

PROPERTY AND HALF-TORTS

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INTRODUCTION

For decades, two focal points have dominated the economic analysis of property conflicts – the Coase Theorem,¹ and the entitlement framework set out by Guido Calabresi and A. Douglas Melamed (“C&M”).² Property scholars working in the Coase/C&M tradition view a dispute between a smoke-spewing factory and a suffering neighbor as a reciprocal event³ that calls for decisions about which party holds the entitlement to pollute and what type of legal protection will be afforded that entitlement.⁴ While this elegant, canonical approach has had tremendous staying power, there have been recurring hints in the literature that something important is missing. Thomas Merrill and Henry Smith have suggested that the standard economic account of property conflicts went astray by failing to recognize key characteristics of property rights.⁵ My diagnosis is different. The conventional view of property entitlements falters not because it ignores property theory, but rather because it neglects a core insight of tort theory – that risky activities are conceptually distinct from harmful outcomes.

The idea that a tort can be split analytically into two parts – risk and harm – underlies a great deal of torts scholarship and is a central, if implicit, theme in Calabresi’s groundbreaking work, *The Costs of Accidents*.⁶ Yet

¹ The Coase Theorem, although not labeled as such by the author, is presented in R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960). Thomas Merrill and Henry Smith have identified *The Problem of Social Cost* as “the starting point of most modern discussions of the economics of property rights.” Thomas W. Merrill & Henry E. Smith, *What Happened to Property in Law and Economics?*, 111 YALE L.J. 357, 366 (2001); *see id.* at n.41 (discussing the influence of Coase’s article).

² Guido Calabresi and A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972). Although the authors modestly emphasize that theirs is only “one view” of the cathedral, *see id.* at 1089 n.2, it remains the one that most law and economics scholars use as a starting point for the analysis of land use entitlements. The literature employing *The Cathedral’s* framework is vast and growing. For a recent overview, see Henry Smith, *Property and Property Rules*, 79 N.Y.U. L. REV. 1719, 1720-22 (2004). *See also* Merrill & Smith, *supra* note 1, at 380 (observing that “[Calabresi and Melamed’s] article is probably second only to Coase’s 1960 article in terms of its influence in shaping modern economic conceptions of property rights”); Jeff Lewin, *Compensated Injunctions and the Evolution of Nuisance Law*, 71 IOWA L. REV. 775, 801-02 (1986) (suggesting that “the ‘modern’ approach to the law of nuisance . . . integrates the theories of Coase and of Calabresi and Melamed”).

³ *See* Coase, *supra* note 1, at 2 (discussing the reciprocal nature of causation). The idea that causation is reciprocal has been much-criticized. *See* Merrill & Smith, *supra* note 1, at 392-94 (reviewing the arguments of others and presenting their own version based on the *in rem* nature of property). The reformulated approach in this paper offers a different way of resolving these criticisms.

⁴ *See* Calabresi & Melamed, *supra* note 2, at 1090.

⁵ *See* Merrill & Smith, *supra* note 1 at 385-97 (discussing implications of economic analysis’s failure to recognize the *in rem* nature of property rights); *see also* Smith, *supra* note 2 at 1759-60 (explaining that *in rem* rights are typically protected through exclusion, which operates to secure a wide range of unspecified potential uses, whereas liability rules typically focus on individual uses).

⁶ *See* GUIDO CALABRESI, *THE COSTS OF ACCIDENTS* (1970). The analytic division of the tort underlies the book’s important insight that the law could separate its deterrence function from its arrangements for compensating victims of accidents. *See id.* at Catherine M. Sharkey, *Revisiting the Noninsurable Costs of Accidents*, 64 MD. L. REV. 409, 411-12 (2005) (“Calabresi’s key insight was that there was no necessary link between compensating victims and deterring or punishing injurers.”). Dividing risk from harm is a predicate for assessing alternative approaches to reducing accident costs. *See, e.g.*, Steven Shavell, *Liability for Harm vs. Regulation of Safety*, 13 J. LEGAL STUD. 357, 357 (1984) (distinguishing tort liability, which reduces accident

the notion has been all but ignored in property circles. For example, in discussing an “entitlement to pollute,” scholars rarely specify whether the rights or privileges in question relate to *inputs* to the pollution event (a factory’s emission of fumes from a smokestack) or *outcomes* of the pollution event (a neighbor’s grimy linens or respiratory distress).⁷ Instead, “pollution” is viewed as a single unified event that one party or the other receives an entitlement to control. This failure to conceptually separate inputs from outcomes has led to imprecise and inaccurate ways of thinking and talking about entitlements. Property theory has suffered as a result, as has our understanding of how property and torts relate to each other. Among other effects, conflating risk production with harmful results excises self-help from the analysis, as well as any elements that might stochastically affect outcomes (“luck”). A lack of clarity in distinguishing risk from harm has also muddled the menu of legal alternatives for addressing land use conflicts. In this paper, I make a start at bringing the notion of the divided tort – here termed “half-torts”⁸ – into the property picture.

Breaking a tort into the components of risk and harm transforms property theory in at least three ways. First, a half-torts perspective generates a more useful and precise way of understanding land use entitlements. In the standard factory-neighbor land use conflict, the law must make decisions as to each half of the tort – whether risk production of a given sort will be permitted, and how the costs of any resulting harm will be allocated. Following Coase, the “resulting harm” can stem from a societal decision to *disallow* an activity as well from a societal decision to allow it.⁹ Yet the two kinds of harm are fundamentally different. Only the former, the costs associated with prohibition, can be coercively imposed by the state. The latter sort of harm, stemming from permissible risk

costs “through the deterrent effect of damage actions that may be brought once harm occurs” from regulations, which “modify behavior in an immediate way through requirements that are imposed before, or least independently of, the actual occurrence of harm”); ARIEL PORAT & ALEX STEIN, TORT LIABILITY UNDER UNCERTAINTY 103-110 (2001) (comparing “risk-based liability” and “damage-based liability”). Bifurcating the tort into risk and harm focuses analytic attention on risks that fail to materialize as harms and harms that are not tethered to any legally cognizable risk. How these unpaired risks and harms should be regarded by the law has generated a rich and interesting literature. See, e.g., *id.* at 101-29; Claire Finkelstein, *Is Risk a Harm?*, 151 U. PA. L. REV. 963 (2003); Stephen R. Perry, *Risk, Harm, and Responsibility* in PHILOSOPHICAL FOUNDATIONS OF TORT LAW 321 (David G. Owen, ed., 1995); Jeremy Waldron, *Moments of Carelessness and Massive Loss*, in PHILOSOPHICAL FOUNDATIONS, *supra*, at 387; Christopher Schroeder, *Causation, Compensation and Moral Responsibility* in PHILOSOPHICAL FOUNDATIONS, *supra*, at 347; Richard A. Epstein, *Luck*, 6 SOC. PHIL. & POL. 17 (1988).

⁷ Similar ambiguity attends courts’ use of the word “nuisance.” See RESTAT 2D OF TORTS, § 821A, cmt b (1979) (observing that courts often use the term “nuisance” in three different ways: to refer to a harmful activity, to refer to harmful results, and to refer to the combination of the two as well as to the conclusion that liability exists).

⁸ I do not mean to suggest symmetry, much less identity, between the two parts. I call them “halves” only to conveniently express that each is one of two parts that together form a larger unit. The functional separation of risk and harm can be readily distinguished from another “halving” idea that has received attention – the idea of splitting an entitlement between two parties in an effort to facilitate bargaining. See Ian Ayres & Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement To Facilitate Coasean Trade*, 104 YALE L.J. 1027 (1995).

⁹ See Coase, *supra* note 1, at 2.

production, can be intercepted by self-help or luck.¹⁰ By separating risk from harm, this paper offers a reformulation of society's matrix of entitlement choices that not only aligns more closely with moral intuitions and ordinary practice, but also highlights the role of social judgments about the appropriate sphere of coercive force. In the process, I unpack and sort out a number of elements that the C&M framework conflates.¹¹

Second, the half-torts perspective offers a new understanding of the significance of property boundaries and exclusion technologies in managing risk.¹² Property arrangements typically charge risks and their associated harms – as well as their associated benefits – to the account of a single owner, who might be expected to make maximizing decisions over time.¹³ In this way, property can be understood as a domain in which gambles are freely made and fully collected on by the same party.¹⁴ Of course, property does not fully accomplish internalization; mismatches between the scale of activities that produce risks and the scope of property holdings are commonplace. Viewed from this perspective, torts are a consequence of imperfectly scaled property interests.¹⁵ While I focus primarily on land use examples, I also discuss how the autonomous realm surrounding one's person might operate in an analogous manner to pair risks and outcomes.¹⁶

Finally, conceptually separating risk production from harm manifestation sheds important light on the law's arsenal of responses to

¹⁰ This distinction, I posit, underlies the asymmetries that have recently been identified in the C&M framework. See Henry E. Smith, *Self-Help and the Nature of Property*, 1 J. L. ECON. & POL'Y 69, 72-76 (2005) (hereinafter "Self-Help") (challenging claims of "symmetry" among entitlements in the C&M framework based on observations about boundaries and self-help); Henry E. Smith, *Exclusion and Property Rules in the Law of Nuisance*, 90 VA. L. REV. 965, 1019-21 (2004) (hereinafter "Exclusion") (explaining how a full understanding of property rights points to an asymmetry in the entitlement framework presented by C&M); Frank I. Michelman, *There Have to Be Four*, 64 MD. L. REV. 136, 147-52 (2005) (discussing asymmetries in "remedial entailments" in the C&M framework).

¹¹ My reformulated matrix separates society's choice about risk production from its choice about liability for the harm that results from that choice – a move similar to one Frank Michelman has suggested. See Michelman, *supra* note 10, at 147-52 (diagnosing and suggesting a way of resolving C&M's "conflation of entitlement assignment with liability assignment"). I view my reformulated matrix as setting out the *content* of the underlying entitlement packages that the parties might hold. I then break out two further inquiries: the rules for transferring an entitlement, and the remedies for violating the rules for transferring an entitlement. See *infra* Part I.D.

¹² My approach to these questions both builds on and diverges from the extensive analysis of the exclusion right provided by Henry Smith in several recent articles. See, e.g., Smith, *Exclusion*, *supra* note 10; Smith, *Property and Property Rules*, *supra* note 2; Henry E. Smith, *Exclusion Versus Governance: Two Strategies for Delineating Property Rights*, 31 J. LEGAL STUD. S453 (2002).

¹³ This insight underpins the "single owner" test for assessing the efficiency of legal arrangements. See Richard Epstein, *Holdouts, Externalities, and the Single Owner: One More Salute to Ronald Coase*, 36 J.L. & ECON. 553, 557 (1993) (explaining that the single owner approach deals with problems generated by divided control over resources by "seek[ing] to create that legal arrangement that induces all the parties to behave in the same fashion as would a single owner who owned all the relevant resources").

¹⁴ See, e.g., Smith, *Property and Property Rules*, *supra* note 2, at 1729 (explaining that "owners make bets in situations of uncertainty and are rewarded or punished depending on how those bets turn out later when the uncertainty is resolved"); *infra* Part II.A (further developing the gambling metaphor for property).

¹⁵ It is commonplace to think of tort law as occupying gaps where bargaining is not possible, and hence to understand torts as a shortfall not of property but of contract. The approach I take here is not inconsistent, insofar as contract is understood as a way of custom-scaling property interests by permitting Hohfeldian rights, privileges, duties, and no-rights to be allocated outside of standard property packages. See *infra* Part III.B.3.

¹⁶ See *infra* Part II.D.

property conflicts. Tort law offers one set of responses, but many other possibilities exist that do not rely on pairing together specific instances of realized harms and particular risky actions. Recognizing that property holdings may be improperly scaled for particular risk-producing activities suggests the possibility of rescaling those holdings to address externalities. Property can be rescaled on a wholesale basis through a reconfiguration of the property interests themselves or selectively through customized contract provisions that add or subtract responsibility for the outcomes of various risky activities. Regulation offers many additional ways to bring legal pressure to bear on either risks or outcomes, without the need for pairing the two together on a one-to-one basis.

This paper proceeds in three parts. Part I works through a reconfigured taxonomy of property entitlements in the nuisance context that takes into account both halves of the tort. I explain how this reformulation advances and refines our understanding of property theory and reconciles it with tort theory. Part II turns to the significance of property boundaries. While Part I focuses on how property and tort fit together in a unified framework, Part II examines how property uniquely manages risk by bundling inputs and outputs within physical or conceptual boundaries. In doing so, I recast torts as a mismatch between the scale of property entitlements and that of various risk-producing activities. Part III explores how tort law and other legal alternatives might operate to address shortfalls in property scale by putting legal pressure on risk, shifting the allocation of liability for harm, or addressing both risk and harm simultaneously through a contractual or across-the-board change in the contours of particular property holdings.

I. HALF-TORTS IN THE CATHEDRAL

“Only rarely are Property and Torts approached from a unified perspective.”¹⁷ So begins Guido Calabresi’s and Douglas Melamed’s enormously influential 1972 article. Perhaps no article has done more to unify thinking about property and torts. Yet, interestingly, the vision of property entitlements it developed did little to incorporate tort theory’s distinction between risk production and the manifestation of harm. Adding this element to the analysis yields a clearer and more precisely specified understanding of how entitlements work – one that better situates property and tort within a single conceptual framework.¹⁸

Consider the standard nuisance example – a factory that expels

¹⁷ Calabresi & Melamed, *supra* note 2, at 1089.

¹⁸ An important antecedent of my approach is found in Robert Cooter’s work. See Robert Cooter, *Unity in Tort, Contract, and Property: The Model of Precaution*, 73 CAL. L. REV. 1 (1985). Cooter’s work pays careful attention to the incentive effects of a legal rule on both parties in a range of interactions – what he terms “double responsibility at the margin.” *Id.* at 3-5.

pollutants to the detriment of a neighbor such as a homeowner.¹⁹ This situation is usually understood to require a decision as to which of the two parties holds a unified legal right (“the entitlement”) as well as a decision about how that entitlement will be protected.²⁰ This way of describing the problem falters, however, when we divide the factory’s act of pollution into two parts: the production of fumes on the one hand, and the dirtying of lungs or linens on the other. When the factory holds what has been described as “the entitlement,” in this situation it does not, in fact, hold the right to carry through the completed tort of harming the neighbor – nor even, as Henry Smith has emphasized, the right to see that the fumes make their way over the neighbor’s property line.²¹ Indeed, it is not even accurate to say that the factory holds an entitlement “to pollute,” if “pollution” is understood in terms of negative end results for the neighbor. Rather, the factory holds only the privilege of engaging in the activity that produces fumes.²²

The distinction is not merely a matter of semantics. For one thing, self-help, as well as luck, can intervene between the production of fumes and harm to the neighbor.²³ The neighbor in the story might prevent the production of fumes from eventuating in harm by rearranging her activities on her property, drying her clothes indoors, closing her windows and installing air-purifiers, or even, (to use Henry Smith’s example) installing giant fans to counteract the fumes.²⁴ Even if the factory is entitled to emit

¹⁹ For a discussion of the prevalence and implications of this standard example, see Merrill & Smith, *supra* note 1, at 368–71; Carol M. Rose, *The Shadow of The Cathedral*, 106 *YALE L.J.* 2175 (1997).

²⁰ Calabresi & Melamed, *supra* note 2, at 1090; see Smith, *Self-Help supra* note 10, at 73-76 (critiquing this formulation).

²¹ Smith, *Self-Help, supra* note 10, at 75-76. Smith notes that the factory *could* have (but typically would not have) an easement that would entitle it to channel fumes onto the neighbor’s property. *Id.* Smith’s critique of the entitlement in the C&M framework relies on the significance of property boundaries, whereas mine turns on a more fundamental distinction between a legal entitlement to engage in an activity and a legal entitlement to bring about a particular outcome. While boundaries are important for reasons I will discuss below (see Part II.B, *infra*), I argue that their significance can only be fully appreciated once the basic move of separating risk creation from harm manifestation has been made.

²² The statement in the text combines two points that will be developed below. First, “privileges” are different from “rights” in the Hohfeldian taxonomy, in that they cannot be coercively enforced by the state. See 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, 444-45 (1999) (applying Hohfeld’s distinction between rights and privileges to the factory example); Smith, *Self-Help, supra* note 10, at 76 (same). Second, the entitlement that might be held by the factory relates to the pursuit of a permissible end (the manufacturing activity that produces the fumes) rather than the pursuit of a forbidden end (harming someone else with pollution). See Schroeder, *supra* at 444 (explaining that the factory’s entitlement “relates to producing widgets, which incidentally cause pollution.”); see also Jonathan Remy Nash, *Framing Effects and Regulatory Choice*, 81 *NOTRE DAME L. REV.* (forthcoming 2006) available at <http://ssrn.com/abstract=916952>, manuscript at 40-42, 48-49 & n.191 (observing that the notion of an “entitlement to pollute” erroneously suggests that that no benefit is derived from the activity that produces the pollution, and that reframing might involve refocusing attention on the beneficial activity of which the pollution is a byproduct).

²³ Cf. WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF TORT LAW* 113 (1987) (making a similar point with regard to blasting operations that produce dust and vibration, and suggesting that the potential for self-help and other complications of causality explains the law’s traditionally different treatment of such operations from those that project airborne debris onto a neighbor’s property).

²⁴ See Smith, *Exclusion, supra* note 10, at 1012. In Smith’s version of the example, the fans operate not to

fumes, it has no right to interfere with the neighbor's self-help to ensure that the neighbor actually breathes the fumes.²⁵ For these and other reasons that will be explored below, dividing inputs from outcomes offers a more precise way of understanding entitlements.

