

2012

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Recommended Citation

Thomas W. Merrill, *Property as Modularity*, 125 HARV. L. REV. F. 151 (2012).
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PROPERTY AS MODULARITY

*Thomas W. Merrill**

Professor Henry Smith's *Property as the Law of Things*¹ urges a return to an older conception of property as rights with respect to things — and justifies this in terms of a very new conception of property based on modularity. Throughout, he highlights the importance of information costs in determining the structure of property law, starting with a baseline of in rem rights of exclusion supplemented by governance rules to deal with exceptional situations. I fully agree with his emphasis on the centrality of things in the law of property, the in rem nature of property, the primacy of exclusion rights, and the importance of information costs in understanding the structure of the property system. These ideas have featured prominently in previous writings I have coauthored with Smith.²

The idea that property systems can be understood in terms of modularity is something Smith has developed independently, and I have not had occasion to comment publicly on it. My reaction is largely positive with reservations. The modularity model is an advance on the simple “optimal standardization” idea we jointly developed for explaining the *numerus clausus* or limited number of forms of property. One of the mysteries associated with the *numerus clausus* is that the same piece of property is governed by very different rules in terms of degree of standardization depending on who the relevant audience happens to be.³ The proverbial Blackacre presents a simple rule of exclusion insofar as the audience of strangers is concerned, a complex of formal rules when potential transactors enter the picture, and a potentially limitless diversity of rules and norms when the relevant audience consists of insiders such as co-owners. The modularity model Smith sketches provides a functional account that helps explain this important structural feature of the property system.

* Charles Evans Hughes Professor, Columbia Law School. Dan Boyle provided valuable research assistance.

¹ Henry E. Smith, *Property as the Law of Things*, 125 HARV. L. REV. 1691 (2012).

² E.g., Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1 (2000) [hereinafter Merrill & Smith, *Optimal Standardization*]; Thomas W. Merrill & Henry E. Smith, *The Morality of Property*, 48 WM. & MARY L. REV. 1849 (2007); Thomas W. Merrill & Henry E. Smith, *The Property/Contract Interface*, 101 COLUM. L. REV. 773 (2001).

³ Thomas W. Merrill, *The Property Prism*, 8 ECON J. WATCH 247, 250 (2011) [hereinafter Merrill, *Property Prism*].

Nevertheless, I have my reservations about whether modularity — or perhaps any structural metaphor — offers a fully adequate picture of property. Structural metaphors can help us better understand the form of property rights. But structural metaphors fail to capture the powerful set of incentives built into systems of private property — the feature of ownership that drives owners to want to rearrange the modules to make them more valuable and to want to work harder to extract as much value from the existing arrangement of modules. This incentivizing effect is a function of the exclusion right that lies at the heart of property. Exclusion does more than minimize information costs for third parties. Even more importantly, it gives the owner residual managerial authority and residual accessionary rights — the rights to sow and to reap what has been sown.⁴ The modularity model ignores or at best fails to highlight this feature of property, which is central to understanding the power and persistence of this institution.

I. THE FORMLESS BUNDLE

A critique of the bundle of rights picture of property takes up much of Smith's paper. This too is a theme we have developed in joint work, and I agree with nearly everything he says in this regard.⁵ Yet it is important to give the bundle its due.

The bundle metaphor has unquestionably been influential with judges and professors — the crowd Professor Bruce Ackerman calls “scientific policymakers,” as opposed to the “ordinary observers” who occupy thing-land.⁶ To cite one example, the bundle has loomed large in constitutional law. The Supreme Court has occasionally defined “property” for constitutional purposes in bundle terms.⁷ The Court has also adopted the bundle picture in decisions in which regulations have been challenged as takings. Perhaps most strikingly, in *Loretto v Teleprompter Manhattan CATV Corp.*,⁸ the Court suggested that a taking occurs when the government chops through every stick in the bundle, even if the slice is very thin.⁹ By negative implication, a taking does not necessarily occur when the government removes a stick from

⁴ Thomas W. Merrill, *The Property Strategy*, 160 U. PA. L. REV. (forthcoming 2012) [hereinafter Merrill, *Property Strategy*] (on file with the Harvard Law School Library).

