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MAKING COASEAN PROPERTY MORE COASEAN

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Abstract: In his pioneering work on transaction costs, Ronald Coase presupposed a picture of property as a bundle of government-prescribed use rights. This picture is not only not essential to what Coase was trying to do, but its limitations emerge when we apply Coase's central insights to analyze the structure of property itself. This leads to what we term the Coase Corollary: in a world of zero transaction costs the nature of property does not matter to allocative efficiency. But as with the Coase Theorem itself, the real point is the implication for a positive transaction cost world: we need to subject the notion of property to a comparative institutional analysis. Because transaction costs are positive, it is no accident that property is defined in terms of things as a starting point, that uses are grouped under exclusion rights, and that in rem rights are widely employed: these features of property receive a transaction cost explanation. Simple lumpy packages of property rights motivated by transaction costs form an important baseline that furnishes presumptive answers to bilateral use conflicts. A more thoroughly Coasean approach points back to a picture of property more like the traditional one furnished by the law.

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Thomas W. Merrill*

Henry E. Smith**

Ronald Coase has had a profound impact on the study of property rights, more so than any other modern thinker. There is an irony and a paradox in this. The irony is that Coase never intended to have such an impact. As he has said – most recently in the video interview that introduced the Coase Centennial Conference – his scholarly objective was to illuminate the impact of the legal system on the working of the economy, not to advance our understanding about how economic forces may influence the law.¹ The paradox concerns the role of Coase’s presuppositions about property. In his seminal writings, Coase assumes a picture of property as ad hoc bundles of government-prescribed use rights. This is deeply misleading in critical respects, and out of sync with both classical and much contemporary economic thought. Yet not only is Coase’s picture of property not essential to what Coase was trying to do, its limitations emerge when we apply Coase’s central insights to analyze the structure of property itself.

To see how Coasean analysis yields a conception of property at odds with Coase’s own picture of property, in Part IV we introduce the Coase Corollary: in a world of zero transaction costs, wealth maximization will occur regardless of the nature and scope of

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¹ See also R.H. Coase, *The Firm, the Market, and the Law* 10 (1988).

property rights. Like the Coase Theorem itself, the Coase Corollary is a thought experiment. It does not purport to describe the real world, where positive transaction costs are pervasive. In a world of positive transaction costs – in the broadest sense of institution costs and not just the costs of exchange – the system of property rights surely does matter. In such a world, a system in which use rights are assigned by the state in an ad hoc, resource-by-resource fashion would operate at a severe disadvantage, because of the high transaction costs this system would impose on participants in the economy. By contrast, a system in which use rights come in a relatively small number of prescribed packages would present significantly lower transaction costs. In effect, the Coase Corollary leads us to a picture of property more like the traditional one furnished by the law.

What is needed to explain the nature of property is no different from what Coase advocates more generally for transaction cost economics: comparative institutional analysis. This is the paradox of Coasean property: Coase's picture of property is not what one would expect to find, given a rigorous application of Coase's own methodology.

I. COASE'S INFLUENCE ON OUR NOTION OF PROPERTY

Before we isolate the limits of Coase's picture of property it is important to recognize some of the many ways in which Coase has influenced our understanding of property. A complete catalogue of influences would be nearly impossible. We will highlight five developments in property theory, each of which can be traced to Coase's seminal mid-career work, most importantly *The Problem of Social Cost*.²

² R.H. Coase, *The Problem of Social Cost*, 3 J.L. & Econ. 1 (1960).

First, Coase's insight that externalities can be internalized by contractual exchanges of property rights formed the foundation of the new institutional approach to property rights. In particular, Harold Demsetz, picking up where Coase left off, perceived that externalities can also be internalized by creating new property rights where none existed before.³ Coase saw that proposed contracts to modify rights (whether such proposals are accepted or rejected) cause actors to take account of how their actions with respect to resources impact others; through this process, contractual exchange of rights can lead to the use of resources that maximizes social value. Demsetz saw that new arrangements of property rights – especially creating property rights in previously open access resources – bring home to owners how their actions with respect to these resources affect the valuation that others place on those resources. The emergence of property rights thus tends toward the use of resources that maximizes social value. This Demsetzian variation on the original Coasean logic gave rise to a powerful economic theory explaining the evolution of property rights over time.⁴

Second, Coase's emphasis on the importance of transaction costs in determining the structure of economic institutions carried with it implications for the protection of entitlements. Very Coasean in spirit is Guido Calabresi's and Douglas Melamed's landmark distinction between property rules and liability rules as modes of protection of property rights.⁵ Property rule protection permits the transfer of rights only with the

³ Harold Demsetz, *Toward a Theory of Property Rights*, 57 *Am. Econ. Rev.* 347, 355 (1967) (Papers & Proc.).

⁴ See generally Symposium: *The Evolution of Property Rights*, 31 *J. Legal Stud.* S331 et seq. (2002) (papers exploring, extending, and critiquing the Demsetzian perspective on the evolution of property rights).

⁵ Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 *Harv. L. Rev.* 1089, 1115-17 (1972)

consent of the rights holder, typically through voluntary exchange. Liability rule protection permits the transfer of rights without the consent of the rights holder, conditioned on the payment of government-determined compensation for the rights taken. The principal explanation given by Calabresi and Melamed for the turn to liability rules in various contexts was high transaction costs. That is, when transaction costs make it difficult to reallocate entitlements through consensual transactions and/or litigation, this supplies a justification for switching from property rule to liability rule protection in order to achieve allocative efficiency.⁶ This is a direct application of Coase's central insight about the critical role of transaction costs, deployed here as an explanation for an important feature of the structure of legal rights.

Third, Coase's emphasis on the importance of transaction costs in determining whether rights will be exchanged stimulated a number of insights into how legal institutions are designed to facilitate transactions. Examples include the use of rules rather than standards in defining property rights,⁷ the use of rectilinear rather than meandering property boundaries,⁸ the adoption of land titling and registration systems,⁹ and the importance of the *numerus clausus* in limiting the number of property forms.¹⁰ In

⁶ Id. at 1106-07.

⁷ See Thomas W. Merrill, Trespass, Nuisance, and the Costs of Determining Property Rights, 14 J. Legal Stud. 13, 16 (1985) (noting that the ad coelum rule for defining rights to land involves "[n]o weighing or balancing of costs and benefits," but rather is "exceptionally simple and exceptionally rigorous" (internal citations omitted)).

⁸ See Gary D. Libecap & Dean Lueck, Land Demarcation Systems, forthcoming in Research Handbook on the Economics of Property Law (Kenneth Ayotte & Henry E. Smith, eds., Edward Elgar, forthcoming 2011).

⁹ See Benito Arruñada, Property Enforcement as Organized Consent, 19 J.L. Econ & Org. 401 (2003).

¹⁰ See Thomas W. Merrill & Henry E. Smith, Optimal Standardization in the Law of Property: The *Numerus Clausus* Principle, 110 Yale L.J. 1 (2000).

each case, the starting point of the inquiry has been the assumption that the ability to exchange rights is of central importance to achieving a more efficient use of resources, and that this is reflected in the structure of rights. This starting point in explaining many features of the structure of property systems is directly attributable to the Coasean perspective.

Fourth, Coase's emphasis on the importance of exchange of rights has underscored the importance of concentrating ownership of property in a way that facilitates transfer. This has led to a variety of additional insights about the structure of rights, such as why rules for establishing original ownership of resources assume a winner-take-all form,¹¹ the need for maintenance doctrines that militate against excessive fragmentation of rights over time,¹² and even the advantages of using trusts in transferring property from one generation to the next because legal title is concentrated in a single trustee.¹³

Fifth, Coase's insistence on comparing the performance of different institutions in regulating externalities, including market transactions and government regulation, has grown into the New Institutional Economics (NIE).¹⁴ In particular, the Coasean approach

¹¹ See, e.g., Richard A. Epstein, Possession as the Root of Title, 13 Ga. L. Rev. 1221, 1222-23 (1979); Thomas W. Merrill, Accession and Original Ownership, 1 J. Legal Analysis 459, 463 (2009); Henry E. Smith, Intellectual Property as Property: Delineating Entitlements in Information, 116 Yale L.J. 1742, 1766-77 (2007); see generally Carol M. Rose, The Shadow of the Cathedral, 106 Yale L.J. 2175, 2179 (1997) (discussing property's preference for leaving parties with either the "whole meatball" or "zip").

¹² See Michael Heller, The Gridlock Economy: How Too Much Ownership Wrecks Markets, Stops Innovation, and Costs Lives (2008).

¹³ See Thomas W. Merrill & Henry E. Smith, The Property/Contract Interface, 101 Colum. L. Rev. 773, 848-49 (2001).

¹⁴ See, e.g., Yoram Barzel, Economic Analysis of Property Rights 3-4, 11 (1989) (introducing "property rights approach"); Oliver E. Williamson, Markets and Hierarchies: Analysis and Antitrust Implications 1 (1975) (subsuming property rights economics in new institutional economics); see generally Thráinn

to institutional analysis has inspired subsequent literature on land use controls¹⁵ as well as a broader literature about the need for comparative institutional analysis in pursuing any collective goal.¹⁶ In this sense Coase can be said to be the father of comparative institutional analysis, at least in the literature inspired by economics.

Obviously, this is by any measure an extraordinary – indeed a stunning – legacy for one thinker. The focus on externalities, the possibility of reducing externalities through exchange of rights, the role of transaction costs in determining the feasibility of exchange of rights, and the need for measuring proposals for regulation against the benchmark of exchange of rights – these ideas were transformative. Coase’s cluster of ideas, either singularly or in combination, have had a revolutionary impact on our collective understanding of property rights.

