes an adequate proxy for control over the sowing and reaping operations (or their analogic equivalents). Because many impacts cross boundaries without being accompanied by a physical presence, investments can be diluted and augmented by factors that the individual owner cannot control.[48] For example, nearby development, local amenities such as schools and parks, and various forms of infrastructure all greatly influence property values without ever crossing property lines. For this reason, the conclusion that boundary exclusion is a cheaper and more efficient way to internalize externalities and reward investment is contingent on the nature of the relevant externalities and investments.

3. Containing Negative Impacts

Although most discussions of exclusion focus on protecting the owner's activities from outside interference, exclusion also helps the owner avoid interfering with the activities of others. If the owner's

46. *See, e.g.*, Thomas W. Merrill, *The Property Strategy*, 160 U. PA. L. REV. 2061, 2083 (2012). *See generally* Timothy Besley, *Property Rights and Investment Incentives: Theory and Evidence from Ghana*, 103 J. POL. ECON. 903 (1995) (examining connections between property rights and investments); Erica Field, *Property Rights and Investment in Urban Slums*, 3 J. EUR. ECON. ASS'N 279 (2005) (examining the effects of property formalization on investment); Sebastian Galiani & Ernesto Schargrodsky, *Property Rights for the Poor: Effects of Land Titling*, 94 J. PUB. ECON. 700 (2010) (same).

47. *See, e.g.*, YORAM BARZEL, ECONOMIC ANALYSIS OF PROPERTY RIGHTS 78-80 (2d ed. 1997) (discussing property owners as residual claimants).

48. Owners can, of course, attempt to collectively control these impacts through measures such as zoning. *See generally* WILLIAM A. FISCHEL, THE HOMEVOTER HYPOTHESIS (2001) (explaining how homeowners use local political power to protect their property values).

holdings are large enough relative to the sorts of activities she regularly conducts on her land, the impacts of these activities will mostly be contained within the property's four corners.[49] This is a function of exclusion. A factory will be less likely to generate troublesome spillovers if the factory's owner has surrounded the facility with buffer land from which she has the right to exclude other uses. Exclusion is thus a liability-limiting mechanism. Because an essential ingredient of a nuisance is the presence of people or uses that are significantly harmed by the activity in question, keeping other people and uses far away is one strategy for preventing nuisances from occurring.

One can lump this benefit of exclusion into the category of protecting a landowner's investments, once one sees the threat of liability as a source of interference with the owner's activities.[50] Exclusion is not fail-safe in this regard, however. Trespasses can occur, and owners are not absolved of liability for all harms that befall those who are on their property without authorization.[51] Further, any owner who cannot afford to buy up enough land to contain all of her activities' effects will need to manage her impacts through other means as well (she might, for example, buy a scrubber for her smokestack). Nonetheless, exclusion is one technique that owners can and do use to keep their activities from having negative spillovers on others. And, notably, this is a technique that relies on exclusion's overbreadth in time and space.

4. Metering and Monetizing

Exclusion can also keep the positive effects of an owner's activities from spilling over onto others—a fact that enables owners to charge for the benefits their property interests produce. Owners

49. *See* Lee Anne Fennell, *Property and Half-Torts*, 116 YALE L.J. 1400, 1446 (2007) (noting that the owner's control of a spatial area lets her find ways "to prevent her own onsite activities from producing risks that extend beyond the property's borders"); *see also* Ellickson, *supra* note 16, at 1323-35 (discussing the implications of events of different sizes for the scale at which property is most efficiently held).

50. *See* R. H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 2 (1960) (noting the reciprocal nature of land use conflicts and the harm caused to a person who is made to stop doing an activity).

51. *See, e.g.*, WARD FARNSWORTH & MARK F. GRADY, TORTS: CASES AND QUESTIONS 255-61 (2d ed. 2009) (examining duties to trespassers).

cannot, as a rule, charge their neighbors for benefits that they gratuitously confer on them.[52] But owners can use exclusion to monetize access to those benefits. Thus, an owner can block outsiders from accessing her property in order to charge them admission. Here, exclusion disables as well as enables. It deprives people of desired inputs into their projects and experiences unless they pay what the owner is asking.

This disabling facet of exclusion should be unsurprising, as it is merely the flip side of ensuring that owners are able to reap returns on their investments. Even in a simple case like farming, exclusion from the cornfields forms the backdrop for market transactions in corn. Where goods are ordinary commodities like crops, the disabling function of exclusion is unremarkable. It is merely a means of metering access to resources. The landowner holds no monopoly; even though her land is unique, there are many substitute sources of produce. In other cases, however, the owner's exclusion deprives a nonowner of a unique input that is not available elsewhere. Here, the monopoly implications of exclusion become economically significant—a point to be further developed below.[53]

The capacity for exclusion to facilitate the metering and monetizing of resources carries another implication: it can push resource development toward forms that are more amenable to exclusion.[54] Exclusion not only mediates access to resources, then, but also shapes the way resources are configured. As technological alternatives to exclusion develop, additional ways of packaging and delivering resources become economically viable.

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52. *See, e.g.*, Scott Hershovitz, *Two Models of Tort (and Takings)*, 92 VA. L. REV. 1147, 1157-59 (2006); Ariel Porat, *Private Production of Public Goods: Liability for Unrequested Benefits*, 108 MICH. L. REV. 189, 195-98 (2009). *See generally* Saul Levmore, *Explaining Restitution*, 71 VA. L. REV. 65 (1985) (examining the basis for the rule and its various exceptions).

53. In addition to metering access to resources that an owner's investments produce, owners can also meter spatial access to resources that have no ongoing investment activities underway. For example, an owner might charge entry fees to allow someone to cross an untended field, or to view a unique geological formation.

54. A contested example involves Nikola Tesla's efforts to develop wireless electricity in the late nineteenth and early twentieth centuries. Some accounts suggest that anticipated difficulties in metering wireless electricity worried would-be backers and caused J.P. Morgan to withdraw his support. *See* MARC J. SEIFER, WIZARD: THE LIFE AND TIMES OF NIKOLA TESLA; BIOGRAPHY OF A GENIUS 300 (1996). But other factors were likely responsible. *See* W. BERNARD CARLSON, TESLA: INVENTOR OF THE ELECTRICAL AGE 201-02 (2013).

5. Territoriality and Coordination

Boundary exclusion also connects to notions of territoriality, although the strength of the connection and the direction of causation is unclear. Although definitions vary, the idea of territoriality is premised on controlling access to resources by controlling the physical area in which the resources are found.[55] Thus territoriality is premised on the same kind of overbreadth as exclusion rights generally, insofar as territory defense proxies for resource defense. Territories need not last forever, but some degree of temporal continuity seems significant. One study examining the way family members define their territories within homes found that rooms used by different family members at different times were deemed "to belong to all the users."[56] Physical boundedness also seemed to matter: although asked about portions of rooms, respondents "defined only [entire] rooms or specific pieces of furniture as territorial areas."[57]

Does boundary exclusion foster territoriality, or does it merely embody preexisting territoriality? Because territoriality is found in nonhuman animals as well as in human populations,[58] it might seem to be innate. Yet territoriality only develops under conditions where it provides a competitive advantage.[59] Much turns on the notion of "economic defensibility": whether the costs of territory defense are more than repaid by the greater access to resources and more efficient foraging opportunities that result from restricting access to the territory.[60] An intriguing claim is that this criterion is

55. *See, e.g.*, Elizabeth Cashdan, *Territoriality Among Human Foragers: Ecological Models and an Application to Four Bushman Groups*, 24 CURRENT ANTHROPOLOGY 47, 47-48 (1983); Robert D. Sack, *Human Territoriality: A Theory*, 73 ANNALS OF THE ASS'N OF AM. GEOGRAPHERS 55, 56, 58 (1983). Notably, some definitions of territoriality do not require exclusivity. *See* Cashdan, *supra*, at 47-48.

56. Rachel Sebba & Arza Churchman, *Territories and Territoriality in the Home*, 15 ENV'T & BEHAV. 191, 197-98 (1983) (noting that the kitchen was an exception to this rule, and "was identified as belonging to the mother").

57. *Id.* at 197.

58. *See, e.g.*, *id.* at 191-92; Cashdan, *supra* note 55, at 47-48.

59. *See, e.g.*, Cashdan, *supra* note 55, at 48 (citing Jerram L. Brown, *The Evolution of Diversity in Avian Territorial Systems*, 76 WILSON BULL. 160 (1964), as the starting point for this line of inquiry).

60. *See id.*

only met in some ranges of resource scarcity and density.[61] Where resources are plentiful, it is not worth bothering to defend a territory.[62] And where resources are very scarce and widely dispersed, the size of the territory that would have to be defended would be so large as to make this strategy unduly costly.[63] Resources that are predictably found in aggregated patches are also cheaper to defend through territoriality than those that exhibit less predictability or more mobility or dispersal.[64]

What this analysis suggests is that boundary exclusion—or what the anthropological literature terms "perimeter defense"—is a sustainable strategy under only particular resource conditions.[65] Far from being the only or universal way to deal with resources, it turns out to be contingent. In fact, humans often use a different form of territoriality, "social boundary defense," that relies on regulating access to a social group occupying an area rather than to the area itself.[66] This approach breaks the link between territory size and defense costs that constrains the use of perimeter defense.[67] As this example shows, substitute technologies can stand in for forms of territoriality that are based on spatial boundaries. In place of social group membership, new ways of regulating access based on payments and agreements could take hold.

A remaining question is whether perimeter defense should be maintained as a social practice in order to foster territoriality itself. What benefits, if any, might widespread territoriality confer? To the

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61. *See id.*; *see also* Sack, *supra* note 55, at 58 (suggesting that territoriality's effectiveness as a control strategy is greatest "if the distribution in space and time of the resources or things to be controlled fall somewhere between ubiquity and unpredictability").

62. *See* Cashdan, *supra* note 55, at 48. This depends on whether there is a natural limit to how much of the resource anyone can use or store up for later use or resale. *See id.* at 55.

63. *See id.* at 48.

64. *See, e.g.*, *id.*; Sack, *supra* note 55, at 58-59. *See generally* D.W. Macdonald & D.D.P. Johnson, *Patchwork Planet: The Resource Dispersion Hypothesis, Society, and the Ecology of Life*, 295 J. ZOOLOGY 75 (2015) (discussing how resource dispersion influences group formation and defense of territory).

65. *See, e.g.*, Cashdan, *supra* note 55, at 49.

66. *See, e.g.*, *id.*; Nicolas Peterson, *Hunter-Gatherer Territoriality: The Perspective from Australia*, 77 AM. ANTHROPOLOGIST 53, 60 (1975) ("An alternative strategy for defending the land is to make acceptance into the local land using group a preliminary requirement for using the resources in its territory; that is, by defending the boundaries of the social group rather than the perimeter of the territory itself.").