⁵ See Thomas W. Merrill & Henry E. Smith, *Making Coasean Property More Coasean*, 54 J.L. & ECON. (forthcoming); Thomas W. Merrill & Henry E. Smith, Essay, *What Happened to Property in Law and Economics?*, 111 YALE L.J. 357 (2001).

⁶ BRUCE A. ACKERMAN, PRIVATE PROPERTY AND THE CONSTITUTION, 168–69 (1977).

⁷ See, e.g., *United States v. Gen. Motors Corp.*, 323 U.S. 373, 378 (1945) (describing the interest as a “group of rights”); cf. *Coll. Sav. Bank v. Fla. Prepaid Postsecondary Educ. Expense Bd.*, 527 U.S. 666, 673 (1999) (noting that the “hallmark” of property is the right to exclude).

⁸ 458 U.S. 419 (1982).

⁹ *Id.* at 435.

the bundle, such as the right to alienate property¹⁰ or the right to exclude a subset of the public from property.¹¹ Whether or not this is a sensible way to resolve takings claims, it faithfully follows from the bundle metaphor.

To cite another example, the bundle has played a central role in debates over how to understand the concept of property. Starting with Professor Tony Honoré's influential account of the attributes of property in a mature liberal legal system,¹² this literature tends to focus on which attributes — that is, which sticks — are essential to the understanding of property. Thus, some argue that the right to exclude is a necessary condition,¹³ while others argue for the right to use,¹⁴ and still others deny that any element is necessary.¹⁵ For better or worse, this philosophical debate has been framed by the idea of the bundle of rights.

The bundle's biggest contribution, undoubtedly, has been to underscore the heterogeneity and plasticity of property. Property comes in many forms, and it can be deployed toward an endless variety of purposes. The bundle draws our attention to these features of the institution of property. In this sense it is a useful corrective to Blackstonian absolutism, which of course was never as absolute as advertised.¹⁶

At the end of the day, however, I agree with Smith that the bundle metaphor fails to offer a satisfactory account of property. The basic problem is that the metaphor suggests property has no "architecture," to use one of Smith's felicitous terms. The bundle metaphor implies that property can take an infinite variety of forms, and that it is always "decomposable" down to the individual stick. This seriously misdescribes the institution of property.

For one thing, the right to exclude has a ubiquity and tenacity that defies the bundle. Even those who deny the centrality of exclusion often admit it is a necessary condition of something being identified as property.¹⁷ Moreover, the bundle view would presumably lead one to

¹⁰ *Andrus v. Allard*, 444 U.S. 51, 66 (1979).

¹¹ *PruneYard Shopping Ctr. v. Robins*, 447 U.S. 74, 82–83 (1980).

¹² See TONY HONORÉ, *Ownership*, in *MAKING LAW BIND* 161, 161–65 (1987).

¹³ See, e.g., Thomas W. Merrill, *Property and the Right to Exclude*, 77 *NEB. L. REV.* 730, 740–52 (1998).

¹⁴ See Eric R. Claeys, Colloquy Essay, *The Right to Exclude in the Shadow of the Cathedral: A Response to Parchomovsky and Stein*, 104 *NW. U. L. REV.* 391, 406–07 (2010); Adam Mossoff, *The False Promise of the Right to Exclude*, 8 *ECON J. WATCH* 255, 255 (2011).

¹⁵ Thomas C. Grey, *The Disintegration of Property*, in *PROPERTY: NOMOS XXII* 69 (J. Roland Pennock & John W. Chapman eds., 1980).

¹⁶ See Robert P. Burns, *Blackstone's Theory of the "Absolute" Rights of Property*, 54 *U. CIN. L. REV.* 67, 73–75 (1985) (detailing the inconsistencies between Blackstone's general claim and his detailed description of property law).