II. COASE’S PICTURE OF PROPERTY

Throughout his writings, but especially in his highly influential papers on the *Federal Communications Commission*¹⁷ and *The Problem of Social Cost*,¹⁸ Coase presupposed a particular picture of property – that of property as a bundle of rights, or more precisely, as a collection of use rights authoritatively prescribed for each resource

Eggertsson, *Economic Behavior and Institutions* 33 (1990); L.J. Alston, *New Institutional Economics*, in 6 *The New Palgrave Dictionary of Economics* 32-37 (Steven N. Durlauf & Lawrence E. Blume eds., 2d ed. 2008).

¹⁵ Robert C. Ellickson, *Alternatives to Zoning: Covenants, Nuisance Rules, and Fines as Land Use Controls*, 40 *U. Chi. L. Rev.* 681 (1973).

¹⁶ Neil K. Komesar, *Imperfect Alternatives: Choosing Institutions in Law, Economics, and Public Policy* (1994).

¹⁷ R.H. Coase, *The Federal Communications Commission*, 2 *J.L. & Econ.* 1 (1959).

¹⁸ Coase, *supra* note 2.

by the state.¹⁹ This picture of property is by no means unique to Coase. Indeed, the idea of property as a bundle of government-prescribed use rights was a thoroughly modern notion when he wrote his seminal articles.²⁰

Before Coase's time – that is, 100 years ago and more – a different picture of property prevailed in legal and economic literature.²¹ This was the picture of property as a kind of mini-sovereignty. To be an owner, according to this picture, is to be the ruler over some thing. Just as the king was understood to be the ruler of the realm, so the owner of property was the ruler over some Blackacre or chattel within the realm. William Blackstone, a master synthesizer of conventional wisdom, expressed the idea quite directly. Property, he said, is that “sole and despotic dominion which one man claims and exercises over the external things of the world, in total exclusion of the right of any other individual in the universe.”²²

The notion of property as a type of sovereignty was an exaggeration, as Blackstone himself seems to have been aware.²³ Regulation, taxation, and liability for

¹⁹ Thomas W. Merrill & Henry E. Smith, What Happened to Property in Law and Economics?, 111 Yale L.J. 357 (2001).

²⁰ The bundle of rights picture was the overwhelming consensus view among commentators of the mid- to late twentieth century. See, e.g., Bruce A. Ackerman, Private Property and the Constitution 26-29 (1977) (reporting that the bundle-of-rights conception of property is so pervasive that “even the dimmest law student can be counted upon to parrot the ritual phrases on command”); see also *infra* note 27 and accompanying text.

²¹ Merrill & Smith, *supra* note 19, at 360-66, 383-84.

²² 2 William Blackstone, Commentaries *2.

²³ See, e.g., Robert P. Burns, Blackstone's Theory of the “Absolute” Rights of Property, 54 U. Cin. L. Rev. 67 (1985) (arguing that the quoted passage is inconsistent with the balance of Blackstone's treatment of property); Carol M. Rose, Canons of Property Talk, or, Blackstone's Anxiety, 108 Yale L.J. 601, 604 (1998) (describing Blackstone's talk of an exclusive right to property as “a rhetorical figure describing an extreme or ideal type rather than reality”); cf. David B. Schorr, How Blackstone Became a Blackstonian, 10 Theoretical Inquiries in Law 103 (2009), available at: <http://www.bepress.com/til/default/vol10/iss1/> (arguing that opening passage was an example of a common eighteenth century style of philosophical introduction and is inconsistent with focus of main body of Blackstone's discussion).

uses of property that harm others always constrained the discretion of property owners. But the picture of property as sovereignty had one great virtue. It captured the idea that property rights are in rem, meaning that property rights create duties of noninterference in all persons.

The distinctive feature of rights in rem is best understood in contrast to rights in personam. In personam rights, such as rights created by contract or by judgment, attach to specific individuals and are paired with duties in other specific individuals. Thus, if A promises to deliver widgets to B in return for cash, A and B have specific rights that are defined in terms of specific duties that they owe to each other – either to deliver the widgets or the cash. Similarly, if C obtains a restraining order against D, C’s rights to be free of interference by D and D’s duties to desist from interfering with C are defined with respect to and are specific to each other.

In rem rights, in contrast, are rights that create duties of noninterference in all other persons, not just in specifically identified others. Individual rights of bodily integrity, reputation, and privacy protected by the law of tort are in rem rights in this sense. Similarly, property rights are in rem, in that they create duties of noninterference with things marked in conventional ways as being owned, which duties apply as a matter of law to all persons. Thus, if Blackacre is marked as an owned thing – perhaps because it has a fence or hedge around it – all other persons are subject to a duty not to invade Blackacre without permission of the owner. This duty applies without regard to who the owner of Blackacre happens to be, or the form of ownership in which it is held, or what uses the owner has in mind for Blackacre. Similar legally-imposed duties of

noninterference apply to personal property like cars and to intellectual property rights like patents and trademarks identified in conventional ways as being owned.

The understanding of property as a right in rem creating a duty of noninterference in all persons was not unique to Blackstone and his description of property as one person's "sole and despotic dominion" over some thing. It has been a fixture of all legal systems that trace at least part of their heritage to Roman law. And it can be found in the writings of many of the founders of modern economics, including Adam Smith²⁴ and Jeremy Bentham.²⁵

At about the time Ronald Coase embarked on his academic career, the traditional picture of property as a kind of mini-sovereignty came under attack, most notably from a group of American academics known as the Legal Realists.²⁶ The Realists offered a competing picture of property – that of property as a bundle of rights or sticks. The idea is that property is simply a label attached to a collection of rights and obligations associated with particular things. The number and identity of the sticks varies from thing to thing, from place to place, and even from person to person. The content of the bundle is determined collectively, that is, primarily by the state through its laws.

²⁴ Adam Smith, *Lectures on Jurisprudence* 9-86 (R.L. Meek, et al., eds., 1978) (Report of 1762-3).

²⁵ Jeremy Bentham, *The Limits of Jurisprudence Defined* 164 (Charles Warren Everett ed., 1945) (noting that "[t]o give a man a property" in a thing, there must be "a mandate prohibiting persons at large from meddling with it"); see also Jeremy Bentham, *Idea of a Complete Law*, in *Of Laws in General* 156, 177-78 (H.L.A. Hart ed., 1970).

²⁶ See, e.g., Felix S. Cohen, *Transcendental Nonsense and the Functional Approach*, 35 *Colum. L. Rev.* 809, 839-42 (1935). The roots of this conception of property can be traced to the work of Wesley Newcomb Hohfeld, although he did not use the metaphor of a bundle of sticks. See Max Radin, *A Restatement of Hohfeld*, 51 *Harv. L. Rev.* 1141 (1938) (interpreting the Hohfeldian scheme from a legal realist's point of view); Arthur Linton Corbin, *Taxation of Seats on the Stock Exchange*, 31 *Yale L.J.* 429, 429 (1922) ("Our concept of property has shifted . . . '[P]roperty' has ceased to describe any res, or object of sense, at all, and has become merely a bundle of legal relations—rights, powers, privileges, immunities.").

The Realists' motivation for advancing the bundle of rights picture was political.²⁷ The Realists sought to “de-privilege” property as the post-modernists would say – “dethrone” might be a more appropriate expression in this context – in order to facilitate more extensive collective control over property, especially through programs of redistribution.

But the bundle of rights picture had a side effect, quite possibly unintended, in that it obscured the in rem character of property rights. The mini-sovereign picture puts the in rem feature front and center. Just as everyone in the realm owes a duty of obedience to the king, without regard to whether they have personally sworn allegiance to the king, so everyone owes a duty of noninterference to the owner of property, whether or not any one of them has met the owner or promised to respect the owner's rights to the owned thing. Also, just as the king has very broad discretionary authority in determining what happens in the realm (at least in the days before parliamentary democracy appeared on the scene), so the owner of property has very broad discretionary authority in determining how owned things are used.

The bundle of rights picture is not logically incompatible with the understanding that property rights are in rem. But it has a strong tendency to obscure the in rem feature of property. If property rights can be adjusted along countless margins, often in the course of the rendering of specific judgments by courts, then it becomes natural to start to think of property as a kind of master list of rights and duties set forth by some authoritative state institution for each type of property – or indeed for each particular

²⁷ See, e.g., Barbara H. Fried, *The Progressive Assault on Laissez Faire* (1998); Thomas C. Grey, *The Disintegration of Property*, in *NOMOS XXII: Property* 69 (J. Roland Pennock & John W. Chapman eds., 1980).

parcel of property. Under the bundle picture, property becomes an elaborate catalogue of in personam rights, setting forth what the owner can or cannot do, and concomitantly what others can and cannot do, with respect to specific resources, established by the state either through legislation or litigation.²⁸ The right-duty relationship no longer runs between the owner and “the world,” but between the owner and the state.

Coase, being a man of his times – and, one might add, being someone with little interest in legal concepts²⁹ – wholeheartedly embraced the bundle of rights picture as his understanding of property. Of course, Coase had little sympathy with the Legal Realist agenda of enhancing collective control or redistribution of property. Coase was interested in promoting the idea of contractual exchange of rights as an alternative to collective regulation. Nevertheless, he adopted the picture of property as a list of permitted and proscribed use rights, imposed by the authoritative institutions of the state. In so doing he, like the Realists, obscured the crucial in rem feature of property rights.

