Property rights and property systems vary along a large number of dimensions, and economics has proven very fruitful in analyzing these patterns and even the nature of the institution of property itself. In its early days, the efficiency of various features of property law dominated the economic analysis of property, like law and economics more generally. This first generation of economic analysis of property dovetailed with one of the prime legacies of the policy-oriented anti-formalist legal realism school that started in the 1920s: the bundle of rights or ‘bundle of sticks’ picture of property. On the ‘bundle’ view, property is simply a collection of rights, duties, privileges, liabilities, and so on, and attaching the label ‘property’ is more or less a matter of taste. Economically a ‘property right’ could be any of these individual sticks – any socially sanctioned expectation to be able to take valued actions with respect to a resource, availing against one or more others. So the expectation of sowing crops or building a house was property, as was the larger collection of property rights we might more conventionally call ownership. The task of economic analysis appeared to be to evaluate these sticks for their cost-effectiveness. As a grab bag of rules and other institutional features, property was no different from torts or contracts.

More recent economic analysis of property law has begun to address what is special about property. The chapters in this volume exemplify this new direction in the economic analysis of property law.

The first three chapters address the evolution of property rights out of open access, and the broad classes of systems that can result. In ‘Property Rights, Land Settlement and Land Conflict on Frontiers: Evidence from Australia, Brazil and the US,’ Lee Alston, Edwyna Harris, and Bernardo Mueller explore the emergence of de facto and de jure property rights on the frontier, where enforcement of property rights to land is marginally worthwhile. They present a demand-side model based on economic rents, political rents, and norms, to explain which combinations of first-, second-, and third-party specification and enforcement will tend to occur under which circumstances. Crucially, the lag between the specification and enforcement of de jure property rights can lead to violence. Moving beyond ‘naïve’ pure demand-side models for rights, they build in the supply-side response to the demand for property rights by incorporating the political economy of group formation, lobbying local and central authorities, and the preferences of members of other groups in the polity and the government(s). They apply this framework to the settlement of the frontier and emergence of property rights in Australia, the United States and Brazil, and show why Brazil exhibits the most conflict among settler-claimants.

At any given time, property systems are likely to mix elements of open access owned by no one, common property owned by groups, and private property owned by individuals and entities. Much confusion has surrounded the term ‘Tragedy of the Commons,’ popularized by Garrett Hardin.1 Open access, in which anyone can use a resource, can
lead to ruin if people benefit fully from appropriating units from the resource but bear only a fraction of the cost. Overall the structure is that of the Prisoner's Dilemma. Somewhat more constrained but with tragic tendencies that need to be kept in check is the limited commons, or group ownership, in which a closed group has use rights that may be further constrained by customs or other rules within the group. In 'Commons, Anticommons, Semicommons,' Lee Anne Fennell points out that many of the problems associated with the commons, in which many have use rights, and the anticommons,² in which many have veto (exclusion) rights, stem from the need to have different property regimes on different scales. For example, individual ownership of cattle and collective ownership of grazing areas benefit from the different scales but also open the door to strategic behavior. In this respect, the overlap of ownership regimes often present a semicommons in which some aspects of a resource are private and others are common.³ In 'The Anticommons Lexicon,' Michael Heller explores the reasons why we have a less developed sense for the anticommons and its associated gridlock than we do for more familiar problems of the tragedy of the commons – and why this matters. Building on his earlier work on the anticommons – an ownership regime in which too many actors have a right to veto use (exclude) leading to underuse – he shows how the anticommons presents the mirror image to the tragedy of the commons in which too widely held rights of use lead to overexploitation (underexclusion).⁴

The next three chapters deal with a specific type of mixture of ownership regimes that could be called public and private. Thomas Merrill’s chapter, ‘Private Property and Public Rights,’ provides a taxonomy of legal doctrines dealing with public property and public rights, and matches these up with economic justifications for publicness. Even if a system like American property law gives a prominent role to private property, various legal regimes and doctrines, ranging from the public domain, to the public trust to public use takings to public accommodations, among others, enhance the value of private property and serve public values. Economics provides some tools for thinking about the benefits of public property, including public goods, network effects, the dangers of monopoly, spillovers, and the difficulties in assembling fragmented rights. Normatively, Merrill identifies how two overarching principles operate to enhance the mixture of public and private aspects of property law – the matching of doctrines and economic rationales, and subsidiarity that directs the problem to the doctrine that involves the mildest interference with private rights.

