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GOVERNING THE TELE-SEMICOMMONS

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I. INTRODUCTION

That the telecommunication Act of 1996 was a revolution has achieved the status of conventional wisdom.¹ Most obviously, it ended the system of rate regulation and attempted to open up local and long-distance telephony to competition. But it also set up a highly unusual property regime to solve the problem of bottleneck facilities. In place of traditional rate regulation, the Act substitutes a system under which competitive local exchange carriers (CLECs) can normally demand that any incumbent local exchange carriers (ILECs) lease some or all of their network elements on an unbundled basis.² If, as is also normally the case, the CLEC and the ILEC cannot agree, then mandatory arbitration will set the rates under the total element long-run incremental cost (TELRIC) approach.³ At first blush, this would seem like a potentially tragic commons in aspects of the network, at least to the extent that the TELRIC prices are undercompensatory.⁴ If so, then CLECS can be expected to overuse the UNEs just as those with access, if unrestrained, will overfish a pond or overgraze a field. But I will argue that many of the difficulties and problems with this system stem from the fact that it sets up a semicommons with its attendant need for high-cost and potentially inflexible governance regime.

¹ 47 U.S.C. § 151 et seq.

² Id. §§ 251-52.

³ Id. § 252(a)(2).

⁴ The problem of the commons was popularized and termed the “tragedy of the commons” in Garrett Hardin, *The Tragedy of the Commons*, 162 *Science* 1243 (1968), but the commons and the characteristic potential problem of overuse was first systematically studied with respect to fisheries by Warming. Jens Warming, *Jens Warming, Om “Grundrente” af Fiskegrunde*, *Nationaløkonomisk Tidsskrift* 495 (1911), translated in Peder Andersen, “On Rent of Fishing Grounds”: A Translation of Jens Warming’s 1911 Article, with an Introduction, 15 *Hist. Pol. Econ.* 391 (1983); Jens Warming, *Aalegaardsretten*, 69 *Nationaløkonomisk Tidsskrift* 151 (1931), whose analysis was independently discovered by H. Scott Gordon in H.S. Gordon, *The Economic Theory of a Common Property Resource: The Fishery*, 62 *J. Pol. Econ.* 124 (1954); and extended by Steven N.S. Cheung in Steven N.S. Cheung, *The Structure of a Contract and the Theory of a Non-Exclusive Resource*, 13 *J.L. & Econ.* 49 (1970).

A semicommons is a property regime which mixes elements of private and common property.⁵ The classic regime of a semicommons was the medieval open fields in which farmers had private property in strips of land for purposes of grain growing but were obliged to throw open these strips and, together with other farmers, form one large grazing commons during periods right after the harvest and fallow seasons. Semicommons are widespread today, including the mixture of common and private property in common interest communities and the use of privately owned assets in joint ventures. The semicommons is especially important in intellectual property.⁶ Because information is difficult to exclude and multiple uses of a nonrival resource is desirable, semicommons are almost inevitable in areas like copyright.

One condition for a semicommons is that these two elements of private and common property should interact. The problem in a semicommons is that someone engaged in the commons use may strategically alter his behavior in order to distribute benefits to “his” part of the commons (in the private part of the system) and steer bads to others’ parts of the asset. In the open fields these goods and bads were manure and trampling, respectively.⁷ Likewise, a private user will seek to externalize bads to parts of the “commons” other than his own. The perversity of these incentives goes beyond those of the commons, in the sense that a commons user will, like her neighbors, still bear a small fraction of the harm done to the common resource. The commons users may then get together to mutually forbear in a system of use rules – what I call governance. This will be easier to the extent that the various users’ interests and information are homogeneous.

The solution to a semicommons is likewise usually a governance regime rather than exclusion rules. Property rights can be delineating using various strategies, which

⁵ Henry E. Smith, *Semicommon Property Rights and Scattering in the Open Fields*, 29 *J. Legal Stud.* 131 (2000).

⁶ See, e.g., Robert A. Heverly, *The Information Semicommons*, 18 *Berkeley Tech. L.J.* 1127 (2003); Smith, *supra* note 5, at 166-67; Henry E. Smith, *Intellectual Property as Property: An Information Cost Approach* (draft, Feb. 2004).

⁷ Smith, *supra* note 5, at 1134-38.

can be ranged along what I have argued is a continuum from *exclusion* to *governance*.⁸ These strategies have their own characteristic costs and benefits. An exclusion strategy relies on very rough signals, ones that are not directly tied to use but are very easy to delineate and for dutyholders to process. The fence or the imaginary line around a parcel of land defining who is on one side of the line (out versus in) allows the law of trespass (and much of nuisance law) to be about whether one has unpermitted access and so is a violator or not. At the other end of the spectrum is the governance strategy in which property rights are delineated by picking out and evaluating individual uses. The rules in a grazing common for proper times and methods of grazing and numbers of animals allowed are governance rules. These rules are historically what prevented many grazing commons from succumbing to tragedy. In copyright, the semicommons is governed by the provisions for fair use, various compulsory licenses, the merger doctrine, etc.⁹ These governance rule rely on signals that are more directly tied to the uses we are interested in. Governance rules are better at capturing the benefits of multiple use but are also more costly to delineate in the first place and require more effort and expertise to police and to obey.

Because a semicommons involves mixing private and common elements the users generally have to have access to the whole in the common use. This means that straightforward rules of exclusion are not likely to be available to protect the private elements from misuses by the commons users. I have argued that the pattern of ownership in the open fields – scattered long strips – reduced the opportunity for strategic behavior by making it difficult to “steer” the goods and bads emanating from grazing animals to particular plots of land.¹⁰ But this is a rare case in which the configurations of boundaries can make strategic behavior more difficult. Like a governance regime this scheme of boundaries was an expensive one but it had to be, if this account is correct, in

⁸ Henry E. Smith, *Exclusion versus Governance: Two Strategies for Delineating Property Rights*, 31 J. Legal Stud. S453 (2002).

⁹ See Smith, *supra* note 6.

¹⁰ See Smith, *supra* note 5, at 144-61.

order to deter the opportunism made possible by the semicommons in the first place. So if the benefits of multiple use are to be achieved, governance rules will generally be needed. And the more intense the uses the more difficult that will be.