The evidence for Coase’s embrace of the bundle of rights picture of property is based primarily on what Coase says in his seminal 1959 and 1960 articles. We will provide here only a few select quotations from those works. Those interested in a more complete documentation of evidence based on these articles should consult an essay we wrote that also touches on Coase’s influence on property scholarship.³⁰

Consider, first, a passage that appears on the last page of *The Problem of Social*

Cost:

²⁸ Merrill & Smith, supra note 19, at 366.

²⁹ See, e.g., Coase, supra note 2, at 15 (describing the reasoning of the judges in resolving nuisance cases as frequently resting on factors that seem “strange to an economist,” such as the doctrine of the lost grant, which he says is “about as relevant as the colour of the judge’s eyes”).

³⁰ Merrill & Smith, supra note 19.

The rights of a land-owner are not unlimited. It is not even always possible for him to remove the land to another place, for instance, by quarrying it. And although it may be possible for him to exclude some people from using “his” land, this may not be true of others. For example, some people may have the right to cross the land. Furthermore, it may or may not be possible to erect certain types of buildings or to grow certain crops or to use particular drainage systems on the land. This does not come about simply because of Government regulation. It would be equally true under the common law. In fact it would be true under any system of law. A system in which the rights of individuals were unlimited would be one in which there were no rights to acquire.³¹

The conclusion Coase draws from these observations is quite striking: “We may speak of a person owning land and using it as a factor of production but what the land-owner in fact possesses is the right to carry out a circumscribed list of actions.”³² This passage rather clearly indicates that Coase understood property not as any distinctive right to a thing imposing duties of noninterference on all others, but rather as a bundle or collection of rights to carry out or desist from certain actions with respect to resources.

Even more striking is the discussion in the 1959 article on the *Federal Communications Commission*, which served as a precursor to the more famous article on social cost published the next year. There, Coase was directly concerned with making the case for establishing a market in rights to the use of radio spectrum frequencies, or what might loosely be termed “spectrum rights.” The nature of property rights was more central to this project than to the more influential article on social cost.

In making the case for allocating spectrum rights by contract, Coase had to confront a variety of arguments to the effect that private property rights in the radio portion of the electromagnetic spectrum are too difficult to define and enforce, given the invisible

³¹ Coase, *supra* note 2, at 44.

³² *Id.*

nature of the resource and our limited understanding of the circumstances in which one type of use of the radio spectrum will interfere with another. Coase sought to address these concerns by suggesting that privatization of spectrum rights should proceed not by defining exclusive rights in a portion of the “ether” or in particular radio frequencies, but rather by specifying use rights in broadcasting equipment. As he summarized his position:

What does not seem to have been understood is that what is being allocated by the Federal Communications Commission, or, if there were a market, what would be sold, is the right to use a piece of equipment to transmit signals in a particular way. Once the question is looked at in this way, it is unnecessary to think in terms of ownership of frequencies or the ether.³³

Lest there be any ambiguity about Coase’s preference for defining the proposed property rights in terms of permitted uses of broadcasting equipment, he turned immediately to certain suggestions that rights to radio spectrum could be determined by analogy to air rights over land. Coase thought that this way of thinking of the problem “tends to obscure the question that is being decided.”³⁴ He continued: “[W]hether we have the right to shoot over another man’s land has been thought of as depending on who owns the airspace over the land. It would be simpler to discuss what we should be allowed to do with a gun.”³⁵ Coase’s preference for defining property rights in terms of permitted uses was here revealed in the starkest possible terms. Coase thought it was unduly complicated to try to describe a landowner’s rights in terms of a general rule

³³ Coase, *supra* note 17, at 33.

³⁴ *Id.* at 34.

³⁵ *Id.*

about the right of the owner to exclude intrusions by strangers from a delimited space – the traditional in rem approach. Far better to draw up a list of permissible uses of a gun.

Two other features of these articles, especially the 1960 article on the *Problem of Social Cost*, reinforced the list-of-uses or bundle-of-rights picture of property. First, all Coase’s examples involved two-party disputes: ranchers and farmers, doctors and confectioners, and so forth.³⁶ This made it more plausible to imagine property as a list of use rights freely exchangeable between the parties to any dispute. Cattle could be allowed to trample crops, or cattle could be prohibited from trampling crops – either way – and the rancher and farmer would then decide how to reallocate this use right. Second, all of Coase’s examples involved land use incompatibilities, usually incompatibilities considered under the rubric of nuisance law. This made it more plausible to think of use rights as being highly mutable. Had Coase focused on other problems associated with ownership, like physical ouster, theft, or state expropriation, this perspective would not have seemed so plausible.

We now know that Coase’s seminal contributions in his 1959 and 1960 articles occurred at the mid-point in his extraordinary career. Coase’s endorsement of the bundle of rights picture of property in these articles would have had little influence on subsequent property scholarship if he had recanted this feature of his analysis in later writing. There is, however, no evidence that Coase ever relinquished his attachment to

³⁶ Coase, *supra* note 2, at 8-10 (discussing *Sturges v. Bridgman*, 11 Ch. D. 852 (1879), involving a confectioner and a doctor). See also *id.* at 10-11 (discussing *Cooke v. Forbes*, L.R. 5 Eq. 166 (1867-68), involving a mat weaver and an ammonia manufacturer); *id.* at 11-13 (discussing *Bryant v. Lefever*, 4 C.P.D. 172 (1878-79), involving an owner of a house with timber stacked on the roof and an owner of an adjacent house with a smoky chimney); *id.* at 14 (discussing *Bass v. Gregory*, 25 Q.B. D. 481 (1890), involving the owners of a public house with a brewing vat and an owner of some cottages with a well that served as a ventilating shaft for the vat).

the bundle of rights picture of property. In fact, three pieces of evidence from Coase's later writings appear to confirm his lifetime commitment to this viewpoint.

Tom Hazlett has suggested in conversation that Coase abandoned the bundle of rights picture, and embraced a more conventional in rem conception of property, in a draft study he undertook in 1963 for the Rand Corporation on the allocation of the radio spectrum.³⁷ Rand commissioned the study to examine how the nascent federal space program could acquire sufficient spectrum rights to ensure adequate communications between satellites or space craft and ground controllers. The draft was authored by Coase and two Rand economists, William Meckling and Jora Minasian. The lengthy draft covers a variety of topics related to the space communications issue, and includes two chapters proposing as a solution to anticipated spectrum shortages that spectrum rights should be allocated by market transactions rather than by government fiat. This of course is the proposal advanced by Coase in his 1959 *Federal Communications Commission* article.

Interestingly, the two chapters set forth two different analyses of how units of spectrum rights could be defined as a predicate to establishing a functioning market in such rights. The first chapter suggests that property rights be defined in terms of inputs –

³⁷ Ronald Coase, William H. Meckling, & Jora Minasian, RAND Corporation, Problems of Radio Frequency Allocation (RAND unrestricted draft no. DRU-1219-RC, 1995), available at: <http://www.rand.org/pubs/drafts/2008/DRU1219.pdf>. Although the draft study is undated, internal evidence suggests it was written in 1963. The most recent material cited in the draft was published in 1962, and it refers to conference held in 1963 in the future tense. See *id.* at 11. For further discussion of the Rand study and Coase's role in the history of allocation of spectrum rights, see Thomas W. Hazlett, David Porter, & Vernon L. Smith, Radio Spectrum and the Disruptive Clarity of Ronald Coase, (George Mason Law & Economics Research Paper No. 10-18, April 1, 2010; forthcoming, *Journal of Law and Economics*), available at SSRN: <http://ssrn.com/abstract=1583098>.

defining the permissible uses of broadcasting equipment.³⁸ This of course is the proposal advanced by Coase in his 1959 article. This chapter was clearly written by Coase. The draft in this chapter refers to the author in the first person as “I,” and introduces a quotation from the 1959 article with the phrase, “[a]s I said on a previous occasion. . . .”³⁹ Not surprisingly, property in this portion of the draft study is treated as a bundle of authoritatively prescribed use rights. For example, the author of this chapter (Coase) says at one point:

We commonly think of the process of allocating radio frequencies as being similar to that by which a stone which is extracted from a quarry is allocated to various users. But, in looking at the question this way, we tend to forget that the stone can only be used in certain ways. What the owner of a piece of stone can do with it is strictly limited; but what he can do with it defines the property rights which adhere to ownership of a piece of stone. And the same would be true for the ownership of radio frequencies.⁴⁰

The draft study also offered, in the next chapter, an “alternative approach” to establishing exchangeable rights in spectrum.⁴¹ This alternative conception would have defined the relevant units to be exchanged in terms of outputs, namely, in reference to a particular segment of bandwidth that could be broadcast over a particular area, with the owner given a right to exclude all “admissions” by others into this frequency in this area. This alternative approach is squarely grounded in a conception of property as an in rem right of exclusion – the traditional legal understanding. The alternative analysis is written in an impersonal passive voice, cites primarily technical engineering materials, and

³⁸ Coase, Meckling, & Minasian, *supra* note 37, at 73-98 (Chapter III: “The Radio Frequency Spectrum as a Scarce Resource”).

³⁹ *Id.* at 94.

⁴⁰ *Id.* at 93.

⁴¹ *Id.* at 99-176 (Chapter IV: “Property Rights in Radiation: Alternative Approach”).

adopts the style of a professional American academic journal. It was almost certainly written by one of Coase's co-authors, Jora Minasian, who a decade later published an article very close to the "alternative approach" chapter in the Rand study.⁴²

The evidence from the draft study is admittedly not conclusive about Coase's views on property in the mid-1960s. The draft does not expressly acknowledge that different authors wrote the different chapters, nor does it acknowledge that there was any disagreement among the authors about the proper way to conceive of property rights in radio frequencies. Nevertheless, we believe the draft study provides at least circumstantial evidence that Coase continued to adhere to his understanding of property as a bundle of use rights. The chapter that adopts the property-as-inputs conception refers to the author in the first person as Coase, and clearly rehearses the Coasean view. The "alternative approach" grounded in exclusion rights bears no evidence of Coase's style of writing. It would not be uncommon for three authors of a consulting report to "agree to disagree" on a significant point like this by presenting their competing views as "alternative" ways of thinking about a problem. We strongly suspect that is what happened in the draft study.