67. *See* Cashdan, *supra* note 55, at 54.

extent that territoriality engrains responsibility for the long-term fate of the area in question, it dovetails with the investment-encouraging benefits of exclusion. It also provides a focal solution to disputes over resources by introducing an asymmetry (the possession of territory) that can form the basis for a convention.[68] In this way, territoriality can facilitate coordination by establishing a priority of claims over resources.

On the other hand, territoriality can give rise to socially costly behaviors that make it harder to put resources to good use. For example, homeowners are often territorial about the curb space outside their homes and will attempt to keep others from parking there, even though the homeowners do not always need the space for their own cars and do not actually own the space.[69] Territoriality has also been blamed for worker resistance to "hot desking," or floating workstation arrangements, despite the capacity of these arrangements to save costs and provide other benefits.[70]

Yet territoriality does not seem to be a hard constraint on flexible resource alternatives if the owner is permitted to control the terms of the interaction. For example, community control over curb parking can be an effective way of putting more parking spaces into rotation.[71] Likewise, what would otherwise seem like an outrageous intrusion—a stranger occupying one's bed when one is away—can be transformed through new transaction structures into an entrepreneurial opportunity.[72] Although the questions are empirical

68. *See, e.g.*, RICHARD H. MCADAMS, THE EXPRESSIVE POWERS OF LAW 86-90 (2015); ROBERT SUGDEN, THE ECONOMICS OF RIGHTS, CO-OPERATION AND WELFARE 49-54, 98-107 (2d ed. 2005); James E. Krier, *Evolutionary Theory and the Origin of Property Rights*, 95 CORNELL L. REV. 139, 154-55 (2009); *see also* JACK KNIGHT, INSTITUTIONS AND SOCIAL CONFLICT 100 (1992) ("The key in [coordination problem] situations is to discover something in the environment that will catch the attention of enough actors so that they can establish a common action, a standard of behavior that will eventually be emulated by the other members of the community."); Peter DeScioli & Bart J. Wilson, *The Territorial Foundations of Human Property*, 32 EVOLUTION & HUM. BEHAV. 297, 303 (2011) (finding support in experimental results for "an ownership convention" that includes willingness of residents "to fight harder than intruders").

69. *See* DONALD C. SHOUP, THE HIGH COST OF FREE PARKING 434 (2005).

70. *See, e.g.*, Graham Brown, *Claiming a Corner at Work: Measuring Employee Territoriality in Their Workspaces*, 29 J. ENVTL. PSYCHOL. 44, 44, 51 (2009); Rachel L. Morrison & Keith A. Macky, *The Demands and Resources Arising from Shared Office Spaces*, 60 APPLIED ERGONOMICS 103, 105 (2017).

71. *See* SHOUP, *supra* note 69, at 434-40.

72. *See* Arthur Ripstein, *Beyond the Harm Principle*, 34 PHIL. & PUB. AFF. 215, 218 (2006)

ones, these examples suggest that territorial attitudes can yield to new arrangements if those new arrangements are reached by certain paths.

6. Expression and Autonomy

The idea that property rights advance liberty interests is a familiar (if complex and contested) one.[73] The ability to set the terms for interactions over resources can advance autonomy and serve expressive values. Whether boundary exclusion is essential to these goals is less clear.[74] We might say that freedom of contract, for example, serves a similar purpose. Nonetheless, there is something significant about setting aside a bounded domain in which the owner can pursue her projects and, perhaps equally important, deny others the ability to pursue theirs over her objections—what Charles Reich calls "a small but sovereign island of [one's] own."[75]

The ability to deny others access to one's property can, of course, mean withholding inputs that are essential to their projects. Unlike

(presenting a thought experiment emphasizing the affront of even an entirely harmless intrusion—a man taking a nap in one's bed while one is out, using his own bed linens and leaving no trace); *see also* Larissa Katz, *Exclusion and Exclusivity in Property Law*, 58 U. TORONTO L.J. 275, 303 (2008) (discussing Ripstein's example). Temporarily unused bedrooms are now commonly made available through online interfaces such as Airbnb. One platform now contemplates people renting out their apartments by the minute to accommodate napping strangers. *See* RECHARGE, https://recharge.co/ [https://perma.cc/JM6H-A47Y].

73. On the relationship between property and liberty, see, for example, Charles A. Reich, *The New Property*, 73 YALE L.J. 733, 771-74 (1964). For a recent critique of the liberty justification for property rights protections on the grounds that it neglects the liberty of nonowners, see Timothy M. Mulvaney, *Property-as-Society*, 2018 WIS. L. REV. 911, 917-29; *see also* Cohen, *supra* note 41, at 227 (describing private property as "a distribution of freedom *and* unfreedom").

74. *See, e.g.*, Arthur Ripstein, *Property and Sovereignty: How to Tell the Difference*, 18 THEORETICAL INQUIRIES L. 243, 249-52 (2017) (questioning autonomy and use as predicates for the right to exclude).

75. Reich, *supra* note 73, at 774. While Reich takes an expansive view of what constitutes "property," his discussion of the connections between liberty and property expressly invokes the language of boundary exclusion. *See id.* at 771 (describing property as "draw[ing] a boundary" or "circle" within which an individual enjoys enhanced freedom and authority, and "creating zones within which the majority has to yield to the owner"); D. Benjamin Barros, *Property and Freedom*, 4 N.Y.U. J.L. & LIBERTY 36, 47 (2009) (describing Reich's vision of the relationship between property and liberty as "highly spatialized"); *see also* Ripstein, *supra* note 74, at 249 (articulating one version of property rights as follows: "Your property rights build a wall around you, providing you with a space within which others must not interfere").

an owner who is metering access (or leveraging monopoly power) to monetize resources, an owner who is using the exclusionary power expressively might withhold access to communicate disapproval of the excluded person or her goals,[76] to make a point in a longstanding interaction with that individual, or simply to spite the other party.[77] As this list of possibilities suggests, the normative valence of this power is ambiguous. Moreover, to the extent that liberty or autonomy is uniquely generated by an exclusion-based form of ownership, the distribution of that form of ownership also becomes normatively relevant.

II. IMPACTS AND INTERACTIONS

The attractions of the boundary exclusion model are evident. By securing temporal continuity and spatial contiguity, a boundary-ringed vision of property promises to clear space for investment and grant the owner the flexibility and autonomy to pursue her own projects over a time horizon of her choosing. But exclusion's efficacy in delivering these benefits depends on how social and economic conditions interact with particular resources. Of course, even the most exclusion-focused property theorists recognize that exclusion cannot stand alone, and view governance mechanisms as necessary supplements.[78] Yet we still must ask whether exclusion continues to serve as the best starting point. And on that score, there is some reason for doubt.

The increased interdependence among properties that has accompanied widespread urbanization raises questions about two

76. *See* James Y. Stern, *What Is the Right to Exclude and Why Does It Matter?*, *in* PROPERTY THEORY: LEGAL AND POLITICAL PERSPECTIVES 38, 66-67 (James Penner & Michael Otsuka eds., 2018) (giving the example of an owner who wants to deny a group of neo-Nazis access to his land for one of their rallies, not because he wishes to use the property himself, but because he does not want to let them use it).

77. *See generally* Lee Anne Fennell, *Owning Bad: Leverage and Spite in Property Law*, *in* CIVIL WRONGS AND JUSTICE IN PRIVATE LAW (Paul B. Miller & John Oberdiek eds., (forthcoming)), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3262836 [https://perma.cc/D4T7-ZHZG]; Jeffrey Harrison, *Spite: Legal and Social Implications*, 22 LEWIS & CLARK L. REV. 991 (2018); Larissa Katz, *Spite and Extortion: A Jurisdictional Principle of Abuse of Property Right*, 122 YALE L.J. 1444 (2013).

78. *See, e.g.*, Smith, *supra* note 14, at 1755-57 (noting advantages of governance when precision is required).

central features of an exclusion-centric model of real property: boundary defense as a proxy for resource defense, and the capacity of owners to monopolize unique resources. The first of these features suggests why boundary exclusion has become less useful, while the second explains why it has become more socially costly.

A. A Weakening Proxy

Exclusion promises to protect the owner's property-related endeavors from interference so that her projects can flourish and grow.[79] The owner may pick bad projects, and exclusion will not turn them into good ones nor save her from their negative consequences. But if she succeeds in building something valuable, exclusion will enable her to reap the rewards.[80] And indeed, exclusion works fairly well as a proxy for resource protection when we think of agrarian examples such as crops and herds. Here, physical intrusion spells interference, and a lack of intrusion corresponds to noninterference. The law supplements exclusion with governance measures such as nuisance law, but exclusion offers a good first line of defense.[81]

The correspondence between exclusion and noninterference is not inevitable, however. It depends on whether physical exclusion from boundaries is a good proxy for keeping out bad effects that would spoil an owner's investments and for protecting her ability to enjoy (or sell, or gift) the fruits of her labors. The proxy value of physical exclusion is not equally robust across all contexts, and it is subject to change as social and economic conditions evolve. With increasing urbanization, exclusion has become a less useful mechanism for safeguarding property's value.

Many of the largest modern threats to real property have nothing to do with boundary crossings. Instead, property values are today largely a function of proximity to other valuable uses and amenities.[82] Of course, exclusion is just one technology for managing access to resources; it is augmented by an array of land use controls,

79. *See supra* Part I.
80. *See* Demsetz, *supra* note 3, at 356.
81. *See, e.g.*, Smith, *supra* note 2, at 1709-10.
82. *See, e.g.*, Lee Anne Fennell, *Agglomerama*, 2014 BYU L. REV. 1373, 1383.

including zoning and private covenants.[83] However, these forms of governance typically operate in rather boundary-focused ways. Because these controls are principally about excluding uses, they rely on the same failing proxy, albeit at a larger scale. Through land use controls such as zoning and covenants, the circle of control expands outward to categorically exclude certain kinds of uses.[84] Just as boundary exclusion is overinclusive and underinclusive at the parcel level,[85] these controls are likely to overexclude uses that would be benign or even beneficial, fail to keep out uses that subtract value from the area, or both.

Although such forms of governance have evolved to address new challenges, they still mesh poorly with prevalent features of urban life.[86] The problem is not only that nearby uses could cause one's property values to fall, but also that they could keep property values from rising. While land use controls are set up to keep out incompatible uses, they are not well suited to maximize urban agglomeration benefits, which are of growing economic importance.[87] If one is interested in making the most of real property in an urban environment, creating positive synergies with one's neighbors is as important as keeping conflicting uses away.