A. *Splitting the Nuisance*

The two parts of a standard pollution event, fume production on one side and manifestations like grime and wheezing on the other, correspond to the division between risk and harm that runs through much of torts scholarship. To be sure, most torts scholarship highlighting the risk/harm dichotomy focuses on highly stochastic events such as reckless driving in which random factors mediate between the risky action and the harmful outcome. In the pollution case, drawing a distinction between risk and harm might at first appear pointless if we posit that it is an absolute certainty that the fumes *will* cause harm unless the neighbor takes some ameliorative action, like installing giant fans, thicker windows, or an air filtering system.²⁶ But precisely because the neighbor can potentially engage in self-help, the factory's fume production creates not a certainty of damage to the neighbor's well-being, but rather only a risk. Redefining the situation in this way yields a reformulated version of the C&M framework.

just to clear the air generally, but rather to physically push the offending fumes back over the boundary line from whence they came. *See id.*

²⁵ Smith suggests that the limitation on the factory's rights, as well as the freedom to act that is preserved to the neighbor, depend crucially on the existence and location of boundary lines. *See id.* at 1020 (asserting that "the imaginary scenario where B is using giant fans to ward off pollution, the fact that the fans are on B's property makes all the difference"). I view boundaries as relevant for a somewhat different reason. *See infra* Parts I.B (generalizing my approach beyond the land use context) and II.B (discussing the significance of boundaries).

²⁶ In reality, of course, unpredictable factors like weather patterns would likely be important to how much pollution is experienced by the homeowner, and a variety of other exogenous factors would determine the severity of harm (for example, whether the homeowner suffers minor throat irritation or full-blown lung cancer).

1. The Four Rules, Reformulated

The standard approach pioneered in *The Cathedral* and followed by countless scholars can be encapsulated in a two-by-two grid that breaks down the possible resolutions of a two-party land use conflict along two dimensions: (1) Which party holds the entitlement?; and (2) Is the entitlement protected by a property rule or a liability rule?²⁷ My reformulation asks two somewhat different questions: (1) Is risk production (of a specified type) permitted or forbidden? and (2) Who is liable for any harm that results from society's answer to the first question? Using the standard example in which the risk production in question is the emission of pollutants into the air, we can construct Table 1, a reformulation of C&M's four-rule schema.

Table 1:

The Four Rules, Reformulated

Liability Allocation / Risk Production Rule	Liability Allocated to Factory	Liability Allocated to Homeowner
Emissions Permitted	A. Factory Pays Damages to Homeowner	B. No Relief (But Can Engage in Self-Help)
Emissions Forbidden	C. Factory Operation Enjoined at Factory's Expense	D. Homeowner Pays Damages for Shutdown

The two rows in Table 1 contain two different risk production rules: In the top row, emissions are permitted, and in the bottom row, emissions are forbidden.²⁸ The term "emissions" as used here is distinct from the usual

²⁷ Calabresi & Melamed, *supra* note 2 at 1090, 1115-18. Although there was no actual table in the original version, the two-by-two layout is suggested by the description in the text. See Michelman, *supra* note 10, at 142-46. Here is a typical rendering of the grid, using the standard factory/homeowner example:

	Homeowner Holds Entitlement	Factory Holds Entitlement
Protected by a Property Rule	Factory is Enjoined (Rule 1)	No Relief (Rule 3)
Protected by a Liability Rule	Factory Can Pollute and Pay Damages (Rule 2)	Homeowner Can Stop Pollution by Paying Stopping Costs (Rule 4)

²⁸ Even though the framework contemplates only a binary choice between "permitting" or "forbidding" a

meaning of “pollution” in that it involves only the privilege to put the pollutants into the air, and not the right to make the pollutants enter the homeowner’s lungs or laundry. Only one kind of risk production appears in this simple example, and it is carried out only by one party – the factory – rather than reciprocally by both parties.²⁹

The two columns represent two different rules for allocating liability for the costs of any resulting harm: In the left column, liability is assigned to the factory, and in the right column, it is assigned to the homeowner. Harm in this context refers to any costly result flowing from the law’s choice of a risk production rule. Following Coase, it is evident that harm can result from a risk production rule that *denies* the factory the privilege of emissions, just as surely as it can result from a risk production rule that allows the factory to emit pollutants.³⁰

Working through this reformulated two-by-two grid produces a sense of *deja vu*; the four rules produced by this new pair of questions look at first to be nearly indistinguishable from those that have featured in the dominant C&M model for decades. Yet, on closer examination, there are significant differences. When the factory is permitted to emit and liability for resulting harm is assigned to it (Cell A in Table 1), we seem to have the equivalent of C&M’s Rule 2, a liability rule regime in which the factory can pollute if it pays damages. But the reformulation adds precision. For reasons that will be explored below, the factory does not (and could not) actually buy a *right* to harm the neighbor.³¹ Moreover, it is not usually accurate to say that the factory *buys* the privilege to emit pollutants – although a regulatory regime could certainly be set up in such a manner.³² Rather, the law grants the factory the privilege to emit pollutants, and *if* that activity results in harm to the homeowner, the factory is liable for the costs. If the emissions do not

given activity, it can accommodate fine-grained distinctions in legal rules between different manners, intensities, or levels of care in a given realm of action by simply defining “the activity” under analysis with a greater level of precision. For example, emitting pollutant X might be a different activity than emitting pollutant Y, emitting with a scrubber might be a different activity than emitting without a scrubber, and so on. Because the choice among the four grid cells can be made separately for each separate activity, it is possible not only to make fine distinctions between activities that are forbidden and those that are permitted, but also between those for which liability is shifted to the actor and those for which liability remains with the victim. We might distinguish, for example, between the activity of “driving while giving full attention to the road” and that of “driving while talking on a cell phone.” Even if both activities are permitted, the liability allocation rule might be different in the two cases. Liability might be placed on the victim for harms that result when a driver is giving full attention to driving, but might be shifted to the driver when the driver drives with a cell phone. Under a negligence rule, the different activities would not be defined with precision ahead of time but might instead be defined by reference to cost-justified precautions. Hence, the activity of driving while undertaking all cost-justified precautions might be permitted with costs left to fall on the victim, while the activity of driving without undertaking all cost justified precautions might be permitted, but with liability shifted to the driver.

²⁹ As I will discuss below, implicit normative judgments lie behind a determination that a particular activity is “risk producing” as opposed to forming part of the background conditions against which risky actions are taken. See *infra* Part I.C.

³⁰ See Coase, *supra* note 1, at 2. However, there is an asymmetry between the two kinds of harm that will become important in the analysis that follows. See *infra* Part I.B.

³¹ See *infra* Part I.B.

³² See *infra* Part III.B.

generate harm, no liability attaches.³³ Thus, the factory bears the risk that emissions will generate harm.

When the factory is permitted to emit and liability for the resulting harm is assigned to the homeowner (Cell B in Table 1), we have the equivalent of C&M's Rule 3, the case of no relief – in their terms, an entitlement in the factory that is protected by a property rule. Recasting this in half-tort terms makes it clear that the factory has only an entitlement *to emit pollutants*, not to actually bring harm to the homeowner. The homeowner can engage in self-help to keep the factory's risk production from eventuating in harm or to reduce the amount of harm. It is helpful to observe, as we would in accident law, that the homeowner is *liable* for the costs of any harm that eventuates from the factory's emissions inasmuch as the legal rule does not shift costs to the factory (or to anyone else).³⁴ Just as allowing the costs of accidents to fall on victims might be expected to produce incentives for victims to take care, liability in this instance would be likely to induce the sorts of self-help activities that amount to victim precaution in the nuisance realm.

When the factory is prohibited from emitting pollutants and bears its own costs in shutting down (Cell C in Table 1), we seem to have the equivalent of C&M's Rule 1, classically formulated as an entitlement in the homeowner that is protected by a property rule. Again, reformulating matters in half-tort terms is helpful. Doing so underscores the fact that the discontinuation of risk-producing activities is costly, and that the costs would not have to fall on the party who was engaged in the risky

³³ To be sure, the use of permanent damages in the famous *Boomer v. Atlantic Cement Co.* case -- a standard example of a liability rule applied in a pollution context -- blurs the line between paying to create risk and liability for resulting harm. 257 N.E.2d 870, 875 (N.Y. 1970). Because the court set an amount that the factory could pay to avoid an injunction and did not contemplate varying the amount in the future based on the actual record of harm, *see id.*, it can be understood as a court-made licensing regime for engaging (in the future) in an activity that emitted pollutants, rather than as establishing a rule of liability for actual harm. For further discussion, *see* text accompanying notes 83-85, *infra*. The way that remedies interact with time was not treated in depth in the original C&M framework, although it has been addressed in later scholarship. *See, e.g.*, Saul Levmore, *Property Rules, Liability Rules, and Startling Rules*, 106 YALE L.J. 2149, 2158-60 (1997) (observing how remedial choices might apply to different "slices of time"); Michelman, *supra* note 10, at 149-54 (distinguishing questions of liability for past harm from the assignment of entitlements going forward). By breaking out remedies as a separate inquiry from entitlement content, as I do here, these questions of timing are deferred. *See infra* Part I.D.3.

³⁴ Calabresi uses "liability" in this way in the *Costs of Accidents*. *See* CALABRESI, *supra* note 6, at 136-37 (explaining that either pedestrians or motorists might be liable for the costs of accidents between them); *see also* Michelman, *supra* note 10, at 148 (discussing this usage). Waldron argues that the term is inapt when used to describe a victim's responsibility for costs, invoking Hohfeld's taxonomy. Waldron, *supra* note 6, at 395-96. It is true certainly true that a victim's responsibility for the costs of an accident is a consequence not of any "liability" to the injurer, but rather, in Hohfeldian terms, a "disability" to bring suit against the injurer (correlative to the injurer's "immunity" from suit). *See* WESLEY NEWCOMB HOHFELD, *FUNDAMENTAL LEGAL CONCEPTIONS AS APPLIED IN JUDICIAL REASONING* 36 (Walter Wheeler Cook ed., 1964) (1919). I use this more precise Hohfeldian phrasing below in delineating the parties' packages of entitlements. *See* Table 2 and text accompanying notes 68-69, *infra*. Nonetheless, it is not inaccurate to say that the victim can remain "liable" in the more general sense of being responsible for any costs that eventuate. *See* HOHFELD, *supra*, at 59 (observing that the term "liability" might carry the "broad generic connotation" of "responsibility").

enterprise.³⁵ As I will explain, harms associated with *stopping* risk production stand on different legal footing than do harms associated with producing risks; the former, but not the latter, are often coercively imposed by the state in ways that offer no opportunity for amelioration by the liable party.

When the factory is prohibited from emitting but the homeowner is assigned the costs of the shutdown (Cell D in Table 1), we have something very much like C&M's Rule 4 (in which the factory holds an entitlement protected by a liability rule). On closer inspection, however, the Table 1 rule is distinct in a way that aligns it more closely with the real-world case that is usually taken to be an example of Rule 4, *Spur Industries v. Del E. Webb*.³⁶ There, the court resolved a land use conflict between a feedlot and a residential developer by shutting down the feedlot and making the developer pay relocation costs.³⁷ As commentators have noted, the feedlot in *Spur* did not actually hold an entitlement to continue its nuisance and the developer did not actually hold an option to stop the nuisance upon payment of damages. Rather, the court ordered the shutdown as an absolute matter on public health and safety grounds, and required the developer to pay costs. Nobody was given a choice.³⁸ What the court did in *Spur* lines up much more cleanly with Table 1: It announced a risk production rule (forbidding the feedlot's operations), and it assigned liability for the resulting harm (to the developer).

Splitting the nuisance in the way I have just suggested does more than tweak the original four-rule framework in minor ways. Approaching land use disputes through half-torts also spotlights important features that are

³⁵ Although "stopping costs" would not have to be allocated to the party engaging in an activity, deviations from this allocation are extremely rare. The reason relates to the set of societal judgments that pick out certain acts or omissions as the risk-producing activities in a given interaction. See Saul Levmore, *Takings, Torts, and Special Interests*, 77 VA. L. REV. 1333, 1338 (1991) (suggesting that the reason why neither the government nor the party benefited by a factory's changed practices must pay for those changes relates to "the idea, rooted in judicial language and everyday intuitions, that torts involve behavior that most reasonable people would regard as offensive and that spills over to harm an innocent party"); *infra* Part III.C (explaining the significance of social judgments in selecting the activities that coercive force may be used against).

³⁶ *Spur Industries v. Del E. Webb*, 494 P.2d 700 (Ariz. 1972).

³⁷ *See id.* The court's resolution of the dispute is generally understood as a way of dealing fairly with a situation in which a blameworthy low-intensity user (the developer) "came to the nuisance" by moving a planned community next to a blameless, longstanding feedlot. A close look at the facts, however, yields a more ambiguous picture. *See infra* note 75.

³⁸ See James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440, 445 n.23 (1995) ("the court's judgment implies that Del Webb *must* pay and that Spur Industries *must* move"). It is a matter of speculation whether the court would have approved a voluntary agreement between the parties to undo the effects of the lawsuit and restore matters to the status quo ante (hence making the acceptance of the court's judgment somewhat more like the exercise of an option). *See id.* at 470 (suggesting that such a bargain would have been permissible); JESSE DUKEMINIER ET AL., *PROPERTY* 664 (6th ed. 2006) (discussing this question). One might also say that the developer had a choice whether or not to sue, and hence effectively exercised a call option in deciding to enter into litigation. This characterization is weakened by the fact that none of the parties was aware before the lawsuit of the (apparently unprecedented) combination of risk production and cost allocation rules that would be announced. It seems odd to imagine someone exercising an option in ignorance of the terms of the option and its exercise price.

suppressed by the usual four-rule grid, and removes some distractions. The half-torts approach provides a new way of understanding the asymmetry identified in Henry Smith's work between "the entitlement" that the homeowner holds to be free of pollution and the "the entitlement" that the factory holds to engage in activities that may produce pollution. In so doing, it clarifies the role of self-help. The reformulated approach also clears away some conceptual underbrush by focusing initially on the content of entitlements, rather than on entitlement transfer protocols or on remedies for running afoul of those protocols.

2. Harm and Self-Help

Table 1 combines two kinds of harms – those that may result from what I am calling "risk production" (such as the homeowner's dirty linens and wheezing lungs), and those that result from *the suppression of* risk production (the costs of shutting down or moving the factory). These two kinds of harms are treated in fundamentally different ways by the law. While the harms that come from risk production are never directly imposed on parties through the affirmative use of the state's coercive apparatus, the harms that come from the suppression of risk production may be imposed on parties by the state in just this way.

To understand this difference, it is helpful to consider Wesley Hohfeld's distinction between rights and privileges.³⁹ A privilege is something that a party is legally free to engage in if she can; the law will not interfere.⁴⁰ However, her plans may be thwarted by other private parties who undertake countermeasures, and the law will not come to her aid – she is on her own.⁴¹ A right, however, is made of sterner stuff. Unlike a privilege, a right is backed up by the coercive force of the state.⁴² Suppose Andrew has a right, rather than merely a privilege, to plant turnips in the garden. That means (among other things) that when Betty tries to block his path to the turnip-planting area, Andrew can call the police to make her stop blocking his access.

To see how the risk/harm distinction that I have been emphasizing maps onto Hohfeld's privilege/right distinction, consider the following variation, in which Andrew wishes not to plant turnips but rather to spray herbicides in the vicinity of the garden. Assume this spraying activity creates a risk of

³⁹ See HOHFELD, *supra* note 34, at 36-42. Other property scholars, most recently and notably Henry Smith, have used Hohfeld's taxonomy to illuminate shortfalls in the C&M framework. See e.g., Smith, *Self-Help*, *supra* note 10.

⁴⁰ HOHFELD, *supra* note 34, at 41.

⁴¹ *Id.*

⁴² *Id.* at 39-42 (distinguishing rights from privileges); see Arthur L. Corbin, *Jural Relations and Their Classification*, 30 YALE L.J. 226, 229 (1920) (explaining that the holder of a Hohfeldian right can obtain assistance from the "giant" of the law).

killing some of the vegetables planted by Betty. Andrew may be granted a privilege to engage in risk-producing activities (that is, spray herbicides) but the law will not grant him a right to generate harmful results (that is, kill Betty's vegetables). Betty can respond to Andrew's spraying privilege by covering her vegetables with a protective tarp, using special plant food to build up her vegetables' resistance, and the like.⁴³ Andrew cannot call the police to demand that the law enforce his right to bring about the demise of the vegetables, because he has no such right – even if the same end result is likely to obtain in the course of the risk-producing activity that the law privileges.

Significantly, those who stand to lose from the risk production of others (here, "victims") are not forced to passively accept the full quantum of harm that might result. They may instead take "victim precautions" or, to put the same point in the language of property, they may engage in "self-help." While parties are routinely granted privileges to engage in risk producing activities, they are not granted the right to see that their risk production eventuates in a harmful result. Here it becomes important to distinguish harmful outcomes that are socially unwanted byproducts of risk production⁴⁴ from those outcomes that can be sought for their own sake because they are viewed as socially beneficial on net (even though they may harm some members of society). Hence, Andrew might hold a right, rather than merely a privilege, to exterminate varmints or pull weeds in a given area.⁴⁵ In such a case, the state would back up his right to bring about the intended result, and would employ its coercive force to remove a blocking Betty who had a sentimental attachment to dandelions or rats.

Consider now the other sort of harm presented in Table 1 – that which results from stopping activities that generate risk. Unlike a risk production rule allowing an activity, a risk production rule disallowing an activity in which someone wishes to engage necessarily entails the realization of harm. This harm will be coercively imposed by state action if necessary (i.e., through injunctive relief) and, absent a bargain to undo the prohibition, no

⁴³ The law would probably prevent Betty from engaging in direct sabotage of the spraying operation itself, however. This is not because Andrew has a "right to spray," as such, but rather because he almost certainly has property interests in the implements that he uses to carry out the spraying, as well as inalienable background rights to bodily integrity. Hence, most of the imaginable private means by which Betty could directly counter Andrew's spraying privilege, such as stopping up his hoses, puncturing his chemical tanks, or tripping him as he approaches the garden area, would violate rights of Andrew. Andrew could summon the law to prevent or punish such violations. For further discussion of the relationship between property rights and privileges of use, see text accompanying notes 101-102, *infra*.