Perhaps more to the point, even if Coase had experienced a conversion in 1963, this would have had little effect on readers of his seminal articles of 1959 and 1960. The draft study was "suppressed" by the Rand Corporation, evidently on the ground that it was too controversial.⁴³ Only many years later, in response to increased acceptance of

⁴² Jora R. Minasian, Property Rights in Radiation: An Alternative Approach to Radio Frequency Allocation, 18 J.L. & Econ. 221 (1975).

⁴³ Ronald H. Coase, Comment on Thomas W. Hazlett: Assigning Property Rights to Radio Spectrum Users: Why Did FCC License Auctions Take 67 Years?, 41 J.L. & Econ. 577, 579 (1998).

the idea of allocating spectrum rights by market mechanisms, did Rand decide to make the study publicly available.⁴⁴ Even today, however, the draft study is not widely known or cited. Thus, the draft's implicit disavowal of Coase's picture of property, at least in its discussion of the "alternative approach" to establishing spectrum rights, had little or no influence on later development of property theory.

A second piece of evidence involves Coase's 1974 article entitled *The Lighthouse in Economics*.⁴⁵ Coase became interested in lighthouses because they have been widely cited in economics texts as an example of a public good that is nonexcludible and nonrivalrous, often with the accompanying suggestion that this means lighthouse services must be provided by the government and funded out of general tax revenues. Coase was able to show, through an examination of the history of lighthouses in Britain, that lighthouses have at some times been built and operated by nongovernmental entities. Thus, as Coase correctly concluded, they are not "an example of a service which could only be provided by the government."⁴⁶

Coase also thought that his investigations showed that, "contrary to the belief of many economists, a lighthouse can be provided by private enterprise."⁴⁷ This he surely did not do, if by "private enterprise" one means a system of conventional property rights to exclude others from lighthouse properties combined with contracts between lighthouse

⁴⁴ See Coase, Meckling, & Minasian, *supra* note 37, at iii.

⁴⁵ R.H. Coase, *The Lighthouse in Economics*, 17 *J.L. & Econ.* 357 (1974).

⁴⁶ *Id.* at 376.

⁴⁷ *Id.* at 375.

owners and ships.⁴⁸ If this had been the full extent of the rights of private lighthouse owners, they would have had no practical way of excluding noncontracting ships from benefitting from the information supplied by lighthouse beacons. Freeriding would likely be rampant, and private lighthouses would likely go out of business.

Private entities were able to survive in the lighthouse business only because they were given an additional property right by the government: the right to exclude ships from British ports unless the ships paid lighthouse tolls to customs officers, who in turn passed on a portion of the tolls to the operators of lighthouses.⁴⁹ In other words, lighthouse owners were given a separate and distinct property right to exclude vessels stopping at British ports from using the information supplied by the lighthouse without paying a fee. This separate right, analogous to an intellectual property right, is what made the provision of lighthouse services by private entities possible.⁵⁰

What are we to make of the fact that Coase misidentified the relevant property right that made the provision of lighthouse services by private entities possible? This does not necessarily prove that he continued to think of property as a bundle of use rights. Nevertheless, there is, again, circumstantial evidence supporting such an inference. Coase at one point makes the remarkable claim about the provision of lighthouse services by “private enterprise” that:

[t]he role of the government was limited to the establishment and enforcement of property rights in the lighthouse. The charges were

⁴⁸ See David E. Van Zandt, *The Lessons of the Lighthouse: “Government” or “Private” Provision of Goods*, 22 *J. Legal Stud.* 47 (1993).

⁴⁹ See Elodie Bertrand, *The Coasean Analysis of Lighthouse Financing: Myths and Realities*, 30 *Cambridge J. Econ.* 389, 396-97 (2006); Van Zandt, *supra* note 48, at 54-57, 64-69.

⁵⁰ A lighthouse owner also needed the Crown’s authorization in order to have the right to enforce the payment of light dues. Bertrand, *supra* note 49, at 397.

collected at the ports by agents for the lighthouses. The problem of enforcement was no different for them than for other suppliers of goods and services to the shipowner. The property rights were unusual only in that they stipulated the price that could be charged.⁵¹

This passage makes sense only if Coase believed that the “property rights in the lighthouse” could be expanded by the government to include the right to receive a portion of the tolls collected by customs officers from ships using nearby ports. In other words, the bundle of rights associated with owning a tower with a light on top can be modified by the state by adding the right to receive a stream of revenues collected by the government from third parties.

This is at a minimum an unconventional way of describing property rights. We do not ordinarily say that the property right of homeowners includes the right to deduct mortgage interest payments from income taxes the homeowner may owe the government, or that the property right of grocers in foodstuffs includes the right to redeem foodstamps collected from patrons in exchange for those foodstuffs. One can of course adopt this locution if one embraces the bundle of rights conception of property. But one would not ordinarily speak of property rights as including the prospect of side payments from the government based on understandings that vary widely with the circumstances of each individual owner.

Notice in this respect that the specific deal offered by the government to each private lighthouse operator was highly idiosyncratic – different tolls were charged in different ports for different types of ships, the length of the agreement between the lighthouse operator and the government varied from lighthouse to lighthouse, and so forth. If all these variations are included in the concept of property, then property rights

⁵¹ Coase, *supra* note 45, at 375.

must be envisioned as a complex of in personam rights prescribed by the state, not standardized rights imposing duties of noninterference on all actors. We would conclude, therefore, that the *Lighthouse* article, at least implicitly, reflects a continuation of Coase's commitment to the bundle of rights picture of property.

A third piece of evidence suggesting that Coase never relinquished the bundle of rights picture of property is a book he published in 1988 reproducing his leading articles, including the *Problem of Social Cost* and *The Lighthouse in Economics*.⁵² The book includes an introduction, in which Coase set forth his understanding of the linkages between these articles. In explaining the connection between the 1959 and 1960 articles, he returned once again to the nature of property rights. After reiterating his proposal to allocate rights to use the radio spectrum by market exchange, he continued as follows:

I went on to discuss what rights would be acquired by the successful bidder, a question which economists, thinking as they do of factors of production as physical units (tons of fertilizer, acres of land, etc.), usually take for granted. Lawyers, however, habitually think of what is bought and sold as consisting of a *bundle of rights*. It is easy to see why I was led to adopt the *same approach* in dealing with the radio frequency spectrum, since it is difficult to treat the use of the right to emit electrical radiation solely in physical terms, particularly since what can be achieved by emitting electrical radiations on a given frequency depends crucially on what use of this and adjacent frequencies is being made by others. It is impossible to think concretely about what would be paid for the use of an particular frequency unless there has been some specification of the rights possessed by all the people who use this and adjacent frequencies or who might use them. . . .

There is no difficulty in employing the *same approach* which I found useful in discussing the allocation of the radio frequency spectrum for the analysis of problems which economists are more accustomed to handle. Someone having the right to build a factory on a piece of land (and wishing to exercise that right) would normally also secure the right to prevent someone else from, say, planting wheat on it; and if the operation of the factory created noise or led to the emission of smoke, the factory-

⁵² Coase, *supra* note 1.

owner would wish to have the right to do this. The factory-owner would chose to use a particular site and create noise and emit smoke because this would produce a higher net income than alternative sites or modes of operation. Exercise of these rights would, of course, deny the use of the land to agriculturalists and clean air to others. . . .

What this approach makes clear is that there is no difference, analytically, between rights such as those to determine how a piece of land should be used and those, for example, which enable someone in a given location to emit smoke.⁵³

Here we find Coase explicitly endorsing the bundle of rights conception, and explicitly extending it from property rights in unusual resources like the radio spectrum to conventional rights in land. Some of his language even goes so far as to suggest there is no standard default bundle of land ownership, but merely ad hoc collections of use rights, assembled one tract at a time. Thus, for example, he says that someone buying land for a factory “would normally also secure the right to prevent someone else from, say, planting wheat on it.”⁵⁴ We seriously doubt that Coase entertained the notion that property rights are purely ad hoc assemblages of rights and privileges, like ingredients at a Mongolian barbecue restaurant. More likely he should be understood as saying that the common law has defined certain default package of use rights associated with land, which in the ordinary case would include the right to build a factory and to exclude someone else who wanted to use the land to plant wheat. But clearly he conceived of each use right as contingent on the evolved state of the law, and as freely exchangeable through contracting. This is the bundle of rights picture of property.

⁵³ Id. 11-12 (emphasis added).

⁵⁴ Id. at 11.

III. PROPERTY AS AN IN REM RIGHT

As should be obvious from the many examples of influence we cited in Part I, Coase's picture of property did not inhibit rapid progress in the development of the economic analysis of property. Nevertheless, we will argue that Coase's picture of property had a distorting influence, and in certain respects may have impeded intellectual progress in developing our understanding of the institution of property.

Notwithstanding the impressive payoffs from Coase's work, the list-of-uses conception of property implicit in his articles also had its costs. The picture of property as an ever-mutable bundle of rights has long blinded economic scholars to the in rem features of property, which means that they have ignored or downplayed certain dimensions of any system of property rights. We will mention three key implications that flow from the in rem understanding of property that were long overlooked in the wake of Coase.