A primary threat to land's value as a resource is, in short, a failure of complementarity. Boundary exclusion cannot effectively group together the elements that will generate the most value in combination. Nor can land use controls, at least as currently constituted. Existing land use controls do try to reach out beyond the boundaries of the individual parcel to secure inputs that are complementary to the owner's enterprises. Suppose that a certain degree of quiet and serenity beyond the edges of one's home is strongly

83. *See, e.g.*, FENNELL, *supra* note 14, at 3.

84. *See, e.g.*, *id.* at 23-24, 55-56.

85. *See, e.g.*, Smith, *supra* note 22, at 982-83.

86. *See, e.g.*, Fennell, *supra* note 82, at 1406-07.

87. For legal scholarship addressing agglomeration benefits, see, for example, *id.*; Gideon Parchomovsky & Peter Siegelman, *Cities, Property, and Positive Externalities*, 54 WM. & MARY L. REV. 211 (2012); David Schleicher, *The City as a Law and Economic Subject*, 2010 U. ILL. L. REV. 1507 (2010). A large body of economic literature has developed on this topic. An early influence was ALFRED MARSHALL, PRINCIPLES OF ECONOMICS IV.X.7-13 § 3 (8th ed. 1920). For a taxonomy and analysis of agglomeration benefits, see generally Gilles Duranton & Diego Puga, *Micro-Foundations of Urban Agglomeration Economies*, *in* 4 HANDBOOK OF REGIONAL AND URBAN ECONOMICS 2063 (J. Vernon Henderson & Jacques-François Thisse eds., 2004).

complementary to the enterprise of "residential living." An owner could secure that complement by buying a large lot with plenty of buffer space around the home, or she could secure it through the operation of a land use control that limits what her neighbors can do and thereby effectively forces them to provide that input (typically in exchange for her reciprocal restraint). But what if the input that she really needs to enjoy her home is not peace and quiet but higher density development in the area or successful retail stores nearby that would enliven the urban experience? Land use controls that focus on keeping things out cannot secure this kind of input.

These points do not suggest that boundary exclusion is unnecessary, only that it is insufficient to deliver what property owners want. In real property contexts, exclusion at the parcel level serves a variety of significant purposes, including protecting privacy and seclusion, securing personal property that is stored on the premises, and offering a staging ground for ongoing projects—whether a new invention, an interrupted chess game, or a craft project. Yet some of these functions require less continuity and contiguity than a boundary exclusion model would suggest. For example, privacy and peace can be supplied outside of the home on an à la carte basis through sleeping pods or hotels (which are now even available by the minute).[88] Storage facilities and shared "makerspaces" can offer a place to hold one's goods and one's works in progress.[89] Homes and offices can be made more portable and flexible through new interfaces that supply on-demand residential and workplace services.[90]

Personal property too is undergoing change. While the dominant model for many forms of personal property still involves keeping others away, some items such as computers are becoming more or less interchangeable portals for accessing content that resides elsewhere. Owning the same machine over time becomes less important than having the right kinds of interactivity with software, apps, and

88. *See, e.g.*, RECHARGE, *supra* note 72.

89. *See, e.g.*, *What is a Makerspace?*, MAKERSPACES, https://www.makerspaces.com/what-is-a-makerspace/ [https://perma.cc/Q26X-KBXL].

90. *See, e.g.*, *Workspace,* WEWORK, https://www.wework.com/workspace [https://perma.cc/4UPB-JUC7] (offering short-term private and shared workspaces); WELIVE, https://www.welive.com [https://perma.cc/97NQ-PZWG] (offering furnished housing for shorter and longer term use).

other users.[91] Threats to value now come more from obsolescence and incompatibilities than from physical intrusions. These threats do not make exclusion unimportant, but they do make it incomplete. Whether exclusion will remain relevant as other threats to asset value rise is an open question. The techniques that are developed to address other losses in value could also change the modality of resource access from one that is premised on exclusion. Thus, hardware tracking mechanisms and rapid replacement might be supplied along with 24/7 repairs and continual updates, supplanting the need for owner vigilance.

Specifics vary from context to context, but the trend is a general one: the proxy value of exclusion is weakening. Boundary exclusion has become less effective in safeguarding and maximizing asset value. It has also become a more socially costly strategy owing to a feature inherent in its design: the monopoly power that it grants to owners. The next Section explains.

B. More Costly Monopolies

Ownership backed by exclusion keeps nonowners from accessing resources without the owner's consent, even when those resources represent crucial inputs into socially valuable projects.[92] This implication of exclusion becomes significant when the owner holds monopoly power over the input in question. Complementarities between separately owned properties can go unrealized due to the veto power each owner enjoys over their aggregation.

Consider land holdings. Because every piece of real estate occupies a unique spatial position, owners are always monopolists over the particular locations that they own.[93] But this nominal monopoly need not translate into any meaningful market power. Often sites are fungible and many good substitutes exist.[94] The

91. *See, e.g.*, Abraham Bell & Gideon Parchomovsky, *Property Lost in Translation*, 80 U. CHI. L. REV. 515, 548-51 (2013) (discussing network effects that depend on interoperability).

92. *See, e.g.*, Thomas W. Merrill, *The Economics of Public Use*, 72 CORNELL L. REV. 61, 75-77 (1986) (discussing owners' monopoly power in land assembly and other "thin market" contexts).

93. *See* Richard A. Epstein, *Justified Monopolies: Regulating Pharmaceuticals and Telecommunications*, 56 CASE W. RES. L. REV. 103, 107 (2005).

94. *See, e.g.*, *id.* at 108-09 (explaining how spatial monopolies over plots of land are

spatial uniqueness of land becomes relevant when it is an essential input into a larger project, such as the assembly of land for a highway or redevelopment project.[95] It also becomes significant when an issue arises between neighbors about impacts or access specific to their positions relative to each other, since they have no choice but to deal with each other.[96]

Personal property can also, if less commonly, confer monopoly power. Most goods are fungible and readily available on open markets. Of course there are some unique goods—custom cars, hand-designed jewelry, artwork, and the like—for which close substitutes do not exist. More commonly, goods that are initially fungible become unique to a particular owner because of associations and experiences that infuse the good with subjective value. This uniqueness confers relevant monopoly power only if the high valuer is not also the current owner—if, say, one person's cherished heirloom has somehow fallen into the hands of another.[97] Monopoly leverage also becomes meaningful when a particular item serves as a crucial input into a larger assembly, such as a collection of artwork representing a particular period, school, style, or phase of an artist's career.[98]

Situations in which owners of unique goods wield significant monopoly power can be recast in terms of complementarities.

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constrained by competition).

95. *See, e.g.*, Merrill, *supra* note 92, at 75.

96. *See, e.g.*, IAN AYRES, OPTIONAL LAW 19-20 (2005).

97. Put another way, personal property that an owner has customized or has become attached to through long possession and use is unlikely to represent a crucial input into the projects of other people. For example, a wedding ring may be valued as a unique and irreplaceable good by the person whose relationship it represents, but almost anyone else would view it as fungible with physically similar rings. *See* Margaret Jane Radin, *Property and Personhood*, 34 STAN. L. REV. 957, 959-60 (1982) (using the example of wedding rings to distinguish "personal property" from "fungible property").

98. *See* Lon L. Fuller, *The Forms and Limits of Adjudication*, 92 HARV. L. REV. 353, 394 (1978) (describing as "polycentric" the task of dividing a set of paintings between two art museums because "the disposition of any single painting has implications for the proper disposition of every other painting"). Related issues arise regarding the siting and curation of items of cultural significance, which can implicate (among other concerns) competing complementarities. *See, e.g.*, Jim Leitzel, The Parthenon Marbles in the British Museum 11-12 (July 2, 2016) (unpublished manuscript), https://ssrn.com/abstract=2803930 [https://perma.cc/9AGZ-2983] (discussing the advantages of viewing the Parthenon Marbles in proximity to the Parthenon versus in proximity to other cultural treasures in the British Museum).

Assembly surplus for land, like anticommons analysis more generally, is premised on a set of entitlements gaining value when put together.[99] The potential leverage of any one party in these contexts depends on the degree of complementarity among the elements to be assembled—whether plots of land, pieces of artwork, or slices of radio spectra.[100] Complementarity also features heavily in disputes between neighbors that present bilateral monopoly dynamics. For example, a landlocked parcel and the access rights necessary to reach it are perfect complements—each is useless without the other. Likewise, the portion of a wall that was accidentally built over the owner's property line complements the rest of that wall and the structure that it supports. Pieces of real and personal property can also be complementary to the special skills, interests, or sentiments of particular individuals. For example, a brickmaker's skill complements land that contains brick-making clay, and a descendant's personal history and memories make a family heirloom more valuable in her hands than in those of a stranger.

Complementarity is important to emphasize for two reasons. First, the degree to which entitlements are complementary to each other is contingent on prevailing social and economic conditions. This point is tightly connected to the idea of efficient scale, which can vary over time depending on the types of resources that are most economically important and on the societal arrangements surrounding those resources. New economies of scale and diseconomies of scale require property holdings to be reconfigured over time.[101] The difficulty of a given reconfiguration depends not only on who holds the necessary entitlements, but also on the constraints—on contiguity, shape, and location (both absolute and relative to other land uses)—that define the relevant complementarities.[102] Both the

99. *See, e.g.*, Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621, 640 (1998) (discussing difficulties in assembling rights "into usable bundles").

100. *See generally* Scott Duke Kominers & E. Glen Weyl, *Holdout in the Assembly of Complements: A Problem for Market Design*, 102 AM. ECON. REV. 360 (2012).

101. On problems of optimal scale, see, for example, Lee Anne Fennell, *Commons, Anticommons, Semicommons*, *in* RESEARCH HANDBOOK ON THE ECONOMICS OF PROPERTY LAW 35, 48 (Kenneth Ayotte & Henry E. Smith eds., 2011); Abraham Bell & Gideon Parchomovsky, *Reconfiguring Property in Three Dimensions*, 75 U. CHI. L. REV. 1015, 1024 (2008); and Demsetz, *supra* note 3, at 357-58.

102. *See* Kominers & Weyl, *supra* note 100, at 362-63 & nn.13-14 (discussing variations in

need for reconfiguration and the constraints upon it have increased with greater urbanization.[103] More value can be gained by putting together complementary land uses, but doing so becomes harder to the extent that the components are already separately owned. The monopoly power that owners hold has accordingly become more economically significant, which increases the costs associated with the exclusion strategy and the veto power it gives owners.