A special publicness, in the sense of public goods and network effects, makes information so special that controversy surrounds what type of property to allow in information. Information as a resource benefits both from private investment and public-good-style use and so it is very often a semicommons. In ‘Toward an Economic Theory of Property in Information,’ Henry Smith explores how the thin notion of ‘property rights’ in the New Institutional Economics and Law and Economics needs to be extended to account for the information costs of delineation and enforcement in information as a resource itself. The nature of these information costs helps explain the structure of property rights as starting with exclusion (keep out, trespass) and moving in certain important contexts to governance regimes consisting of rules and standards of proper use. Because information as a property resource is associated with high delineation costs, it is more public than other forms of property, but the basic exclusion-governance architecture helps solve the problems of appropriating the returns to rival inputs in a complex system of interaction.
For example, employee inventions and joint ventures as well as the problems of licensing all benefit from the modularity supplied by the exclusion-governance framework. What combination of exclusion and governance is best for information as a resource, and for different regimes like patent and copyright, remains an empirical question. Suggestive evidence though can come from contracting in organizations.

The rise of private property out of open access or common property is a common Demsetzian theme, but Demsetzian evolution of property rights also includes the attenuation or disappearance of property rights with declining importance of spillovers or increasing delineation and enforcement costs – the familiar process in reverse. So if resources become less valuable, it may at some point cease being worthwhile to assert property rights over that resource. On the individual level, such decisions involve a comparison of the costs and benefits of maintaining continued ownership. On the societal level, institutions may form to prevent externalities, in another example of the interplay between the private and the public. Lior Strahilevitz’s chapter, ‘Unilateral Relinquishment of Property,’ explores the power of owners to abandon or destroy their property. Unlike sales, gifts, wills, inheritance, and even adverse possession, both abandonment and destruction involve a unilateral relinquishment of ownership. Many of the benefits (for example, low transaction costs) and costs (for example, externalities) stem from the unilateral nature of abandonment and destruction. After surveying these benefits and costs and the law’s somewhat inconsistent response to them, the chapter proposes an economically informed rationalization of the law of abandonment and destruction. The law should liberally permit abandonment of positive value assets but encourage publicity and clarity (for example, by marking) and prohibiting certain forms of littering. As for destruction, Strahilevitz proposes to bring the law of living-owner and post mortem property destruction closer together, through a permissive regime of rights to destroy in wills subject to requirements that the owner made a public offer to sell a remainder interest in the property during the owner’s lifetime. Such a requirement would allay concerns that the owner was not facing the full costs of the post mortem destruction. And subject to requirements such as paying off liens, the chapter argues that the law’s differential treatment of the abandonment of real and personal property should likewise be abandoned. Overall the focus should be on reducing the information costs of unilateral transfers rather than outright prohibition.

Information costs have pervasive impacts on the institution of property, and to a far greater extent than contracts, property law standardizes the ways of owning. Because contracts are meant to serve the interests, sometimes idiosyncratic, of identified parties and these interests interact with resources subject to rights good against the world, the standardization of property and its interaction with contract feature prominently in many of the remaining chapters. The next two chapters deal explicitly with the theme of standardization in property law. In ‘Standardization in Property Law,’ Henry Smith offers an information cost theory of property communication. A central example of the standardization of property is the _numerus clausus_ principle, which limits the number and types of property rights and channels changes in the basic menu to legislatures rather than courts. Building on work with Thomas Merrill on the _numerus clausus_, the chapter ties the standardization of property to the information-cost externalities involved in a system of in rem rights. The chapter extends this account to the role that the basic exclusion strategy serves in furnishing black-box-like modules within which owners
and their activities are informationally irrelevant to outsiders – as in the simple rules of trespass. These modules are supplemented by an interface of use-based governance rules and standards (e.g. nuisance). The modularity of property law is related to formalism, which is a matter of degree. All communication is subject to a basic informational tradeoff: one can communicate in a more formal way with a wider audience or in a more information-rich fashion with a more limited audience (as in the prototypical contract) where everyone tends to be on the ‘same wavelength.’ In communicating with an in rem audience, parties have an incentive to externalize the costs of idiosyncratic communication to far-flung dutyholders and others. Property law addresses this externality through mandatory standardization by prescribing a *numerus clausus* of simple yet generative basic building blocks of property.