First, the bundle of rights picture fails to capture the centrality of exclusion rights to the institution of property. Because the owner has the right to exclude the world, the owner assumes the role of gatekeeper or manager of the asset.⁵⁵ This means, among other things, that the owner has a powerful incentive to invest in and develop the asset, because the owner will capture the benefit of these actions as the residual claimant.⁵⁶

⁵⁵ See, e.g., J.E. Penner, *The Idea of Property in Law* 29-30, 71 (1997); Thomas W. Merrill, *Property and the Right to Exclude*, 77 *Neb. L. Rev.* 730, 739 (1998); Henry E. Smith, *Self-Help and the Nature of Property*, 1 *J.L. Econ. & Pol'y* 69, 78-79 (2005).

⁵⁶ See, e.g., Barzel, *supra* note 14, at 3-4 (introducing theory in which the notion of rights "is closely related to that of residual claimancy," and the notion of property rights "is closely related to that of transaction costs," because the residual claimant enjoys attributes of assets that cannot be captured in contracts due to transaction costs.); Armen A. Alchian & Harold Demsetz, *Production, Information Costs, and Economic Organization*, 62 *Am. Econ. Rev.* 777 (1972) (describing the residual claimant as one with incentives to reduce shirking and with the most significant management potential).

Thus, exclusion accounts for the dynamic efficiency of property, as opposed to the allocational efficiency that comes from the free exchange of rights. Under the bundle of rights picture, in contrast, the exclusion right fades into the background as part of the general bundle of sticks, no more important than the right to inherit or the right to use the asset for particular purposes.

Second, the bundle of rights picture fails to highlight the enormous information cost constraints associated with any system of in rem rights. This is most pronounced if we think about the situation of potential violators of in rem rights.⁵⁷ If everyday property – rights to land and chattels – entails rights to exclude all the world from some thing, this sets up a potentially severe information cost problem for potential violators of these rights. The costs of communicating information about rights and duties in a world that consists solely of in personam or A-to-B rights would be significant. Each person would have to be aware of and comprehend all the obligations that they had personally undertaken or that had been imposed upon them. The costs of communicating information about in rem rights and duties which apply to “everyone” are potentially much greater. If every property right was described by a customizable list of permitted uses – as Coase imagined with respect to stones from different quarries or individual British lighthouses – and these rights had to be understood and respected by all the world, the resulting information costs would be staggering.

This in turn suggests that the messages about everyday property must be very simple – messages like “keep off” or “don’t touch” – couched in concepts readily

⁵⁷ See, e.g., Merrill & Smith, *supra* note 10, at 8; Thomas W. Merrill & Henry E. Smith, *The Morality of Property*, 48 *Wm. & Mary L. Rev.* 1849, 1850, 1854 (2007); Henry E. Smith, *The Language of Property: Form, Context, and Audience*, 55 *Stan. L. Rev.* 1105, 1146-47 (2003).

comprehensible to remote people with little special legal or asset-specific information.⁵⁸

It also suggests that the signaling mechanisms for delineating the boundaries of property must be easily observable and comprehensible, things like fences and hedge rows that mark the edges of land ownership.⁵⁹ The bundle of rights conception obscures the need for communication to potential violators on a mass scale, and thus suggests that property rights are much more malleable than we observe them in actual practice to be.

Even if we confine ourselves to potential transactors in property rights – the more common Coasean perspective – the in rem nature of property also underscores the need to communicate with a large potential audience.⁶⁰ The types of transactions emphasized by Coase – agreements between two neighbors to modify entitlements in order more efficiently to manage spillover effects – are relatively rare. Much more common are outright purchases, leases, licenses, and lending of all stripes and varieties. In order for the potential parties to these transactions to make judgments about who owns what, it is necessary that the available forms of property and conventions about the respective priorities of different lenders be significantly standardized. Standardization to the degree necessary for random potential violators is not necessary. But free customization of interests between A and B would be unacceptable, because this would create an

⁵⁸ See, e.g., Robert C. Ellickson, *Property in Land*, 102 *Yale L.J.* 1315, 1328-29 (1993) (noting that fences and other boundary markers are more readily apparent to outsiders than a group's internal work rules); Merrill & Smith, *supra* note 19, at 388-94 (discussing simplicity of messages about property to dutyholders in the context of social norms and causation of harm); Smith, *supra* note 57, at 1116-17; see also Carol M. Rose, *Rethinking Environmental Controls: Management Strategies for Common Resources*, 1991 *Duke L.J.* 1, 18-20 (contrasting "KEEPOUT" and "RIGHTWAY" strategies in terms of administrative costs).

⁵⁹ See, e.g., Carol M. Rose, *Property and Persuasion: Essays on the History, Theory, and Rhetoric of Ownership* 267-304 (1994); Robert C. Ellickson, *The Inevitable Trend Toward Universally Recognized Signals of Property Claims: An Essay for Carol Rose* (Yale Law & Economics Research Paper No. 415, Oct. 28, 2010; forthcoming, *William & Mary Bill of Rights Journal*), available at SSRN: <http://ssrn.com/abstract=1699427>; Smith, *supra* note 57, at 1115-25, 1174-75.

⁶⁰ See, e.g., Merrill & Smith, *supra* note 10, at 24-42; Smith, *supra* note 57, 1139-67.

informational externality for other potential transactors. The added informational burden would affect not only future transactors in the property transferred from A to B, but all potential transactors who would have to be on the lookout for deviant forms of property or security interests in unrelated transactions.⁶¹

One might think that land records would obviate the need for standardization.⁶² But cross-country empirical work on land records suggests that land records and standardization are to some extent complements: more definitive land records that guarantee title tend to have a stricter *numerus clausus*, allowing fewer property forms, apparently because the registrar of titles stands in for the public as the “audience” for rights and cannot be expected to pass judgment on all sorts of idiosyncratic rights.⁶³ By contrast, the bundle of rights picture emphasizes the plasticity and variety of packages of property rights. Again, the bundle of rights picture of property obscures the need for this degree of standardization of rights.

Third, the in rem nature of property rights renders implausible one of the principal claims of Coase’s 1960 article, which is that the problem of social cost is reciprocal in nature, and thus it is not useful to speak of one party to an externality as being “the

⁶¹ Merrill & Smith, *supra* note 10, at 26-27, 31-33; Henry E. Smith, Standardization in Property Law, in *Research Handbook on the Economics of Property Law 20-34* (Kenneth Ayotte & Henry E. Smith, eds., Edward Elgar, forthcoming, 2011).

⁶² See, e.g., Richard A. Epstein, Notice and Freedom of Contract in the Law of Servitudes, 55 *S. Cal. L. Rev.* 1353 (1982); see also Alfred F. Conard, Easement Novelty, 30 *Cal. L. Rev.* 125, 131-33 (1942) (arguing that the enforcement of easements should not be objectionable on grounds of novelty as long as there is notice). Henry Hansmann and Reinier Kraakman fall into this trap when their assertion that recording removes reasons for standardization leads them to claim – erroneously – that the *numerus clausus* has no basis in common law. Henry Hansmann & Reinier Kraakman, Property, Contract, and Verification: The *Numerus Clausus* Problem and the Divisibility of Rights, 31 *J. Legal Stud.* S373, S416-17 (2002).

⁶³ See Arruñada, *supra* note 9, at 1416-20.

cause” of any problem of incompatible demands on resources.⁶⁴ Lawyers have always had trouble accepting this claim, offering counterexamples such as A’s fist striking B’s nose.⁶⁵ The idea of reciprocal causation is not strictly speaking entailed by the bundle of rights picture of property. One could theoretically retain the idea of asymmetric causation with respect to (some at least) of the uses included within the bundle. Once we recognize the in rem nature of rights in property and bodily integrity, however, the idea of reciprocal causation is not just a contingent feature of the legally sanctioned bundle, it becomes utterly implausible.

Rights good against the world have a built-in asymmetry. We could imagine solving questions of resource use pairwise between everyone: A versus B, A versus C, B versus C, and so on. But many of the various combinations would never be used, making A versus everyone else a reasonable first approximation. And A versus everyone else is asymmetric: the class of everyone else is almost inevitably much larger and more indefinite than the class that includes just A. Consider the rights to use a car. If A has the right and can exclude all others, then it is clear that anyone else who wants to use the car must strike a deal with A. The costs of transactions under such an arrangement are manageable. But if all the world has the right to use the car, then if A wishes to use the car for any period of time, A will have to strike a deal with all the world.⁶⁶ The costs of entering into transactions under this allocation of rights are extremely large – indeed potentially infinite. If we say that the difference between these two arrangements

⁶⁴ Coase, *supra* note 2, at 2, 8-15, 37.

⁶⁵ See, e.g., Donald H. Gjerdingen, *The Coase Theorem and the Psychology of Common-Law Thought*, 56 *S. Cal. L. Rev.* 711, 724-25 (1983) (ascribing this resistance to psychological differences between economic and common-law conceptions of causation).

⁶⁶ See, e.g., Clifford G. Holderness, *A Legal Foundation for Exchange*, 14 *J. Legal Stud.* 321 (1985).

disappears if we assume zero transaction costs, then this significantly undermines the heuristic value of the assumption of zero transaction costs, since the transaction costs differ enormously depending on the assignment of rights.

Is the basic package of rights associated with the in rem picture of property a mystification or legal irrelevancy, like the color of the judge's eyes?⁶⁷ Our answer is no, and that answer relates back to the Coase Theorem, but in a more thoroughgoing way than envisioned by Coase. It is time to turn the Coasean spotlight back on the picture of property as a bundle of sticks.