By setting up a semicommons over assets subject to very intense use and investment, telecommunications law has opted for a semicommons. Sections 251 and 252 of the Act provide for three methods to facilitate competitive entry into local telephony, at least two of which moves the regime closer to a semicommons. First, the act requires that ILEC provide interconnection to those who have competing facilities. This requires familiar coordination rules but creates a semicommons in a weak sense; the two firms with the interconnected facilities have separate property and only a limited range of uses need be governed to provide for interconnection, along the lines of what was required for common carriers at common law.¹¹ Second, the statute provides for resale by competitors who are to be able to purchase at wholesale. Third and most controversially, the Act requires that most ILECs make available unbundled network elements to competitors.¹² The FCC must consider when deciding whether to mandate unbundling whether a proprietary element is necessary and whether, in the case of other elements, the failure to gain access to them would impair the competitor to provide service.¹³ In the various attempts that the FCC has made to implement unbundling have all involved the FCC heavily in evaluating the use that competitors might make of an element in a wide-ranging governance regime.¹⁴

¹¹ See James B. Speta, *A Common Carrier Approach To Internet Interconnection*, 54 *Fed. Comm. L.J.* 225 (2002).

¹² Section 251 (c)(3).

¹³ Section 251(d)(2). For general discussion, see e.g., Peter W. Huber, Michael K. Kellogg, & John Thorne, *Federal Telecommunications Law* § 5.5 (2d ed. 1999); Jerry A. Hausman & J. Gregory Sidak, *A Consumer-Welfare Approach to the Mandatory Unbundling of Telecommunications Networks*, 109 *Yale L.J.* 417 (1999).

¹⁴ Under the first set of rules, any decrease in the quality of the competitor's service would constitute impairment. Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, First Report and Order, 11 *FCC Rcd.* 15499, 15643 ¶ 285 (1996). This approach was struck down in *AT&T Corp. v. Iowa Utils. Bd.*, 525 U.S. 366 (1999), because the FCC did not consider the alternatives of self-provision or provision by a third party and because the FCC's adopted meaning of "impair" was too unlimited. The second set of rules substituted a material diminishment standard, Implementation of the

Accompanying detailed governance rules are the rates at which the mandatory access would be provided. The Act provided that the ILECs may charge a “just and reasonable rate” for the UNEs.¹⁵ If the CLEC and the ILEC cannot agree on such a price, then mandatory arbitration is called for, and the FCC has opted for TELRIC prices. TELRIC prices are to be based on the most efficient technology and the lowest cost configuration currently available.¹⁶

The benefits that the Act seeks to achieve can be viewed as multiple use – here use by both ILECs and CLECs of the essential or bottleneck facilities owned by the ILECs. The Act mandates access to these facilities for the CLECs and simple rules of exclusion are not possible to deter strategic behavior that would impact the ILECs otherwise private ownership rights in the facilities. Instead, the Act must use a governance regime, which is ambitious in terms of capturing the benefits of multiple use – here the benefits of competition in the provision of local telephone service – but also involves the high costs of delineating and policing individual uses. Under the simple exclusion strategy, property law delegates many choices over uses at a given time and over time to owners and need not address first-order use questions at all. By contrast, the adoption of a governmentally-mandated governance regime is a partial withdrawal of this delegation and foregoes the benefits of the delegation as well.

Governance regimes are particularly costly in terms of ensuring the ability to change use as conditions change. The nature and identity of the uses change, and the more rapidly this occurs, the more quickly the governance regime, based as it is on rules tailored to given uses, will become outmoded. In telecommunications, this dynamic

Local Competition Provisions in the Telecommunications Act of 1996, Third Report and Order and Fourth Further Notice of Proposed Rulemaking, 15 FCC Fcd. 3696, 3725 ¶ 51 (1997), but this was found inadequate in *U.S. Telecom. Ass’n v. F.C.C.*, 290 F.3d 415 (D.C. Cir. 2002). Most recently, the third set of rules adopted a standard based on barriers to entry and under impairment adopted more “granular” approach involving deferring some of the determination of impairment to state public utilities commissions, Report and Order and Order on Remand and Further Notice of Proposed Rulemaking, review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, 18 FCC Rcd. 16978 ¶¶ 97-98, ¶ 118 (2003), was struck down in *U.S. Telecom. Ass’n v. F.C.C.*, 359 F.3d 554 (Mar. 2 2004).

¹⁵ 47 U.S.C. § 252(d)(1).

¹⁶ 47 C.F.R. § 51.505(b)(1); see also *Verizon Communications v. F.C.C.*, 535 U.S. 467 (2002).

choice of uses is particularly important in light of rapid technological change. By not delegating dynamic choice among uses to an owner, governance requires other mechanisms to allow for change over time. In the early modern open fields this mechanism was enclosure, which was a messy and drawn-out process.¹⁷ In telecommunications, an important challenge is to build in the ability to change governance systems over time, as through sunset provisions or phase outs. Many voluntary governance systems, such as interlocking covenants, build in such features.¹⁸

Part II of this essay will introduce the notion of a semicommons, a property regime that combines elements of private and common property such that the two parts of the hybrid potentially interact with each other. I will show that a semicommons is useful where multiple use is beneficial but it can lead to even worse incentives than either private property or a pure commons. To solve the problems of a semicommons, property regimes usually have to rely on costly governance strategies, elaborate systems of use rules. I then show that the system of forced sharing of UNEs and TELRIC pricing are a semicommons and involve extreme problems of governance and little opportunity to rely on the advantages of exclusion. Part III explains why governance of the type involved in mandatory unbundling often lead to reliance on liability rules rather than property rules. All the problems with foregoing exclusion and property rules are potentially pitfalls of the TELRIC pricing regime. In Part IV, I turn to the costs of semicommons and governance in terms of dynamic flexibility and suggest why viewing mandatory unbundling and TELRIC pricing as this type of property system leads to the need for some kind of sunset or phase out provisions in order to achieve the benefits of facilities-based competition that is one purpose of the Act. If an ability to change can be built into

¹⁷ See, e.g., Thráinn Eggertsson, *Economic Behavior and Institutions* 221-23 (1990); E.P. Thompson, *Customs in Common* 97-184 (1991); J.A. Yelling, *Common Field and Enclosure in England 1450-1850* at 1-10 (1977).; Robert C. Ellickson, *Property in Land*, 102 *Yale L.J.* 1315, 1391-92 (1993); Donald N. McCloskey, *The Economics of Enclosure: A Market Analysis*, in *European Peasants and Their Markets* 123, 142-51 (William N. Parker & Eric L. Jones eds. 1975).

¹⁸ See, e.g., Richard A. Epstein, *Covenants and Constitutions*, 73 *Cornell L. Rev.* 906, 919-26 (1988) (arguing that developers have an incentive to use tools of entrenched rights, majority rules, and compensation for changes, and that law need only fill interstices); see also Robert Ellickson & Vicki L. Been, *Land Use Controls: Cases and materials* (2d ed. 2000) (express termination clauses).

a semicommons, a cheaper regime of exclusion based on competition between holders of private property can emerge over time from the semicommons.