¹⁷ HANOCH DAGAN, *PROPERTY: VALUES AND INSTITUTIONS* 37 (2011).

predict that the owner's right to exclude would be balanced against competing social values on a case-by-case basis. Although it is possible to find decisions that proceed in this fashion,¹⁸ what is truly striking is the strong continuing legal protection of exclusion, whether through criminal law, or civil tort law, or recognition of a robust privilege of self-help.

Nor is property decomposable into individual attributes that can be mixed and matched in any combination like ingredients in a Mongolian barbeque. Rather, we find that attributes are nearly always combined in predictable ways: they come in packages that are "lumpy," to use a Smith expression. The owner of land has the right to exclude strangers, to use the land in a variety of ways; to alienate the land by sale, gift, or will, and to pledge the land as security for a loan. The holder of an intellectual property right has the right to exclude others from using the right, to develop derivative rights, to license others to use the right, and to pledge the right as security for loan. Rarely do we see different combinations, that is, the right to use and pledge but not to exclude or license. The bundle metaphor cannot explain this.

The bundle perspective also fails to explain the limited number of legal forms in which property can be held — the *numerus clausus* principle. There are a significant number of forms, but the number is finite, and from the perspective of individual actors it is not permissible to create new forms.¹⁹ This is revealed by the universal practice of courts and lawyers when interpreting wills or deeds that convey property. The objective always is to fit what has been granted into one of the existing forms — is it a life estate or a lease? — not to enforce the intentions of the grantor in their full particularity, as would happen in a case of contractual interpretation.

Finally, the bundle fails to explain why nearly every organized society uses the property strategy (at least to some extent) for organizing control over resources in the first place. The bundle highlights issues of collective modification of property rights, for example, the power of the collectivity — the state — to prescribe which sticks the owner gets to keep and which can be taken away. It is important to recognize this power, but merely doing so skips over the antecedent question of why property is a valuable institution and what characteristic weaknesses

¹⁸ *State v. Shack*, 277 A.2d 369 (N.J. 1971), is the leading example and not surprisingly the lodestar of the bundle crowd. See, e.g., Gregory S. Alexander, *The Social-Obligation Norm in American Property Law*, 94 CORNELL L. REV. 745, 808 (2009). For some evidence suggesting that the New Jersey courts are backing away from the balancing approach of *Shack*, see THOMAS W. MERRILL & HENRY E. SMITH, *PROPERTY: PRINCIPLES AND POLICIES* 427–29 (2d ed. 2012).

¹⁹ Merrill & Smith, *Optimal Standardization*, *supra* note 2, at 40.

justify collective intervention in the first place. As to these important questions, the bundle is silent.

Those who persist in calling property a bundle of sticks are either too lazy, indifferent, or, I suspect, too hostile to the institution to try to describe how it really works and why.

II. THE MODULARITY MODEL

So we need a better model or metaphor for property. Smith has tried out more than one. Property as language or grammar is a recurring theme in his writing, reflecting his training as a linguist.²⁰ In the present paper, his candidate for a different model is modularity. Property, Smith argues, is like a modular system for organizing a business firm or an information system like the Internet.²¹

Modular systems allow particular activities to be compartmentalized in specialized units that operate semi-autonomously from other specialized units. The modular units are then combined together or separated through some kind of interface.²² As Smith indicates, modular systems allow for intense interactions and interdependencies within individual modules. In particular, activity inside a module involves lots of highly specialized knowledge and information. Most of this activity and information, however, remains opaque to outside observers.²³ What is important to those outside the module is what the module produces, not the means by which this production is achieved. Meanwhile, the principles for linking up modules can be kept relatively simple and standardized, allowing for easy substitution among modules or different kinds of combinations among modules. Smith mentions Lego blocks in passing,²⁴ suggesting that the modules are like opaque blocks that can be snapped together and apart, but once one masters the interface that connects the blocks, one need not worry

²⁰ E.g., Henry E. Smith, *The Language of Property: Form, Context, and Audience*, 55 STAN. L. REV. 1105 (2003).