⁴⁴ See Nash, *supra* note 22 (emphasizing the importance for framing policy of recognizing pollution as such a byproduct)

⁴⁵ The right might derive from an individual property interest of Andrew in the garden, or he might be authorized by a collective body to carry out the specified tasks on property belonging to others. While certain limits exist, public bodies have significant latitude to pursue outcomes that they deem to be beneficial on net, even when some members of society are detrimentally affected. See, e.g., *Miller v. Schoene*, 276 U.S. 272 (1928) (upholding the uncompensated cutting of cedar trees where necessary to protect nearby apple trees from falling victim to "cedar rust").

party will have any power to deflect or reduce that harm.⁴⁶ A decision remains as to who shall bear the costs of that realized harm, although it is very rare for liability for stopping costs to be allocated to any party other than the one forced to stop the activity.⁴⁷

Here we see an asymmetry.⁴⁸ The possibility of self-help drives a wedge, at least potentially, between the production of risk and the realization of harm – even apart from any stochastic element intrinsic to the risky activity. No such wedge could exist between the law’s coercive mandate to cease a particular activity and the costs that are associated with that stoppage. To that extent, a risk production rule disallowing an activity is much more coercive in generating harm than is a risk production rule allowing an activity.⁴⁹ That observation does not imply that allowing a risky activity to proceed is always a good idea; it merely means that private parties are in a position to affect costs when an activity is allowed but cannot do so when the activity is forbidden.⁵⁰

B. Generalizing Beyond Nuisance

Two points made above can be generalized beyond the nuisance setting. First, we can generalize the idea that no party permitted to undertake a risky activity ever holds a right *to bring about a harmful result* (recognizing here, of course, that “harmful result” is a socially defined term). Rather, parties hold entitlements to engage in otherwise beneficial activities that produce various *risks of harm*. If Eleanor is driving carefully and Franklin leaps into her car’s path too late for her to stop, Eleanor does not thereby gain a right to crush Franklin with her car. What Eleanor has after Franklin leaps is the same thing she had before – an entitlement to engage in the risk-producing activity (careful driving). It is true that this activity may result in harm to Franklin in a given instance. But the darting Franklin remains free to leap

⁴⁶ To be sure, ex ante investment decisions would be relevant to the potential impact of a later shutdown. See generally Lucian Arye Bebchuk, *Property Rights and Liability Rules: An Ex Ante View of the Cathedral*, 100 MICH. L. REV. 601 (2001). However, viewed at the point at which a shutdown is ordered, a harm will be imposed equal to the difference between continuing the activity and engaging in the next best substitute (a similar activity, or perhaps the same activity pursued in a different location) that the parties will be powerless to further reduce.

⁴⁷ Indeed, *Spur Industries v. Del E. Webb*, 494 P.2d 700 (Ariz. 1972), seems to be the only known example of this remedy. See DOUGLAS LAYCOCK, MODERN AMERICAN REMEDIES: CASES AND MATERIALS 409–10 (3d ed. 2002). Some possible reasons for its rarity are discussed below.

⁴⁸ Obviously, I am not the first to spot the asymmetry in this story, although my explanation for it is somewhat different. See sources cited in *supra* note 10.

⁴⁹ I am assuming for purposes of this discussion that bargaining to lift an injunction or societal prohibition is not a viable alternative. There is some evidence that this is a realistic assumption in many nuisance cases. Ward Farnsworth, *Do Parties to Nuisance Cases Bargain After Judgment? A Glimpse Inside the Cathedral*, 66 U. CHI. L. REV. 373, 381–84 (1999) (analyzing twenty nuisance cases, none of which involved post-judgment bargaining, and none of which, based on self-reports of lawyers involved, would have had a prospect of such bargaining had the outcome been different).

⁵⁰ This difference in kind between allowing an activity and forbidding it tracks the distinction that Calabresi draws between general and specific deterrence in the *Costs of Accidents*, as I will discuss below. See *infra* Part III.A.1.

back out of Eleanor's way or benefit from some intervening event that fortuitously sweeps him out of Eleanor's path. Eleanor has no entitlement to make Franklin hold still so she can run him over, just as a polluting factory has no entitlement to make a household suffer lung discomfort or grimy laundry from its fumes.

It is easy enough to see how this principle applies to unintentional torts and to the category of nuisance,⁵¹ but what about intentional torts like battery?⁵² If Gilda punches Harold in the nose and Harold collects damages in the ensuing lawsuit, the situation might be described conventionally as the application of a liability rule. On that view, Harold has a right not to be punched that Gilda can buy out by paying damages. But that description clashes with moral intuitions, and also is inconsistent with the supercompensatory relief that would likely be available to Harold in this situation. A more consonant way of understanding the situation is to say that society has prohibited the risk-producing activity of "punching another person in the nose" and that the costs of not punching are assigned to the party who would otherwise like to punch (here, Gilda). In other words, the legal regime aligns with Cell C in Table 1. Society may indeed permit a number of physically similar activities that produce risks of similar harm (violent stretching exercises, shadow boxing, and the like) but again, these are entitlements to engage in the activity, not to bring about the harmful result.⁵³

When Gilda throws her intentional punch, she violates a prohibition on an activity. That is a very different matter than when Gilda practices boxing moves in the park (a permitted risk-producing activity, let us suppose), accidentally smacks a passerby, and has to pay damages. In the latter case we have a permitted activity with a cost allocation rule that shifts liability back to Gilda when harm results (Cell A in Table 1). In the case of the punch, Gilda has violated the Cell C regime. While this regime did not physically prevent Gilda from throwing an intentional punch in this

⁵¹ As a doctrinal matter, nuisances of the polluting factory variety are deemed to be "intentional" even where the operation producing the pollution was not carried out for the purpose of harming the plaintiff. *See, e.g.*, DAVID W. ROBERTSON ET AL., *CASES AND MATERIALS ON TORTS* 619 (2d ed. 1998) (explaining that "most nuisances are intentional, at least in the sense that the defendant continued the activity, knowing with a substantial certainty that the interference was taking place"); Jeff L. Lewin, *Comparative Nuisance*, 50 U. PITT. L. REV. 1009, 1027-28 (1989) (noting that "a nuisance may be intentional even if the defendant did not specifically intend to harm the plaintiff and was carrying on a legitimate activity in the safest practical manner").

⁵² The term "intentional" is a very slippery one. *See, e.g.*, WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF TORT LAW* 149-50 (1987). The members of the doctrinal class "intentional torts" are heterogeneous and do not invariably require the intent to cause a harmful result. For a recent discussion, see Kenneth W. Simons, *A Restatement Third of Intentional Torts?* 48 ARIZONA L. REV. (forthcoming 2006), available at <http://ssrn.com/abstract=920602>. Parsing the current system of categorization lies beyond the scope of this paper, but the examples in the text suggest that we might usefully distinguish intentional actions directed at producing harmful results (which society will always prohibit) from intentional engagement in activities that merely produce a risk of harmful results (which society may or may not choose to prohibit).

⁵³ As these examples suggest, risk-production rules can cut fine distinctions between permitted activities and prohibited ones. *See supra* note 28.

instance, the state stood ready (in theory) to physically protect Harold's right not to be punched. Because physical coercion was not applied in time to prevent the violation of Cell C's prohibition, however, some other remedy had to be applied. This would likely include damages, just as in the Cell A case, but it could also include supercompensatory relief and injunctive relief against Gilda's future activities. Rather than understand Gilda as having "bought out" Harold's right not to be punched, it is more useful and accurate to think of these remedies as penalties imposed against Gilda for violating a risk-production rule that *bans* the activity of intentional punches.⁵⁴

Another generalizable principle relates to the notion of self-help. As just established, nobody has a right to bring about a harmful result (that is, everyone has "no right" in Hohfeldian terms to produce such an outcome).⁵⁵ A corollary is that every potential victim has the privilege of engaging in self-help or precautions to prevent or minimize the manifestation of harm. This privilege of precaution creates the same asymmetry we observed previously in the land use context. Notice that Harold can leap out of the way or block Gilda's punch, but Gilda has no ability to "leap out of the way" of the penalties that the law imposes on her for violating the prohibition on intentional punching. Likewise, if a police officer had been handy to stop Gilda from punching Harold in the first place, or if Gilda had simply followed the legal rule, she would have had to bear the disutility associated with not throwing the punch. Just as in the case where a factory is enjoined from emitting pollutants, the party who is stopped from engaging in an activity typically must bear the stopping costs.⁵⁶

⁵⁴ The distinction that I am drawing here between the content of an entitlement and the legal remedies that are available for violations of that entitlement has been made by others, and will be explored further below. See *infra* Part I.D.3.

⁵⁵ See Hohfeld, *supra* note 34; see also *infra* note 68.

⁵⁶ It is interesting to imagine how a *Spur*-like situation, in which the other party is forced to bear the stopping costs, might arise outside of the land use context. Suppose that the law in a given community absolutely prohibits any nonconsensual physical contact with another person, no matter how it comes about, and backs up that prohibition by issuing high-tech deflector shields to its citizens which they can use on a moment's notice to (painfully) stop an approaching person before any contact occurs. We might imagine that deploying the shield against a person who is blamelessly engaged in a permissible activity would be allowed where necessary to stop contact only if damages were paid to the actor who is blocked. For example, a party who has decided to lie down just past a blind corner on a jogging trail might use the shield to keep an oncoming jogger from trampling him, but only if he pays the "stopping costs" that the jogger incurs when she runs into the deflector shield. As this example suggests, there is an alternative way of thinking about *Spur*. Putting oneself in a position likely to create a costly conflict (whether lying down on a jogging track, or moving a bunch of people next to a feedlot) can itself be understood as a risk-producing activity subject to legal regulation. See, e.g., Richard Epstein, *A Theory of Strict Liability*, 2 J. LEG. STUD. 151, 177-79 (1975) (discussing the creation of "dangerous conditions"); Stephen R. Pery, *The Impossibility of General Strict Liability*, 12 J. PROD. LIAB. 383, 397 (1989) (giving an example in which a driver collides with a parked car, and observing that liability cannot turn simply on which party was "active" in a given interaction, because expanding the time horizon will show that the other party acted too – for example, by parking the car "in a dangerous spot"). As the next section explains, the law must make normative judgments in picking out which activities count as "risk-producing" ones for which coercion or liability-shifting is routine, and which activities instead simply make up part of the background against which risks are undertaken. See *infra* Part I.D.

C. *The Limits of Coercion*

To this point, I have been speaking as if there is some self-evident category of “risk-producing activities” that law can choose to allow or (coercively) disallow. In the factory/homeowner example, I have posited a single such activity – the emission of fumes. Table 1 is structured around the choices suggested by this risk-producing activity. But before we ever reach a grid like Table 1, society has implicitly made some judgments that constrain the alternatives we encounter there.

It is intuitive that the activity of emitting effluents (a means, let us suppose, to the permissible end of widget-making)⁵⁷ creates risk. As such, society must decide whether to allow or ban that activity, and must further decide about the allocation of liability for harm resulting from that decision. In other words, by defining “emitting” as the risk-producing activity in the story, we have placed it on the chopping block as a potential subject of government coercion. The conflicting activity, residing in a home nearby, is not placed on the chopping block in a reciprocal manner – neither in Table 1, nor in the original C&M framework. That distinction is readily defensible. The activity of residential living – without more⁵⁸ – does not seem to create any risk of harm for others. Because stopping any activity is coercive, a rule that limits such coercion to activities that generate a risk of harm seems sensible.

Nonetheless, a Coasean analysis would suggest that the residential use is just as much to blame for the land use conflict as is the industrial use.⁵⁹ Indeed, the residential use’s existence and location is exactly what causes us to pick out the factory’s activity as a risk-producing one.⁶⁰ To take account

⁵⁷ As suggested already, coercive force could clearly be brought to bear against a person pursuing an impermissible end, such as attempting to gratuitously harm someone else. The more interesting questions involve societal choices to use coercion in constraining activities undertaken in pursuit of permissible ends. Ends that may be perfectly legitimate for someone to pursue (making widgets, or driving to Poughkeepsie) might be undertaken by means that generate significant risks for others – and that thereby impede others in the pursuit of their own permissible ends.

⁵⁸ There are two “mores” that might be imagined here. First, and most obviously, the residence poses a risk of a lawsuit – and a threat that the factory will be forced to cease its activity. But that threat, and any costs that flow from it, can be addressed through the response that the law structures to the factory’s activity of emitting effluents. Second, if we posit a world in which pollution is a generally accepted background condition, the production of “pleasant residential life” would require aggressive measures, such as the deployment of technologies for constantly clearing the air of pollutants. These measures could have harmful effects on the factory. See Smith, *Exclusion*, *supra* note 10, at 1012 (giving the example of giant fans that might blow pollution back onto a factory’s property and interfere with the factory’s operations). But because we could address such measures as risk-creating activities in their own right if and when they might arise, we need not view them as an essential element of the activity of residing near a factory.

⁵⁹ See Coase, *supra* note 1, at 2.

⁶⁰ This connects to a larger point – that risks are not created in the abstract, but rather only relative to some other interest. Cf. *Palsgraf v. Long Island R. Co.*, 162 N.E. 99, 102 (Ct. App. N.Y. 1928) (Cardozo, C.J.) (“It may well be that there is no such thing as negligence in the abstract. ‘Proof of negligence in the air, so to speak, will not do.’”) (quoting Pollock, *Torts* [11th ed.], p. 455).

of this, we might refine the description of the risk-creating activity in our example so that it is not simply “emissions” but rather “emissions within 500 yards of a home.”⁶¹ With this refinement, a prohibition on the “risk-creating activity” might involve either stopping the emission of effluents or increasing the distance between the factory and the home. The latter could be accomplished, of course, either by moving the factory or by moving the home.

Now we see shadow possibilities lurking in the bottom row of Table 1. The government might enforce a prohibition on the activity (as redefined) by moving the household somewhere else while placing liability for the moving costs on one party or the other.⁶² We can come up with reasons – practical, cognitive, or even moral – to explain why these alternatives are not part of the standard panoply of societal choices. But it is nonetheless the case that an implicit judgment has been made about which features of the situation are deemed responsible for the risk,⁶³ and thereby understood as an appropriate potential target of government coercion. Such a selection inheres in every matrix that sets out legal alternatives for resolving a conflict. Entitlement theory is therefore in a sense interstitial – a way of exploring the alternatives left open after law has undertaken this normative work of selection.

D. Reconciling New and Old

What would the reformulation that I have suggested mean for the original *Cathedral* framework and the large body of interesting and important work that has been constructed upon that edifice? The original framework was not wrong, only overstuffed. It attempted to pack into each

⁶¹ In fact, nuisances are often classified as such not because of any inherent characteristics of their operation, but rather because of what is nearby. See RESTAT 2D OF TORTS, § 821A, cmt b(3) (1979) (explaining that courts “may distinguish between a ‘nuisance per se,’ meaning harmful conduct of a kind that always results in liability and a ‘nuisance per accidens,’ meaning harmful conduct that results in liability only under particular circumstances”).

⁶² It is indeed not obvious that such alternatives would always be normatively less desirable than making the household bear the costs of moving the uses apart in the manner accomplished in *Spur* (that is, by making the factory move and placing the costs on the residential party). On the contrary, making the household move while placing the costs of the move on the factory would appear to be a better distributive outcome for the household, inasmuch as the household would not be required to bear the costs of separating the uses. Nonetheless, coercively shutting down a residential use seems problematic, even when the costs are placed elsewhere, for reasons that have been much discussed in the eminent domain context.

⁶³ As elsewhere, the law necessarily identifies some features of a situation as “mere conditions” and other features as causally relevant. See H.L.A. HART & TONY HONORÉ, *CAUSATION IN THE LAW* 33 (2d ed. 1985) (explaining that “[t]he line between cause and mere condition is in fact drawn by common sense on principles which vary in a subtle and complex way, both with the type of causal question at issue and the circumstances in which causal questions arise”). Many conditions that are “but for” causes in the physical sense are dismissed as irrelevant to legal causation. Hence, the (legal or proximate) cause of a fire might be a tossed match or a faulty wire, rather than the presence of normal levels of oxygen in the surrounding environment. *Id.* at 34-35. Because conditions that are not “normal” in a given setting are the ones that will be picked out as “causes,” the analysis is contingent on what is viewed as “normal.” Hence, oxygen might be considered the cause of a fire if the fire broke out in a laboratory from which oxygen had been intentionally excluded. *Id.* at 35.

cell of the four-rule schema answers to three inquiries: (1) What is the content of the (underlying) entitlement?⁶⁴ (2) What is the protocol for transferring the entitlement? and (3) What remedies are available for a violation of the approved transfer protocol? Pieces of this same critique, variously stated, have appeared in the literature for decades, of course.⁶⁵ This paper suggests a new way of isolating the first inquiry. Once that groundwork has been laid, the existing superstructure of work on entitlements, which relates primarily to the design of transfer protocols, fits easily and naturally into it. Recognizing transfer protocols for what they are also helps to keep separate the question of what remedial action should follow when a protocol is broken.

1. Entitlement Content

Before we can distinguish the content of an initial entitlement from the legal protocol for transferring it, we first must work through some wrinkles about the nature of entitlements. C&M and their successors have generally characterized “the entitlement” as something unitary, like a football – exclusively held at any given time by one party or the other, and capable of being passed back and forth upon fulfillment of specified conditions, such as the payment of money.⁶⁶ Refining what each party holds under different risk production and cost allocation rules changes the picture. As I will show, Cells A, B, C, and D from Table 1 can be thought of as different entitlement *packages* with which the law might endow pairs of parties.⁶⁷

⁶⁴ As I will explain, the content of transfer protocols and of applicable remedies can also be understood as part of one’s entitlement set. See text accompanying note 76, *infra*.