II. DELINEATING SHARED USE

The Telecommunications Act of 1996 sets up a semicommons over network elements. The Act aims at the multiple use that a semicommons provides in order to foster competition in the provision of local telephone services. But semicommons also have characteristic costs, which are evident in the system of mandatory unbundling and TELRIC pricing. These costs stem from strategic behavior and the elaborate governance mechanisms meant to curb it. A semicommons presents problems that go beyond those of the familiar tragedy of the commons.

A semicommons exists where a given resource is subject to a hybrid between common and private property. In neoinstitutional or property-rights economics, assets are regarded as collections of valued attributes, which are costly to measure.¹⁹ In a semicommons different sets of these attributes of an asset can be subject to different property regimes, private and common, and the two elements in this hybrid regime interact with each other. Because users of the private attributes can impact the value of the common attributes and vice versa, semicommons are associated with characteristic costs. The reason to incur these costs sometimes is that the semicommons carries with it the benefits of multiple use. Often the resource could be put to more than one use but the optimal scale for the two uses does not match up. Or the multiple use requires access by both users.

The classic example of a semicommons is the “open field” system prevalent in medieval and early modern England (and northern Europe more generally). The open fields combined elements of private and common property. The latter element, the

¹⁹ Yoram Barzel, Measurement Cost and the Organization of Markets, 25 *J.L. & Econ.* 27 (1982); Roy Kenney & Benjamin Klein, The Economics of Block Booking, 26 *J.L. & Econ.* 497 (1983); see also, e.g., Jack Hirshleifer, *Price Theory and Applications* 155-56 (3d ed. 1984); Kelvin J. Lancaster, A New Approach to Consumer Theory, 74 *J. Pol. Econ.* 132 (1966); Sherwin Rosen, Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition, 82 *J. Pol. Econ.* 34 (1974); George J. Stigler & Gary S. Becker, *De Gustibus Non Est Disputandum*, 67 *Am. Econ. Rev.* 76 (1977).

common property was, like purer forms of grazing commons in medieval and early modern England limited rather than open access.²⁰ In a limited-access commons, the right of common belongs only to some subset of the members of the community. In the open-field system, peasants would have the rights to grain crops they grew on scattered strips, and during certain periods, all holders of strips of land would be obliged to throw open the strips to grazing, thus forming one large but limited grazing commons.

In the semicommons of the open fields, the system mixed exclusion and governance. Exclusion was used for the outer perimeter and for the graingrowing strips during the non-commons periods: non-commoners were excluded from the field as a whole and individual farmers could exclude everyone else from that farmer's strips during the graingrowing periods. But during the commons periods, governance regimes of use-based restrictions applied. Most prominently, rules called "stints" prescribed limits on the number of animals, especially sheep, that a landholding peasant was allowed to graze on the commons.²¹ These were based on the amount of land the peasant owned, and prevented the system from becoming tragic: Garrett Hardin's image of inexorable ruin – tragedy – did not obtain in his primary example, the grazing commons. The grazing common was not open access nor tragic.²² During the centuries in which the open-field system (and other commons) prevailed in England these stints and other rules

²⁰ For general descriptions of the open-field system, see, e.g., Warren O. Ault, *Open-Field Husbandry and the Village Community: A Study of Agrarian By-Laws in Medieval Europe* (1965) (Transactions of the American Philosophical Society, Part 7, Vol. 55); Eric Kerridge, *The Common Fields of England* (1992); C.S. Orwin & C.S. Orwin, *The Open Fields* (1938); Joan Thirsk, *Farming Techniques*, in *The Agrarian History of England and Wales Volume IV 1500-1640*, 161 (Joan Thirsk, ed., 1967); Joan Thirsk, *The Common Fields*, 29 *Past and Present* 3 (1964) [henceforth, Thirsk, *Common Fields*].

²¹ See, for example, W.O. Ault, *Open-Field Farming in Medieval England: A Study of Village By-Laws* 123, 137, 141 (1972) (stinting of sheep); Kerridge, *supra* note 20, at 77.

²² See, e.g., Elinor Ostrom, *Governing the Commons* (1990); Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 *U. Chi. L. Rev.* 711 (1986); James M. Acheson, *Management of Common-Property Resources*, in *Economic Anthropology* 351 (Stuart Plattner ed., 1989); see also Alison Rieser, *Prescriptions for the Commons: Environmental Scholarship and the Fishing Quotas Debate*, 23 *Harv. Envtl. L. Rev.* 393, 399-400 (1999) (reviewing critiques of Hardin's conflation of commons with open access).

seem to have become more stringent or less depending on the intensity of the problem.²³ Other governance rules included limitations on times for grazing, the use of and provisions for a common herdsman, among many others.²⁴

A more modern semicommons is in assets contributed to a joint venture. An asset can be used for purposes of the joint venture, but the joint venturers may retain certain private uses. As in the open fields there is a problem of strategic behavior where the two sets of uses impact on each other. Thus, if a patent or equipment is used in a joint venture, the members might skew their decisions in order to extract benefits for assets over which they retain some private uses, and dump costs to the assets over which others have retained private uses. To foreshadow, this type of joint venture is a voluntary version of what the mandatory sharing scheme in the Telecommunications Act imposes on ILECs. The network elements that have to be shared are both common and private. The CLEC has an incentive to use these elements to the extent they are underpriced and not to contribute to investment. The ILEC has no incentive to make the network attractive to the CLEC.

The problem of a semicommons is usefully compared to the more familiar “tragedy” of the commons.²⁵ In a situation of open access (or nonlimited-access commons), each potential user will extract all of the benefits of a unit of use, say a unit of water pollution in a lake, but will bear only a fraction of the cost. In the case of n people with access who are equally burdened by a unit of pollution, the actor bears only $1/n$ of

²³ See, e.g., Douglass C. North & Robert Paul Thomas, *The Rise of the Western World: A New Economic History* 19 (1973) (“manorial regulations grew more restrictive as land became scarce”); id. at 23-24; Thirsk, *Common Fields*, supra note 20, at 7 (“Yet from the sixteenth century onwards manorial documents contain more and more explicit rules and regulations about the workings of the system until in the seventeenth and eighteenth centuries they are at their most emphatic and lucid.”). The first recorded stint, from Newton Longville in 1426, imposed the restriction of 100 sheep per virgate (yardland), Ault, supra note 20, at 26; Ault, note 21, at 47-48 & n.203, which, in Ault’s words, was “not a very severe restriction.” Id. Stints at that location were reduced to 30 per virgater in 1509 and to 20 in 1608. Ault, supra note 20, at 26-27; Ault, supra note 21, at 47-48. For stints in other locations and times in England see Ault, supra note 20, at 27.