In their chapter, ‘Covenant Lite Lending, Liquidity, and Standardization of Financial Contracts,’ Kenneth Ayotte and Patrick Bolton model the role that mandatory standardization plays in reducing the costs of financial contracting and improving liquidity. In particular, they identity opportunities for financial contractors to appropriate value from unknowing third parties and show that rules that standardize contracts can serve as a commitment device against such demand-dampening pitfalls facing these other parties. Mandatory standardization thereby can improve the liquidity of secondary markets for loan contracts. The model also has implications for the current financial crisis. In good times such as an asset bubble, secondary purchasers of loan contracts will not be as scared off by the weakened covenants in loan contracts, because the costs of the moral hazard created by such ‘covenant lite’ contracting will only hurt purchasers in bad states. This equilibrium in good states can turn into one with pervasive ‘lemons problems’ when the bubble bursts and times are bad.

Standardization is often thought of as a constraint on the types of division of property rights, and the next three chapters deal with various types of division, between parties and/or states of the world. In general, the law provides for a menu of co-ownership arrangements that allow multiple parties to serve interests in situations in which a combination of multiple uses under a variety of circumstances maximizes resource value. In ‘The Personification and Property of Legal Entities,’ George Triantis analyzes entities, like corporations and other business organizations, as property, especially the central role played by the notion of legal personhood with its asset partitioning effect. The overlap and conflict between capital structure and governance structure is somewhat reminiscent of the interactions between different ownership structures (private, common, public) at the outset of the volume. In some situations different assets may call for different mixtures of debt and equity but capital structure is only allowed by the law to vary with legal personality. Yet separate entities can complicate the governance problem and reintroduce agency costs that unified organization structure is meant to address. In general, matching financial claims to asset types, governance tailoring, firm-internal capital market formation, and facilitation of the transfer of groups of firm assets may point in different directions. The chapter ends by asking whether the law should be changed to allow internal tailoring of financial and governance structures within firms and whether the law governing consolidation of multi-entity enterprises in bankruptcy should take more account of the reasons for asset partitioning.

Bankruptcy law itself divides property rights among claimants according to states of the world – solvency and insolvency. Barry Adler’s chapter, ‘Bankruptcy as Property
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Law,’ explores the role of bankruptcy law as property law and vice versa. The chapter points out that, despite the almost exclusive focus on bankruptcy law as process, bankruptcy law need not follow state law entitlements in all situations. Whether it does furnish its own substantive entitlements or follows those of state law, bankruptcy resolves competing claims to assets that cannot all be satisfied because of insolvency, and is thus property law. Among consensual and other adjusting creditors, the vindication of state law entitlements in bankruptcy may not matter much substantively and may prevent some forum shopping. But with respect to nonconsensual creditors, like accident victims, children who are owed support, and those injured by environmental contamination, bankruptcy law could furnish a better set of entitlements that would give nonconsensual creditors superpriority, thereby preventing the externalization of harms from consensual creditors to nonconsensual creditors. The chapter also points to how various aspects of property and contract law prevent externalization of harm by potentially insolvent actors, and thus function as bankruptcy law.