²¹ See Smith, *supra* note 1, at 1700–02. Biological organisms and ecological systems have also been described as having a modular structure. E.g., RUDOLF A. RAFF, *THE SHAPE OF LIFE* 321–61 (1996); Roger N. Hughes, *Lessons in Modularity: The Evolutionary Ecology of Colonial Invertebrates*, 69 SCIENTIA MARINA 169 (2005). One could argue that the law itself is a modular system, in that legal knowledge is highly specialized into specific fields — products liability, secured lending, corporate governance, bankruptcy, international trade — and this knowledge is then integrated through shared principles about procedures, interpretation conventions, precedent following, and the like.

²² See Carliss Y. Baldwin & Kim B. Clark, *Managing in an Age of Modularity*, in *MANAGING IN THE MODULAR AGE* 149 (Raghu Garud et al. eds., 2003); Melissa A. Schilling & H. Kevin Steensma, *The Use of Modular Organizational Forms: An Industry-Level Analysis*, 44 ACAD. MGMT. J. 1149, 1151 (2001).

²³ See Smith, *supra* note 1, at 1701.

²⁴ *Id.* at 1708.

about the shape or color of the individual blocks or how they got that way.

Modular systems are often contrasted to hierarchical systems, which feature general instructions emanating from the top that flow down through successive layers of authority where they are translated into increasingly specific commands.²⁵ Hierarchical systems run into difficulties in that those at the top can never master all the detailed knowledge possessed by those at the bottom or even in the middle layers. Modular systems promise to cordon off most of the local information needed to perform particular tasks, reducing the informational burden needed to operate the system as a whole.

The central question presented by Smith's paper is whether this generalized description of modularity — property as Legoland — provides a better model for understanding property systems than the bundle of rights.

III. THE STRENGTHS OF THE MODULARITY MODEL

Modularity has several powerful advantages over the bundle of rights. First, and most obviously, it highlights the tremendous advantage of private property systems in terms of decentralizing decisional authority over the management of resources. The decentralization of authority allows owners to specialize in developing the knowledge and skills relevant to their respective resources, as well as permitting experimentation with new techniques for managing resources. As F.A. Hayek emphasizes, decentralization of authority greatly reduces the informational burden associated with any complex economy.²⁶ Modularity explains how property serves a similar function.

Another virtue of the model is that it highlights a feature of property noted by Smith but not otherwise (to my knowledge) considered in the literature, which is its “scalability.” Modules of property can be combined in a variety of ways to create larger complexes of property, without fundamentally changing the essential characteristics of ownership. Think of a farmer who owns the proverbial Blackacre. The farmer can also acquire Whiteacre, the land next door, and can combine the two modules into a single operating unit in order to achieve economies of scale. Moreover, the farmer can acquire a tractor module, a barn module, livestock modules, and more in order to make his original modules more productive and valuable. A similar story can

²⁵ M. A. Schilling, *Toward a General Modular Systems Theory and its Application to Interfirm Product Modularity*, in *MANAGING IN THE MODULAR AGE* *supra* note 22, at 172, 172–73.

²⁶ See F. A. Hayek, *The Use of Knowledge in Society*, 35 *AM. ECON. REV.* 519, 524–25 (1945).

be told about the factory owner, the owner of an apartment complex, and so on and so forth.

Note that the scalability of property is made possible in significant part by the rigorous rule of exclusion that applies to strangers outside the complex of modules. The same rule of exclusion applies to the land, the barn, the tractor, and the livestock, which means the farmer can serve as the gatekeeper/manager of the entire modular complex because the same rule of exclusion applies to all the modules. Scalability is also made possible by the *numerus clausus* feature of property that restricts the forms of the property insofar as potential transactors are concerned. This allows the farmer to acquire and sell modules like the tractor and the livestock, to borrow against his modules, and so on without stumbling over impossible informational costs. Thus, scalability can be derived fairly directly from the other architectural features of property emphasized by the modularity model.