²⁴ See generally Ault, supra note 20; Ault, supra note 21. In related work, I have argued that the placement of boundaries served the function of denying access for those engaging in strategic behavior. Henry E. Smith, supra note 5, at 144-54, 161-67.

²⁵ On the standard analysis of the commons problem, see the sources cited in note 4 supra.

the cost but all the benefit, leading the actor to push the activity beyond the optimal point. This can result in some, all, or under certain circumstances, more than all the rent from the resource to be dissipated.²⁶ Unless those with access place use limitations on themselves or are coerced by an outside authority to do so, overuse and resource collapse are the likely outcome. Historically, some common pool resources, such as grazing commons, have avoided tragedy through governance regimes.

A semicommons combines elements of private and common property. As a commons, the potential for tragedy is there. But there is an additional problem of the potential interaction between the private and common uses. We can usefully distinguish four scenarios, assuming for the moment that the potential appropriators are homogeneous:

- (i) A common-attribute user imposes costs on the commonly owned attributes of the asset. She bears $1/n$ of the cost of the actions, as in the commons.
- (ii) A common-attribute user imposes costs on some privately owned attributes, either (a) her own private attribute, in which case all of the cost is internalized or (b) someone else's private attribute, in which case she bears none of the cost.
- (iii) A private-attribute user imposes costs on private property, either (a) her own (internalized) or (b) someone else's (externalized).
- (iv) A private-attribute user imposes costs on the commonly owned attributes. She bears $1/n$ of the costs of her actions, as in the commons.

These scenarios are like those of the commons except that in (ii) and (iii) we have a mix of full internalization and full externalization. This would be just like the commons ($1/n$ of the cost is internalized) if all of the cost is internalized $1/n$ of the time and none of the cost the rest ($1 - 1/n$) of the time, leading to $1/n$ of the overall costs of actions to be borne by the actor. The additional problem characteristic of the semicommons comes from the

²⁶ See Terry L. Anderson & Peter J. Hill, Privatizing the Commons: An Improvement?, 50 Southern Econ. J. 438, 441, 447 (1983); see also Dennis C. Mueller, Public Choice II 232 (1989) (in rent-seeking model, when one relaxes any of the three assumptions of risk-neutrality, symmetric positions, and free entry, one can derive a total amount expended on rent seeking either more or less than the total rent).

opportunity for the actor to influence these probabilities: to make sure that internalization of harms happens less than $1/n$ of the time by steering harms away from one's own privately owned attributes and ensuring that externalization happens more than $1-1/n$ of the time by steering bad to others' private attributes.

Thus, a semicommons presents a basic problem of strategic behavior in addition to the commons problem. The reason to set up a semicommons is that multiple use requiring multiple access is optimal. Often the reason multiple access is desirable is that two uses are have different optimal scales. Thus, in the open fields, graingrowing is a small event and the benefits and costs can be internalized trough relatively small plots but grazing is thought to involve economies of scale requiring one large plot.²⁷ Once we let people use the semicommons as commons users they have basic access to the resource and are in a position to distribute bads and goods to different parts of the resource. In some semicommons arrangements the opportunities for such strategic behavior will be slight or easily policed. Thus, in many indigenous property systems, different families or individuals might have rights to pick berries or hunt birds, and these activities did not interact much (or the interaction was easy to police).²⁸

Capturing the benefits of multiple use involves dealing with users with access to more of the resource than they privately own. This arrangement normally makes unavailable many of the cheapest and most effective tools in property to deal with resource conflict. Elsewhere I have distinguished two strategies for delineating property rights as lying at poles of a spectrum.²⁹ At the one end is the exclusion strategy in which rough signals not directly tied to use are used to protect owners' interests in a wide range of unspecific uses. The owner of a plot of land can use it for a residence (and as such can cook on it, read in it etc.), can use it to grow plants, can use it for parking cars, etc. By

²⁷ Carl J. Dahlman, *The Open Field System and Beyond: A Property Rights Analysis of an Economic Institution* 112-14 (1980); George W. Grantham, *The Persistence of Open-Field Farming in Nineteenth-Century France*, 40 *J. Econ. Hist.* 515, 523 (1980); Thirsk, *Common Fields*, supra note 20, at 188.

²⁸ See Stuart Banner, *Two Properties, One Land: Law and Space in 19th Century New Zealand*, 24 *L. & Soc. Inquiry* 807 (1999).

²⁹ See Smith, supra note 8.

having a right to exclude, all these use-privileges are protected without having to be separately delineated – or even known to – officials at all. By contrast, a governance strategy uses signals that target specific uses. Thus a limit on the number of sheep one can graze or a rule about proper tethering is a governance rule. So too are real covenants (limiting for example, parcels to residential use) and zoning.

Crucially, exclusion and governance have different cost structures. Exclusion is very low cost but as the precision desired increases, exclusion quickly gets expensive: think of trying to prescribe proper grazing levels with a fence. Exclusion is low cost both because officials need not delineate or know about use directly – owners are delegated authority over this first-order choice – and exclusion rules are simple and cheap to communicate to the world at large. For this reason, property has always rested on a large base of exclusion rules.³⁰ Governance by contrast starts out high cost: consider trying to specify every result of every use conflict between all the pairs of members of society, but as the stakes of a particular use conflict rise and precision required increases, governance becomes the least cost method of dealing with these particular resource use conflicts. Governance rules are used to loosen and moderate the exclusion rules in these contexts. Special rules for airplane overflights,³¹ riparian rights to use water,³² and part of nuisance law are off-the-rack use rules that serve to modify but not replace the basic exclusionary regime. As a result, the commonly heard metaphor of property as a bundle of sticks is

³⁰ See Henry E. Smith, *Exclusion, Property Rules, and the Law of Nuisance*, 90 Va. L. Rev. [965] (forthcoming June 2004). For arguments that the right to exclude is important or even criterial to the notion of property, see J.W. Harris, *Property and Justice* 13 (1996); J.E. Penner, *The Idea of Property in Law* 71 (1997); Jeremy Waldron, *The Right to Private Property* 39 (1988); Felix S. Cohen, *Dialogue on Private Property*, 9 Rutgers L. Rev. 357 (1954); Thomas W. Merrill, *Property and the Right To Exclude*, 77 Neb. L. Rev. 730, 748 (1998).

³¹ See, e.g., *Brown v. United States*, 73 F.3d 110, 1103 (Fed. Cir. 1996); Thomas W. Merrill, *Trespass, Nuisance, and the Costs of Determining Property Rights*, 14 J. Legal Stud. 13, 36 (1985).