⁶⁵ See, e.g., Smith, *Property and Property Rules*, *supra* note 2, at 1759 & n.116 (observing that “[p]roperty rules and liability rules are properly thought of as different ways of defining the scope of entitlements in the domain of transfer, rather simply as ‘remedies’ protecting entitlements” and collecting cites relating to this point); JULES L. COLEMAN, *MARKETS, MORALS, AND THE LAW* 60 (1988) (suggesting that property rules and liability rules should be treated not “as ways of protecting rights” but rather as “normative rules specifying the content of rights within the transactional domain” and explaining that “[t]ransaction rules” contain no enforcement mechanisms and hence “merely specify terms or conditions of transfer”); Madeline Morris, *The Structure of Entitlements*, 78 CORNELL L. REV. 822, 843 (1993) (arguing that C&M’s rules “do not protect and define the transferability of an already-allocated entitlement; rather, the rules themselves constitute the particular entitlement”). Of course, one might understand some of the conflation embodied in the original schema not as an oversight but rather as a central feature of the project. Levmore, *supra* note 33, at 2149 (1997) (“By focusing on (and moving between) property rights, damage awards, and private bargains around these rights and awards, Calabresi and Melamed vaporized the inherited barriers between private law rights and remedies”). But it is possible to accept the insight that entitlements depend in some sense on what courts will do without completely abandoning the distinction between entitlements and their enforcement. See *infra* Part I.D.3.

⁶⁶ Jeanne Schroeder has challenged this vision of a unified entitlement. Schroeder, *supra* note 22 at 445 (1999) (“There is no single thing, no ‘entitlement,’ that is shared by two persons”).

⁶⁷ The four pairings in Table 1 seem to effectively cover the waterfront in terms of entitlement content for a single, narrowly defined risk-generating activity engaged in by one party to a two-party interaction. Of course, the number of possible on-the-ground legal arrangements is much, much greater, given the possibility of combining and transferring among these alternatives, different transfer pricing mechanisms, different remedial schemes, different specifications of the strength of entitlements (e.g., rights v. privileges), and different possible interactions with other entitlements relating to other activities or to property ownership itself.

Table 2 lists the sets of Hohfeldian entitlements⁶⁸ held by each party under each of the combinations of risk production and cost allocation rules shown in Table 1.

Table 2:

Entitlement Packages in Hohfeldian Terms

Cell in Tbl. 1	Content of Factory's Entitlement	Content of Homeowner's Entitlement
A	Privilege to Emit Liability to Pay for Harm	No-Right to Stop Emissions Power to Collect Damages
B	Privilege to Emit Immunity from Paying Costs	No-Right to Stop Emissions Disability from Collecting
C	Duty Not to Emit Disability from Collecting	Right to Stop Emissions Immunity from Paying Costs
D	Duty Not to Emit Power to Collect Costs	Right to Stop Emissions Liability to Pay Costs

Cells B and C in Table 2 most closely resemble unitary, entitlement-as-football regimes, in that the same party enjoys *both* a beneficial risk production rule *and* a beneficial cost allocation rule. In cell B, the factory holds the privilege to emit, and the homeowner has, in Hohfeldian terms “no-right” to engage the apparatus of the state to stop the emissions.⁶⁹ Liability for any resulting harm is left to fall on the homeowner, who may choose to buffer the effects through self-help. That result is expressed here as a disability on the part of the homeowner to recover damages from the factory, and a correlative immunity on the part of the factory from liability for such costs. In cell C, the situation is roughly reversed, although the

⁶⁸ Hohfeld's taxonomy sets out pairs of “jural opposites” and “jural correlatives.” HOHFELD, *supra* note 34, at 36. The correlatives, which represent possible combinations of complementary entitlements that two parties to an interaction could hold, are set out below. Where one party holds an entitlement listed in the top row, the other party holds the corresponding entitlement directly below it.

right	privilege	power	immunity
duty	no-right	liability	disability

Id.

⁶⁹ *Id.* at 36, 39-42. Calling the factory's entitlement to emit a “privilege,” while technically accurate, understates matters a bit. The privilege that the factory has to emit is paired with a background right that does not appear in Table 2 – the factory's right to exclude others from its property. *See* text accompanying notes 100-101, *infra*. Thus, virtually anything that the homeowner might dream up that would stop the factory “from emitting” -- (such as clogging up the factory's gears, stuffing rags in the exhaust pipes, and so on) would violate a right of the factory. Because the power of the state could be invoked to protect the factory's rights in all of the property that it uses to carry out the act of emitting, the factory holds an entitlement that is practically indistinguishable from a “right” to emit. The crucial point is that the entitlement, whatever we choose to call it, extends only so far as the creation of risk; it does not extend to creating realized harm.

content of the beneficial risk production rule for the homeowner takes the form of a right rather than a privilege. The factory has a duty not to emit, and the homeowner has a right to engage the coercive power of the state to stop emissions. Again, the resulting costs (here, the costs of *not* emitting) are left to fall on the party who incurs them in the first instance (here, the factory). Hence, the homeowner is immune from claims that it chip in to cover the costs of the factory shutdown, and the factory is disabled from using the legal system to seek such contributions.

Cells A and D are different, in that one party has a favorable risk production rule while the other party enjoys a favorable cost allocation rule. Each of these entitlement regimes can be understood as granting an embedded option⁷⁰ to the party who enjoys the favorable risk production rule. In cell A, the factory's privilege to emit is paired with liability for harm that eventuates. We might then say that each increment of emission amounts to the implicit exercise of a call option with an exercise price equal to the marginal damages suffered by the homeowner (as determined by a court or other third party).⁷¹ Likewise, the factory could choose not to exercise its option at all; it could close down altogether to eliminate liability – without ever leaving the cell A regime.

There is, however, an important difference between the embedded option at issue here and explicit call options that are used in contractual or financial settings. With explicit options, the exercise price or “strike price” is fixed at the time the option is written; the holder of the option can easily determine at any point in time whether the option is “in the money” for her and hence worth exercising. But the exercise of an embedded option to emit does not carry a readily discernible strike price, if a particular unit of emissions does not reliably produce a predictable amount of liability. It is true that by choosing its emissions level and by otherwise adjusting its operations, the factory can influence its liability. However, actions taken by the homeowner, as well as the intervention of luck, will also affect whether, and to what extent, risk production is manifested in realized harm. Hence, the option analogy fits less well when an actor faces liability for the *actual outcomes* of an activity than when the actor chooses to pay a known price to

⁷⁰ Legal scholars have recently begun to observe the prevalence of options embedded in the structure of legal rules or contractual provisions. See, e.g., IAN AYRES, *OPTIONAL LAW* 3-6 (2005); George S. Geis, *An Embedded Options Theory of Indefinite Contracts*, 90 MINN. L. REV. 1664 (2006); Robert E. Scott & George G. Triantis, *Embedded Options and the Case Against Compensation in Contract Law*, 104 COLUM. L. REV. 1428 (2004). Unlike explicit options, these embedded options are created implicitly; their terms are not expressly labeled but rather must be inferred from an examination of the relevant provisions or arrangements. See Geis, *supra*, at 1687-89; Scott & Triantis, *supra*, at 1456-59.

⁷¹ Liability rules have been equated with call options for some time. In a 1993 article, Madeline Morris explained that liability rules are structured like call options, and went on to discuss a reverse arrangement equivalent to a put option. Morris, *supra* note 65, at 852. Other scholars soon adopted the option language. See, e.g., Ian Ayres, *Protecting Property with Puts*, 32 VAL. U.L. REV. 793, 795-96 & n.6 (1998) (discussing this development and collecting cites to articles using the options nomenclature).

engage in a risky input.⁷²

The analogy of an embedded call option becomes even more tenuous in cell D. There, the homeowner's right to stop the factory's pollution is paired with the homeowner's liability for factory relocation or shutdown costs. If we adopt the same logic as we just did for cell A, then not only could the homeowner choose to allow emissions to continue (and thereby avoid shutdown liability), she could also select any intermediate point between full operations and complete shutdown, perhaps even going so far as to specify particular operational details.⁷³ But the idea of allowing one party to dictate the scope and manner of another party's operations seems oddly coercive.⁷⁴ On the other hand, making a party liable for another party's shutdown costs without offering her any choice in the matter also seems oddly coercive, for different reasons.⁷⁵ These competing concerns may help to explain the rarity of cell D regimes.

Defining an underlying entitlement is only one part of the analysis –we still must examine potential rules for transfer as well as the remedies that apply if the rules for transfer are violated.⁷⁶ Before proceeding, one point must be emphasized: In an important sense, it is not possible to wall off entitlement content as something distinct from transfer protocols and remedies. What one “has” is importantly defined by when and how one can get rid of it, whether someone else can take it and under what circumstances, and what the law will do about those who violate any of the above rules. One's entitlement in full includes what I have here termed the

⁷² Cf. Rose, *supra* note 19, at 2181-82 (discussing poor fit of “option” idea to accidental damages or other unexpected intrusions into property rights).

⁷³ See Calabresi & Melamed, *supra* note 2, at 1121 (providing an example in which a Rule Four regime would allow the homeowner to force the factory to use higher-grade coal by paying for the cost).

⁷⁴ See *id.* at 1121-22 (observing that “the problems of coercion may as a practical matter be extremely severe under rule four”).

⁷⁵ Where costs are a function of a mandated shutdown that cannot be bargained around, it is not possible for anyone to do anything *ex post* to control or reduce the costs. But the party that had previously been engaged in the activity at least had the opportunity to decide about *ex ante* investment levels and thereby control the extent of her exposure. See generally Bebchuk, *supra* note 46 (noting the relevance of entitlement regimes for *ex ante* investment decisions). To hold a party that had no opportunity to choose investment levels liable for stopping costs seems potentially unfair as well as inefficient. Interestingly, the facts of *Spur* itself illustrate one aspect of this concern: Spur invested in massive expansions of the feedlot after the Del E. Webb development was well underway nearby. Del E. Webb started development in late 1959, began selling homes in January 1960, and had between 450 and 500 houses in various stages of completion by May 2, 1960. See *Spur*, 494 P.2d at 704. Between 1960 and 1962, Spur more than tripled the size of its feedlot, expanding it from 35 acres to 114 acres. See *id.* at 704 & Exhibit A. In 1959, Spur's predecessors grazed between 7,500 and 8,500 head of cattle on the original 35 acres; Spur ultimately accommodated between 20,000 and 30,000 head. *Id.*

That both Spur and Del E. Webb were busily expanding their incompatible uses at the same time complicates the question of fault. See Daniel A. Farber, *The Story of Boomer: Pollution and the Common Law*, 32 *ECOLOGICAL L.Q.* 113, 139 (2005). It also complicates the efficiency analysis; there are two parties engaged in activities that might be stopped, and we wish to induce both parties to make efficient investments. See Bebchuk, *supra* note 46. While the *Spur* remedy is potentially problematic in that it could induce inefficient investment on the part of the party in Spur's position, the more commonplace remedy of making the party in Spur's position stop and bear its own stopping costs will fail to attend to the investment incentives of the other party to the case. See *id.*

⁷⁶ See *infra* Parts I.D.2 and I.D.3.

“underlying” entitlement package (risk production and liability allocation rules), as conditioned by the powers and liabilities that one has with regard to movement from that package to some other package, and as further conditioned by the realities of imperfect enforcement and available remedies for violations of transfer protocols. Nonetheless, it is helpful to break out the elements of transfer rules and remedies conceptually, while holding firmly in mind that they importantly bear on the overall value of one’s entitlement package.

2. Transfer Protocols

As the discussion above suggests, some entitlement regimes come with embedded mechanisms that allow one party to unilaterally move from one combination of risk and cost to another. But this does not begin to exhaust the ways that such shifts can take place. Absent any legal prohibition, all entitlements come implicitly bundled with the owner’s prerogative to alienate them, and all parties are implicitly endowed with the power to seek to obtain entitlements that they do not yet possess. Usually any change from a given default package of entitlements (that is, any shift from one cell in Table 1 to another) would occur only with the consent of both (or all) parties, and at a mutually agreeable price.

This transfer protocol lines up well with the usual understanding of property rule protection. But the “mutual consent” transfer protocol can be used to alter *any* package of entitlements (again, barring a legal prohibition on such transfers). Hence, we can imagine parties bargaining in the shadow of a cell A regime (emit with liability) for a move either to a cell B regime (emit without liability) or a cell C regime (no emissions permitted). Such a bargain would require mutual consent, even though the starting point is an emit-and-pay regime that we would ordinarily tag as a liability rule regime. On this account, the conceptual categories of property rules and liability rules are better understood not as layers of protection attached to particular entitlements but rather as different kinds of transfer protocols for changing from one entitlement package to another.

While a “mutual consent” transfer protocol is the typical default, it is also possible for the law, or for private parties, to devise other transfer protocols for moving among entitlement packages. For example, a governmental entity might charge a party a licensing fee to engage in a particular activity. This would amount to a grant of a governmentally created call option to move from cell C to, say, cell B.⁷⁷ Parties could also

⁷⁷ There would then be the question of whether a move *back* from B to C would also be unilaterally possible (and if so, at which party’s initiative and at what price). The possibility of successive rounds of liability rules (that is, liability rules that, once exercised, are then vulnerable to a retaking) has received some attention in the entitlement literature. See, e.g., Ian Ayres & Paul M. Goldbart, *Optimal Delegation and Decoupling in the Design*

write options for each other, either on their own initiative or as part of a mandatory governmental program. Likewise, judges could explicitly structure the way in which parties can move from a default resolution to a different resolution by specifying the moves that each is entitled to make and the choice set that each will have. Hence, many of the alternative ways that scholars have contemplated structuring entitlements can be understood as transfer protocols for moving among the basic, plain-vanilla entitlement regimes represented in Tables 1 and 2.⁷⁸

3. Remedies

The fact that the law parcels out specific entitlement packages to parties and prescribes rules for their transfer does not mean that everyone will follow those rules.⁷⁹ Hence, the law must also decide what remedy should apply when a party oversteps the limits of an entitlement package without following an approved transfer protocol. For example, one's property boundaries are usually protected by a property rule so that most legitimate transfers of interests inside the boundary can occur only with the consent of the owner. However, a trespasser may complete a violation before the coercive power of the state can be summoned. In that case, injunctive relief will no longer be useful, and supercompensatory damages may be awarded instead.⁸⁰ Likewise, an entitlement that is protected by an inalienability rule might nonetheless be sold, and some remedy would have to be devised.

C&M were aware of these possibilities, and even discussed the need for society to apply a “kicker” in criminal law settings “to keep all property rules from being changed at will into liability rules.”⁸¹ Indeed, that very formulation – suggesting that remedies be formulated in a way that will keep one kind of rule “from being changed at will” into another – demonstrates that the content of an entitlement is distinct both from the

of *Liability Rules*, 100 MICH. L. REV. 1, 51-54 (2001) (discussing “second (and higher) order liability rules” that would include a take-back feature).

⁷⁸ For example, in addition to “call options,” that allow a party to gain an entitlement by paying a particular price, scholars have discussed the use of “put options” that would allow a party to force the sale of an entitlement at a particular price. See, e.g., Morris, *supra* note 65; Ayres, *supra* note 71. Many other ways of combining or subdividing entitlement forms have appeared in the literature, whether focusing on the structure of remedies, the design of transfer mechanisms, or both. See, e.g., Ayres & Goldbart, *supra* note 77; Levmore, *supra* note 33; Michelman, *supra* note 10; Lee Anne Fennell, *Revealing Options*, 118 HARV. L. REV. 1399, 1404 nn. 20-21 (collecting citations to sources offering different taxonomies and combinations of entitlements).

⁷⁹ See COLEMAN, *supra* note 65 at 60 (observing that without enforcement mechanisms, “nonentitled parties may be encouraged to disregard entirely the legitimacy of the claims of entitled parties”).

⁸⁰ See *Jacque v. Steenberg Homes*, 563 N.W.2d 154 (Wis. 1997) (upholding \$100,000 punitive damages award for an intentional trespass).

⁸¹ Calabresi & Melamed, *supra* note 2, at 1126. See also Alvin K. Klevorick, *On the Economic Theory of Crime*, in NOMOS XXVII: CRIMINAL JUSTICE 289, 301-03 (J. Roland Pennock & John W. Chapman eds., 1985) (explaining that violations of society’s “transaction structure” are classified as crimes); COLEMAN, *supra* note 65 at 153-65 (discussing Klevorick’s approach and how it relates to and differs from that of C&M).

rules for changing it, and the remedies for breaking the rules for changing it.⁸²

The fact that underlying entitlement structures are often inferred from or illustrated by court-ordered remedies has contributed to confusion between entitlement content, transfer protocols, and remedies. Consider the *Boomer* case, in which the court held that the factory could continue to emit (without further liability) if it paid permanent damages to neighboring homeowners, but that an injunction would issue if it failed to pay the permanent damages.⁸³ The pre-lawsuit parties arguably occupied a cell C world in which emissions were not allowed. Because any change from that entitlement package would, as a default matter, require the consent of both parties, and because the factory went ahead and emitted without obtaining that consent, it can be understood as having violated an entitlement transfer protocol.

Ordinarily a court faced with this scenario would have done two things: ordered damages for the past harm (or some other relief for violation of the transfer protocol), and coercively restored the world to cell C through injunctive relief. The *Boomer* court did neither. Instead, the court's judgment can be understood as announcing a new transfer protocol by which the factory could unilaterally move from cell C (emissions not allowed and shutdown costs borne by the factory) to cell B (emissions allowed, with any future liability for harm falling on the homeowners). This transfer protocol was structured as an explicit option, with a strike price (permanent damages) set in advance. The factory could exercise the option and effect a shift to cell B by paying permanent damages, or it could choose not to exercise the option and remain in cell C, with its operations enjoined.⁸⁴ Looking at the *Boomer* case in this way suggests an interesting clarification. The universe of court-ordered actions regarded as remedies actually comprises several distinct functions – clarifying the nature of the underlying entitlement, announcing new transfer protocols, enforcing the terms of existing transfer protocols, and providing relief for violations of transfer protocols.