A second reason to emphasize complementarity relates to the nature of the costs imposed by monopolistic owners of unique resources. In textbook monopoly situations, a sole supplier limits output of a good and raises its price, generating a deadweight loss.[104] When a property owner holds monopoly power over a unique good or entitlement that is essential to the value or usefulness of someone else's projects or holdings, there is only one unit of the good in the picture; it will or will not be transferred at some price. In this context, losses to efficiency take two forms: (1) a loss in allocative efficiency if a transfer does not take place that should take place; and (2) a loss of time, money, and effort associated with wrangling over the division of surplus in the course of determining whether the deal will or will not occur.[105]

The magnitude of these costs depends on how much more valuable the assembled set of entitlements is relative to the sum of the individual pieces, and on other features of the situation that determine the bargaining costs and dynamics. Given the modern significance of urban agglomerations to the value of real property, it is a reasonable surmise that the gap in value between assembled and unassembled entitlements is growing.[106] And while technology has greatly reduced the costs of carrying out transactions in

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assembly problems and noting the relevance of contiguity requirements).

103. *See, e.g.*, Lee Anne Fennell, *Fee Simple Obsolete*, 91 N.Y.U. L. REV. 1457, 1461-62 (2016).

104. *See, e.g.*, AUSTAN GOOLSBEE ET AL., MICROECONOMICS 331, 358 (2d ed., 2016).

105. *See, e.g.*, A. Mitchell Polinsky, *Resolving Nuisance Disputes: The Simple Economics of Injunctive and Damage Remedies*, 32 STAN. L. REV. 1075, 1092 & n.37 (1980).

106. Recent empirical work has examined the premiums paid for parcels that were destined for assembly, in an effort to identify land use frictions. *See* Leah Brooks & Byron Lutz, *From Today's City to Tomorrow's City: An Empirical Investigation of Urban Land Assembly*, 8 AM. ECON. J.: ECON. POL'Y 69, 71-72 (2016); Chris Cunningham, *Estimating the Holdout Problem in Land Assembly* 1-2 (Fed. Res. Bank of Atlanta, Working Paper No. 2013-19, 2013), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2579904 [https://perma.cc/F525-S73K].

competitive settings where prices are not subject to haggling, the problem of how to divide the surplus in bilateral monopoly situations continues to loom large.[107] However, any source of substitution greatly eases bargaining dynamics by introducing competition and loosening the degree of complementarity among particular entitlements.[108] For example, if it is only necessary to assemble eight out of ten parcels in a given area, no owner can act as a holdout, and any owner who tries may find herself out of a bargain that would have made her better off. Although it is an empirical question, the spatial sensitivity of many would-be assemblies in urban areas has likely reduced the availability of substitutes and made complementarities increasingly strict.

The basic claim, then, is that as complementarities between separately owned elements tighten, the capacity of each owner to monopolize an element of a complementary set grows, increasing social costs. There are many ways that these costs might be addressed. Most obviously, the property rule protection that gives owners a veto power could be replaced with a liability rule, as already occurs with eminent domain.[109] Eric Posner and Glen Weyl contemplate a massive expansion of this move, coupled with self-assessed valuation (and associated taxation) to address the monopoly problems baked into current property arrangements.[110] Many other proposals have attempted to surmount holdout problems through mechanisms that alter owners' property rights.[111] But all

107. For related distinctions among types of transaction costs, see, for example, Lee Anne Fennell, *The Problem of Resource Access*, 126 HARV. L. REV. 1472, 1485-87, 1510-15 (2013); Richard N. Langlois, *The Secret Life of Mundane Transaction Costs*, 27 ORG. STUD. 1389, 1389-90 (2006); and Carol M. Rose, *The Shadow of* The Cathedral, 106 YALE L.J. 2175, 2184 (1997).

108. *See, e.g.*, Kominers & Weyl, *supra* note 100, at 362-63; Abel M. Winn & Matthew W. McCarter, *Who's Holding Out? An Experimental Study of the Benefits and Burdens of Eminent Domain*, 105 J. URB. ECON. 176, 184-85 (2018).

109. *See* Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral,* 85 HARV. L. REV. 1089, 1092 (1972) (defining and distinguishing property rules and liability rules).

110. *See* ERIC A. POSNER & E. GLEN WEYL, RADICAL MARKETS: UPROOTING CAPITALISM AND DEMOCRACY FOR A JUST SOCIETY 30-79 (2018). *See generally* Eric A. Posner & E. Glen Weyl, *Property Is Only Another Name for Monopoly*, 9 J. LEGAL ANALYSIS 51 (2017).

111. *See, e.g.*, Michael Heller & Rick Hills, *Land Assembly Districts,* 121 HARV. L. REV. 1465, 1488-97 (2008); Amnon Lehavi & Amir N. Licht, *Eminent Domain, Inc.*, 107 COLUM. L. REV. 1704, 1731-48 (2007); Abraham Bell & Gideon Parchomovsky, *Taking Compensation Private*, 59 STAN. L. REV. 871, 890-900 (2007).

such solutions must confront another important fact about modern property rights: there is frequently more than one complementarity in the picture.

We see competing complementarities play out in eminent domain when a close-knit neighborhood is broken up through displacement in order to redevelop an area or put in a highway.[112] We see temporal complementarities disrupted when longtime residents are forced to move from homes and communities to which they have developed strong attachments.[113] And partial takings can break up complementarities within property holdings, making the balance dramatically less valuable.[114] Boundary exclusion supports the maintenance of many such complementarities by allowing the owner to deflect attempted involuntary acquisitions. Yet at the same time, other complementary bundles are impeded or left vulnerable by an exclusion-based model.

One might suggest at this point that the problem is not with the boundary exclusion model as such, but rather with where the boundary lines are drawn. Perhaps some urban land holdings are uneconomically small, for example, and should simply be made larger.[115] A similar intuition crops up in work on the theory of the firm, where ownership of complementary assets prevents hold-up problems from developing.[116] If broken complementarities produce costly monopolies, why not just expand the circle of ownership? Consolidating larger blocks of ownership in fewer hands is indeed a potential strategy for managing complementarities,[117] but it

112. The costs of severing communities—both internally and from nearby amenities and services—is examined in, for example, José M. Grisolía et al., *Burying the Highway: The Social Valuation of Community Severance and Amenity*, 9 INT'L J. SUSTAINABLE TRANSP. 298 (2015).

113. *See, e.g.*, Lee Anne Fennell, *Lumpy Property*, 160 U. PA. L. REV. 1955, 1971-72 (2012).

114. *See* Abraham Bell & Gideon Parchomovsky, *Partial Takings*, 117 COLUM. L. REV. 2043, 2045, 2062-66 (2017).

115. *Cf.* TERRY L. ANDERSON & PETER J. HILL, THE *NOT SO* WILD, WILD WEST 170, 231 n.33 (2004) (observing that certain Homestead Act claims were of insufficient size, given the land's characteristics).

116. *See* Sanford J. Grossman & Oliver D. Hart, *The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration*, 94 J. POL. ECON. 691 (1986); Oliver Hart & John Moore, *Property Rights and the Nature of the Firm*, 98 J. POL. ECON. 1119 (1990).

117. *See, e.g.*, Parchomovsky & Siegelman, *supra* note 87, at 247-57.

introduces internal management challenges as well as questions about overly concentrated ownership.[118] And it may be unnecessary.

The complementarities to which exclusion's monopoly power poses a threat are ones that *could* be achieved through unified ownership of all the pieces. But complementary parts can work together to produce value even if separately owned, so long as coordination is possible.[119] Moreover, sometimes the relevant complementarity is not between entire properties but certain pieces of each one. Commercial air travel through what owners might have thought were their own personal columns of air is the classic example.[120] A boundary exclusion model lends itself to thinking about ownership and nonownership in whole-property units. Yet it has always been possible to break up unified blocks of ownership into separately owned components, both in time and space, and it has become increasingly worthwhile to do so. This brings us to the flip side of boundary exclusion's waning relevance: the diminishing complementarity found *within* pieces of real and personal property.

III. FROM LUMPS TO SLICES

Exclusion's value as a strategy depends on the capacity of boundaries to group together elements that, in combination, generate value. The discussion in Part II emphasized ways that boundaries fail to capture extraparcel impacts and interactions. But can we at least say that, however underinclusive they may be, boundaries do manage to mark out chunks of ownership that are internally complementary, both spatially and temporally? Not necessarily. Although this remains true for some resources, for others enduring lumps of ownership are giving way to slices of access on demand.

Alternatives to full-strength ownership are emerging: new modes of access do away with the continuity in possession that accompanies traditional boundary exclusion, and can also alter the physical

118. *See, e.g.*, Coase, *supra* note 16, at 394-95 (noting the costs of carrying out transactions within a firm); Thomas W. Merrill, *The Property Strategy*, 160 U. PA. L. REV. 2061, 2094 (2012) (noting the disadvantages of concentrated ownership).

119. *See* Lloyd Cohen, *Holdouts and Free Riders*, 20 J. LEGAL STUD. 351, 351-53 (1991).

120. For a thorough history of the overflight issue and its resolution, see generally STUART BANNER, WHO OWNS THE SKY? THE STRUGGLE TO CONTROL AIRSPACE FROM THE WRIGHT BROTHERS ON (2008).

scope of ownership. For example, it becomes less necessary to choose a home with space for infrequent houseguests if it is easy to find spare bedrooms right in the neighborhood on an as-needed basis. The costs of small-scale transactions over slices of access have fallen dramatically, making outright ownership of many goods unnecessary. At the same time, the burdens of constant possession have grown as space has become more scarce and as the opportunity costs associated with untapped excess capacity have increased. Put another way, the boundary exclusion model assumes that there are temporal economies of scale, with longer periods of possession producing disproportionately greater value. But diseconomies of scale are now emerging in the dimension of time: shorter, scattered stints of possession often generate more value in total than persistent possession of a thing by a single owner.

To be clear, this shift is not uniformly occurring in all domains—nor should it. The discussion below will consider some limits on the disaggregation of the ownership experience. But it is important to consider this trend alongside the greater interdependence among holdings discussed in the previous Part. Doing so shows us that property's exclusion-based model is under pressure from two directions, not just one. At the same time as interdependence among properties is growing, within-property interdependence is breaking down in interesting ways. That these trends have appeared together is not a coincidence. The same processes of urbanization that generate interdependencies among properties also facilitate the thick markets that can support new ways of slicing up interests in property.[121]

A. Ownership and Overbreadth

A boundary exclusion strategy, as I emphasized at the outset, is prophylactic. By parceling out rights in lumpy, thing-shaped servings, ownership builds in overbreadth.[122] Physical contiguity and temporal continuity together secure blocks of potential use that are greater than a typical owner can personally consume. Likewise,

121. *See* Davidson & Infranca, *supra* note 4, at 220.