³² In riparian water law, owners whose land abuts a water course are entitled to make reasonable use of the water. See, e.g. *Evans v. Merriweather*, 4 Ill. 492 (1842); Carol Rose, *Energy and Efficiency in the Realignment of Common-Law Water Rights*, 19 J. Legal Stud. 261 (1990).

only partially apt: Property is not built up use by use, stick by stick.³³ Building up packages of rights use by use would be a choice of the governance regime for all possible use conflicts without any reference to things and rights to exclude from them. Instead property involves a first cut or shorthand such that many use conflicts can be decided based on who invaded whose rights, in accord with the traditional lay view. As a matter of delineation and information costs, some reliance on this approach is almost inevitable.

In a semicommons, those with access for the commons use cannot easily be excluded from the privately owned attributes. Otherwise we could parcelize the asset into a purely privately owned asset and a commons. Where this is not possible, a semicommons is only worthwhile if the benefits of the multiple use are worth incurring the costs of abating strategic behavior (including the residuum of strategic behavior that is not cost-effectively abatable). In the open fields this was accomplished in part through scattering the strips so that strategic picking and choosing is made more difficult. In a joint venture, rules for what one can do with assets might ameliorate the problem.

As in a commons, the more homogeneous those in a semicommons are in terms of their interests the easier it will be to devise governance rules to abate strategic behavior. That homogeneity of the appropriators lowers transaction costs is true of governance rules to govern commons and semicommons,³⁴ and of contracting and organizational forms more generally.³⁵ Where parties are homogeneous in their endowments and abilities to appropriate, the same rule can be applied to all and each has the same incentive to reach an agreement. Where interests are heterogeneous we should expect a commons or semicommons to be more liable to tragedy.

³³ Much of law and economics from Coase onward has assumed an extreme version of the bundle-of-sticks view. See In Thomas W. Merrill & Henry E. Smith, What Happened to Property in Law and Economics?, 101 Yale L.J. 357 (2001).

³⁴ See, e.g., Gary D. Libecap, Contracting for Property Rights 22-23 (1989).

³⁵ See, e.g., Henry Hansmann, The Ownership of Enterprise 136-40 (1996) (scarcity of marketing cooperatives that handle more than one commodity can be explained by importance of homogeneity of interests); Christian Bessy & Eric Brousseau, Technology Licensing Contracts: Features and Diversity, 18 Int'l Rev. L. & Econ. 451, 477 (1998) ("Because most industry members are both licensors and licensees, they have a common interest in building [efficient supervision systems]").

The unbundling and sharing regime of the Telecommunications Act sets up a semicommons of the heterogeneous sort. The local networks are under the basic ownership of the ILECs. But CLECs have a right to demand access to some or all of the network elements at what are in effect officially determined prices, under the TELRIC regime. As to the shared elements, the entitlement is in effect split between the ILEC and the CLEC. In such a situation we have at least three classes of problems.

First, and most obviously, there is the common-like aspect. Governance rules will be needed. Rules of the terms under which interconnection and sharing of the network elements happen are governance rules. Governmentally mandated governance rules are often paired with official prices; where individual uses are being regulated, officials may try to harness private information by “pricing” the use through damages from marginal external harm. Official prices are rules designed to induce proper use. As usual, if these prices are undercompensatory, overuse of the resource will be likely. This is no different from a commons or any other resource conflict in which some portion of the cost of use is externalized.

Second, as in the scenarios outlined (iii) outlined above, the commons user can use the commons in such a way that it imposes costs on the privately owned attributes. Thus, in the context of telecommunications, a CLEC could impose costs on its (now) rival ILEC by making the request to use the network as onerous as possible; at the least there is no incentive to reduce the impact of such requests on the part of the network that is not being leased under the sharing regime. Regulators have to be on guard against this type of behavior because of the incentives in a semicommons, where the commons-user is not excluded from the privately owned attributes in the sense that it has the opportunity to impose costs on them if that results in even a small benefit to the commons user.

Third, the private user has an incentive to dump costs on and withhold benefits from the commons. Here any investment in or activities with respect to the privately owned attributes that improve the commonly owned attributes are externalized to the extent that they do not result in higher revenue through the officially determined prices. Neither an ILEC nor a CLEC has an incentive to improve or build facilities that will take pressure off elements that bear the sharing under the current regime.

III. LIABILITY RULES AND THE TELRIC SEMICOMMONS

Mandatory sharing of assets usually involves not only governance rules but like many mandatory governance regimes protects entitlements through officially determined prices or “liability rules” in Guido Calabresi and A. Douglas Melamed’s famous framework.³⁶ According to Calabresi and Melamed, an entitlement is protected by a property rule if the remedy for its violation forces a would-be taker to bargain for a voluntary transfer. Under a liability rule, the potential taker can take the entitlement as long as he pays officially determined damages. The scheme of TELRIC pricing under the regulations pursuant to the Telecommunications Act are a form of liability rule. A CLEC that wants to use elements of an ILEC’s network does not face a veto by the ILEC as entitlement holder. Rather, the CLEC is entitled to access at a nonmarket price.

Governance schemes often require liability rules but liability rules are not as common as recent commentary suggests they should be. The basic (second-order) delegation to owners of first-order choices among – and investments in – uses of assets that an exclusion regime makes possible is usually paired with property rules.³⁷ An exclusion regime relies on on/off signals like the crossing of the boundary around a parcel of land or the almost equally bright-line signal of any use of personal property. The regime is not designed to put actors in equipoise: the message is to keep off. Liability rules tend to weaken this scheme of delegation-through-exclusion and to forego the widespread information-cost advantages of property and property rules.

By contrast, much of recent law and economics finds liability rules to be the preferred approach.³⁸ As I argue elsewhere, this is because a great deal of economics

³⁶ Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 Harv. L. Rev. 1089 (1972).

³⁷ Henry E. Smith, *Property and Property Rules*, ___ N.Y.U. L. Rev. (forthcoming 2004).