IV. PROPERTY AND THE COASE COROLLARY

Not only was Coase's picture of property wholly tangential to the major contributions that have flowed from his pathbreaking work, it was inconsistent with the main tenor of his work. Although Coase aimed to show the influence of the legal system on the workings of the economic system, his framework, as we have seen, has been immensely fruitful as a tool of institutional analysis. In this spirit we apply Coase's framework to the notion of property itself – an important legal and economic institution if ever there was one.

Coase did not present his work in *The Problem of Social Cost* as a theorem, but starting with George Stigler in the mid 1960's, Coase's argument that in a zero transaction cost world people will always reach the wealth-maximizing result through contracting (or other equally costless institutional responses) has come to be known as the "Coase Theorem."⁶⁸ Coase much later summarized his article as "show[ing] . . . that,

⁶⁷ See supra note 29.

⁶⁸ George J. Stigler, *The Theory of Price* 113 (3d ed. 1966) (stating Coase Theorem as proposition that "under perfect competition private and social costs will be equal").

in the absence of transaction costs, it does not matter what the law is, since people can always negotiate without cost to acquire, subdivide, and combine rights whenever this would increase the value of production.”⁶⁹ The point of the exercise was to show the importance of transaction costs in the real world of positive social costs. Far from endorsing a view of the world based on an assumption of zero transaction costs, Coase’s aim was a nearly the opposite. As he wrote:

The world of zero transaction costs has often been described as a Coasean world. Nothing could be further from the truth. It is the world of modern economic theory, one which I was hoping to persuade economists to leave.⁷⁰

By pointing out the strangeness of the proposition that the “legal position” is irrelevant to the pattern of production, Coase was highlighting the importance of transaction costs to institutional design.

The relevant institutions go far beyond the thin question of who, as between a pair of actors, will be liable for an activity involving a resource conflict.⁷¹ One critical institution is the firm. Firms are economic institutions, which because of Coase’s work we now see as explained by transaction costs. Coase himself saw that what came to be

⁶⁹ Coase, *supra* note 1, at 14. On how Coase assumes away strategic behavior, see, e.g., Robert Cooter, *The Cost of Coase*, 11 *J. Legal Stud.* 1 (1982) (emphasizing strategic behavior by comparing the Coase Theorem and the “Hobbes Theorem”). On the abstraction in Coase’s analysis away from issues like wealth effects on consumers, Harold Demsetz, *When Does the Rule of Liability Matter?*, 1 *J. Legal Stud.* 13 (1972); Stewart Schwab, *Coase Defends Coase: Why Lawyers Listen and Economists Do Not*, 87 *Mich. L. Rev.* 1171, 1178-84 (1989). For Coase’s view on these issues, see Coase, *supra* note 1 at 170-74.

⁷⁰ *Id.* at 174; see also Daniel A. Farber, *Parody Lost/Pragmatism Regained: The Ironic History of the Coase Theorem*, 83 *Va. L. Rev.* 397 (1997); Deirdre McCloskey, *The So-Called Coase Theorem*, 24 *E. Econ. J.* 367 (1998) (pointing out that part of Coase Theorem that originated with Coase is claim that placement of liability does matter in world of positive transaction costs, not that placement of liability does not matter in world of zero transaction cost, as conventionally stated).

⁷¹ On the bilateral approach to liability, see, e.g., Guido Calabresi, *The Costs of Accidents: A Legal and Economic Analysis* 135-73, 261-63 (1970); Guido Calabresi & Jon T. Hirschoff, *Toward a Test for Strict Liability in Torts*, 81 *Yale L.J.* 1055, 1060 (1972); Demsetz, *supra* note 69, at 27-28.

known as the Coase Theorem is closely related to his earlier work on the theory of the firm.⁷² In that article Coase showed that the boundary of the firm can only be explained by the relative costs of carrying out transactions within the firm (by fiat) and outside the firm in the market (by market contracting). In other words, “in the absence of transaction costs, there is no basis for the existence of firms.”⁷³

Another critical institution is property itself. We have property and endow it with a basic architecture of exclusion rules supplemented by rules and standards governing proper use, precisely because of transaction costs. The term “transaction costs” in a sense replicates some of the hidden bias towards contracts and away from property in Coase’s seminal work. The term “transaction costs” can be taken narrowly or broadly.⁷⁴ For institutional analysis – or in other words “transaction cost economics” – the frictions captured by the term “transaction costs” go beyond the costs of exchange in the sense of a *quid pro quo*. Coase was preoccupied the costs of exchange of rights, and treated transaction costs as the resources that must be expended “to discover who it is that one wishes to deal with . . . and on what terms, to conduct negotiations leading up to a bargain, to draw up a contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on.”⁷⁵ But transaction costs also include other costs of institutions. Most relevant for us are all the resources that must be expended in order to determine *what* is being exchanged – the costs of delineating,

⁷² R.H. Coase, *The Nature of the Firm*, 4 *Economica* (n.s.) 386 (1937).

⁷³ Coase, *supra* note 1, at 14.

⁷⁴ See Douglas W. Allen, *What Are Transaction Costs?*, 14 *Res. L. & Econ.* 1 (1991) (arguing that transaction costs are better defined as the costs of establishing property rights, in the economist’s sense of a *de facto* ability to derive utility from an action, rather than narrowly as the costs of exchange).

⁷⁵ Coase, *supra* note 2 at 15.

understanding, and enforcing rights to particular resources. Some or all of these costs have variously gone under the headings of entitlement determination costs,⁷⁶ information costs,⁷⁷ measurement costs,⁷⁸ and institution costs.⁷⁹ Although it is true that in analyzing particular institutions, it is necessary to be clear on which “transaction costs” are actually in play,⁸⁰ we will employ the Coasean term “transaction costs” in order to explore the implications of Coase’s work – but on the understanding that transaction costs include these other costs of a system of property rights and alternative institutional arrangements.

Once we recognize that property is an institution shaped by positive transaction costs in this broad sense, we come to what we dub the *Coase Corollary*:

Coase Corollary: In a world of zero transaction costs, wealth maximization will occur regardless of the nature and scope of property rights.

The intuition behind the Coase Corollary is straightforward, and directly parallels the intuition behind the Coase Theorem. In a world of zero transaction costs, it would not matter whether property rights are broad or narrow, clear or ambiguous – or in rem or in personam. For example, it would not matter if the boundary of land is marked by precise lines, or if the boundary is fuzzy and use rights are determined through case-by-case

⁷⁶ See Merrill, *supra* note 7, at 20-26 (distinguishing between transaction costs and entitlement determination costs).

⁷⁷ See, e.g., Alchian & Demsetz, *supra* note 56; Carl J. Dahlman, The Problem of Externality, 22 J.L. & Econ. 141, 148 (1979) (noting three classes of “search and information costs, bargaining and decision costs, policing and enforcement costs . . . [which] reduce to a single one . . . [the] resources losses due to lack of information.”); George J. Stigler, The Economics of Information, 69 J. Pol. Econ. 213 (1961).

⁷⁸ Yoram Barzel, Measurement Cost and the Organization of Markets, 25 J.L. & Econ. 27 (1982); see also Barzel, *supra* note 14.

⁷⁹ Steven N.S. Cheung, The Transaction Costs Paradigm, 36 Econ. Inquiry 514, 515 (1998) (“Transaction costs’ must be defined to be all the costs which do not exist in a Robinson Crusoe economy.”); Henry E. Smith, Governing Water: The Semicommons of Fluid Property Rights, 50 Ariz. L. Rev. 445, 447 (2008).

⁸⁰ Cf. Pierre Schlag, The Problem of Transaction Costs, 62 S. Cal. L. Rev. 1661, 1674-76 (1989) (noting widely divergent definitions of “transaction costs” and warning of dangers of tautology in broad definitions for the Coase Theorem).

balancing of the needs of rival claimants. Nor would it matter if property rights were standardized (as in the *numerus clausus*), or if idiosyncratic rights were allowed to proliferate. Either way, as long as transaction costs are zero, the respective rights of all affected parties will be instantly and costlessly ascertained. Similarly, it does not matter if property can be held in only one form – say, the fee simple absolute – or if each item of property has its own unique set of attributes. Either way, as long as transaction costs are zero, all affected parties can either instantly and costlessly generate new forms (if there are not enough) or can instantly and costlessly communicate about and understand the forms that do exist (if there are infinitely many).

Indeed, in a zero transaction cost world, it would not matter whether we had anything like property law at all.⁸¹ We could, instead, just as easily regard “property” as being the solution of all pairwise conflicts between members of society with respect to each potential resource conflict – the most extreme bundle of rights picture of property imaginable. The delineation, understanding, and enforcement of these highly atomized rights would cost no more than a system in which rights were understood as having a standardized form and as imposing duties of respect on all persons. And, as we saw earlier, the highly atomized list of uses approach to property is Coase’s picture of property.⁸²

But as with the Coase Theorem, the lesson of the Coase Corollary is to subject the notion of property to comparative institutional analysis, and it is here that we argue that

⁸¹ Steven Cheung recognized that a thoroughgoing version of the zero transaction cost assumption would remove the need for property rights at all. See Cheung, *supra* note 79, at 518-20. Coase has agreed in principle with this observation. See Coase, *supra* note 1, at 14-15.

⁸² See also Merrill & Smith, *supra* note 19, at 385 (noting that for Coaseans “[p]roperty rights are simply ‘entitlements,’ little empty boxes filled with a miscellany of use rights that operate in the background of a world consisting of nothing but in personam obligations”).

the extreme bundle picture of property comes up far short. Indeed, this hyper-Realist picture is plausible (much less realistic) only in a zero transaction cost world – the world Coase tried to persuade economists to leave.