The winding up of conflicting claims is a function of another branch of law, marital property, which likewise allocates assets to spouses across different states of the world – falling under marriage and divorce. Martin Zelder’s chapter, ‘The Law and Economics of Marital Property,’ models the incentives facing spouses both to contribute to marital and separate goods within the marriage and to get divorced in the shadow of outside options given divorce law’s property division rules. The rules for property division and the grounds for divorce (fault versus no-fault) would not lead to different behavior in the absence of transaction costs: in a zero transaction cost world the spouses would in Coasean fashion bargain to the utility maximizing result (with varying distributions), but in our world the rules setting entitlements may matter to efficiency as well as distribution. Zelder provides a model that incorporates the joint product of marriage, the jointly created separate products, and separate spousal products, and shows how changes in the size of divorce settlements, the expanding scope of marital property (e.g. professional degrees), and no-fault divorce impact these three components through the behavior of the spouse with better outside options (traditionally and stylized as the husband) and the spouse with fewer outside options (traditionally and stylized as the wife). The model extends previous results about the conditions under which changes in the law affect spousal allocation of effort and incentives to pursue socially wasteful divorce, as well as the potential negative impact of no fault divorce on the more vulnerable spouse. The model draws support from empirical studies of the effects of no-fault divorce and sharpens the empirical questions for future research.

Closely related to the standardization of property are other notice-giving devices that ensure transactors and other third parties are aware of who owns what. The next two chapters deal with standardization, publicity, and notice issues surrounding property, and land in particular. In ‘Property Titling and Conveyancing,’ Benito Arruñada analyzes titling systems as a method of organizing the consent to transfer. A useful benchmark is privacy, in which the claims of original owners would prevail regardless of notice to later good faith claimants. In general, he shows that loosening property rights to make them enforceable by good faith purchasers may make rights more valuable than the loss of value from nonenforcement for original owners in such situations. As alternatives to the baseline of privacy, Arruñada then goes on to compare recordation, in which transaction-related documents are simply filed and indexed, and registration, in
which an official determines the state of title in the course of accepting title documents. Each system makes different institutional demands, and in light of the theory he questions the oft-assumed cost advantage of recordation over registration. In a cross-country empirical study, the chapter shows that land records that are given more definitive effect tend to be accompanied by a stricter *numerus clausus*, apparently because an official who must give a determination of validity serves as a stand-in for the public and needs the information-cost-reducing effect of stricter standardization of property.

For land, property rights definition includes a description of the physical space covered by rights, through some sort of survey. In ‘Land Demarcation Systems,’ Gary Libecap and Dean Lueck compare land demarcation systems in various times and places. They focus on two primary systems and their variants. The metes and bounds system, which is decentralized and based on landmarks and angles, leads to a pattern of irregular land claims that tracks topography. The rectangular system is more centralized, and requires parcels to conform to a rectangular shape and in some systems, like the U.S. Public Land Survey System set up by the Land Ordinance of 1795, also requires all rectangular parcels to fit into a grid system based on markers defined in terms of latitude and longitude. They compare the two main systems in the United States in a comparative context. The regular interlocking shape and the standard location of the rectangular system provide substantial benefits, in light of Libecap and Lueck’s empirical study of a natural experiment involving the Virginia Military District, a metes and bounds area in Ohio. The rest of Ohio, which was marked off in the public survey into townships and sections, etc., shows greater investment, more infrastructure, higher economic growth and less litigation than the Virginia Military District for long stretches of time. These findings suggest the superiority of the rectangular system in terms of incentives for land use, promotion of land markets and investment, and avoidance of border disputes.

Other conflicts between neighbors involve uses, and the next two chapters take up covenants and nuisance as devices for land use control. Covenants and easements – servitudes – in particular raise issues of recording and notice. In ‘Servitudes,’ Carol Rose explores the role of servitudes in coordination among neighbors and provides a framework for thinking about how the law addresses the special worries to which they give rise. She demonstrates how covenants partake both of in personam contract and in rem property and in what sense they are an alternative to zoning. Only through their running to successors in interest do servitudes enable the kind of commitment to patterns of land use that afford stability of expectations. Rose then shows how covenant law deals with the main worries to which covenants give rise: information or notice, renegotiability, and value over time. In particular, she highlights some of the problems servitudes pose to third parties. Informationally, any restrictions on servitudes are puzzling as long as they are reflected in land records. Nevertheless, in light of civil law comparisons, Rose argues that standardization and record systems may sometimes be supplements rather than alternatives to each other, and that some of the formalities that covenants are held to may reflect a more ex ante common law procedure involving juries. By contrast, the more flexible equitable servitude doctrine bears the traces of the judicial ex post decision making where jury control was not an issue. These worries and the characteristic solutions to them provide a descriptive explanation for and normative evaluation of the law’s response to racially restrictive covenants, common interest communities, and conservation easements. In all these areas, many of the characteristic
difficulties of covenants stem from their potential to reach out to the broader in rem set of actors in the world.