³⁸ See, e.g., Ian Ayres & Eric Talley, *Solomonic Bargaining: Dividing a Legal Entitlement to Facilitate Coasean Trade*, 104 Yale L.J. 1027 (1995) (arguing that liability rules facilitate bargaining); Louis Kaplow & Steven Shavell, *Property Rules Versus Liability Rules: An Economic Analysis*, 109 Harv. L. Rev. 713 (1996); see also A. Mitchel Polinsky, *Controlling Externalities and Protecting Entitlements: Property Right, Liability Rule, and Tax-Subsidy Approaches*, 8 J. Legal Stud. 1 (1979). The literature advocating a

rests on the assumption that uncertainty can be assimilated to risk.³⁹ Frank Knight noted that some but not all variability in outcomes can be captured by a probability distribution, which is familiar risk. But he distinguished from risk other variability in outcomes that cannot be quantified in this way, and termed this uncertainty.⁴⁰ As an example of risk, consider an asset that might be worth \$100 in situation type 1 but only \$40 in situation type 2 and if situation type 1 will occur with 75% probability and situation type 2 with 25%; the asset's expected value is the sum of the values discounted by their probabilities, i.e. $85 = (.75 \times \$100) + (.25 \times \$40)$. There is risk but no uncertainty: there is knowledge of all the possible states, their probabilities, and their pay-off values. If the value of the asset were uncertain, some or all of this knowledge would be lacking. Knight argues that it is uncertainty that gives rise to the role of the entrepreneur.⁴¹ The entrepreneur has some advantage in dealing with uncertainty.

Much of economics assumes that assets and activities, including harm-producing activities can be grouped into sensible actuarial classes.⁴² If so, then liability rules are attractive because the correct ex ante incentives can be supplied without great deal of information.⁴³ As long as the liability level is not systematically biased and the actor on

liability rules solution in particular contexts includes a wide range of situations in which holding out and other strategic behaviour are thought to be severe. See James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. Rev. 440, 452 & n.44 (1995) (describing survey of legal literature from 1975 to 1986 in which some dozen proposals for liability rules in high transaction costs settings were proposed, and giving examples).

³⁹ See Smith, *supra* note 37.

⁴⁰ Frank H. Knight, *Risk, Uncertainty and Profit* 19-21, 197-232 (1921).

⁴¹ *Id.* at 264-90; see also, e.g., Israel M. Kirzner, *Discovery and the Capitalist Process* (1985).

⁴² See, e.g., Louis Kaplow, *The Value of Accuracy in Adjudication: An Economic Analysis*, 23 J. Legal Stud. 307, 312-13 (1994). As Dan Ortiz points out in his response to Kaplow's article this kind of actuarial information is not easy to come by and, as in insurance problems, leaves room for moral hazard and adverse selection. Daniel R. Ortiz, *Ne actuarialism: Comment on Kaplow* (1), 23 J. Legal Stud. 403, 403-06 (1994).

⁴³ Kaplow & Shavell, *supra* note 38, at 719 (arguing that liability rules are superior to property rules in a wide range of situations as long as liability is set at "the average harm for cases characterized by the facts the court observes."); see also Ian Ayres & Paul M. Goldbart, *Correlated Values in the Theory of Property and Liability Rules*, 32 J. Legal Stud. 121, 135-36 (2003) (fixed point result).

whom the liability falls is risk-neutral (which will often be true in a commercial context), then inaccuracy in actual liability is fine as long as the expected liability and the expected harm to be internalized are equal.

This neat picture breaks down in the face of uncertainty and property and property rules can be seen as a response to uncertainty.⁴⁴ First, the benefits of delegation of first-order use choice to owners allows judges and other officials to be ignorant of the value or even the identity of the uses, much less the highest uses of assets. Thus officials can lack the kind of knowledge that would turn uncertainty into risk as long as exclusion and property rules play a large role in defining and protecting entitlements. Exclusion and property rules solve the basic uncertainty problem.

In the face of uncertainty we also have to worry about the incentives of actors, potential takers and owners, to exploit judicial uncertainty. If takers can anticipate the level of liability that will be associated with taking various assets they can cherrypick assets that are undervalued by the liability rule.⁴⁵ This goes beyond the problem of multiple takings emphasized by Louis Kaplow and Steven Shavell: It will cause takers to invest in takings and courts to have to incur administrative costs to avoid this problem of opportunism. If the opportunism is not sufficiently curbed, the prospect of it can cause original owners not to invest in the first place.

Likewise, liability rules can lead to incentives for owner self-help that are unnecessary.⁴⁶ Owners with valuable assets may find it cheaper to opt out of the system by defending their assets through secrecy and other measures that make access by potential takers difficult.

⁴⁴ For a more detailed version of these arguments for property rules, see Smith, *supra* note 37.

⁴⁵ I am extending the analysis of cherrypicking in the literature. David D. Haddock & Fred S. McChesney, *Do Liability Rules Deter Takings?*, in *The Economic Consequences of Liability Rules: In Defense of Common Law Liability* 29-30, 33-36, 38-39 (Roger E. Meiners & Bruce Yandle, eds. 1991) (market damages leave exchange value unprotected); see also Kaplow & Shavell, *supra* note 38, at 757-73 (unbiased damages can lead to multiple takings in the case of tangible things).

⁴⁶ Self-help has figured in the literature on liability rules. See, e.g., Haddock & McChesney, *supra* note 45, at 38-39; Kaplow & Shavell, *supra* note 38, at 769 (problem of takings in the absence of liability and under liability rules is a matter of degree).

In the context of telecommunications all these problems with liability rules are potentially troublesome. In a regime of forced sharing it is less likely that either party, the CLEC or the ILEC, will have the type of residual claim protected by a property rules that would lead it to invest in developing uses in a way that is difficult to justify to third parties ex ante. Further, there is a concern that TELRIC prices if predictable by CLECs can lead to cherrypicking of network elements.⁴⁷ And in response, ILECs could be expected to drag their feet and not to make access easy as they would in a normal market.

Sometimes liability rules and governance are unavoidable as tools to soften the impact of exclusion. In telecommunications the major problem with an unmodified exclusion regime is that a unitary owner of facilities that are thought to have natural monopoly elements is in a position to exercise market power and forestall competition.⁴⁸ All responses to this problem ranging from traditional regulated industries law to the modern regime of forced sharing and sharing-based competition involve heavy reliance on rules of proper behavior by the incumbent and are often implemented through liability rules. According to the conventional law-and-economics view, this should not be so troubling because liability rules are seen as beneficial and the costs of governance are systematically overlooked.⁴⁹ In the (post)realist world of the bundle-of-sticks approach to property and heavy reliance on liability rules, this scheme of mandatory sharing would seem to be the norm. But if information costs are taken seriously, the foregone benefits of exclusion have to be taken into account.

The information cost theory highlights two problems. One is when to shift from exclusion to governance. Elsewhere I have argued that not only commentary but even

⁴⁷ Huber, Kellogg, & Thorne, *supra* note 13, at § 5.5.3.3.

⁴⁸ Whether antitrust law is directly applicable to this question is debatable, but traditional concerns about essential facilities animating antitrust and regulated industries law lie behind the regime set up by the Act. See, e.g., James B. Speta, *Antitrust and Local Competition under the Telecommunications Act*, 71 *Antitrust L.J.* 99 (2003).