Less obviously, modularity goes a significant way toward explaining a puzzling feature of property law that I have described in recent writing as its “prismatic” quality: namely, that the degree of standardization in the law varies depending on the identity of the person interacting with the property.²⁷ In particular, we find extreme standardization insofar as strangers are concerned, moderate standardization insofar as potential transactors are concerned, and virtually no standardization insofar as co-owners and other insiders are concerned.²⁸

Modularity can explain the simple rules of exclusion that apply between owners and strangers. If you are not inside a module or proposing to link up with another module, your duty is simply one of noninterference. Hence, strangers are governed by simple rules of trespass and conversion, both matters of strict liability with few defenses. One explanation for this draconian regime, as Smith explains, is information costs. The universe of strangers is potentially infinite and infinitely various, and hence duties must be delineated in stark and easily understood ways. The draconian rules also protect the managerial prerogatives of those in charge of the property modules. The simple right to exclude strangers allows the owner to function as the gatekeeper of the complex of modules, and hence to exercise effective managerial control over it.²⁹

Modularity can also explain why the rules that apply inside any given module are not standardized at all. Inside the module, relationships are governed either by contract or by informal norms of great variety. Think of landlord-tenant relationships in an office building or

²⁷ Merrill, *Property Prism*, *supra* note 3, at 250.

²⁸ *See id.* at 250–52.

²⁹ *See* Merrill, *Property Strategy*, *supra* note 4, at 7–9.

high-rise apartment. Or the relations between trustee and beneficiaries under a trust giving the trustee significant discretionary powers. Or roommates sharing an apartment, with lots of unwritten rules and norms governing who has which bedroom, who cooks and who cleans up, and so forth.³⁰ Again, information costs explain the great diversity of norms in these contexts. Interactions within the module concern a limited number of people who deal with each other on a routine basis. Consequently, they can tailor the rules that govern their interactions in specialized ways without creating an informational externality to those in other modules or outside the modular complex altogether.³¹

The modular metaphor can further explain the rules that govern the joining and disjoining of modules. Here I would distinguish between potential and actual transactors. Potential transactors include persons who are on the lookout for particular resources to purchase or rent, as well as persons who may want to use property as security for a loan or other debt. With respect to potential transactors, the legal rules that govern property take on greater complexity than we see with respect to strangers, but are more standardized than those that prevail with respect to relationships inside the module.³² Specifically, we encounter here the forms of property, including the various estates in land, the lease, the trust, the easement, the mortgage, and so forth. The forms are limited in number — this is the *numerus clausus* principle — and this fact serves to reduce the potential informational externality that would arise if potential transactors were confronted with novel forms of uncertain significance.³³ But the forms are far more diverse than the simple rule of exclusion that applies to strangers. Because potential transactors have diverse interests in linking up, those transactors require more than one available form of interaction.

Once a deal is struck, however, we switch from potential transactors to actual transactors, and, not surprisingly, the degree of permitted complexity multiplies many times over. There are only a few estates in land, but real estate sales contracts can be quite complex. Similarly, leases come in a short list of recognized forms, but actual leases are infinitely various in their terms and conditions. Again, information costs — in particular, informational externalities — explain all this quite nicely. When individuals are in the market for a piece of property or for a lease or security interest — or are thinking of buying property subject to a lease or security interest — the information costs of understanding a large variety of forms would be quite high. Once two parties get down to the business of negotiating actual terms, however, the

³⁰ ROBERT C. ELLICKSON, *THE HOUSEHOLD* 109–11 (2008).

³¹ See Merrill, *Property Prism*, *supra* note 3, at 251.

³² See *id.* at 250–51.

³³ Merrill & Smith, *Optimal Standardization*, *supra* note 2, at 26–27.

informational externality disappears. Thus, we have the paradox that the legal forms of property are limited in number whereas the physical attributes of the property — not to mention the price and other terms of the transaction — are infinitely various. The modules floating around in space must be readily classifiable to strangers. But once a linkup is agreed upon, we quickly switch to something akin to inside-the-module rather than outside-the-module.

In short, modularity allows us to begin to see the structure or architecture of property as an institution, something the bundle of rights metaphor fails to do.

IV. LIMITS OF THE MODULARITY MODEL

Nevertheless, modularity is not a perfect metaphor for property. Let me briefly mention some shortcomings.