In our positive transaction cost world, the lumpy, in rem property rights are no accident precisely because they save on delineation, understanding, and enforcement costs. Further, in our positive transaction cost world one should expect to find a significant degree of standardization of rights, precisely because this would save on delineation, understanding, and enforcement costs. This is not to say that rights will be maximally standardized. There is an inevitable tradeoff between the reduction of information costs through standardization of rights and the need for flexibility in offering a variety of options in terms of how entitlements are delineated and defined.⁸³ Still, the exploration of a zero transaction cost world makes clear what we would otherwise miss because it is so obvious: that property rights assume the form they do in significant part in order to conserve on transaction costs. Nothing could be more Coasean. Despite not being Coase's picture of property, this more realistic picture is the result of applying the true Coase Theorem back on the notion of property itself.

Such an exercise is no mere theoretical curiosity. The Coase Corollary sheds light on some of the very questions that Coase addressed in his articles. Take the problem of spillovers that Coase illustrated with nuisance cases.⁸⁴ When deciding a nuisance case, we are not writing on a blank slate and are not really asking judges to engage in a cost-benefit analysis. Coase may be right that the ultimate question is who gets to do what

⁸³ See Merrill & Smith, *supra* note 10 (emphasizing the need for optimal, rather than maximal, standardization of property forms).

⁸⁴ Coase, *supra* note 2, at 8-10.

and that this determines the value of production. But because of transaction costs we delegate to owners a range of sovereign authority over their property, with a presumptive right to repel invasions through some combination of self-help and litigation (or its threat). This view of nuisance is more realistic than Coase's, because a truly universal ex post balancing test for resource conflict would be prohibitively costly.

This not to say that owners always win. For one thing, the sovereignty afforded owners through the exclusion strategy is only a starting point. The presumption that owners can veto invasions sometimes gives way – to the need for airplane overflights and antidiscrimination law, to take two examples.⁸⁵ And sometimes owners will not be able to shut down activities emitting sound or odors – for example, if the locality is characterized by such activities.⁸⁶ In other situations, owners may be relegated to a remedy of damages rather than an injunction.⁸⁷ These questions too all turn in part on considerations of transaction costs – both the entitlement determination and processing costs and the (narrower) transaction costs associated with potential exchanges.⁸⁸ But

⁸⁵ Thomas W. Merrill & Henry E. Smith, *Property: Principles and Policies* 9-15 (2007) (airplane overflights); *id.* at 456-80 (antidiscrimination law); see also Henry E. Smith, *Mind the Gap: The Indirect Relation between Ends and Means in American Property Law*, 94 *Cornell L. Rev.* 959 (2009).

⁸⁶ See, e.g., Robert G. Bone, *Normative Theory and Legal Doctrine in American Nuisance Law: 1850 to 1920*, 59 *S. Cal. L. Rev.* 1101, 1159-60, 1160 n.126 (1986).

⁸⁷ See, e.g., *Boomer v. Atlantic Cement Co.*, 257 N.E.2d 870 (N.Y. 1970).

⁸⁸ The mainstream position in law and economics endorses the shift to damages in large numbers situations in order to prevent holdouts. See, e.g., Robert Cooter & Thomas Ulen, *Law and Economics* 170-80 (1988); Richard A. Posner, *Economic Analysis of Law* 16, 68-71, 79-81 (5th ed. 1998); Calabresi & Melamed, *supra* note 5, at 1106-10; Robert Cooter, *Unity in Tort, Contract, and Property: The Model of Precaution*, 73 *Cal. L. Rev.* 1, 26-27 (1985); A. Mitchell Polinsky, *Controlling Externalities and Protecting Entitlements: Property Rights, Liability Rule, and Tax-Subsidy Approaches*, 8 *J. Legal Stud.* 1, 4 (1979); A. Mitchell Polinsky, *Resolving Nuisance Disputes: The Simple Economics of Injunctive and Damage Remedies*, 32 *Stan. L. Rev.* 1075, 1076 (1980); but see Daniel A. Farber, *Reassessing Boomer: Justice, Efficiency, and Nuisance Law*, in *Property Law and Legal Education: Essays in Honor of John E. Cribbet* 7, 7-8 (Peter Hay & Michael H. Hoeflich eds., 1988) (arguing the result in *Boomer* rests on an underestimation of damages and lack of attention to ex ante incentives); Henry E. Smith, *Exclusion and*

analyzing these important use conflicts from a transaction cost point of view should not obscure the important starting point: for transaction cost reasons we start with sovereign owners exercising the right to exclude over clearly delineated things, and we use this starting point to resolve a wide range of resource conflicts.

The Coase Corollary also calls into question aspects of Calabresi and Melamed's Coase-inspired analysis of property rules and liability rules.⁸⁹ As one of us has written, Calabresi and Melamed's assumption of a thin notion of entitlement is essential to the "symmetry" result in their framework.⁹⁰ But the thin notion of entitlement, drawn as it is from Coase and the zero transaction cost world, breaks down in the face of the need for significant standardization of rights in our positive transaction cost world.⁹¹ If A is sending emissions from A's land to B's land, we are not in a position to be as agnostic about the direction of causation as we might be in a zero transaction cost world. Even the law of nuisance takes the right to be free from a wide range of invasions into the owner's column of space as the starting point.⁹² This principle of owner entitlement saves on delineation costs, as opposed to the thin set of sticks in a giant list of use conflicts.

Property Rules in the Law of Nuisance, 90 Va. L. Rev. 965, 1037-45 (2004) (arguing for stronger but rebuttable presumption for injunctions in nuisance cases based on information cost advantages of property rules).

⁸⁹ Calabresi & Melamed, *supra* note 5.

⁹⁰ Smith, *supra* note 55, at 70-76 (arguing that entitlements do not actually show the degree of symmetry suggested by a traditional law and economics approach).

⁹¹ See, e.g., Lee Anne Fennell, Property and Half-Torts, 116 Yale L.J. 1400, 1404 n.10 (2007); Frank I. Michelman, There Have To Be Four, 64 Md. L. Rev. 136, 147-52 (2005) (discussing asymmetries in "remedial entailments" in the Calabresi and Melamed framework); Jeanne L. Schroeder, Three's a Crowd: A Feminist Critique of Calabresi and Melamed's *One View of the Cathedral*, 84 Cornell L. Rev. 394, 433-35 (1999); Smith, *supra* note 88, at 1019-21; Smith, *supra* note 55, at 72-76.

⁹² For recent analyses from a variety of perspectives that try to bring the more traditional invasion-based test back to the fore, see, for example, Richard A. Epstein, Nuisance Law: Corrective Justice and Its Utilitarian Constraints, 8 J. Legal Stud. 49, 53-65 (1979); J.E. Penner, Nuisance and the Character of the Neighbourhood, 5 J. Evtl. L. 1, 14-25 (1993); Smith, *supra* note 88, at 992-96; Eric R. Claeys, Jefferson

So if under Rule 1 the resident has the entitlement to be free from pollution protected by a property rule (injunction) and under Rule 2 has the entitlement protected by a liability rule – meaning that the polluter can pollute and pay officially determined damages – the question arises what it would mean to “flip things around.” Calabresi and Melamed believe that, in accord with Coasean causal symmetry, the polluter could be given the “entitlement” and then we face a parallel choice between protecting that entitlement with a property rule (Rule 3) or a liability rule (Rule 4). What they envision is a situation in which the factory owner can pollute but the resident cannot get a remedy, thus forcing the resident to pay the polluter if the pollution is to stop.⁹³ But this is not truly parallel or symmetric to the Rule 1 situation.⁹⁴ If it were, then the factory owner would have a *right* to pollute. If the resident puts up a giant fan and blows the pollution back, can the polluter get an injunction? If not, there is no “right” to pollute but rather an ability to get away with it. As part of the default package of property rights no one has the right to pollute in this robust sense (entailing a right to enjoin fans). The factory owner could have a right to pollute if it has an easement (by grant or prescription), which might give it the right to enjoin fans, but this is an add-on to the baseline default package of rights in land. When it comes to the resource conflict there is an entitlement structure in place and it breaks the symmetry that Calabresi and Melamed are relying on.

Meets Coase: Land-Use Torts, Law and Economics, and Natural Property Rights (George Mason Law & Economics Research Paper No. 08-20, 2008), available at <http://ssrn.com/abstract=1117999>.

⁹³ Calabresi & Melamed, *supra* note 5, at 1116.

⁹⁴ Smith *supra* note 55, at 74-76.

Much the same can be said about Rule 4.⁹⁵ Although there is a rationale in some situations of undue hardship to soften the remedy from injunctions to damages (Rule 1 to Rule 2), there is no parallel rationale from moving from Rule 3, which only exists in the specific context of an easement, to Rule 4, by allowing residents to shut down pollution on paying damages. This may be one reason why Rule 4 is almost unheard of in the nuisance context.⁹⁶ Again, the baselines that get in the way of both the Realists' (and Coase's) bundle-of-sticks entitlements and Coasean causal symmetry stem from the institutional analysis called for by the Coase Corollary: we don't proceed in the agnostic bundle-of-sticks fashion because of transaction costs.

Relatedly, the need for significant standardization of rights as a response to positive transaction costs also helps explain why Coase's view of causation as reciprocal – what we have called Coasean causal agnosticism – does not carry over from the zero transaction cost world into our world of positive transaction costs.⁹⁷ Once we have a system of in rem property rights in place it makes no sense to be causally agnostic, for transaction cost reasons. If A's action causes particles or waves to travel over the boundary and into B's column of space, the presumptive answer is that A is harming B

⁹⁵ Smith, *supra* note 88, at 1007-21; see also Smith, *supra* note 55, at 74-75.