⁴⁹ See, e.g., Richard A. Epstein, *A Clear View of The Cathedral: The Dominance of Property Rules*, 106 *Yale L.J.* 2091 (1997); Carol M. Rose, *The Shadow of The Cathedral*, 106 *Yale L.J.* 2175; Smith, *supra* note 37.

recent tort law has been too hasty in their willingness to make (or advocate) this shift.⁵⁰ Further, when the shift to governance is made, it is important to hem it about with institutional safeguards such as hearings in which the would-be taker must justify its project as being in the public interest and potential takees have a chance to object and propose alternatives.⁵¹ The other problems how to avoid making governance regimes inflexible and static, to which I now turn.

IV. THE DYNAMICS OF THE SEMICOMMONS

One of the central problems in the law and economics of property rights is when to expect “more” property and what more property is. In his landmark article Harold Demsetz argued that property rights would emerge in response to changed conditions such as rising resource values and certain types of technological change.⁵² Without specifying the mechanisms, Demsetz predicted that an increase in a resource conflict would lead to the emergence of property rights.⁵³ Because he assumed that transaction costs among those with access to a common resource would always be higher than the costs of exclusion, Demsetz therefore concluded that rising resource value would lead to more exclusive rights. He used the example of beaver hunting territories emerging among the Native Americans of the Labrador Peninsula in response to the rise of the fur

⁵⁰ See Smith *supra* note 30; Smith & Merrill, *supra* note 33. For an example of judicial adoption of the stick-by-stick approach, see *Prah v. Maretti*, 321 N.W.2d 182 (Wis. 1982) (holding that nuisance law applies to access to sunlight for solar collectors and disavowing traditional policies of property law).

⁵¹ Richard Epstein has argued that liability rules are generally paired with institutional brakes, even in the Mill Act, which the liability rule literature treats as a take-and-pay scheme. Compare Epstein, *supra* note 49, at 2111-20 with Ian Ayres & J.M. Balkin, *Legal Entitlements as Auctions: Property Rules, Liability Rules, and Beyond*, 106 *Yale L.J.* 703, 742 (1996). See also Smith, *supra* note 37. At the least, due process requirements can act as a “tax” on expropriation. See Thomas W. Merrill, *The Economics of Public Use*, 72 *Cornell L. Rev.* 61 (1986).

⁵² Harold Demsetz, *Toward a Theory of Property Rights*, 57 *Am. Econ. Rev.* 347 (1967) (Papers & Proc.).

⁵³ *Id.* at 350; see Eggertsson, *supra* note 17, at 249-62; Symposium: *The Evolution of Property Rights*, 31 *J. Legal Stud.* S331 (2002).

trade as an example of this process.⁵⁴ What Demsetz did not emphasize is that decreasing resource values should lead to a weakening of property rights, at least to the extent that ongoing costs and new investments in property rights can be saved.⁵⁵ And examples are forthcoming of drops in resource values leading to weakening of property rights. For example, drops in the value of cattle or horses led to less property rights activity or abandonment in the nineteenth-century west.⁵⁶

I have argued elsewhere that a rise in resource values can lead to an increase in governance rules.⁵⁷ For example, a group of grazers can institute or strengthen stints or a residential community can start adopting more elaborate covenants as resource values and attendant conflicts increase. Adding to the precision and enforcement of governance rules is one way for the Demsetzian emergence of more property to take place.⁵⁸

Of particular interest in this framework are cases are the apparent counterexamples to the Demsetzian framework, in which increasing resource values seem to lead to less property, or at least less exclusion. Theoretically this could happen if the rise in the value of the resource increase exclusion costs faster than it increased the benefits of exclusion. Elsewhere I have argued that these conditions for this to happen are quite restrictive.

⁵⁴ Demsetz, *supra* note 52, at 351. The beaver hunting territories are actually a semicommons because nonowners would have a right to kill and consume beavers for own-consumption. See Smith, *supra* note 5, at 143 (analyzing rights in beaver hunting territories as a semicommons); see also John C. McManus, *An Economic Analysis of Indian Behavior in the North American Fur Trade*, 32 *J. Econ. Hist.* 36, 38-39, 46, 51 (1972) (documenting complex of property rights in beaver hunting territories and noting evidence of strategic behavior).

⁵⁵ On the capital costs of setting up rights and marginal costs of holding them in further periods, see David D. Haddock & L. Lynne Kiesling, *The Black Death and Property Rights*, 31 *J. Legal Stud.* S545 (2002).

⁵⁶ Terry L. Anderson & P.J. Hill, *The Evolution of Property Rights: A Study of the American West*, 18 *J.L. & Econ.* 163, 170-71, 172-76 (1975).

⁵⁷ Smith, *supra* note 8.

⁵⁸ See *id.*; see also Cheung, *supra* note 4, at 64; Carol M. Rose, *Rethinking Environmental Controls: Management Strategies for Common Resources*, 1991 *Duke L.J.* 1, 9-36.

Economic change can lead to more property rights – delineated using exclusion or governance or something in between – but it can also affect the relative reliance on these strategies. One of the chief advantages of exclusion is that it allows officials and other third parties to avoid having to know about uses (or even their identity). If uses of information become more multiplex and more uncertain, the advantages of delegating the choice of which uses to develop – as through further research and development and commercialization in particular, also increase.⁵⁹ If so, then technology also pushes in the direction of more exclusive property rights. Just as Ronald Coase pointed out long ago that the advent of the telephone would increase or decrease the size of the firms depending on whether it lowered the costs of communication within a firm by more or by less than it lowered the costs of communication in the market,⁶⁰ so too technological change can lead to less or more exclusion (and governance) depending on whether it raises the benefits of multiple use faster or slower than the costs of officials’ delineating governance rules.

Thus, rising benefits of multiple uses do not inexorably point to a semicommons, much less a governmentally mandated semicommons, or even towards more reliance on the governance strategy. In the context of telecommunications, governance aims at benefits flowing from multiple use if network elements but this strategy also entails higher costs of overuse, strategic behavior, and efforts at controlling such activity.

⁵⁹ Recently, it has become conventional that in intellectual property, an increase in the value of the resource should lead to less exclusion. See, e.g., Lawrence Lessig, *The Future of Ideas: The Fate of the Commons in a Connected World* 161 (2001) (contending that enclosure propertizing information by media and software companies is stifling innovation in the New Economy); Siva Vaidhyanathan, *Copyrights and Copywrongs: The Rise of Intellectual Property and How It Threatens Creativity* (2001); James Boyle, *The Second Enclosure Movement and the Construction of the Public Domain*, 66 *Law & Contemp. Probs.* 33 (2003) (arguing against increased propertization of intellectual property law at the expense of the public domain. Information in particular is nonrival and may often have network effects such that new technologies are making exclusive rights less sensible, and many scholars call for tightening limits on intellectual property rights in contrast to the propertization trend they see in the law. This may be true on the benefit side, but exclusion also has advantages on the cost side. See Smith, *supra* 6.