122. On the lumpiness of property rights, see, for example, Fennell, *supra* note 113, at 1962-64; Smith, *supra* note 2, at 1693.

the investments the owner undertakes on or with her property do not generally depend on a strong right to exclude others from every square inch, around the clock, every day of the year. In short, boundary-focused property characteristically gives people more rights than they need or can use.

The result is excess capacity: unused benefit streams sequestered within owned resources. This underutilization does not necessarily signal inefficiency. Policing boundaries might be so much cheaper than making moment-by-moment judgments about claims over resources that it makes no sense to worry about excess capacity when defining property rights.[123] Moreover, excess capacity only persists to the extent that the owner does not transfer it to others through market transactions or sharing arrangements. A boundary exclusion model puts the owner in charge of those transactions and leaves it up to her to decide whether they are worth carrying out, or whether it is instead more advantageous to simply tolerate the excess capacity. There are costs and benefits on both sides of the ledger.

Although slack capacity sounds wasteful, it carries considerable benefits for owners, including the option of using the property whenever the owner wishes.[124] A toaster or washing machine may go unused for days at a time, but it stands ready whenever the owner wishes to make use of it. Similarly, unneeded capacity can be spontaneously gifted. For example, a spare bedroom can accommodate an unexpected out-of-town guest or family member in need of a place to stay. Not making deals over every fragment of unused property preserves flexibility even as it avoids the costs of transacting.

Unused capacity carries downsides, however. People cannot acquire assets at all if full-time ownership of the thing is too expensive and it is too cumbersome or costly to set up a sharing or fractional

123. *See* Demsetz, *supra* note 3, at 350-52 (observing that the costs of delineating and enforcing property rights will not always be worth incurring); Ellickson, *supra* note 16, at 1327-28 ("Monitoring boundary crossings is easier than monitoring the behavior of persons situated inside boundaries.").

124. I thank Scott Baker for emphasizing this dimension of value. For a discussion of option value in the context of collective goods, see Burton A. Weisbrod, *Collective-Consumption Services of Individual-Consumption Goods*, 78 Q.J. ECON. 471, 472-73 (1964). Like a public park that offers the option of use to many who never make actual use of it, a privately owned good that is continually possessed stands available for use by all temporal selves, no matter how many or few of them actually exercise the option to use it.

ownership arrangement.[125] If an owner's demand for a resource fluctuates over time, she must choose between episodic inadequacy or persistent surplus. For example, a car that is used for daily commuting and occasional family outings might be optimally sized for either the former or the latter, or for something in between, with concomitant shortages or excesses of space. As this example suggests, the carrying costs of excess capacity, such as extra fuel consumption, can be significant. Relatedly, owning something all the time means having to store it whenever it is not in use.

Some of these costs and benefits are changing as a function of social and technological developments. Most obviously, technology is offering new platforms for tapping into excess capacity through business models such as Airbnb and Uber. Urbanization helps sustain thick markets in which these models can thrive,[126] even as it sharpens some of the costs of constant possession by making space more expensive to consume. Technology is thus offering new ways to tap into—and relieve oneself of—excess capacity. Yet it is doing so from a starting point of boundary exclusion. This trend might make us question whether excess capacity should be classed as a *problem* with boundary exclusion, rather than merely an opportunity that it presents.

In fact, we are likely observing a transitional phase in resource use. As it becomes increasingly attractive for people to access certain kinds of resources on demand, full-strength ownership of those assets will presumably become less popular.[127] We would expect to see ownership concentrated among those who are especially well-suited to manage assets, and who are in a good position to bring those goods to market in readily accessible slices (or to form contracts with intermediaries who will do so on their behalf).[128] As this process unfolds, ordinary consumers may own fewer assets that

125. *See, e.g.*, PHILIP H. WICKSTEED, THE COMMON SENSE OF POLITICAL ECONOMY 99-100, 108-09 (1910) (presenting examples illustrating this point).

126. *See* Davidson & Infranca, *supra* note 4, at 219-21.

127. *See, e.g.*, Orly Lobel, *The Law of the Platform*, 101 MINN. L. REV. 87, 108-09 (2016).

128. This conclusion depends on some parties having lower costs than others to bring newly subdivided goods to market, whether due to economies of scale, expertise, or other factors. *See* John J. Horton & Richard J. Zeckhauser, *Owning, Using and Renting: Some Simple Economics of the "Sharing Economy"* 19-20 (Nat'l Bureau of Econ. Res., Working Paper No. 22029, 2016).

come with excess capacity, and thus less frequently wind up with leftovers to share.[129] Although platform economies are making entrepreneurs and hoteliers out of millions of regular folks, only those who are really good at the job of managing transactions are likely to keep at it for long, once they have the option of simply accessing their own on-demand streams of resources.

We are moving into a new *slicing economy*—a world in which a great deal of innovation surrounds the process of dividing up products and services to form "right-sized" benefit streams.[130] Just as it is not practical for most people to own their own cows to secure access to milk, it increasingly will not make sense for most people to own the means of producing transportation services—or perhaps in the foreseeable future, the means of producing residential services. To the extent that new models represent better ways of making use of existing capacity, the potential for significant gains exists. Value that is now trapped inside owned resources can be tapped more affordably on an as-needed basis.

To be sure, exclusion will continue to lie behind these arrangements. *Someone* has to own the loaf (and be able to keep others from using it), even if most people are just buying slices as they need them. But this "pre-slicing" exclusion will have different implications than boundary exclusion as we know it today. It will not be designed to deliver use value to possessors, but rather exchange value to those in charge of slicing up access.[131] Exclusion will, in

129. In other words, consumers might purchase fewer goods of "mid-grained" granularity, which come with shareable excess capacity. *See* Yochai Benkler, *Sharing Nicely: On Shareable Goods and the Emergence of Sharing as a Modality of Economic Production,* 114 YALE L.J. 273, 276-77, 297 (2004) (presenting a taxonomy of granularity). On-demand access in which consumers buy just what they need, when they need it, involves finer granularity and does not leave extra capacity to sell or give away. *See, e.g.*, Eric E. Johnson, *The Economics and Sociality of Sharing Intellectual Property Rights*, 94 B.U. L. REV. 1935, 1952 (2014) (observing that "[w]ith small-grained goods, you tend to buy only as much as you need, so you are unlikely to have shareable leftovers").

130. ROBIN CHASE, PEERS INC 44 (2015) (observing that platforms capable of "slicing" and "aggregating" can "create a right-sized asset"); *see also* UMAIR HAQUE, THE NEW CAPITALIST MANIFESTO 128-31, 137 (2011) (discussing how new business models engage in "micro-chunking"—making products and services available in smaller increments).

131. The distinction between "use-value" and "exchange value" appears in KARL MARX, CAPITAL 2-8 (Frederick Engels ed., Samuel Moore & Edward Aveling trans., George Allen & Unwin Ltd. 4th ed. 1971) (1889). For use of this distinction in property theory, see, for example, JOHN R. LOGAN & HARVEY L. MOLOTCH, URBAN FORTUNES: THE POLITICAL ECONOMY OF PLACE 1-2 (20th anniversary ed. 2007); and Eduardo M. Peñalver, *Land Virtues*, 94 CORNELL

other words, become a raw material for production rather than an attribute for direct consumption by end users. Any excess capacity that remains will be regarded not as foundational to the architecture of property, but rather as a form of industrial waste that exists only because the technology is not yet good enough to wring value out of every scrap.

This point should not be overstated. Asset ownership and associated exclusion will probably always make sense for certain kinds of goods. Moreover, excess capacity offers some unremarked benefits, including the flexibility to meet unexpected needs. Well-developed on-demand models can restore that flexibility in a different form: a person who cannot loan a car to a friend can call a ridesharing service for her, for example. Difficulties may arise, however, in the transitional period when people have ceded the flexibility that is bundled with traditional asset ownership without fully built-out alternative sources of flexibility. And there are many categories of assets that at least some people will wish to continue owning outright, for a variety of reasons, long after on-demand alternatives become widespread and seamless. But exclusion's relevance to the everyday experience of resource use is likely to be waning.

B. Pinpointing Gains, Recognizing Costs

Although we are seeing a flurry of experimentation in various platform-enabled access arrangements, not all of them will prove viable over time. Without question, the costs of carrying out small-scale transactions have dropped dramatically, which opens up the possibility of resource arrangements that were previously too expensive to contemplate. But before we reach the question of whether these "bringing-to-market costs"[132] are worth bearing, a more foundational question must be addressed: whether the potential gains of the new resource arrangement exceed the costs of jettisoning the continuity and contiguity of full ownership. Sometimes this will

L. REV. 821, 834-36 (2009).

132. Horton & Zeckhauser, *supra* note 128, at 3-4 (using the term "bringing-to-market costs" to encompass labor, transaction, and other costs associated with peer-to-peer rental of excess capacity).

simply not be the case, even for assets that might seem underutilized.

1. Efficiently Underused?

Commentators often cite the proportion of time that a given asset sits idle as prima facie evidence, if not conclusive proof, that it is being wastefully employed. For example, Jeremy Rifkin laments that "[t]he average vehicle in the United States is idle 92 percent of the time, making it an extremely inefficient fixed asset."[133] Yet "percent of time idle" is an utterly unreliable metric for identifying opportunities for gains from resource reconfiguration. This is obvious in the case of rarely used but contingently essential items such as fire extinguishers, but the critique applies as well to a variety of more mundane items.

Think of a toothbrush. A person who brushes her teeth for two minutes twice per day will leave her toothbrush sitting idle for about 23.93 hours out of each 24-hour period, or about 99.7 percent of the time. Suppose there were a sharing service capable of whisking a toothbrush from person to person by drone, instantaneously sterilizing it en route, so that a given toothbrush could be used continuously throughout each 24-hour period. Would this herald in a brave new era of toothbrushing hyperefficiency? Of course not. Toothbrushes wear out as a function of brushing teeth. So a toothbrush shared among dozens of people each day will wear out dozens of times faster, requiring roughly the same number of toothbrushes to be used population-wide over time as before, only far less conveniently. Even if setting up a sharing service were costless, it would be worse than pointless.[134]

This conclusion turns on some key facts about toothbrushes, including the fact that use, rather than the mere passage of time, wears them out. Toothbrushes are easy to store and transport, do not require a large outlay of cash up front, and are relatively immune to design changes that would render them obsolete or

133. JEREMY RIFKIN, THE ZERO MARGINAL COST SOCIETY: THE INTERNET OF THINGS, THE COLLABORATIVE COMMONS, AND THE ECLIPSE OF CAPITALISM 228 (2014).