More generally, viewing remedies as distinct from entitlement content

⁸² Coleman would put the point slightly differently: “Absent means of enforcement, nonentitled parties do not turn or convert one sort of rule into another so much as they may be disposed to ignore the lot of them.” See COLEMAN, *supra* note 65 at 60.

⁸³ *Boomer v. Atlantic Cement Co.*, 57 N.E.2d 870 (N.Y. 1970)

⁸⁴ It might seem at first blush that the factory actually occupied a cell A regime in which it held an embedded option to emit, at the price of paying for the harm that it actually caused – even if it did not find out that it occupied such a regime until the court ruled on the case. However, the court did not actually *require* the factory to pay for harm that it had already caused, because the factory could have elected an injunction instead. Moreover, going forward, the factory was not required to pay for actual harm. Rather, by paying a present value estimate in the form of permanent damages, the factory could both avoid an injunction and purchase immunity from any further damages actions.

offers an important gloss on how court-ordered relief relates to Table 1's reformulation. When a court awards damages, it might *either* be remedying a move from cell C (emissions prohibited) that was conducted outside of approved transfer protocols, or it might be enforcing the terms of cell A, in which emissions are permitted, but liability for resulting harm has been shifted. It may be difficult to conclude from a single court case that we are "really" living in a cell A or a cell C world. Of course, the pattern of damages associated with a given activity – whether they tend to be compensatory or supercompensatory in nature, whether they tend to be combined with forward-looking injunctive relief, and whether, indeed, instances of engaging in the activity are punished even in the absence of demonstrated harm – all go to whether the regime is more appropriately viewed as cell A or cell C.⁸⁵

II. SCALING PROPERTY BOUNDARIES

The discussion in Part I established that the basic risk/harm dichotomy operates both on and off real property. Nonetheless, property boundaries are essential to an understanding of how entitlements work. In this Part, I explore the connection between property lines and half-torts, and the related connection between property and torts as doctrinal fields. While Part I suggested that a more coherent understanding of property entitlements can be gleaned by importing the half-torts refinement into the story, this Part will show how property's distinctive elements interact with, and can be better explained in light of, that refinement.

I begin by reconsidering the appropriate paradigm for thinking about property. The approach taken in this paper shows property to be neither a bundle of sticks nor a near-absolute exclusionary right in a thing, but something rather different – a leaky, unsealed bucket of gambles.⁸⁶ Exclusion mechanisms, though imperfect, are generally designed to keep one's own positive payoffs inside the bucket and the negative payoffs

⁸⁵ The point in the text assumes that we are concerned with identifying regimes that fit descriptively with the incentive structures courts actually enforce. To the extent that there is heterogeneity in the choice of remedies applied by courts, incentives (and on this descriptive view, entitlements) will be less clearly framed. See Emily Sherwin, *Property Rules as Remedies*, 106 YALE L.J. 2081, 2086 (1997) ("The absence of rules for judicial choice among remedies means that property rules and liability rules, as imposed by courts, have only a limited prospective role in law. Because the identity of the remedy is uncertain until a dispute has been adjudicated, property rules and liability rules cannot serve as incentives before that time."). It would also be possible to view certain entitlement contents as normatively required or certain transfer protocols as normatively impermissible, quite apart from observed patterns of relief. For example, one might take a normative position that certain invasions of rights are impermissible, even if courts consistently award damages that do no more than compensate for the harm caused. See COLEMAN, *supra* note 65, at 62-63 ("[I]t can never be any part of the classical liberal account that by compensating someone for taking what is his without his consent an injurer respects the victim's rights; whereas the core of economic analysis is the possibility that by compensating a victim, an injurer (at least sometimes) gives his victim all that he is entitled to, thereby legitimating the taking").

⁸⁶ Both the "bucket" and "gambles" side of the metaphor have been explored by others. See *infra* notes 95-98 and accompanying text.

generated by others out of it. The leakiness of the bucket depends on the tightness of the fit between the scale of the gambles undertaken and the scale of property ownership. Shortcomings of scale in property entitlements cause risks and harms to fall on opposite sides of property lines, generating the potential for torts.⁸⁷ Analogous ideas can be applied to other spheres of control granted to persons.

A. *Property as a Bucket of Gambles*

Property scholars have long struggled over the most useful characterization of property. The two primary contestants for dominance are the “bundle of sticks” (or “bundle of rights”) idea introduced by the legal realists and adopted with varying levels of enthusiasm by scholars thereafter, and a neo-Blackstonian property-as-exclusion model, most prominently endorsed in recent years by Henry Smith and Thomas Merrill.⁸⁸ The “bundle” proponents emphasize the capacity of property to be decomposed into separate, discrete entitlements.⁸⁹ The “exclusion” scholars suggest that this decomposed view of property misses its signal characteristic – the fact that property lumps together countless unenumerated use privileges simply by granting the blunt, overarching right to keep all others off.⁹⁰

Unsurprisingly, there is something to be said for each of these views. It is certainly true that the privileges that accompany ownership cannot be reduced to a list or logically deduced from the legal rules that expressly govern property, as J.W. Harris observes:

Brown may have rights against all other citizens that they
do not enter or intentionally or recklessly damage his house.

⁸⁷ While tort law reaches risks and harms that meet applicable legal tests and that can be causally paired up on a one-to-one basis in the manner that the law requires, a proliferation of free-floating half-torts is symptomatic of scale problems that might be addressed in other ways. I discuss some of these possibilities in Part III, *infra*.

⁸⁸ See, e.g., Smith, *supra* note 2, at 1791-93 (criticizing the “atomized” view of property suggested by the bundle of sticks and emphasizing the significance of exclusion); Thomas W. Merrill, *Property and the Right to Exclude*, 77 NEB. L. REV. 730, 754 (1998) (contending “that property means the right to exclude others from valued resources, no more and no less”).

⁸⁹ For an extended discussion of development and implications of the “bundle of rights” metaphor, see generally J.E. Penner, *The “Bundle of Rights” Picture of Property*, 43 U.C.L.A. L. REV. 711 (1996). See also Thomas C. Grey, *The Disintegration of Property*, in PROPERTY: NOMOS XXII 69 (J. Roland Pennock & John W. Chapman eds., 1980). It is noteworthy that property might be conceptually splintered along a variety of dimensions. See Penner, *supra*. For example, Honoré focused on certain “incidents of ownership” – powers that owners have with respect to a thing. Tony Honoré, *Ownership*, in MAKING LAW BIND 161 (1987). Hohfeld decomposed property in a different manner by understanding it as a set of juridical relations between people. HOHFELD, *supra* note 34. It is also possible to break down the different substantive uses that might be made of property, to enumerate all the persons against whom those various entitlements run, or to subdivide interests in space and time. See Penner, *supra*. Calabresi and Melamed, as well as Coase, have followed in the realist tradition by focusing on specific substantive entitlements in working through conflicts. See, e.g., Smith, *supra* note 2; Merrill & Smith, *supra* note 1.

⁹⁰ See, e.g., Smith, *supra* note 2; Merrill & Smith, *supra* note 1.

He may be prohibited from using it for business purposes without planning permission. He may be liable to have it taken from him by compulsory purchase as part of a road-widening scheme. And so on. Nothing, however, follows from these rules, one way or the other, as to whether he is free to paint the bedrooms a luminous green, or to keep coals in the bath, or to inscribe graffiti on the walls, or to breed spiders in the kitchen. Similarly, nothing in these rules tells us whether Brown can share his house with others on condition that they sing him to sleep at night, or may sell his house at half its cost to the first person to guess his weight. If he may use, abuse, exploit, or transmit in these and countless other less eccentric ways, it is because he is owner.⁹¹

But the full panoply of ownership privileges cannot be collapsed into a single right to exclude, either. To see why, imagine a super-fortified exclusion right that coercively protects owners from any and all intrusions – whether from trespassers, animals, tangible objects, sound waves, light waves, fumes, odors, vibrations, or even wayward air molecules. To be sure, this exclusion right would seem to allow owners the privilege to engage in an infinite array of property uses without disturbance. Such a powerful exclusion right is a double-edged sword, however. It also would prohibit owners from engaging in any uses that *produced* any such extra-boundary effects. Virtually any activity on one's property will generate some extra-boundary effects. For example, simply walking across one's own front yard doubtless creates some stirring of air molecules and causes some of them to cross the boundary line. To say that these moving molecules are benign and harmless is no answer: an exclusion-centric account suggests that exclusion is designed to protect the full range of unknown and unknowable use privileges that may be occurring on property. For all we know, a neighbor is engaged in a sensitive weather experiment that will be grievously disrupted by even the slightest stirring of air across the boundaries.⁹²

Each time the law decides to enjoin an activity with extra-boundary impacts, it drains away a property owner's privilege to engage in the activity in question. As more and more uses are drained away, property

⁹¹ J.W. HARRIS, PROPERTY AND JUSTICE 65 (1996).

⁹² Under existing tort doctrines, this would be an abnormally sensitive use that would not give rise to a cause of action. See *Amphitheaters, Inc. v. Portland Meadows*, 198 P.2d 847 (Or. 1948) (affirming a directed verdict for defendant, whose race-track lights interfered with plaintiff's drive-in movie operation by producing illumination roughly equivalent to that of a full moon). The court in *Amphitheaters* discussed and applied the rule that "a man cannot increase the liabilities of his neighbor by applying his own property to special and delicate uses." *Id.* at 854.

becomes less and less valuable. There is a principle of conservation at work, in which each move to strengthen exclusion requires weakening the use-content that exclusion is meant to protect.⁹³ Because an unlimited exclusion right would make property worthless as a practical matter, the law must decide which activities with extra-boundary impacts are permissible and which are prohibited, and must further decide how the costs of that decision will be allocated. These decisions in turn require identifying, individuating, and assessing the specific use entitlements that are at issue in cross-boundary interactions. Significantly, this act of conceptual disaggregation becomes necessary at precisely the point where property and torts run into each other, when risk production and harm manifestation end up on opposite sides of a property line.

It is important to understand the role of the property line in this story. It does not designate a categorical, coercively guarded barrier against all intrusions great and small, nor does it establish a realm in which a limitless slate of activities can be pursued with impunity by the owner. Rather, it marks out a space (whether physical or conceptual) in which risks and outcomes are *designed* to be paired and in which owners have certain rights and privileges to help bring about such pairing. To the extent the pairing happens successfully within the corners of the property, we need not inquire as to the specific uses undertaken. But when harms eventuate beyond the property line as a result of risky activities undertaken inside the property line, we can no longer be satisfied to view the property in question as an undifferentiated aggregation of potential uses; we must interrogate the activities in question and make legal rules with regard to them. As greater numbers of people live and work in close proximity, activities with extra-boundary impacts proliferate, and so too does the number of required societal judgments about those activities. At some point, the proportion of extra-boundary impacts becomes so great that an almost entirely disaggregated vision of property seems destined to take hold – but this need not be the case. The existence of large numbers of half-torts on either side of a property line are symptomatic of a problem of scale in property holdings, reflecting the inability of property to act in its historic capacity as an all-purpose container for activities. An alternative to disaggregation, then, is rescaling of property itself.⁹⁴

A useful metaphor for property must connote both the undifferentiated corpus of activity/outcome pairings that occur within the property's

⁹³ Cf. Duncan Kennedy & Frank Michelman, *Are Property and Contract Efficient?*, 8 HOFSTRA L. REV. 711, 760 (1980) (presenting “The Law of Conservation of Exposures”). While it is true that exclusion rights and use privileges might be simultaneously strengthened for any given owner (if the counterpart exclusion rights and use privileges were weakened for all the owners with whom the first owner interacted), it is not possible to grant all owners tougher exclusion rights *and* unchanged or enhanced use privileges.

⁹⁴ See *infra* Part III.B.4.

boundaries and the articulation and evaluation of activity/outcome pairings that span property boundaries. Henry Smith has recently revived a metaphor used by William Markby a century ago to suggest that property is more like “a bucket of water” than “a bundle of sticks”⁹⁵ While sticks suggest separate, articulated interests, the bucket image conjures up a fluid whole that would be both impossible and pointless to disaggregate.⁹⁶ The bucket metaphor is apt for a second reason as well – as a container, it is notoriously slosh-prone and leaky. Once impacts make it out of the bucket, the activities that gave rise to them warrant individualized attention. In other words, we don’t bother to name or distinguish the drops in an owner’s bucket *until* one of those drops leaves the bucket and lands on someone else.⁹⁷

The idea that property ownership offers a way to make and collect on bets has also appeared in Smith’s work.⁹⁸ When paired with the bucket image, we can think of property as a container within which risky bets of nearly limitless variety may be pursued and their effects collected. In general, we need not know what the uses are or even list them specifically, so long as their effects are well contained.⁹⁹ As long as risk production and all of its effects – both positive and negative – are confined within the owned parcel, internalization is complete. Luck and other inputs will determine whether risk production manifests in harm in a given instance, but the risks that are built into the endeavors that owners undertake on their properties “come with the territory” – quite literally. When gambles pay off well, the owner reaps the rewards. When gambles pay off poorly, the owner suffers the harm. Or so we might hope.

⁹⁵ See WILLIAM MARKBY, *ELEMENTS OF LAW* 158 (6th ed. 1905) (asserting that ownership “is no more conceived as an aggregate of distinct rights than a bucket of water is conceived as an aggregate of separate drops.”) *quoted in* Smith, *supra* note 2, at 1760.

⁹⁶ Smith, *supra* note 2, at 1760.

⁹⁷ This characterization is fully consistent with Markby’s own presentation of the bucket analogy. *See supra* note 95 and accompanying text. After asserting that property is “a single right” and drawing the analogy to a bucket of water, Markby goes on to explain: “Yet, as we may take a drop or several drops from the bucket, so we may detach a right or several rights from ownership.” While Markby seems to have in mind alienation of specific use privileges, such as to walk on land or graze cattle on it, *see id.* at 159, his vision of property is just as consistent with the state’s withdrawal of particular use privileges from an owner as it is with the owner’s grant of specific use privileges to another private party. Markby elaborates: “So long as the rights I have mentioned are in the hands of any other person they have a separate existence, but as soon as they get back into the hands of the person from whom they are derived, as soon as they are ‘at home’ as it were, they lose their separate existence, and merge in the general right of ownership.” *Id.*

⁹⁸ *See, e.g., id.* at 1729 (characterizing owners as making bets that may or may not pay off well; Smith, *Exclusion, supra* note 10, at 984 (explaining that an owner’s property should be protected in a way that allows her to “act on a hunch,” such as the possibility that a given site will be a tourist attraction, and then “bear the consequences of this bet on the future without needing to articulate it to others”).

⁹⁹ Containment in this context is not always satisfied by physical containment, although boundaries and exclusion technologies can be quite important, as we shall see. We can easily imagine activities that are physically contained on a piece of property that nonetheless have significant negative impacts to interests that are not contained within the envelope of ownership. For example, a houseguest may sprain her ankle while squarely situated within the boundaries of an owner’s parcel, but that does not mean that the owner has thereby internalized the costs of the guest’s injury.

In fact, the effects of the risks that people undertake are not neatly contained on their respective properties. If property holdings are appropriately scaled to fit the kinds of gambles undertaken on them, they may work as relatively good catchments. Even so, positive and negative effects can leak or slosh out of a given property bucket, just as they can slosh or seep in. The word “spillover” is apt. Beyond inadvertent sloshes and leaks, there is the potential for more purposeful interferences – pumps and siphons that systematically introduce risks of harm and extract realized benefits. Property boundaries backed with the right of exclusion are essential to managing many of these concerns, although they cannot do so completely.

B. The Benefits of Boundaries

An owner can use boundary exclusion to at least roughly fence in the positive payoffs of her own gambles (such as apples from trees she has planted) and fence out negative impacts of risks that outsiders have undertaken in support of their own projects (such as refuse from the neighbor’s party).¹⁰⁰ Because the law grants a landowner broad latitude to exclude others from the property boundaries,¹⁰¹ the owner has the capacity to keep the risk-reward ratio on her property under reasonable control. Put a different way, the ability to keep the risk-reward ratio under reasonable control within a particular spatial or conceptual envelope is part of what it means to have property. Exclusion is instrumental to maintaining that ratio not only because it prevents the carrying away of positive outcomes and the introduction of spurious risks, but also because it fortifies on-site use privileges in a way that enables owners to make desired gambles on their property without *private* interference.

This last point requires elaboration. The Hohfeldian distinction between privileges and rights emphasizes that privileges are less robust than rights precisely because they are not backed by the law’s coercive force and are vulnerable to private interference. But privileges to undertake particular activities on (or with) one’s property come wrapped in an exclusion *right* that keeps others off the property itself. For this reason “privileges-on-property” look very much like rights to engage in particular uses, inasmuch

¹⁰⁰ She is presumably less concerned about fencing in negative impacts of her own behaviors and in fencing out the positive effects of her neighbors’ actions. *But see* text accompanying notes 107-109 *infra* (explaining why owners might find it in their interest to confine negative impacts to their own property).

¹⁰¹ As discussed above, the law necessarily draws some line between intrusions that count as trespasses, which can generally be coercively prevented, and intrusions that fall short of that mark – representing either nuisances (which may be redressed in a variety of ways) or nonactionable impacts. Even within the category of trespasses, there are some exceptions to the rule of coerced exclusion, such as the doctrine of private necessity. *See, e.g.*, ROBERT COOTER & THOMAS ULEN, LAW AND ECONOMICS 160-61 (4th ed. 2002); Smith, *supra* note 2, at 1735.

as private parties can be coercively prevented from entering another's property to shut down a particular use or interfere with it directly. It may be technically accurate to say that a factory owner has merely a privilege to emit pollutants in the course of making widgets, but because she is undertaking the emissions using her own equipment on her own land, an unhappy neighbor cannot throw a monkey wrench into the widget works, stuff rags down the smokestack, or do any other act on or to the property without being subject to law's coercive sanction.¹⁰²

Because of the strength of exclusion rights, the only recourse that private parties have for stopping uses conducted on or with another's property requires engaging the coercive power of the state. And, where a use privilege exists, the neighbors have "no right" to engage the state's apparatus to stop it. The result is that use privileges undertaken on or with property are virtually indistinguishable from rights to engage in the activity at issue. However, this right-like character of privileges-on-property extends only so far as the property line. Beyond that point, the privileged activity is no longer sheathed in an exclusion right; the law will not interfere with the activity, but private parties may do so.