An alternative method of coordinating neighbors’ land use is the tort of nuisance. In ‘The Economics of Nuisance Law,’ Keith Hylton takes up nuisance, which is a tort that protects property rights. After noting that transaction cost models of nuisance are designed to explain the contrast between trespass and nuisance, the chapter develops an externality model of nuisance. By taking into account both external costs and benefits, the chapter shows that imposing strict liability on a nuisance causes incentives facing private actors to roughly track social optimality when either of two conditions is satisfied: external costs of the activity substantially outweigh the external benefits, or there is a lack of reciprocity of the harms imposed by neighboring activities. Nuisance thus serves a regulatory function with respect to activity levels. This externality model helps explain the contours of nuisance, including the intentionality requirement, liability for abnormally dangerous activities, proximate cause, hypersensitive plaintiffs, and coming to the nuisance. Although the chapter focuses on the more finegrained rules governing identified parties and thus emphasizes the tort aspect of nuisance, the theory emphasizes situations in which external benefits substantially outweigh the external cost and those in which harms are nonreciprocal. These rough and ready tests bring out how nuisance reflects only a partial shift from crude exclusion rules to finegrained governance.

Eminent domain and takings implicate many of the themes of the economic analysis of property law, including the forms of property, externalities, hold outs, and the mixture of the public and the private. In ‘Acquiring Land Through Eminent Domain: Justifications, Limitations, and Alternatives,’ Daniel Kelly provides an economic analysis of the justifications for and limitations of eminent domain. Although eminent domain is often considered a solution to the holdout problem, holdouts come in different varieties with different implications for efficiency – strategic owners, numerous owners, and idiosyncratic owners. The chapter also explores other rationales for eminent domain, especially those sounding in positive externalities. On the 'limitations’ side of the ledger, while valuation difficulties and the attendant risks of undesirable transfers receive much attention, secondary rent seeking and administrative costs can sometimes prove crucial. As alternatives to zoning secret purchasers, land assembly districts, and auction mechanisms are designed to solve some of the shortcomings of eminent domain. Kelly demonstrates that each of these alternatives carries with it a characteristic set of further problems. In particular, land assembly districts overcome many holdouts but do leave valuation problems and the possibility of socially undesirable transfers. Auction mechanisms benefit from strong theoretical support in the literature but they too are not immune from secondary rentseeking and might raise administrative costs. The chapter ends by noting that we are at the beginning of a true comparative analysis of the full range of institutions that deal with land assembly problems.

Finally, William Fischel’s chapter, ‘The Rest of Michelman 1967,’ engages in an economic analysis of lesser known parts of Frank Michelman’s landmark 1967 article on just compensation law. Most commentary has picked up on Michelman’s Rawlsian and utilitarian criteria for takings law. But much of the rest of the article significantly qualifies these criteria and argues for skepticism about the state of takings law. In the most neglected aspect of the article, Michelman addresses institutional questions for implementing fairness, as a problem of choosing between a ‘fairness machine’ (politics) and
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‘fairness discipline’ (judicial review). From a compromise between the need for judges to make subjective judgments in this area and the difficulty of doing so, Michelman derives a takings law remarkably like the one that unfolded in the decades since he wrote. Nevertheless, this ‘test of fairness’ in a variety of institutional vehicles remains a largely unfulfilled program.

The chapters in this volume suggest that the economic analysis of property is entering a new phase. A greater diversity of methods than ever – analytical, empirical, institutional – are being brought to bear on new questions regarding property’s basic architecture.

NOTES