134. Horton and Zeckhauser note that the shortness of use sessions for toothbrushes cut against their suitability as a rental item. *See* Horton & Zeckhauser, *supra* note 128, at 22.

unstylish during their normal life cycle. Moreover, much of their value comes from having the option to use them whenever one wishes (that is, choosing *which* four minutes one will spend brushing one's teeth). Continuity of ownership might not be strictly necessary to deliver the benefits of the toothbrush, but it is hard to imagine any sharing or rental system that could dominate asset ownership for such an item.[135]

Not everything is as good a candidate for outright ownership as a toothbrush, but it remains important to specify the ways in which a more thinly sliced approach to resource access could generate savings. Consider another example commentators have focused on: the lawnmower.[136] Lawnmowers, like cars and toothbrushes, spend most of their time just sitting around. Could a group of neighbors enjoy gains by sharing one? The answer depends in part on what causes lawnmowers to wear out. Is it the number of lawn-acres cut, the passage of time, the effects of sitting idle (rust, clogged fuel lines), technical obsolescence, or some of each? If grass cutting alone is what wears out lawnmowers, then the situation looks a bit like the toothbrush case. On this assumption, ten households sharing one lawnmower will burn through the same number of machines in the same period of time as if they owned their own machines—assuming, perhaps counterfactually, that the inconvenience of the sharing arrangement does not cause them to curtail their mowing practices.

However, the sharing arrangement could be useful in other ways. For one thing, it could economize on storage if space is at a premium, since the machines would be owned sequentially rather than concurrently. For another, the households could take advantage of technological advancements as their shared use shortens the life cycle of each machine. Having all households pitch in on one machine at a time can also address liquidity shortfalls and serve as a pocketbook-friendly alternative to financing the purchase. Perhaps the neighbors would enjoy intangible benefits of thrifty solidarity or

135. *See* Cohen, *supra* note 41, at 236 ("There is little sense in one hundred people sharing control over one hundred toothbrushes.").

136. *See, e.g.*, Shelly Kreiczer-Levy, *Consumption Property in the Sharing Economy*, 43 PEPP. L. REV. 61, 83 (2015) (quoting a video from NeighborGoods that asks "does everyone on your block need to own a lawnmower?").

sociability. At the same time, correlated demand for the machine could be a problem—everyone is likely to want to mow the yard on weekend days with good weather. For similar reasons, snow shovel sharing might be a nonstarter. The option value of constant availability that featured prominently in the toothbrush case may reemerge here.

For each of the many goods and services that seem poised to move to on-demand access, we must ask a similar set of questions. In some cases, continuity of access offers real benefits, while in others the stream of benefits can be just as easily provided through an on-demand model, without outright asset ownership. The next Sections elaborate on two implications of making ownership less continuous: tradeoffs between familiarity and variety, and the possibility that a less continuous ownership experience will enable people to offload costs onto others.

2. Familiarity and Variety

Property, in exclusion mode, bundles together possession over lengthy, unbroken stretches of time. The implicit assumption is that there are temporal economies of scale, so that ownership across a long span of time generates more value than would the sum of disaggregated time slices of possession. Even if property sits idle much of the time, it may still be more valuable in one person's hands than if it were constantly passed around from user to user.

One reason is the familiarity and experience that an owner gains with a particular possession. Someone who rides the same bicycle or operates the same coffeemaker over a span of time learns its special quirks, finds ways to overcome its shortfalls, and can adjust all of its settings to fit her preferences with no need for readjustment. The owner interacts with the thing and adapts it to suit her particular needs and purposes, perhaps even adorning it with personal touches. Sentimental attachments may form as well, though this need not occur in order for temporal economies of scale to exist—it is enough that there are gains from having the same object day to day, even if those gains are practical rather than emotional.

These points carry special force when it comes to real property—especially residential real property. An individual or household gains experience not only with the physical structure itself, but also with its location relative to other amenities and services in the vicinity. A life is built up around the home, and to switch homes would disrupt far more than one's interactions with the residence itself. Some of the reasons may be quite personal in nature, but many are simply practical: knowing where to get the best deals on groceries, perfecting the commuting route, or finding one's regular coffee shops, fitness classes, and dry cleaners. As these examples suggest, technology now massively speeds up the learning process along many of these dimensions, but some forms of familiarity come only with experience.

Diseconomies of temporal scale—situations in which more total value can be wrung from a resource if it is subdivided over time among users—are also fully possible. Similarly, there can be diseconomies of physical scale, so that a tract of land renders more value if subdivided into multiple parcels rather than maintained intact. Both temporal and spatial diseconomies of scale have been largely ignored by property scholars, presumably because of the way property ownership is typically structured. If someone owns a larger parcel of land than she needs, she simply sells part of it. Likewise, she does not have to hold onto property for longer than serves her needs; she can lease or sell it at any time. The advent of platforms that make subdividing in time and space increasingly seamless would seem to further reduce concerns about these diseconomies. Still, regulatory barriers can block efforts to divide interests in time and space, making these diseconomies relevant to policy. Identifying the sources of these diseconomies also becomes important analytically as we consider new forms of ownership.

An asset held over time can become obsolete or boring, or it can fall out of alignment (temporarily or permanently) with one's needs. Conversely, slicing up goods in time can enable people to experience a greater variety of goods.[137] Many acquisitions, whether of cars, houses, or winter coats, require the purchaser to consider the full span of conditions under which use will occur and assess how well

137. *See* Horton & Zeckhauser, *supra* note 128, at 32 (noting the ability to diversify across types of blenders or cars with shorter-term use arrangements).

particular features will accommodate those fluctuations. The coat that is warm enough for the coldest days of the year may be unsuitable on other days, and the vehicle that works well for carpooling kids to soccer practice or hauling lumber home for a renovation project may lack the sportiness and fuel efficiency desired for other uses. The resulting compromises are a function of the durability and temporal bundling of the product. If cars and coats were purchased by the week or by the day rather than at multiyear intervals, people would be able to experience a larger variety of these goods.

Whether variety adds or subtracts value, however, depends on the relative costs of foregone familiarity. For goods with a nontrivial learning curve, like a new car, familiarity may win out, at least for some users.[138] But this may be changing. We can imagine portable profiles that auto-adjust the seats and mirrors and instantly reconfigure touchscreen-based controls to match our preferred arrangement. Alternatively, providers of short-term use rights might tend toward a limited menu of standard models—a sort of *numerus clausus* of goods—to ease transitions. If tastes for familiarity were strong enough, thinner slicing could mean less rather than more variety. What is interesting, and empirically uncertain, is the capacity of asset slicing to alter preferences for goods and thereby change the kinds of things that get produced.[139]

Relatedly, by providing what amounts to fractional ownership, slicing arrangements can enable people to obtain access to higher-quality goods than they could acquire outright.[140] For goods with shallow or nonexistent learning curves, these advantages can combine with variety to bring substantial gains. For example, the ability

138. I thank Lior Strahilevitz for discussions on this point.

139. Umair Haque has suggested that underserved markets might benefit from new business models that make products and services available in smaller segments. *See* HAQUE, *supra* note 130, at 129-31, 137. But if the underlying asset that is subdivided (such as a car) must serve a broad range of tastes, it could become both more widely available *and* more standardized, depending on the assumptions that we make about consumer preferences. For a related discussion of how high fixed costs can constrain product offerings, see JOEL WALDFOGEL, THE TYRANNY OF THE MARKET: WHY YOU CAN'T ALWAYS GET WHAT YOU WANT 100-07 (2007).

140. *See* BARZEL, *supra* note 47, at 63 (observing that tools for amateur users "are often low-cost, low-quality versions of superior professional-quality tools," and that professional-grade tools can be made more widely available through rental markets).

to diversify and upgrade one's wardrobe provides a primary impetus for short-term clothing rental services such as Rent the Runway.[141] Other claimed advantages of this model, such as reducing the overall production of cloth,[142] are far less clear. The analysis here is a bit like that for the toothbrush. Given secondhand and recycling opportunities for fabrics, people might ultimately get comparable amounts of use out of the cloth that is produced under sharing and traditional models, whether quickly or slowly.

An intriguing question is whether more "fashion value" can be wrung from a given outfit through arrangements that enable it to be worn by many people. If the window of fashionability were fixed, the slicing arrangement might enable more people to be more fashionable more of the time. In fact, fashionability seems like a status good that is inherently limited. If fashions diffuse more quickly through new platforms, fashion cycles may speed up accordingly.[143] We would need to know what "wears out" the fashionability of an outfit: Is it the mere passage of time, or the number of times people observe the style being worn? As this example suggests, the benefits one can derive from property may be endogenous to the arrangements that exist for slicing it up or bundling it together.

3. Responsibility and Residual Claims

A boundary exclusion model internalizes the effects of an owner's acts—insofar as those effects fall within the property's bounds. Although spillovers across boundaries are common and imperfectly addressed, spillovers across time can be obviated (at least in theory) by granting the owner the full temporal arrow of ownership. She can, of course, transfer the property at any point, but the sales price should reflect whatever positive or negative effects her activities

141. *See, e.g., Our Vision*, RENT THE RUNWAY, https://www.renttherunway.com/about-us [https://perma.cc/JMS8-96DV] (touting an "unlimited closet").

142. *See* Anna Soler Perlacia et al., Collaborative Consumption: Live Fashion, Don't Own It 6-7 (Oct. 27, 2016) (unpublished manuscript), available at https://papers.ssrn.com/abstract=2860021 [https://perma.cc/6Z33-QM9C].

143. For a discussion of the effect of copying on fashion cycles, see Kal Raustiala & Christopher Sprigman, *The Piracy Paradox: Innovation and Intellectual Property in Fashion Design*, 92 VA. L. REV. 1687, 1718-28 (2006).

have had on the property.[144] The investment incentive that comes from internalizing positive effects—reaping where one sows—forms a core economic justification of ownership.[145] Significantly, these incentive effects extend to simply taking care of the property so that it does not deteriorate. The owner can form contracts with others to maintain the property, but she is the residual claimant—the one who, at the end of the day, will benefit or suffer from the effects of whatever happens to the asset.[146]

It is easy to overstate this "responsibility" facet of full ownership. Owners may be myopic or misinformed, and may do a poor job managing their property. They can degrade the property and walk away from it. Even though the common law precludes landowners from legally abandoning fee interests, they can avoid responsibility by simply decamping, if they are judgment proof, or by transferring the property to another judgment-proof party.[147] Nonetheless, to the extent that an owner plans to continue using the property in the future, she might be expected to take better care of it than if it were going to be handed off to a stranger.