It is important to clarify how this property-line distinction relates to the distinction drawn above between an entitlement to engage in an activity that produces risk (which actors often hold) and an entitlement to actually produce harm as a result of that activity (which actors never hold). The idea that self-help and luck can freely intervene between risk-production and harm-manifestation does not depend on the existence or location of property lines; rather, it would hold true regardless of whose land the parties might find themselves on. Parties may always avail themselves of means at their disposal to avert the manifestation of harm from a risk-producing activity – whether on their own land, on public land, on the land of a third party, or even when wrongfully on the land of the party engaging in the risk-producing activity.¹⁰³ Nonetheless, property boundaries offer victims a protected space within which they are privileged to undertake certain kinds of intensive or permanent self-help measures without interference.¹⁰⁴

¹⁰² Note that the same holds true for interferences with private property owned by third parties as well as with rights in bodily integrity. Hence, the neighbor cannot stop the widget-making operation by physically restraining factory employees (whether on or off factory property) or shooting out the tires of their cars as they drive to work (whether on public roadways or on private drives).

¹⁰³ To be sure, so-called "stand your ground" laws fold into self-defense the ability to preemptively employ deadly force against a trespasser under certain circumstances. See, e.g., Patrik Jonsson, *Is Self-Defense Law Vigilante Justice?* CHRISTIAN SCIENCE MONITOR, Feb. 24, 2006, <http://www.csmonitor.com/2006/0224/p02s01-usju.html>. But these laws turn on a (contested) societal judgment that stopping the trespasser is a legitimate end; it is not deemed to be an unfortunate side-effect of some other activity being performed by the landowner. Where side-effects that amount to net social bads are involved, even a trespasser is privileged to try to mitigate or avoid harm. For example, a trespasser could take evasive maneuvers to keep from being mauled by a landowner's pet wolf, or could shield her eyes to avoid damage from flying debris from a landowner's wood chipper.

¹⁰⁴ Again, the privilege to engage in self-help measures without interference depends on the privileged actions being wrapped in an exclusion right that comes with the ownership of property.

Consider two neighbors, *A* and *B*, who live on adjacent parcels of land. *A* owns a small, excitable Yorkshire Terrier that is prone to intense barking fits whenever it sees another animal that is much larger than its own size. *B* owns a large, calm Great Dane that stands, lies, or walks around in *B*'s yard all day long. A chain link fence separates the two lots, allowing easy visual access between *A*'s house and *B*'s yard. As a result, the Yorkshire Terrier yaps continually, preventing *A* from enjoying most of the land uses in which he would like to engage, such as reading, working, conversing, entertaining, and so on. If *B* in this story has an entitlement that allows her to keep the Great Dane in her own yard, she is permitted to generate the risk of these unhappy consequences in *A*'s eardrums. She does not, however, have an entitlement to bring about that manifestation of harm – she has no right to “make” her neighbor’s dog bark.

A may engage in several kinds of self-help within or along his property lines to keep the risk-generating activity beyond the fence from manifesting in harm. He might, for example, install an opaque fence of sufficient height to block visual access to *B*'s yard. Alternatively, he might keep the Terrier in the house and install blinds on the windows that face *B*'s yard. He might even consider installing “trick windows” that make objects (such as *B*'s dog) appear more distant, and hence smaller, than they actually are. None of these techniques depend on physical exclusion, yet they are all facilitated by the degree of dominion and control that *A* has over his own property. There are limits, however, to how far this self-help may go. While it may be true, as Henry Smith suggests, that a neighbor could permissibly undertake aggressive countermeasures like blowing pollution back onto the factory’s property to such an extent that it clogs the factory’s machinery,¹⁰⁵ the neighbor’s ability to do so is the product of a social judgment about the activities in question rather than a principle that can be derived from the position of the property boundaries. Such “self-help” could be characterized as an activity that itself produces a risk of harm across the boundary.¹⁰⁶

¹⁰⁵ See Smith, *Exclusion*, *supra* note 10, at 1012.

¹⁰⁶ It would be tempting, but incorrect, to suggest that self-help merely amounts to a return to the pre-intrusion status quo ante in which both parties were on their respective sides of the boundary line. Presumably the fans would not only push the original offending molecules back to the place from whence they came, but would also propel air molecules that were not part of the original “invasion” onto someone else’s property. This might seem to create a new violation of exclusion rights (this time, those of the polluter). Of course, the fans might be analogized to throwing a punch in self-defense so that the original intrusion justifies not only correction but countermeasures that would, on their own, violate rights. See Smith, *supra* note 10, at 80-81 (discussing the privilege of self-defense in criminal law, which removes rights that the aggressor previously had not to be hit); see also *Hannabalsen v. Sessions*, 90 N.W. 93 (Iowa 1902) (the fact that plaintiff had extended her arm over a partition fence so that it entered her neighbor’s airspace was deemed sufficient “to technically authorize the defendant to demand that she cease the intrusion, and to justify him in using reasonable and necessary force required for the expulsion of so much of her person as he found upon his side of the line, being careful to keep within the limits of “*Molliter manus imposuit*,” so far as was consistent with his own safety”). Nonetheless, the extent of aggressive self-help that is permissible depends on a societal judgment that the actions operate to mitigate a risk created by someone else rather than to create a new risk.

A converse benefit stemming from owners' broad control over a spatial area is the opportunity this affords to prevent on-site activities from producing risks that extend beyond the property's borders. When a given activity is permitted on property but liability for harms that result are assigned to the property owner, the advantages of being able to freely design cost-effective precautions for limiting liability are evident. Interestingly, however, the discretion that owners have to engage in protective countermeasures on their property also has significance in limiting exposure to the harm that comes from a rule forbidding a given risk-producing activity. As emphasized above, the harms that come from forbidding a particular activity cannot be diminished through self-help once the prohibition kicks in. However, precautions taken on the land can influence whether or how broadly a prohibition will apply in the first place – at least within the paradigm of common law nuisance.¹⁰⁷

Here it becomes important that property ownership does not confer a list of specific enumerated privileges, but rather works as a catch-all grant to engage in any use that the law does not specifically prohibit.¹⁰⁸ Moreover, many uses that would be classified as nuisances by the law are not nuisances per se that would be forbidden anywhere and everywhere, but rather are nuisances per accidens that acquire their nuisance character as a result of the surrounding circumstances.¹⁰⁹ Whether a given use will count as a nuisance or not will, therefore, often depend on exactly where and how it is carried out. Not only does a property owner have discretion about where to acquire property, she can also decide where on her property to conduct a given use and can take countermeasures on her property as well to help contain impacts. To control the risks generated by particular uses, an owner might build taller smokestacks, devise a containment reservoir for wastes, install sound absorbing panels, add filters or scrubbers of various kinds, and so on. If, as a practical matter, uses will only be prohibited as nuisances when someone on the other side of the property boundary has reason to complain, owners have a wide spectrum of choices about the most profitable mix of activities and within-borders precautions.

Property boundaries, then, do at least three things that help to turn property holdings into meaningful basins for capturing the benefits and

¹⁰⁷ Legislative land use controls like zoning and private controls adopted through systems of reciprocal covenants do not react on a case-by-case basis to spillovers from one property to another, but rather restrict proactively based on assumptions about the impacts of different activities. If all owners engaged in a particular use were to adopt precautions that precluded spillovers, it is likely that no prohibition on that use would be adopted. But where there is heterogeneity among different instances of the same class of uses, many proactive land use regulations will sweep broadly enough to reach even the more innocuous examples. An interesting exception to this rule is found in performance zoning, which zones based on impacts rather than based on uses. See, e.g., LANE KENDIG, PERFORMANCE ZONING (1980); Frederick W. Acker, Note, *Performance Zoning*, 67 NOTRE DAME L. REV. 363 (1991).

¹⁰⁸ See notes 90-91, 95-96, and accompanying text.

¹⁰⁹ See *supra* note 61.

harms of risk-producing activities undertaken by the owner. First, boundaries provide a means for excluding those who would introduce spurious risks or carry away realized benefits. Second, boundaries define a command post from which to address risks that are generated offsite that cannot be excluded directly. Third, boundaries demarcate a space within which owners can undertake precautions that will keep their own risk-generating activities from having extra-boundary effects.

C. Half-Torts as Failures of Scale

Property boundaries, as useful as they are, cannot accomplish full internalization of outcomes produced by activities. The problem can be restated as one of scale: Some risk-producing activities operate at a scale that does not match up with the size or shape of individually owned pieces of property.¹¹⁰ Boundaries are helpful, even essential, in delivering control over risk-producing activities to property owners, but they are not sufficient in many instances. If we understand property as a sphere of effective control over gambles, boundaries represent just one way of packaging that control. This point is well-recognized; possible alternative means of control, collectively dubbed “governance,” have received careful attention.¹¹¹ Governance has been viewed as a potential substitute for exclusion – one that is particularly well-suited to managing common property regimes from which the commoners themselves cannot be excluded.¹¹² In addition, Henry Smith has explained that governance operates around the edges of ordinary private property, through devices like nuisance law, zoning, and covenants.¹¹³

¹¹⁰ See Robert C. Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1332-35 (1993) (discussing how scale relates to boundaries).

¹¹¹ See Henry E. Smith, *Exclusion Versus Governance*, *supra* note 12; see also Thráinn Eggertsson, *Open Access Versus Common Property*, in PROPERTY RIGHTS: COOPERATION, CONFLICT, AND LAW 73, (Terry L. Anderson & Fred S. McChesney eds., 2003) (discussing “exclusion costs” and “internal governance costs” that property rights entail).

¹¹² See Smith *Exclusion Versus Governance*, *supra* note 12. The phrase “common property” denotes ownership that is shared among some limited number of individuals; it is distinguished from an “open access” resource that is truly open to all. See, e.g., Eggertsson, *supra* note 111, at 76 (explaining that “[w]hen an asset is under a well-defined common property regime, an easily identifiable group of insiders controls the use and management of the resource and holds exclusive user rights, which outsiders do not enjoy”); ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION 48 (1990) (distinguishing limited access common pool resources from those that are open access). Those who hold a resource in common can and do exclude outsiders, but arrangements must be made on the insider for managing the resources among those holding it in common. See Carol M. Rose, *The Several Futures of Property: Of Cyberspace and Folk Tales, Emission Trades and Ecosystems*, 83 MINN. L. REV. 129, 155 (1998) (discussing “limited common property” regimes that can be understood as constituting “property on the outside, commons on the inside”).

¹¹³ Smith, *Exclusion Versus Governance*, *supra* note 12 (explaining that “property proper includes a basic exclusionary regime with refinements of the governance type” and noting that nuisance, zoning, and covenants represent such refinements).

The half-torts perspective refines this account in at least two ways. First, precision can be added to our understanding of the governance category by recognizing that there are two margins on which legal pressure can be applied, whether separately or in combination – risk production, and the allocation of cost for harm. Second, the problems that call out for governance types of responses can be helpfully identified as risks and harms that property has failed to charge to the same owner’s account – in short, half-torts. A systematic proliferation of these disconnected risks and harms, then, can serve a diagnostic function by suggesting a possible shortcoming in the scale of property holdings relative to property-based bets.

To say that unmoored risks and harms suggest shortcomings in property scale does not mean we should pursue a normative goal of constantly rescaling property to eliminate all these half-torts. Following Demsetz, adjusting or reconfiguring property rights will make sense only when the costs of delineating and enforcing the recalibrated rights are outweighed by the gains that such a reconfiguration would make possible.¹¹⁴ Because eliminating all free-floating risks and harms would be prohibitively expensive and would also likely have other disadvantages (such as creating unwanted concentrations of ownership), a property-based strategy for addressing torts and their unpaired components has limits. Nonetheless, it is useful to recognize property as an effort to create tort-free enclaves by pairing important sets of risks and outcomes together. Where those pairings cannot be accomplished with some degree of regularity, property loses its power and half-torts must be addressed.

Before turning to legal responses to failures of scale, however, it is useful to return briefly to a puzzle sometimes posed in the torts literature: Why are *positive* externalities of activities rarely charged against the recipient and credited to the actor?¹¹⁵ Returning to the original problem of scale offers at least a partial explanation. Other things equal, it is preferable for the scale of one’s property holdings to roughly match the scale of one’s gambles. Activities and outcomes are thereby grouped together without the need for any (further) transactions and, importantly, without any need to examine, individuate, evaluate, or produce legal rules about specific risk-producing activities that eventuate in harm off-site. The wide heterogeneity in the uses to which property may be put makes accurate scaling more important-- one does not know what ongoing efforts of one’s neighbors one

¹¹⁴ See Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. 347 (1967); see also Eggertsson, *supra* note 111, at 82-83.

¹¹⁵ See generally, Saul Levmore, *Explaining Restitution*, 71 VA. L. REV. 65 (1985) (discussing possible reasons for the disinclination of the law to require payment for “nonbargained benefits,” as well as some exceptions to that general rule); Scott Hershovitz, *Two Models of Torts (and Takings)*, 92 VA. L. REV. (forthcoming 2006), available at <http://ssrn.com/abstract=895423> (revisiting the puzzle of law’s reluctance to require payment for positive externalities).

will interfere with through badly-scaled activities. Thus, we can understand the business of “right-scaling” as itself a kind of socially valuable precautionary activity undertaken by property owners.

The threat of tort liability and damages or injunctive relief provides a powerful incentive to scale efficiently, as discussed above.¹¹⁶ But there is another built-in inducement to get the scale right – the possibility that *benefits* produced by one’s activities will escape and thus fail to be properly credited to one’s account. Allowing an actor to recoup the benefits bestowed on others as a result of bad scaling takes away this added incentive – and, indeed, may even create a positive incentive in the other direction. A perverse incentive towards “wrong-scaling” expands the domain in which mutually consensual transactions are supplanted by unilaterally imposed ones. While there are already plenty of reasons not to charge people for unsought benefits,¹¹⁷ intuitions militate even more strongly against gratuitously expanding the reach of a risky activity capable of producing harmful effects.¹¹⁸ Here it becomes important that an out-of-scale activity is likely to simultaneously produce risks of negative and positive effects. Heterogeneity among neighboring landowners and the uses to which they may put their property makes such mixed effects more likely.

An example will help to clarify. Suppose a chocolate factory emits an aroma that envelops the surrounding neighborhood, with varying effects. Some people who live in the neighborhood find the odor unpleasant, but others find it delightful. A nearby shopping center enjoys higher sales volumes because of the psychological boost that the chocolate fumes give to its customers, but a nearby gourmet restaurant finds that the odor overwhelms the delicate and subtle flavors that had previously led diners to part with large amounts of cash. With some probability the pervasive chocolate aroma will forestall the development of an obesity-related disorder in one individual by turning her against the consumption of sweets, but it will with some other probability induce life-threatening asthma attacks in another highly susceptible individual. And so on.

If the chocolate factory determined that the average per-neighbor impact was x for those positively affected and $-x$ for those negatively affected, and if it further determined that, on average, just over half of all neighbors would experience positive impacts, it would have an incentive to broadcast its emissions far and wide across the neighboring populations. The larger the unnecessary scope of the emissions, the broader the swath of the population affected, and the larger would be the expected range of

¹¹⁶ See *supra* Part II.B.

¹¹⁷ See, e.g., Levmore, *supra* note 115.

¹¹⁸ I am using the word “gratuitously” here to signify an expansion that is not justified by any benefits that the expansion generates for the actor, but rather that is bottomed on the ability to charge people for positive spillovers associated with that same expansion.

heterogeneous conditions and activities impacted by the fumes. The chocolate factory would move beyond its accustomed role of making a product with a value that is actually tested in the marketplace (a production process that only incidentally generates fumes) to becoming a fume-bully indiscriminately forcing nonmarket exchanges on everyone within the artificially expanded aroma range. Not only does this bullying interfere with the neighbors' autonomous choices, it also implicates a well-known set of valuation problems.¹¹⁹

Law's failure to allow collections for unsought benefits (except in certain narrowly-defined circumstances) therefore encourages a general "keep to yourself" strategy that is compatible with the broad range of uses to which property may be put. An additional benefit of this strategy relates to the tort principle that only impacts on persons or uses of "normal sensitivity" will be actionable.¹²⁰ This principle fits uneasily with property theory's celebration of heterogeneity in property uses, yet there are sensible reasons for drawing some line below which impacts will not be legally cognizable. The acceptability of such a line is arguably enhanced by the incentives that property owners already have to avoid engaging in out-of-scale activities – including the inability to collect on positive externalities.

Self-help also becomes relevant in thinking about the appropriate treatment of beneficial impacts. Given the earlier discussion, it is apparent that parties engaging in risky activities do not have an entitlement to generate any particular outcome – whether good or bad – for another party. Rather they have, at most, an entitlement to engage in an otherwise worthwhile activity that generates risks of such an outcome. Hence, we might imagine neighbors who wished to avoid being required to pay for chocolate fumes building defensive fans of their own to keep the positive effects from eventuating in *good* outcomes for which they might be charged. The wastefulness of this conduct is apparent; unlike the mitigation of harm that is produced in the course of some other worthwhile activity, this kind of self-help (perhaps we should call it self-unhelp) is a pure deadweight loss.