As we have seen, modularity does a good job of illuminating the relationships between owned objects and strangers, co-owners, and transactors, both potential and actual. Two other important sets of relationships are perhaps less helpfully described using the modularity metaphor: those between owners and neighbors and those between owners and the government.

Neighbors play an interesting role in property. Neighbor conflicts are almost entirely limited to one type of property — land — perhaps because land is immovable and because it is impossible to escape from neighbors. In terms of the modularity model, neighbors are neither strangers nor insiders. They are somewhere in between. Their relationship to property is best described using the economic concept of externalities, which of course can be either negative or positive.³⁴ Neighbors can be potential transactors, but notwithstanding Coase,³⁵ we see relatively little ex post contracting to internalize neighborhood externalities.³⁶

Up to a point, the modularity metaphor can usefully illuminate the relationship between owners and neighbors. Easements and covenants respecting the use of land both fit into the modularity picture. An easement can be seen as a specialized kind of module granting one neighbor a right of access over another neighbor's land or, in some cases, restricting a particular use of one neighbor's land for the benefit of another. Easements are in this sense a kind of bridging or linking module between other larger and more conventional modules. Covenants are a bit more difficult, because they entail highly diverse con-

³⁴ See Merrill, *Property Prism*, *supra* note 3, at 251–52.

³⁵ See generally R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

³⁶ See, e.g., Ward Farnsworth, *Do Parties to Nuisance Cases Bargain After Judgment? A Glimpse Inside the Cathedral*, 66 U. CHI. L. REV. 373, 421–23 (1999).

tractual provisions that regulate the use of land among neighbors. Nevertheless, covenants among neighbors are nearly always created when a common grantor imposes restrictions on a new development, which are then recorded and become binding on successors in interest. Given the special circumstances of their creation, we can perhaps envision covenants as a kind of “modular dome” imposed over a subdivision, which then subjects persons inside the dome to contractual commitments of the sort that we see routinely being adopted inside other property modules.

With respect to other disputes over externalities, however, the modular model seems less illuminating. The common law of nuisance is sometimes invoked to mediate conflicts among neighboring property owners. It does so in a fact-specific, ad hoc fashion, resulting in injunctions tailored to specific disputes or awards of damages reflecting declines in property values caused by use conflicts. Government land-use controls — most prominently, zoning restrictions — are another method of minimizing disputes among neighbors over land-use conflicts. Smith seeks to assimilate these irregular and episodic modes of externality control to his general description of property systems by describing them as a shift from an “exclusion” model of dispute resolution to a “governance” model.³⁷ The exclusion-governance distinction is a useful one. But I have difficulty seeing how it follows from modularity. The shift from exclusion to governance seems to reflect a breakdown in the modularity model — a kind of patchwork solution layered over the top rather than something that logically flows from the basic architecture.

A second relationship not well captured by modularity is that between property and the government. The government performs a variety of roles with regard to property, including backstopping exclusion rights, setting up the forms of property, enforcing contracts for the transfer of property rights, and mediating disputes among neighbors about externalities. To some extent, the government’s relationship to property mimics that of potential transactors. Specifically, when the government engages in transactions involving property rights, as when it purchases or condemns land for public roads, parks, or other improvements, it is constrained to act in ways that parallel the way potential transactors interact with property. Thus, when the government acquires a fee simple, it obtains all the rights appropriate to a fee simple, and it must pay for a fee simple, either through a negotiated price or by judicial determination of just compensation in eminent domain.

³⁷ See Smith, *supra* note 1, at 1718; see also Henry E. Smith, *Exclusion and Property Rules in the Law of Nuisance*, 90 VA. L. REV. 965, 978–79 (2004).

But the government performs many other functions vis-à-vis property that have no direct analogue in the modularity world. The government taxes property in order to help fund public goods like police and fire protection services, not to mention courts, zoning boards, and other conflict-resolution devices. The provision of these public goods by government (or with the encouragement and authorization of government) greatly enhances the value of property.³⁸ Indeed, as Professor James Krier has emphasized, the government creates (or at least supports) the very system of private property itself, as a kind of public good.³⁹ Government also exercises a general police power over property, which, for better or worse, extends well beyond the mediation function contemplated by the law of nuisance. Yet these functions are not captured very easily by the modularity model.