New business models for slicing up access to resources can create governance systems to stand in for the "automatic" internalization that long-term ownership accomplishes.[148] Those who abuse their rental properties can be fined or penalized. But a problem remains if some of the relevant costs are not contained within the overall envelope of the slicing enterprise, and instead spill over to third parties. Regulation is of course possible, but it adds to the overall costs of the new arrangement and must be taken into account in assessing the value of the shift. Once ownership is unbundled, the societal functions that the bundling served must be replicated in some other way.

144. *See* Demsetz, *supra* note 3, at 355.

145. *See supra* note 46 and accompanying text.

146. *See, e.g.*, BARZEL, *supra* note 47, at 78-80; Smith, *supra* note 14, at 1795-97.

147. *See* Lior Jacob Strahilevitz, *The Right to Abandon*, 158 U. PA. L. REV. 355, 401 (2010).

148. *See* Robert C. Ellickson, *The Costs of Complex Land Titles: Two Examples from China*, 1 BRIGHAM-KANNER PROP. RTS. CONF. J. 281, 284 (2012) ("When a private farmer is entitled to keep a crop he grows, for example, he is automatically rewarded for choosing the best crop to plant, planting at the right time, weeding, applying fertilizer, fallowing a field when appropriate, and so on.").

Scholarship on the commons is instructive on this score. For example, Elinor Ostrom discusses a "wintering" rule used to control overgrazing in the Swiss Alps: no one could graze more cattle on the pasture than they could sustain over the winter.[149] The costs of winter feeding thus effectively rationed the use of the commons.[150] No one could skim disproportionate benefits from the commons by buying cattle, grazing them, and selling them before the costly winter season kicked in. Exclusive ownership of both pasture and cow would have constrained grazing in a different way, but those constraining effects could be partially replicated by the wintering rule while keeping the pasture as a commons.

The temporal bundling accomplished by traditional ownership automatically performs a similar rationing function by requiring people to bear the costs of ownership over time. If one wants to own a car, one must also acquire rights to park it somewhere, pay to license it, and keep it reasonably maintained. A major impetus for thinner slicing is relief from some of the burdens of constant ownership. But for the same reason, reducing the continuity of ownership raises concerns about externalities. For example, pressing questions about externalities surround ride-hailing services, which have gained much of their tremendous popularity by relieving riders of the burdens of parking.[151]

Keeping cars constantly in circulation should translate into less parking. But recent work suggesting that these services contribute to congestion raises an important question: are the cars effectively being stored *in traffic* in between trips?[152] Are the public roads themselves being appropriated as an adjunct to the business model? Unpriced roads are already susceptible to congestion because drivers do not bear the full effects of their entry.[153] But the practical

149. *See* ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 62 (1990).

150. *See id.*

151. *See* Regina R. Clewlow & Gouri Shankar Mishra, *Disruptive Transportation: The Adoption, Utilization, and Impacts of Ride-Hailing in the United States* 1 (UC Davis Inst. of Transp. Studies, Working Paper No. UCD-ITS-RR-17-07, 2017).

152. *See* Bruce Schaller, *Empty Seats, Full Streets: Fixing Manhattan's Traffic Problem* 12, (Dec. 21, 2017), http://schallerconsult.com/rideservices/emptyseats.pdf [https://perma.cc/CM73-B8PM].

153. *See, e.g.*, U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-12-119, TRAFFIC CONGESTION: ROAD PRICING CAN HELP REDUCE CONGESTION, BUT EQUITY CONCERNS MAY GROW 3 (2012).

requirement that anyone who drives must also park provides a partial check, one that has now been lifted through fleets of circulating drivers. An analogue to the wintering rule might place offsetting responsibilities on platform providers for each car added to the commons. We need not go back to the old model to see the externality in the picture and understand the need to fix it.

IV. POST-EXCLUSION PROPERTY?

The foregoing analysis identified some shortcomings in an exclusion-centric model of property rights. Boundaries are no longer a robust proxy for strong complementarity, due to both the increasing interdependence among separately owned entitlements and the decreasing significance of continuous possession.[154] The costs of boundary exclusion have also gone up, both because complementarities among properties raise the frequency and cost of monopoly holdout dynamics, and because continual possession imposes increasing burdens in space-constrained urban environments.[155]

These developments do not, however, establish that property has moved beyond exclusion, or that it should do so. As I have also emphasized, boundary exclusion and the related thing-based vision of full ownership carry important benefits that may not (or may not yet) be possible to replicate through alternative mechanisms.[156] The fact that a given arrangement has become less efficacious and more costly is not enough reason to jettison it—we must always ask whether a better alternative exists. The answer, as I hope is clear by now, is not a categorical yes or no, but rather maybe, sometimes, depending on context.

This last Part offers a few thoughts on the directions property might take as it starts to move beyond exclusion. It starts with some examples of how law might begin to evolve in directions consistent with the changes detailed above. It closes by addressing a critique: whether property, properly understood, can ever really move beyond exclusion.

154. *See supra* Parts II.A., III.A.
155. *See supra* Parts II.B., III.A.
156. *See supra* Part III.B.

A. What Now?

The shifting nature of complementarities among and within entitlements suggests some possible directions in which property might evolve. While a full account of the possibilities is beyond the scope of this Article, a few examples and observations will help to illustrate.

1. Land Use Beyond Exclusion

Interdependence among pieces of real property has been addressed to date through an array of land use controls: nuisance, covenants, and zoning. In one sense, these controls can be viewed as moving "beyond exclusion" and squarely into the realm of governance. They explicitly focus on spillovers and are thus premised on the imperfect containment that boundaries perform.[157] At the same time, however, modern land use controls are infused with an exclusion mentality. Zoning excludes classes of uses, based (at best) on predictions about their likely spillover effects.[158] Covenants are commonly deployed in private communities that, whether gated or not, are premised on expanding a circle of control to encompass the whole neighborhood.[159] Nuisance does consider actual impacts, but addresses only a subset of them—negative spillovers that rise to a certain level of substantiality.[160] None of these controls are focused

157. *See, e.g.*, Smith, *supra* note 22, at 980-83.

158. Exclusionary land use controls may be based on prejudices and stereotypes rather than any actual spillovers; they may also be based on fiscal, political, or monopolistic motives. *See, e.g.*, Lee Anne Fennell, *Exclusion's Attraction*, *in* THE TIEBOUT MODEL AT FIFTY: ESSAYS IN PUBLIC ECONOMICS IN HONOR OF WALLACE OATES 163, 173-77 (William A. Fischel ed., 2006); William T. Bogart, *"What Big Teeth You Have!": Identifying the Motivations for Exclusionary Zoning*, 30 URB. STUD. 1669, 1671-72 (1993); Richard Thompson Ford, *The Boundaries of Race: Political Geography in Legal Analysis*, 107 HARV. L. REV. 1841, 1855-56, 1870-74 (1994). The political power and risk aversion of homeowners play a large role. *See generally* FISCHEL, *supra* note 48.

159. *See, e.g.*, FENNELL, *supra* note 14, at 23-24, 55-56.

160. *See, e.g.*, RESTATEMENT (SECOND) OF TORTS § 821F (AM. LAW INST. 1979) ("There is liability for a nuisance only to those to whom it causes significant harm, of a kind that would be suffered by a normal person in the community or by property in normal condition and used for a normal purpose.").

on the most pressing urban land use challenge: how to put together complementary uses to maximize agglomeration benefits.[161]

A modest move in that direction would entail focusing more explicitly on actual impacts experienced by neighbors, both positive and negative, rather than on summarily excluding classes of uses. The idea of impact-based zoning—performance zoning—is not new, but it has not yet been widely implemented.[162] For example, instead of banning all commercial or industrial uses, a performance zoning code might simply ban uses that generate a certain amount of noise or traffic.[163] Conversely, in an area where foot traffic generates important benefits, businesses locating in the area might be required to generate minimum numbers of customers on average.[164]

This family of approaches has become increasingly feasible with the rise of widely available tools for gathering and aggregating information about the effects of activities carried out on land.[165] For example, smartphone apps enable dispersed monitoring and reporting using a tool that most adults now carry with them at all times.[166] Other means of gathering and aggregating data would be trivial to implement with readily available technologies.[167] The expanding ability to secure large amounts of real-time data makes thinkable

161. *See, e.g.*, Fennell, *supra* note 82, at 1398-1401.

162. *See, e.g.*, DONALD L. ELLIOTT, A BETTER WAY TO ZONE: TEN PRINCIPLES TO CREATE MORE LIVABLE CITIES 23-26 (2008); DOUGLAS R. PORTER ET AL., FLEXIBLE ZONING: HOW IT WORKS 11-13 (1988); John R. Nolon, Golden *and Its Emanations: The Surprising Origins of Smart Growth*, 35 URB. LAW. 15, 30-32 (2003). *See generally* Frederick W. Acker, Note, *Performance Zoning*, 67 NOTRE DAME L. REV. 363 (1991).

163. *See, e.g.*, JANE JACOBS, DARK AGE AHEAD 153-57 (2004) (discussing a "performance code" focused on impacts); PORTER, *supra* note 162, at 11 (explaining how performance zoning in pure form specifies permissible effects rather than uses).

164. *See* Fennell, *supra* note 82, at 1410-12. A related motivation could explain efforts by local governments to restrict large employers from subsidizing on-site meals for their employees—a move that has a notable impact on the surrounding businesses. *See* Nellie Bowles, *San Francisco Officials to Tech Workers: Buy Your Lunch*, N.Y. TIMES (July 31, 2018), https://www.nytimes.com/2018/07/31/technology/san-francisco-tech-free-lunch.html [https://perma.cc/5GBU-JYRW]; Wendy Lee & Roland Li, *Mountain View's Unusual Rule for Facebook: No Free Food*, S.F. CHRON. (July 23, 2018), https://www.sfchronicle.com/business/article/Mountain-View-s-unusual-rule-for-Facebook-No-13096100.php [https://perma.cc/CWF5-3KM6].

165. *See, e.g.*, Lee Anne Fennell, *Crowdsourcing Land Use*, 78 BROOK. L. REV. 385, 391-96 (2013).

166. *See id.* at 392-94.

167. *See id.*

a land use regime that is based on impacts, rather than on invasions and exclusions.[168]

The ultimate goal would be to promote the most valuable complementarities among land uses, not just block incompatibilities. Focusing on impacts can advance that goal, but fully achieving it would require interjecting more flexibility into real property ownership than presently exists. Individual owners currently hold vetoes that can block synchronized redevelopment efforts that require the assembly of parcels.[169] This produces a rigidity in urban arrangements that is presently unpriced.[170] Instead, ownership comes equipped for intransigence as part of its standard operating equipment.[171] Loosening up land use regulations to refocus on impacts would help, but because large-scale changes are often necessary to remake a particular area, monopoly represents a continuing impediment.