On the other hand, the party engaging in the activity – the chocolate factory in our example – can engage in forms of self-help to "right-scale" the property if the opportunity costs of the escaping benefits are deemed too high. Of course, the factory owner's self-help might take the form not only of containing impacts better, but also of altering, reducing, or ceasing the

¹¹⁹ See, e.g., Robert C. Ellickson, *Adverse Possession and Perpetuities Law: Two Dents in the Libertarian Model of Property Rights*, 64 WASH U. L.Q. 723, 724 (1986) (discussing both autonomy-based and epistemic problems with involuntary transfers); Saul Levmore, *Self-Assessed Valuation Systems for Tort and Other Law*, 68 VA. L. REV. 771, 795-810 (1982) (discussing valuation problems in assessing tort damages). The usual problems with the inability to discern subjective valuations are presumably intensified when we cannot even be sure whether the value is a negative or positive number.

¹²⁰ See *supra* note 92 and accompanying text.

activity that produces the externalities. These moves – or threats to undertake them – may seem spiteful and patently inefficient. However, these may serve as precursors to contracts with other benefited parties that will realign the production of benefits with the receipt of proceeds through a customized adjustment in scale. Alternatively, such self-help may trigger political activity and ensuing society-wide adjustments in the property interests themselves or a regulatory solution that grants subsidies either on the basis of activities that tend to produce positive externalities or on the basis of socially desirable outcomes.

D. Beyond Real Property

The discussion to this point has emphasized how real property operates to group together risks and outcomes and charge them to the account of a single owner. How, if at all, would these ideas apply to risk production and harm manifestation that occurs outside of the land use arena?

Arthur Ripstein has helpfully suggested that a tort is an interference “with your secure entitlement to your means” – whether the interference involves taking those means away without consent or redirecting the means to unauthorized use.¹²¹ Ripstein explains that one’s person as well as one’s property count as means, and, using language that bears a striking similarity to that used by property scholars, he suggests that these means are available to be used in any of an uncountable number of ways to achieve any ends one may have.¹²² This broad entitlement exists without regard to what one’s actual ends may be and without regard to whether one actually uses – or has any prospect of using – those means in any way that an onlooker would deem valuable.¹²³

Without taking a position on whether it is useful to conceptualize people as “owners” of their bodies in a property sense,¹²⁴ it is evident that some parallels exist between property and persons with respect to the production of risk and the manifestation of harm. Persons, like real and personal

¹²¹ Arthur Ripstein, *As If It Had Never Happened*, University of Toronto Legal Studies Series Research Paper No. 906130, available at <http://ssrn.com/abstract=906130>, manuscript at 9-10. Ripstein aligns these two kinds of interference with unintentional and intentional torts, respectively. *See id.*

¹²² *See id.* at 11-12. As Ripstein explains, part of what makes means valuable is the ability to use them to try to “generat[e] more useful things” that will become means of their own. *Id.* at 12.

¹²³ *See id.* at 7-8, 19-20 (explaining this idea and giving examples where various means – land left fallow, philosophy books in a basement, a toe that turns out to be unimportant to a particular person’s ends – are not used in any way that appears very valuable, but nonetheless represent entitlements).

¹²⁴ *See, e.g.,* Moore v. Regents of the University of California, 739 P.2d 479 (Cal. 1990) (considering and rejecting a claim of property rights in excised cells); STEPHEN R. MUNZER, A THEORY OF PROPERTY 41-56 (1990) (exploring notion of “limited property rights” in one’s body); LAURA S. UNDERKUFFLER, THE IDEA OF PROPERTY: ITS MEANING AND POWER 103-06 (2003) (discussing arguments surrounding “the body as property”); *see also* James E. Penner, *Misled by “Property”*, 18 CAN. J. L. & JURIS. 75, 76-77 (2005) (suggesting that a “bankruptcy test” – whether the thing in question is one that should be available for seizure in bankruptcy proceedings – is a helpful way of deciding whether various items, such as kidneys, should count as property).

property, have identifiable physical edges that make possible enforcement of a broad right to exclude. And, like property, one's person might also be thought of as (among other things) a vehicle through which various projects and risks are undertaken or not and outcomes are enjoyed or suffered over time. Preserving individual autonomy to pursue whatever identity-ends one chooses requires, at a minimum, the legal protection of physical boundaries – the right to bodily integrity.

Just as interests in property may be harmed without any physical crossing of boundaries, so too is interference with the means of personhood possible without any physical touching. It would be possible to characterize certain intellectual property rights, such as the right of publicity, in these terms. When an unauthorized party imitates a celebrity's voice to sell snack foods, for example,¹²⁵ the snack purveyor is attempting to collect on successful gambles made by the celebrity in the cultivation of identity. While risks undertaken on real property often implicate questions of physical scale, intellectual and identity gambles introduce difficult questions of conceptual and temporal scale – such as the appropriate length of time for which positive payoffs from an intellectual product must be credited back to the author. An analog to the principle of conservation referenced earlier applies here as well – the stronger we make individuals' ability to exclude others from interfering with their means, the fewer things individuals are left free to do with their means.¹²⁶ For example, the broader the right of publicity becomes, the larger will be the ratio of rewards returned to people who cultivate a unique persona, but the smaller will be the opportunities to construct such a persona (given the potential that, in doing so, one will interfere with someone else's already-established persona).¹²⁷

III. RESPONSES TO HALF-TORTS

How should the law respond to risks and outcomes that are not bundled together within a property (or other means) holding? An initial question is whether a response is necessary at all. Many of the disjunctions between risks and outcomes are benign, either because the impacts are minimal, or because they are sufficiently reciprocal to wash out over the long run.¹²⁸

¹²⁵ See *Waits v. Frito-Lay, Inc.*, 978 F.2d 1093 (9th Cir. 1992) (case involving the unauthorized imitation of Tom Waits' singing voice in a radio commercial for Doritos).

¹²⁶ See *supra* note 93 and accompanying text.

¹²⁷ See *White v. Samsung Elec. Am., Inc.*, 989 F.2d 1512, (9th Cir., 1993) (Kozinski, J., dissenting from denial of rehearing) (expressing concerns about the costs of a too-broad right of publicity).

¹²⁸ This possibility underlies analyses that anchor the appropriate threshold for liability to behavior that is below normal standards for the circumstances; impacts below that threshold are likely to wash out over time. See, e.g., Smith, *Self-Help*, *supra* note 10, at 1003-04; Robert C. Ellickson, *Alternatives to Zoning: Covenants*,

Even where risk/harm disconnects generate appreciable net costs, it may be cheaper for society to bear those costs than to formulate a response. However, in a nontrivial subset of instances, the fission of risk and harm raises difficult, costly problems that law will inevitably respond to in one way or another.

A. Addressing Risk, Addressing Harm

The half-torts formulation suggests that a distinction can be drawn between legal approaches that operate by addressing risk-producing activities and those that operate by addressing the allocation of the costs of harm. Of course, as emphasized above in Table 1, law is always doing both of these things simultaneously. A decision always must be made about whether to allow or disallow an activity and a decision always must be made about how to allocate the costs that flow from the first decision. However, it is useful to start from a default position in which risk-creating activities are permitted unless otherwise specified by law, and in which losses are allocated to those on whom they fall unless otherwise specified by law.¹²⁹ Considered relative to this default position, the law's actions with regard to risk-producing activities can be understood as moving in the direction of restrictions or bans. Likewise, considered relative to the default position, the law's cost allocations involve shifts of liability to a party other than the one on whom the costs would initially fall.

Viewed in this way, the law's starting point lies in cell B of Table 1, where the risk-creating activity is allowed and costs fall on the hapless neighbors. The law can make a move on the risk-production front by banning the activity¹³⁰ or it can make a move on the cost allocation front by assigning liability to the party engaging in the risk-producing activity.¹³¹ This basic choice of whether to place legal pressure on risk or on harm cross-cuts doctrinal boundaries, as Table 3 illustrates.

Table 3: Addressing Half-Torts

Nuisance Rules, and Fines as Land Use Controls, 40 U. CHI. L. REV. 681, 729-31 (1973).

¹²⁹ This "otherwise specified by law" proviso includes private contractual solutions that would change the default rule about doing an activity or bearing the costs, as discussed below. See Part III.B.3. For now, however, assume that these contractual solutions are not available and if something is to be done, the law must make a change that more globally moves away from the default position.

¹³⁰ Depending on how narrowly the activity is defined, the prohibition may amount only to restrictions on the ways a particular activity can be carried out (by prohibiting particular methods, equipment, times, places, frequencies, intensities, and so on). See *supra* note 28.

¹³¹ Usually, when it does the former, the law sticks with the default rule that losses remain where they fall – but by banning the activity, the nature of the losses have changed to those associated with activity-shutdown, and would now fall by default on the party who is no longer able to engage in the activity. Hence, a ban on an activity would usually amount to a diagonal move to cell C, in which the activity is prohibited and the party restrained must bear the costs. Rarely, the law might change the risk-production rule to a ban simultaneously with shifting costs to a different party – hence, the *Spur* situation.

	Tort	Contract	Property	Regulation
Risk	enjoin activity	contract over risky inputs	pair risk and harm under one owner	prohibit, tax, or subsidize risk-producing activities
Harm	assess damages	contract over liability for outcomes	pair risk and harm under one owner	penalize or reward outcomes

The risk/harm dichotomy roughly tracks Calabresi's distinction between general and specific deterrence,¹³² recast by Michelman as a choice between centralized and decentralized approaches to accident costs.¹³³ When law merely allocates the costs of harm, actors retain more flexibility to find ways to avoid that harm, but may be prone to making mistakes in doing so. Where risk is addressed directly, each input can be assessed and controlled, but obtaining this advantage heightens the informational burdens for law.¹³⁴ To put the distinction in the terms introduced in the previous Part, an outright prohibition on an activity addresses problems of scale by curtailing the owner's gambling space to eliminate the imperfectly scaled activity, while a shift in liability redefines the range of outcomes for which one will be responsible.

Significantly, there are intermediate positions between a ban on an activity (however narrowly defined) and a choice to assign liability for the costs it generates. For example, solutions that involve the reconfiguration of property neither ban activities nor shift liability, but rather move control over risk to the party who will experience the outcomes of that risk.¹³⁵ Another class of possibilities is revealed when we consider the many ways that the law can set conditions on which parties can accomplish transfers from one entitlement regime to another.¹³⁶ When these "transfer" possibilities are considered, it becomes clear that legal pressures exerted against risky activities can take a form other than a prohibition.

¹³² CALABRESI, *supra* note 6.

¹³³ Frank I. Michelman, *Pollution as a Tort: A Non-Accidental Perspective on Calabresi's Costs*, 80 YALE L.J. 647, 663-66 (1971) (book review of GUIDO CALABRESI, THE COSTS OF ACCIDENTS). As Michelman explains, the correspondence between his dichotomy and Calabresi's is "general only"; moreover, actual techniques blend centralized and decentralized approaches. *Id.* at 664-65.

¹³⁴ See Shavell, *supra* note 6, at 359 (explaining how "the possibility of a *difference in knowledge about risky activities* as between private parties and a regulatory authority" bears on the choice between regulation of risk and liability for harm).

¹³⁵ By doing so, a property solution might appear to dodge the choice between addressing risk and addressing harm. But rescaling property is no panacea. The bigger property gets, the more it must internally rely on governance mechanisms that will *themselves* have to select among the various alternatives for dealing with risks and harms that are not meant to be collectivized. And here, the same choice between addressing risk and addressing harm resurfaces. See *supra* Part III.B.4.

¹³⁶ See *supra* Part I.D.2.

By setting the terms on which a party can unilaterally move from a regime in which an activity is prohibited to one in which it is permitted, it becomes possible to price rather than prohibit risky activities. For example, the law might allow an actor to purchase a license to engage in a particular activity for a certain period of time, or might tax each instance of engaging in an activity. These approaches amount to explicit options written by the government, for which the exercise price is known in advance. Such options allow private parties to compare the benefits of engaging in an activity with the strike price set by the government.¹³⁷ Hence, the activity level is a function of both centralized and decentralized decision-making.¹³⁸

B. A Menu of Alternatives

Paying attention to the risk/harm dichotomy refines the menu of alternatives for responding to risk-generating activities, as the following sections will show.

1. Tort Law Responses

Where activities undertaken on property generate harm on the other side of the property line, a court can respond through the tort law doctrine of nuisance. More precisely, it can elect any of the combinations of risk-production and cost-allocation rules identified above in Table 1. Tort law seeks to eliminate or realign risks and harms that the initial delineation of property rights has separated. This result might be achieved either by eliminating risk-creating activities through a legal prohibition or by charging extra-boundary impacts to the account of the risk-creator.¹³⁹

The first alternative drains away some of the permissible gambles in a property owner's bucket based on the tendency of negative payoffs to materialize off-site. This amounts to a coercive customization of property rights – a rescaling that is accomplished not by altering the physical dimensions of property holdings but rather by eliminating a specific threat

¹³⁷ It would be possible to have parties other than the government determine the option's exercise price, of course. One possibility would be to require one party to state a valuation at which another party can realize a shift to a different entitlement package. See, e.g., Fennell, *supra* note 78, at 1406-08 (discussing "entitlements subject to self-made options" or "ESSMOs" and discussing scholarly antecedents of the idea); Levmore, *supra* note 119 (discussing legal applications of self-assessed valuation).

¹³⁸ Alternatively, the government might issue a limited number of alienable permits to engage in activities. Here, the price is set in a decentralized way by the market, but the quantity is selected by a centralized entity. Finally, even when decisions about activities are left with private parties and costs are addressed through the allocation of liability, governmental judgments are nonetheless involved setting the switchpoints between activities that are prohibited, those that are permitted with shifted liability, and those that are permitted without any shift in liability. When examined carefully enough, all real systems for addressing accident costs employ some mix of centralization and decentralization. See Michelman, *supra* note 133, at 664-65.

¹³⁹ Significantly, the process of selecting among these alternatives is not triggered unless and until a plaintiff establishes a link between a harm and risk-producing activity.

to the successful operation of property holdings at an existing physical scale.¹⁴⁰ The second alternative, charging damages against the risk-creator, can be understood in similar property-modification terms. Here, the bucket of gambles held by the victim is not protected from contamination by negative payoffs produced by actions across the boundary line, but compensation is paid that, in theory, neutralizes that negative payoff. Rather than take away the injuring property owner's ability to create risk, this approach counters harm directly by making the risk-creator responsible for it.

2. Regulatory Responses

As an alternative to tort law, regulation can either address risk-producing activities or harmful (or beneficial) outcomes.¹⁴¹ While the notion of "regulation" is often equated with a command-and-control approach that operates directly to ban or limit activities, regulatory mechanisms obviously need not be cabined in this way. Regulatory bodies can create new propertized instruments, can tax or subsidize particular actions or outcomes, and can develop all manner of options for parties to write and exercise. To fit these possibilities into the framework developed above in Tables 1 and 2, the government can set the precise terms on which a transfer from one entitlement regime to another will be allowed.

Regulatory responses differ in at least three important ways from a traditional tort law approach. First, because payments in and out need not be based on specific, causally connected incidents, a broader spreading of risks and costs becomes possible. For example, instead of heaping costs on the unlucky reckless driver who is involved in an accident while giving the lucky reckless driver a free pass,¹⁴² it would be possible (at least in theory) to equilibrate the law's response by charging each driver the same amount for the same level of risk creation.

Second, because a harmed plaintiff is not a necessary precondition for legal action, regulation can reach more easily inside property boundaries to shut down even those activities that have been carefully conducted in a manner designed to prevent spillovers. Hence, the variety of self-help discussed above in which an actor uses the space within her boundaries to

¹⁴⁰ A separate question, of course, is whether the property owner should be compensated for the resulting change.

¹⁴¹ That regulation and tort liability are alternative ways of addressing accident costs has been well recognized. *See, e.g.,* Shavell, *supra* note 6. While it often makes sense to think of regulation as directly bearing on risk and tort liability as bearing on realized harm, *see id.*, this breakdown is not inevitable. In property-based torts, injunctive relief can operate prospectively in a manner that directly addresses risk-creation. Likewise, it is possible to have a regulatory body base penalties and rewards on experienced outcomes rather than on activities that create risks of those outcomes.

¹⁴² *See* Jeremy Waldron, *supra* note 6, at 387 (giving the example of two equally distracted drivers, only one of whom causes an accident).

preclude extra-boundary impacts offers no defense against regulation (save, perhaps, an argument that might be marshaled in a political arena).

Third, under a regulatory approach, subsidies and rewards can be viable alternatives to taxes and penalties, at least potentially.¹⁴³ Where the subsidy or reward payment is made by the government on behalf of society as a whole, the costs associated with it are spread broadly. Rather than ask specific benefited parties to cough up contributions whenever an activity produces a positive externality – something that tort law, with good reason, has been unwilling to do – society as a whole can decide that the activity is valuable enough to reward or subsidize. As Table 3 suggests, it is possible to distinguish subsidies for engaging in particular activities from rewards for favorable outcomes actually achieved. The former approach places the risk on society that the activity will not turn out to be as beneficial as expected in a given case, while the latter approach leaves that risk on the actor.

3. Contractual Responses

Misaligned risks and harms need not always be addressed through government coercion; private bargaining may also serve to accomplish the necessary realignments.¹⁴⁴ If transaction costs can be overcome, contract offers the prospect of a custom reconfiguration of property rights. In other words, at least some forms of contracting can be understood as a private ordering response to scale imperfections in property holdings. These contractual responses are enormously varied – indeed, the potential for virtually unlimited customization is one of the most important distinctions between property and contract.¹⁴⁵

For example, suppose a landowner wishes to conduct a particular activity that generates risks extending only a small distance beyond his boundaries. He likes to practice archery, say, but has a lawn that cannot fully accommodate his hobby. He might simply buy from his neighbor enough land to contain his propelled arrows (changing the physical scope of his property holding), or he might instead purchase an archery easement (extending the scope of his holdings for one particular use). Alternatively, he might negotiate a license to shoot arrows into the neighbor's yard, and this might be coupled with a liability release or other arrangement for whatever harm is caused to the lawn or its occupants in the course of the

¹⁴³ See generally Saul Levmore, *Carrots and Torts*, in CHICAGO LECTURES IN LAW AND ECONOMICS 203 (Eric A. Posner ed., 2000) (explaining how a corresponding reward can be devised to match any penalty, and discussing considerations relevant to the choice between these alternatives).