⁹⁶ The one, heavily rehearsed, case is *Spur Industries, Inc. v. Del E. Webb Development Co.*, 494 P.2d 700, 708 (Ariz. 1972) (en banc). Another reason for the rarity of rule 4 is that it requires collecting potential plaintiffs to avoid freerider problems, as for example in a class action. In *Spur*, the developer, who made the decision to build close to the feedlot, was the one suing rather than the residents, but to the extent that this matters to courts, developers will try to avoid being the plaintiff in the future.

⁹⁷ Merrill & Smith, *supra* note 19, at 391-94.

and not vice versa. Conventional in rem property rights are not the only source of baseline entitlements,⁹⁸ but they are a wholesale source of them.

This lack of symmetry is also at the root of the “gravitational” pull that the *ad coelum* rule exerts in many contexts.⁹⁹ Even in situations governed by social norms we find that norms based on the *ad coelum* approach are more widespread than a comparison of values of the conflicting activities would warrant. Thus in the prototypical Coasean example of wandering cattle and trampled crops,¹⁰⁰ cattle have to be significantly more important than crops to flip from fencing in (rancher liability) to fencing out (rancher nonliability).¹⁰¹ Even norms tend to track the *ad coelum* rule, with fencing in norms being more widespread than one would expect on an approach of choosing the more valuable activity for the immediate area.¹⁰²

Likewise, general norms of possession seem to form powerful defaults: in the law of possession, certain control over a thing is a default requirement unless an important resource clearly cries out for different treatment. Robert Ellickson found a pattern of

⁹⁸ Another source is custom. For a discussion of custom as a baseline including for the famous cedar-apple rust situation of *Miller v. Schoene*, 276 U.S. 272 (1928), see Henry E. Smith, Community and Custom in Property, 10 Theoretical Inquiries in Law 5 (2009), available at: <http://www.bepress.com/til/default/vol10/iss1/>; see also William A. Fischel, The Law and Economics of Cedar-Apple Rust: State Action and Just Compensation in *Miller v. Shoene*, 3 Rev. L. & Econ. 133, 149-51 (2007).

⁹⁹ See Merrill & Smith, *supra* note 19, at 388-91. The full statement of the maxim is *cujus est solum, ejus est usque ad coelum et ad inferos* (whoever owns the soil owns also to the sky and to the depths). The maxim is routinely followed in resolving issues about ownership of air rights, building encroachments, overhanging tree limbs, mineral rights, and so forth, and is subject to certain limited exceptions for airplane overflights, for example. See *Brown v. United States*, 73 F.3d 110, 1103 (Fed. Cir. 1996); Merrill, *supra* note 7, at 6-35.

¹⁰⁰ Coase, *supra* note 2, at 2-8.

¹⁰¹ Merrill & Smith, *supra* note 19, at 390-91.

¹⁰² See Robert C. Ellickson, Order without Law: How Neighbors Settle Disputes at 52-53, 72-76 (1991) (noting widespread use of an informal norm of animal-owner responsibility); Merrill & Smith, *supra* note 19, at 388-91 (relating widespread norm of fencing in to transaction costs of basic package of entitlements).

nineteenth-century whaling norms that can be seen as conforming to a simple general rule with an exception for special important situations.¹⁰³ Under the “fast-fish-loose-fish” rule, the first harpooner gets the whole whale as long as whale is attached to his boat. This rule, which accords with general notions of certain control in first possession, applied to right whales, which are relatively slow-moving, and to whales generally, with some major exceptions. Under the “iron-holds-the-whale” or “first-iron” rule, the first harpooner would get exclusive rights to the whale as long as he was in fresh pursuit, which requires more judgment. The first-iron rule tended to be adopted where the very valuable but very dangerous sperm whales were predominant. For finback whales, which sink and rise to the surface, the custom was marking with a bomb lance and a small fee to finders who were obligated to report beached marked finbacks.¹⁰⁴ Ellickson argues that these norms confirm his hypothesis that close-knit groups will devise efficient norms among themselves (but with the possibility of outgroup externalities, like overexploitation).¹⁰⁵ But note that the general norm of first possession based on certain control is the default rule for whales.¹⁰⁶ Simple baselines matter, and they matter because of information costs – an important species of transaction costs. Again, it is the Coase Corollary in action.

Finally, the distinction between in rem and in personam rights, which lies at the heart of the traditional property/contract distinction, is likewise a product of transaction

¹⁰³ Robert C. Ellickson, A Hypothesis of Wealth-Maximizing Norms: Evidence from the Whaling Industry, 5 J.L. Econ. & Org. 83 (1989).

¹⁰⁴ *Ghen v. Rich*, 8 F. 159, 159-60 (D. Mass. 1881).

¹⁰⁵ Ellickson, *supra* note 103, at 88-94.

¹⁰⁶ Smith, *supra* note 57, at 1119-22 (analyzing whaling norms as solving a problem of communication cost).

costs. In a zero transaction cost world, one could re-describe in rem rights against all the world in terms of a congeries of in personam rights, as Hohfeld imagined.¹⁰⁷ That is, one could cash out the idea of A having a right against all the world as being equivalent to A having a right against B, a right against C, a right against D, etc. This equivalence would hold, however, only in the world of the Coase Corollary. In the real world of positive transaction costs, it is prohibitively costly to list everyone in the world in order to describe all the persons who are bound by A's having an right in rem. Likewise, contracting pairwise would be unfeasibly costly. Instead, it is necessary to solve many problems "wholesale" through in rem rights – including core property rights – which impose automatic duties of noninterference on all persons who may or may not encounter the owned property, whoever they may be, and whether or not they have any conception of who the owner might be. In our world of positive transaction costs, in rem duties are not and cannot be equivalent to an enormously long list of in personam duties.

By having the right to exclude from some thing, A is given "sovereignty" over a range of largely unspecified uses as against a largely unspecified set of dutyholders. We do not deny that many aspects of property differ according to conditions of time, place, and culture. But we would argue that defining property in terms of things as a starting point, grouping of uses under exclusion rights, and the widespread employment of in rem rights are no accident: they receive a transaction cost explanation. Establishing starting points or baselines in property is not a trivial problem, and for transaction cost reasons

¹⁰⁷ Wesley Hohfeld famously analyzed in rem rights as collections of in personam rights, as part of an atomizing scheme of legal relations that was quite inspiring to the Legal Realists. See Wesley Newcomb Hohfeld, *Fundamental Legal Conceptions as Applied in Judicial Reasoning*, 26 *Yale L.J.* 710 (1917); Merrill & Smith, *supra* note 13, at 780-89; see also Albert Kocourek, *Rights in Rem*, 68 *U. Pa. L. Rev.* 322, 322 (1920) (noting influence in both civil-law and common-law traditions of Austin's definition of in rem rights as "rights residing in persons and availing against other persons generally" and related formulations including the familiar phrase "against the world").

could not be replicated by contract. Establishing such baselines is thus, to borrow a phrase, an “essential role” of the law of property.¹⁰⁸ The need for the baseline entitlements to be largely unspecified is a direct result of the Coase Corollary. Positive transaction costs in our world make it advantageous to economize on the costs of delineating, understanding, and enforcing entitlements. Hence the preference for the traditional notion of property as opposed to the bundle of rights. Rather than Coase’s atomized picture of property, our positive transaction cost world exhibits the highly standardized, truly “Coasean” property familiar from the law of property.

CONCLUSION

In this essay, we have sought to make Coasean property more Coasean. We started by showing what picture of property Coase subscribed to in his pathbreaking work. Coase’s picture of property was an extreme version of the Legal Realist bundle of rights. This highly atomized bundle of rights picture treats property as a collection of governmentally-resolved pairwise use conflicts among members of society, with a background assumption of symmetry of causation and entitlement allocation. The bundle of rights picture has carried over into Coase-inspired work in law and economics and the New Institutional Economics.

Coase’s picture of property was wholly tangential to the major contributions that have flowed from his seminal articles. The importance of transaction costs in the design of legal institutions, the importance of contracting as a device for internalizing externalities, the need to engage in comparative institutional analysis in proposing solutions to problems of social cost – all these transformative insights could have been

¹⁰⁸ Henry Hansmann & Reinier Kraakman, *The Essential Role of Organizational Law*, 110 *Yale L.J.* 387, 393-94 (2000) (arguing that affirmative asset partitioning, protecting the firm’s assets from the owner’s creditors, could not be replicated by contract and is therefore the essential role of organizational law).

made and their value fully realized without accepting the bundle of rights picture of property.

We have gone further, and have also argued that applying Coasean economic-institutional analysis to the institution of property itself reveals a Coasean rationale for traditional notions of property as an in rem right to a thing. To this end, we introduced the Coase Corollary, which states that in a zero transaction cost world, the nature and scope of property is irrelevant to the value of production. As with the Coase Theorem, from which it directly follows, the point of the Coase Corollary is that in our positive transaction cost world the nature and scope of property do matter to the allocation of resources and the value of production. The truly Coasean approach is to engage in comparative institutional analysis of the notion of property itself. Here baselines matter, and because of positive transaction costs – and in particular, the costs of delineating, understanding, and enforcing rights – “entitlements” are built using an in rem exclusion strategy to define things and take care of many conflicts wholesale, with refinements governing uses through institutions like zoning, nuisance, contracts, and norms. Traditional property as defined in law turns out to be quite Coasean after all.