There have been many proposals for breaking through this deadlock, some of which I have written about elsewhere.[172] For purposes of the current discussion, two observations suffice. First, to the extent that property's exclusionary shell imposes substantial and increasing social costs, it will inevitably be softened or broken down in some fashion.[173] Eminent domain already provides a brute-force alternative, and large-scale concentrated ownership offers another possibility that also carries significant drawbacks.[174] Finding ways to enable people to opt into ownership regimes that are designed from the outset to be less permanent or less rooted is an underexplored alternative.[175]

168. *See id.* at 395-96.

169. *See supra* Part II.B.

170. *See, e.g.*, Lee Anne Fennell, *Property and Precaution*, 4 J. TORT L., Sept. 2011, at 22 (discussing rigidities associated with ownership and considering responses to it); T. Nicolaus Tideman, *Integrating Land-Value Taxation with the Internalization of Spatial Externalities*, 66 LAND ECON. 341, 347 (1990) (suggesting taxation on the right to remain as a response to the flexibility that landowners withdraw from society's overall fund).

171. *See* Fennell, *supra* note 170, at 3-4, 14-16.

172. *See, e.g.*, *id.* at 24-31; Fennell, *supra* note 103, at 1480-1504.

173. *See* Fennell, *supra* note 103, at 1463-64.

174. *See id.* at 1461-62, 1469, 1508-09.

175. For an extended discussion of these points, see *id.* at 1479-1504.

Second, solutions to problems of thwarted complementarities must be sensitive to existing temporal and spatial complementarities—including those that involve separately owned entitlements, such as the homes that make up a close-knit community. One possibility would establish designated districts in which property could be taken (with compensation) after a certain amount of time, but only if the option to take were exercised on an all-or-nothing basis.[176] Another set of ideas would build on land readjustment models that enable areas to be spatially rearranged in ways that alter people's existing holdings but guarantee them the right to remain within the reconfigured community.[177]

2. Unbundling and Rebundling

The changes currently afoot in property regimes have an interestingly bidirectional character: property has never been more interdependent, but it has also never been easier to divide up into smaller slices. Bundles and patterns of property holdings are now a primary source of value, even as unbundling and disaggregation continues apace. We cannot predict a simple trajectory toward fragmentation, nor one toward ever-expanding consolidation. Instead, property is changing from a thing that contains a stream of benefits to a stream of benefits that implicates things. Finding ways to maximize, capture, and recombine those benefit streams is the essential modern task of property.

The water metaphor is not accidental. Land-based ways of defining and regulating property have proved inapposite to fugitive resources such as water, oil, and wildlife populations.[178] Making the most of resources requires tracing the particular ways in which they deliver value and shaping entitlements accordingly. Urbanization

176. *See id.* at 1482-85.

177. For background on this approach, which has many variations, see, for example, ANALYZING LAND READJUSTMENT: ECONOMICS, LAW, AND COLLECTIVE ACTION (Yu-Hung Hong & Barrie Needham eds., 2007).

178. *See, e.g.*, Carol M. Rose, *Property as the Keystone Right?*, 71 NOTRE DAME L. REV. 329, 351 (1996) (asking how our conceptions of property might be different if water rather than land had served as "our chief symbol for property"); Karen Bradshaw Schulz & Dean Lueck, *Contracting for Control of Landscape-Level Resources*, 100 IOWA L. REV. 2507, 2514-19 (2015) (discussing challenges of coordinating the management of "landscape-level resources").

and technological change have brought about a profound shift in how resources deliver value to people, one in which reconfigurability looms large.[179] It is not just a matter of how to best reconfigure entitlements at one moment, but rather how to set up the institution of property so that reconfiguration can occur again and again as needs change.[180]

Part of making property reconfigurable is recognizing the full set of conditions necessary for more flexible property arrangements. For example, condominiums that either do or do not come with parking spaces cannot readily accommodate fractional car ownership.[181] Consider also the interplay between ownership of personal belongings and of real estate. If every piece of personal property one needed to use on a given day could be instantly delivered to whatever location one happened to be occupying, the temporal economies of scale associated with sustained ownership of real property would disappear. We can see a similar phenomenon playing out in workplaces where people no longer have permanent claims on particular offices, but rather are assigned to floating workstations—an arrangement made feasible by technologies that make certain kinds of work highly portable.[182]

More broadly, property ownership's temporal bundling can be viewed as an artifact of imperfect portability. It amounts to a type of indivisibility—components that cannot be detached from their current location or from the current owner's hands without loss of value. But not all existing sets of entitlements lose value when they are broken apart; sometimes disaggregation facilitates a far more valuable reconfiguration. As this analysis has emphasized, the packages into which property has traditionally been bundled should not be viewed as inevitable; rather, they are only as good and as durable as the contingencies that shaped them in the first place.

179. *See* Fennell, *supra* note 103, at 1474-77.

180. *See, e.g.*, *id.* at 1496-97.

181. I thank Lior Strahilevitz for this example.

182. *See, e.g.*, Sue Shellenbarger, *Don't Get Too Used to Your Own Desk*, WALL ST. J. (May 15, 2018, 9:17 AM), https://www.wsj.com/articles/dont-get-too-used-to-your-own-desk-1526390258 [https://perma.cc/ND3H-9NWP].

B. Objections

There are many substantive objections that might be made to specific changes in property arrangements, some of which have been alluded to already. In this last Section, I want to take on the meta-critique implicit in the question of whether property beyond exclusion is a logical or conceptual impossibility. Two challenges might be mounted against the possibility of property beyond exclusion. Predictably, the first relates to how we conceptualize property and the second relates to the meaning and limits of the word exclusion.

First, to the extent that exclusion is understood as a defining characteristic of property, one might dispute that there is anything recognizable as property that lies beyond exclusion. Because even scholars who emphasize exclusion recognize a role for governance, the objection cannot be to the use of the word "property" to encompass strategies other than boundary exclusion.[183] Nonetheless, one might contend that any system of resource management that does not have exclusion as its core strategy (or that eschews exclusion altogether) cannot count as property.[184]

Definitions should be assessed by their usefulness.[185] By that benchmark, we must decide whether it is more useful to toss all resource access arrangements into the property bucket or reserve that category for institutional arrangements that exhibit certain structural or formal features.[186] As a property professor who would like to continue being one, I have self-interested reasons to favor the former approach. But treating property as a functional category also has a conceptual advantage: it allows the complementarities that lie behind resource arrangements to take center stage. As the management of resources becomes increasingly fine-grained, the category

183. *See, e.g.*, Smith, *supra* note 2, at 1693-94.

184. *See, e.g.*, *id.* at 1705 ("Exclusion is at the core of [property's] architecture because it is a default, a convenient starting point."); Merrill, *supra* note 1, at 730 ("Deny someone the exclusion right and they do not have property.").

185. *See* Felix S. Cohen, *Dialogue on Private Property*, 9 RUTGERS L. REV. 357, 373 (1954) ("[A]sking whether a definition is true or false is a meaningless question. But we can ask whether a definition is useful or useless.").

186. For one view of property's essential features, see Chang & Smith, *supra* note 25, at 30-35.

of property may start to bump into contract, but the varied solutions to resource dilemmas have enough systemic implications that they should be treated together. There is nothing inevitable about the doctrinal categories that we use, however, and my primary concern is not with labels but with coming up with the best ways of structuring access to resources.

The second critique comes from the opposite direction, questioning whether it is even logically possible for a resource arrangement to diverge from an exclusion model. At least when we are talking about rival resources like real and personal property, it might seem that any affirmative use implies exclusion of all other uses. Is it not, then, exclusion all the way down? The answer depends, again, on how we define terms, and for what purpose. In this Article, I have defined exclusion as an overinclusive strategy that relies on boundary defense, not as a synonym for the rival nature of tangible resources.[187] This is consistent with the usage in the literature,[188] and it is essential to treating exclusion as a conscious strategy rather than as an inevitability or a tautology.

Regardless of what we choose to call it, there is something conceptually significant about more closely tailoring entitlements in time and space to fit the value that users derive from resources. The distinction drawn in the commons literature between resource systems, or "stocks" (such as a fishery), and resource units, or "flows" (such as individual fish), is illustrative.[189] Whether or not one thinks property can go beyond exclusion, resource access can morph from a modality that focuses on stocks to one that focuses on flows.[190] Although one can comprehensibly speak of having private exclusionary rights to the fish that one is in the act of catching, an "own what you catch" approach is still a much different way of

187. *See supra* Part I.A. For discussion of different ways of using the term "exclusion" (and a defense of an alternative approach in a different context), see Lee Anne Fennell, *Common Interest Tragedies*, 98 NW.U. L. REV. 907, 939 (2004).

188. *See, e.g.*, Smith, *supra* note 18, at S467-74.

189. *See, e.g.*, OSTROM, *supra* note 149, at 30-33; Dean Lueck, *First Possession as the Basis of Property*, *in* PROPERTY RIGHTS: COOPERATION, CONFLICT, AND LAW 200, 202 (Terry L. Anderson & Fred S. McChesney eds., 2003).

190. *See* Lueck, *supra* note 189, at 202-03 (discussing different ownership arrangements for stocks and flows).

parceling out access than putting a fence around the entire fish pond.[191]

CONCLUSION

Although real and personal property often seem mired in the past, societal changes can and should (and will) alter what ownership means.[192] Traditional boundary exclusion, although tightly linked to popular conceptions of property, turns out to be just one possible technology for doing property's work of pairing inputs and outcomes. And it is a technology in decline. Exclusion will remain important in some contexts, but it cannot remain property's go-to strategy in all domains.

The simple architecture of boundary exclusion assumes that resource control is best managed in continuous and contiguous lumps of ownership, and that physical invasions represent the most significant sources of interference with resource use and investment. Neither assumption is warranted today. Exclusion and the thing-based model it entails have become both less efficacious and more costly. Boundaries no longer reliably group together complementary elements. Meanwhile, alternatives that have historically been too costly to countenance are beginning to gain ground, from fine-grained assessment of impacts to microtransactions over excess capacity.

Some of these new resource models will succeed and others will not. What matters more than predictions about the content of evolving property arrangements is the fact of evolution itself, and the underlying logic of property's work in grouping together components that work together to produce value. Property's future lies in reconfigurability, and in a flexibility capable of capitalizing on complements as they arise and change.

191. That even an "own what you catch" regime incorporates a certain degree of exclusion can be seen by contrasting a regime in which caught fish remain up for grabs. *See* Heller, *supra* note 99, at 675 & n.246.

192. *See generally* Demsetz, *supra* note 3.