¹⁴⁴ See Coase, *supra* note 1.

¹⁴⁵ See Thomas W. Merrill & Henry E. Smith, *The Property/Contract Interface*, 101 COLUM. L. REV. 773, 776-77 (2001); Thomas W. Merrill & Henry E. Smith, *Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1 (2000).

archery. We can imagine a variety of more fanciful alternatives, including payments to the neighbor to outfit the pets and children in arrow-resistant suits, arrow-throwing privileges that extend only to nights with full moons, and the like.¹⁴⁶ All of these arrangements would represent private ways of dealing with an activity that operates on a larger scale than actor's property holding can accommodate. Risk and harm are either brought within the umbrella of the same property owner, or compensation is negotiated upfront for spillovers.

Another example might be a landowner who likes to hold backyard pig-roasts that attract a rowdy crowd. Music, laughter, cigarette smoke, and fumes from the roasting pit create significant risks of annoyance to several nearby neighbors. In theory, deals can be struck in either direction to induce efficient precautions on either side of the fence line to minimize the realized harm. The pig-partiers might buy each of the neighbors a night out on the town, or the neighbors might pay for a large sound-and-odor absorbent tent in which to hold the proceedings. These solutions, and many others that might be imagined, would amount to hand-tailoring a property arrangement that is not by its nature well-fitted to collecting risks and harms of the pig roast in a format designed to yield efficient decisionmaking.

Both of these examples address spillovers from a single activity and therefore contractual solutions would likely be drawn narrowly to provide a carve-out or add-on relating to that activity alone. This is the sort of one-off interaction that features in the typical Coasean examples. Of course, more comprehensive private contractual approaches are not only imaginable, but rapidly growing in popularity. Networks of reciprocal land use covenants operate on the boundary between property and contract by allowing landowners to enter into binding agreements to alter property arrangements in ways that will outlast the owners' tenure on the property. The next section discusses these and other vehicles for rescaling property.

4. Property Innovations

The possibilities discussed above are all designed to overcome imperfections in property scale. One mechanism for doing so, already suggested by some of the examples above, would be to reshape property itself so that it does a better job of grouping together risks and outcomes. Here it becomes important to specify what we mean by property. Resources can be held not only as private property but also in various kinds of limited-access commons and semi-commons arrangements. Setting aside the extreme case of a completely open-access commons from which nobody

¹⁴⁶ Of course, bargains could theoretically run in the other direction as well: The neighbor could pay the archer not to shoot arrows or to do so only at certain times or with special damage-reducing caps on their tips.

is excluded, all of these forms of property aim to create a hard shell around an interior space where risks are produced and outcomes are shared. Whether that interior space is held by a single individual, a household, a small group of co-owners, or some larger collective, its exclusive outer edges make it look and work like property from the outside.¹⁴⁷

A complication is that even those *inside* an enclave that is created when resources are held in common will not want to hold all imaginable risks and outcomes in common.¹⁴⁸ For example, an individual may be part of a homeowners association that holds property in common and also controls many aesthetic spillovers between properties, but may not thereby mean to give up her right to recover if a neighbor accidentally drives a golf ball through her car window. Likewise, the fact that friends or family members own property together does not necessarily mean that any co-owner is free to remove cash from the wallet of any other co-owner at will, nor do co-owners have a free license to trample each other on the property merely by virtue of their co-ownership. Instead, certain risks and outcomes are pooled while others remain privatized even within a given common property envelope. The result can best be thought of as a semi-commons regime.¹⁴⁹

The classic example of the semi-commons, discussed in Henry Smith's work, is a grazing area held in common that overlays many individually owned and cultivated strips of farmland. The semi-commons reflects the reality that different activities like grazing and farming may best be pursued at different scales. Hence, a resource (land) is split into two different uses and held in different property arrangements for each of those uses. As Smith discusses, concerns about the sharing of risk and good and bad outcomes are heightened by this arrangement, because the common land usage (grazing) offers opportunities for selective benefiting or burdening of the private land usage (farming). Dividing farmland into many very narrow strips and having each owner hold strips dispersed throughout the grazing land offers a solution. An alternative would be to formulate rules for using the commonly held property that would avoid grossly unequal burdens and benefits on the private uses.

The semi-commons template illustrates both a potential response to problems of scale and some difficulties with that response. To return to the bucket metaphor, the semi-commons responds to certain kinds of sloshing – such as the ambient aesthetic spillovers in a neighborhood – by creating a larger bucket into which the smaller (individual parcel) buckets can be

¹⁴⁷ See *supra* note 112

¹⁴⁸ For an interesting illustration of this point, consider the rules that govern members of Twin Oaks, an “intentional community” whose members pool labor and income but do not make all resources of the individual members fully communal. See Explanation of Twin Oaks’ Property Code, available at <http://www.twinoaks.org/community/policies/property-code.html>.

¹⁴⁹ Henry E. Smith, *Semicommon Property Rights and Scattering in the Open Fields*, 29 J. Legal Stud. 131 (2000).

nested.¹⁵⁰ Deciding to hold the larger area in common better fits the scale of many activities conducted within the neighborhood, and thereby concentrates good and bad outcomes of those neighborhood-scale activities on the co-owners. Doing so gives the co-owners an incentive through governance rules or other means to limit opportunistic behavior on the part of the individual parcel owners that would disproportionately offload burdens on or extract benefits from the limited-access commons. The outer boundary to the commonly held area is not only easier to establish in a geometric sense than are the aggregate of individual boundaries on parcels,¹⁵¹ it also requires fewer extra-boundary interactions to the extent its dimensions exceed the scale of most on-site activities.¹⁵² However, if there are activities taking place at a yet larger scale, sloshes and leaks into and out of the larger, neighborhood-sized bucket will also occur. There is also a concern that intentional strategic actions by parcel holders (funnels and siphons) will degrade the commonly held asset. This is the usual concern about a tragedy of the commons – that the costs of injecting bads and extracting goods will not be fully internalized by those engaging in the actions.

Returning to half-torts, it is clear that a nested set of buckets for collecting risk-producing activities and outcomes works better than any set of single-sized buckets in responding to activities that produce effects at various scales. As nesting progresses, however, are the contents still recognizable as private property? The answer depends on what perspective one takes. Viewed from outside the outermost bucket, the nesting arrangement does look like an oversized chunk of private property.¹⁵³ Inside, however, there are elements of both private property and common property, access to both of which must be mediated somehow. In other words, there is a microcosm of the same problem on the inside that existed on the outside. Absent incentive-compatible configurations of private and common property, some internal mechanism for addressing risk/harm mismatches must be devised.

Consider a typical private neighborhood development. It contains parcels that are privately owned by individual households and other areas, such as greenbelts or golf courses, that are owned in common. The development is also typically designed to act as a basin for positive spillovers from activities, such as gardening and home maintenance, conducted on the individual parcels. Exclusion from the entire development

¹⁵⁰ Cf. OSTROM, *supra* note 112, at 101-02 (discussing how “appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises” in complex common pool resource regimes).

¹⁵¹ See, e.g., Ellickson, *supra* note 110, at 1332; Eggertsson, *supra* note 111, at 83 (citing Field, 1989).

¹⁵² In other words, the more “buffer” is built into a property holding, the less internal stress is placed on the boundaries, because activities inside the boundaries will only infrequently reach or overrun the outer edges.

¹⁵³ See *supra* note 112.

helps to accomplish containment of these positive externalities by turning them, and the other the common elements in the community, into club goods.¹⁵⁴ Through exclusion, outsiders can be largely (although not perfectly) prevented from introducing various risks to the interests within the development. But some internal mechanism or set of mechanisms is necessary to keep individual parcel-holders from harming their neighbors or the common areas, whether through risk-producing activities conducted on their own parcels or on commonly-owned property.

The control of risk creation by insiders is mediated partially through contract mechanisms – restrictive land use covenants – and partially through regulation undertaken by the (contractually-established) internal governance mechanism, the homeowners association. While both types of responses could be crafted in quite flexible and creative ways, practices have generally converged on blunt-force prohibitions of risk-creating activities.¹⁵⁵ For example, if displaying yard art, erecting fences of a given sort, parking boats in the driveway, or painting the home’s exterior in bold colors are deemed to provide some aesthetic risks for the neighbors, these activities are likely to be banned outright – whether by covenant or by a later-enacted governance rule. Of course, many other regulatory responses would be possible as well, including the creation of new property-like instruments for engaging in specified forms of risk creation.

C. Choosing a Strategy

This paper’s primary goal has been to explore how conceptually separating risk and harm changes the way we think about property and tort. The many considerations that go into choosing among possible ways of addressing risky activities have been extensively studied by others, and even a summary discussion lies beyond the scope of this paper.¹⁵⁶ Instead, I will briefly highlight some important implications of law’s choice of whether to apply legal pressure to risky inputs or harmful outcomes.

First, separating risk from harm reveals that there are two distinct approaches that have been lumped together under the heading “liability rules.” As Table 1 showed, it is possible to arrive at something that looks like a liability rule by permitting an activity and shifting the cost for any

¹⁵⁴ For analyses of club goods, see, e.g., RICHARD CORNES & TODD SANDLER, *THE THEORY OF EXTERNALITIES, PUBLIC GOODS, AND CLUB GOODS* (1986); James M. Buchanan, *An Economic Theory of Clubs*, 32 *ECONOMICA* 1 (1965).

¹⁵⁵ See, e.g., ROBERT H. NELSON, *PRIVATE NEIGHBORHOODS AND THE TRANSFORMATION OF LOCAL GOVERNMENT* (2005); Lee Anne Fennell, *Contracting Communities*, 2004 U. ILL. L. REV. 829 (discussing possible reasons for this convergence).

¹⁵⁶ For example, a policymaker would be concerned not only about incentives on primary behavior of injurers and victims, but also (among other things) about administrative costs, error costs in imposing liability and in the magnitude of damages, the problem of judgment-proof defendants, differences in ability to bear risk, and availability of insurance. See, e.g., Shavell, *supra* note 6; CALABRESI, *supra* note 6.

resulting harm to the actor. A very different kind of liability rule is created when a regulatory body allows an activity upon payment of a pre-set price (whether to a governmental authority or to the potential victim) corresponding to the risk that is thereby created. The latter alternative amounts to an explicit option; it allows a unilateral transfer from a regime in which the activity is prohibited to one in which it is permitted. The two kinds of liability rules have different implications for victim incentives (self-help) as well as for the allocation of luck-based risk.

Returning to the familiar emissions example, suppose that emitting fumes will eventuate in harm to the neighbor only if two conditions hold true: 1) the neighbor leaves her windows open; and 2) the wind blows from the east. The cell A rule, where emissions are permitted but liability for resulting harm is allocated to the factory, dampens the neighbor's incentive to undertake window-closing precautions.¹⁵⁷ At the same time, it allocates the risk associated with weather patterns to the factory. The other kind of liability rule discussed above takes the form of an explicit option offered to the factory which would allow it to unilaterally initiate a move from cell C (emissions prohibited and factory bears shutdown costs) to cell B (emissions permitted and homeowner bears liability) upon payment of a predetermined exercise price. Because this payment is made to the neighbor (or, alternatively, to the government) based on risk *exposure*, what the neighbor receives does not vary based on realized harm.¹⁵⁸ The neighbor's payoff will therefore be maximized by taking efficient precautions (here, closing the window – assuming the cost of doing so is less than the reduction it produces in the expected harm from the factory's fumes).¹⁵⁹

The homeowner also bears the risk associated with the weather when risk-based payments are employed, raising the question of whether the factory or the homeowner is in a better position to bear the risk associated with weather luck.¹⁶⁰ The two components could be broken apart through a refinement of the conditions on which a risk-based payment must be made:

¹⁵⁷ What I am describing amounts to a strict liability regime without the defense of contributory negligence. The idea that such a compensation rule can lead to inefficient behavior on the part of victims is well-recognized. See, e.g., Cooter, *supra* note 18, at 6; A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 48-49 (3d ed. 2003). Imperfections in damage awards and the lack of commensurability between money and certain kinds of harms obviously limit the degree to which victim incentives are reduced. See, e.g., RICHARD A. POSNER, ECONOMIC ANALYSIS OF LAW 172-73 (6th ed. 2003).

¹⁵⁸ Because payments collected from injurers are risk-based rather than triggered by the actual occurrence of harm, the scheme does not raise the concern that injurers will take insufficient care knowing that victims will take up the slack with excessive precautions to avoid accidents. See POSNER, *supra* note 157, at 192.

¹⁵⁹ To use Cooter's phrasing, such an approach would neatly accomplish "double responsibility at the margin." Cooter, *supra* note 18. Cooter does not work through this specific example, but emphasizes the capacity of invariant damage awards (such as liquidated damages in contract) to induce efficient behavior by both parties. *Id.* at 14. Cooter discusses the potential of a negligence rule in tort to produce this same result. *Id.* at 7.

¹⁶⁰ If insurance is equally available to the two parties, and other factors like wealth differentials do not alter their ability to access that insurance on favorable terms, this question would not arise.

rather than making the factory pay a particular sum annually in order to operate based on expected weather patterns, the factory might be required to pay a particular sum for every operational day in which the wind blew from the east. This arrangement would place risks associated with the victim's failure to take precautions on the victim, inducing efficient self-help, but would place weather-based risks on the factory.

It is also possible, of course, to forbid emissions altogether, perhaps leaving open the possibility of a private bargain that would accomplish the move from cell C (emissions prohibited and factory bears shutdown costs) to cell B (emissions permitted and homeowner bears liability) by mutual consent on terms agreeable to the homeowner. Neither homeowner incentives nor luck come into play if the prohibition stays in place and is perfectly enforced – the risky activity simply never occurs. If the injunction on emissions is lifted through a mutually agreeable bargain, the payment made to the victim will not vary based on actual harm suffered, potentially producing efficient incentives.¹⁶¹ Moreover, a simple bargain to lift the injunction would shift the risk of weather luck onto the victim, but a more complex contractual arrangement could leave the weather risk on the factory, as discussed above.

If emissions were prohibited and no bargain were struck to alter that prohibition, it is still possible that emissions might occur. This is because, as the earlier discussion emphasized, legal prohibitions do not work perfectly to prevent all forbidden activities from occurring. Here, the nature of the remedies imposed when prohibitions are breached will play a role in determining victim incentives. If the remedies are keyed to actual harm incurred, then victim incentives are again eroded. If remedies instead involved a lump sum payment for violating the prohibition paid either to the government or to the neighbor, and if this payment were independent of whether or how much damage was caused, efficient victim incentives would remain intact, and weather risk would also fall on the victim. An intermediate case discussed by Cooter – stipulated damages made only if (some) harm results – would give victims efficient incentives to reduce the severity of harm but not the probability of harm.¹⁶² If the probability of harm is completely weather-driven (that is, there will always be some damage to the neighbor when the wind blows from the east on a day the factory is operating, even if the neighbor takes all possible precautions) then this alternative would effectively allocate weather risk to the factory while inducing efficient precautions by the neighbor.¹⁶³

¹⁶¹ See Cooter, *supra* note 18, at 25-28.

¹⁶² *Id.* at 30 (explaining that “[i]f damages are stipulated in advance, then the victim has efficient incentives to reduce the *extent* of injury,” but “the victim’s incentive to reduce the *probability* of injury is reduced in part by the payment of damages”).

¹⁶³ This result depends on the assumption that the neighbor either cannot take any precautions that would

There are doubtless many other permutations that could be explored,¹⁶⁴ but this brief sketch illustrates how consciously considering whether risk or harm is the focus of policy allows for greater precision in setting victim incentives and allocating luck-based risk. Depending on how important each of these factors is in a given case, the implications of the risk/harm choice could become very significant.

CONCLUSION

Property theory has proceeded for decades without the benefit of a concept central to torts theory – that risk and harm are distinct. The strains created by this omission are beginning to show, but the fault lines have been misdiagnosed. The problem is not that property is so unique that it cannot fruitfully use an entitlement framework, but rather that property is so closely connected to torts that it cannot do without one of the core ideas from torts theory. Property does have some unique features, but those can only be fully appreciated by examining the places where property falls short -- that is, when we observe risk and harm falling on opposite sides of a real or metaphorical property line.

Bringing the notion of the divided tort into the analysis of property entitlements illuminates a great deal about how entitlements actually work, solves some longstanding puzzles, and, by adding precision, offers an account that sits more comfortably with moral intuitions. The half-torts perspective shows how property operates as a response to torts, and how torts represent shortcomings in the scaling of property interests. Finally, breaking apart risk and harm opens up a clearer and more complete menu of societal alternatives for addressing externalities. While others have examined pieces of this puzzle in far greater depth than I, this paper attempts to bring together several strands of thought to form a more realistic and resilient picture of property and torts as cognate doctrinal areas.

Finally, as a work of property theory, this paper aspires to leave some lingering image behind that might be of use to others, even if only by way of provocation. Needless to say, the account presented here offers no grand views of the Cathedral, nor stirring glimpses of the hyper-fortified walls of Blackstonian estates. Even the old realist metaphor for property, the bundle of sticks, has been edged out here. Instead, I suggest that property's true

completely stop harm from occurring or that such precautions would not be cost-efficient. If there is something that the neighbor could do that would stop the harm from happening, then the incentives to do that thing would be dampened by a system that pays out only on the realization of harm, although the fact that the payment would be in a fixed amount would create incentives to act efficiently to minimize the severity of the damage. *See id.*

¹⁶⁴ For example, victim behavior could be regulated directly, or indirectly through doctrines like contributory or comparative negligence. Jeff Lewin has suggested a system of "comparative nuisance" for land use conflicts. *See Lewin, supra* note 51.

nature is better captured by the inelegant image of a bucket¹⁶⁵ -- leaky, slosh-prone, but full of possibility.

¹⁶⁵ See MARKBY, *supra* note 95 (using bucket analogy); Smith, *supra* note 2, at 1760 (discussing Markby's analogy).