Aside from these problems of incomplete fit, a more fundamental shortcoming of modularity is one that is shared by any model of property that emphasizes structure (including, of course, the bundle of rights). Property creates extremely powerful incentives for those who have it — incentives for good custodial practices, for making improvements, for coming up with innovations, and for sheer hard work, for example. It does so not only because the modular structure of property permits realization of economies of scale or specialization of functions — although these features surely help. Property is also a powerful motivator because of two other features of ownership, which happily enough come back into the picture by focusing on property as the law of things — the place where Smith begins.

The first feature is that property confers on the owner residual managerial authority over the owned thing.⁴⁰ Property makes the owner the gatekeeper/manager of the resource. He or she gets to decide how the resource will be used and who will use it. Property does not confer complete managerial control over the thing. Accommodation with the interests of neighbors and fealty to the government's police power must be given their due. But property confers enough residual managerial control net of specific contractual and governmental obligations that we can say the owner is able to have the final say in what is done with the thing.⁴¹

The second feature is that property confers on the owner residual rights to the fruits yielded up by the thing. This fruit-capturing or

³⁸ See Thomas W. Merrill, *Private Property and Public Rights*, in RESEARCH HANDBOOK ON THE ECONOMICS OF PROPERTY LAW 75 (Kenneth Ayotte & Henry E. Smith eds., 2011).

³⁹ James E. Krier, *The Tragedy of the Commons, Part Two*, 15 HARV. J.L. & PUB. POL'Y 325, 332–33 (1992).

⁴⁰ Merrill, *Property Strategy*, *supra* note 4, at 9–11.

⁴¹ See JEREMY WALDRON, THE RIGHT TO PRIVATE PROPERTY 31–33 (1988).

accessionary right is not discretionary but automatic.⁴² If the land yields a bumper crop, the owner/manger gets to keep the bumper crop. If the crop fails, the owner/manger fails, too. Again, the right to capture the fruits is incomplete. The owner must honor contractual commitments and must pay the state the property taxes that are due. But again, the residual rights to capture the fruits generated by the thing are sufficiently significant that the owner has a great incentive to organize his or her managerial efforts in order to maximize the expected payoffs.

Notice the direct and powerful linkage between the right of residual control and the right of residual capture. Property confers discretionary authority on the owner/manager and rewards the owner/manager with the profits (or losses) that the exercise of this authority generates. Property is like a profit-sharing plan in which 100% of the profits go to the individual profit center, or an incentive compensation scheme in which 100% of the compensation is in stock options. Property is strong stuff in terms of incentives, which accounts for its dynamic nature, its stimulus to economic growth, and its capacity to generate innovation.

Smith mentions residual rights as an important attribute of property.⁴³ But again, I do not see how residual capture of the fruits of the owned object follows from modularity. The modular structure of property could be laid down as an organizational principle for a state bureaucracy that controls all resources in society. This would reduce information and transaction costs and hence would promote efficiency, in a static, allocational efficiency sense. But the modular state bureaucracy would give us something very different from the dynamic engine of growth we call property. Thus, residual capture and modularity can exist independently of one another, and Smith's elaboration of modularity — a structural theory — fails to address why and when we see private residual capture — a central feature of the institution of private property.

V. CONCLUSION

Modularity is a better model of property than is the bundle of sticks. Modularity gives us a sense of the architecture of property, something the formless bundle does not do. But modularity, like the bundle, informs our understanding of the form of property, while giving no hint about its powerful incentive effects. The search must go

⁴² Merrill, *Property Strategy*, *supra* note 4, at 27–28; Thomas W. Merrill, *Accession and Original Ownership*, 1 J. LEGAL ANALYSIS 459, 481 (2009).

⁴³ Smith, *supra* note 1, at 1710.

on for a model that captures the dynamic as well as the static features of the law of things.