⁶⁰ Ronald H. Coase, *The Nature of the Firm*, 4 *Economica* (N.S.) 386 (1937).

Which effects – on the benefit or the cost side – dominate is an empirical question. Growing evidence does suggest that the costs of governing the tele-semicommons are substantial.⁶¹

Governance is also costly in that it is difficult to change. In systems of governance, changing the governance rules or abolishing them altogether can require the consent of too many parties. This is reminiscent of traditional holdout problems and leads to anticommons-style problems in the domain of transfer.⁶² In particular, the problem may not be underuse; many people may have the right to use. But changing the pattern of use requires the assembly of the consent of many parties. The problem is magnified when those whose consent is required have heterogeneous interests.⁶³ This is familiar problem in political and economic organizations and in a property sense comes through especially clearly in common interest communities. In a condominium complex, developers will “build in” amenities either physically (by building the swimming pool) or in the original charter and will leave for voting later only issues that either require flexibility or do not involve heterogeneous interests and the potential for oppression of one group by another.⁶⁴

When a governance regime has outlived its usefulness we need flexibility but this is difficult to achieve if the participants are many and especially if they have divergent interests. In the case of the open fields, when economic conditions favored enclosure, it was not easy to move from one regime to another. The enclosure process was slow and costly and in many cases involved simply not respecting older rights of use.

The ability to change from one regime to another is easiest when a unitary owner has the right to change uses and to contract for new rules or transfer the resource. When

⁶¹ See, e.g., Robert W. Crandall, Allan T. Ingraham, & Hal J. Singer, Do Unbundling Policies Discourage CLEC Facilities-Based Investment?, *Berkeley Elec. J. Econ. Anal. & Pol’y* (forthcoming 2004); Robert S. Pindyck, Mandatory Unbundling and Irreversible Investment in Telecom Networks (December 2003)

⁶² See, e.g., Michael A. Heller, The Tragedy of the Anticommons: Property in the Transition from Marx to Markets, 111 *Harv. L. Rev.* 621 (1998); Holderness, *supra* note 65.

⁶³ See *supra* notes 34-35 and accompanying text.

⁶⁴ Yoram Barzel & Tim R. Sass, The Allocation of Resources by Voting, 105 *Q. J. Econ.* 745 (1990).

multiple parties are involved because of parcelization (smaller chunks of the resource protected by exclusion) or governance (a commons or semicommons in which many have access with use rules in a governance regime), changing rules or regimes can be costly.⁶⁵ One reason that changing from a governance regime to something else is particularly costly is that the rights of use are likely to be hard to value.⁶⁶ In the familiar situation where a project requires the assembly of multiple parcels, there may have already been markets in individual parcels to which reference can be made. This is the usual source of evidence in the award of just compensation in a condemnation. Where there are a lot of governance rules, use rights have to be valued in a context where there may not be an active market for the use rights themselves. One reason rights fragmented on the basis of use are difficult to value is that markets in use rights are difficult to establish: so much depends on the identity of the use that valuation becomes costly. Indeed one reason for a judicial regime of governance in particular, say riparian rights, is that private transacting is not likely to occur.⁶⁷ Thus changes that involve closing out use rights under a governance regime are particularly costly. Dividing condemnation awards becomes more difficult as we move from single parcels to the question of condemning easements and covenants, or splitting condemnation awards between landlord and tenant, or more difficult, between present possessory interest holder and holders of future interests.⁶⁸ The lack of much of a market in future interests, particularly in the charitable public goods context.⁶⁹ In the semicommons, a change in which use rights are bought out is likely to be difficult. In enclosure, rights of use not appurtenant to land were difficult to value and

⁶⁵ See, e.g., Heller, *supra* note 62 (fragmentation); Clifford G. Holderness, Joint Ownership and Alienability, 23 *Int'l Rev. L. & Econ.* 75 (2003) (assembling consents).

⁶⁶ Barzel & Sass, *supra* note 64, at 752 (pointing out that “harmony” in voters’ interests “is relatively easy to achieve in projects that provide only pecuniary benefits, but harder to achieve when projects also provide their owners direct consumption”).

⁶⁷ Cf. Rose, *supra* note 32, at 285 (arguing that as in Merrill’s account of nuisance, judgmental as opposed to bright-line rules will be used where transaction costs are high); Merrill, *supra* note 31.

⁶⁸ See, e.g., Victor P. Goldberg, Thomas W. Merrill, & Daniel Unumb, Bargaining in the Shadow Eminent Domain: Valuing and Apportioning Condemnation Awards Between Landlord and Tenant, 34 *UCLA L. Rev.* 1083 (1987).

⁶⁹ See, e.g., *Ink v. City of Canton*, 212 N.E.2d 574 (Ohio 1965).

were the ones least likely to be respected, creating great hardship to those depending on them.

In the case of mandatory sharing in telecommunications, the 1996 Act and the FCC envision eventual facilities-based competition.⁷⁰ From a CLEC's point of view, building an alternative facility will only make sense when this is more attractive than the sharing regime. As many have pointed out, this will not happen under mandatory sharing if the sharing regime is underpriced.⁷¹ Alternatively, the semicommons here being a creature of the Act and regulation could be changed in the legislative or administrative arena. But this will be difficult and costly because of the heterogeneous interest at stake and the difficult information problems (especially valuation) that use rights under the present system present. Any agreement to "buy out" use rights in these arenas would have to deal with the problem of valuation. Indeed just these problems have arisen in copyright, another compulsory licensing regime in an area with network benefits. Copyright law has a number of statutory compulsory licenses, and however much sense these might make in a static sense, they are very difficult to change once they are in place.⁷² A statutory compulsory license involves heterogeneous interests and uses that are thought to be associated with high transaction costs in markets; at least that is their justification in the first place. These very factors make compulsory license regime difficult to change over time in response to changed conditions.

One solution to the rigidity of governance regimes is to build a sunset provision into them or to phase them out. Private governance regimes do seem to be sensitive to this concern: under conditions of voluntary entry and good information, people tend to opt for governance over exclusion of a given resource when the need for flexibility is low

⁷⁰ See, e.g., Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, 16 FCC Rcd. 22781, 22786 ¶ 9 (Dec. 20, 2001) ("[T]he Commission emphasized that 'unbundling rules that are based on a preference for development of facilities-based competition in the long run will provide incentives for both incumbents and competitors to invest and innovate, and should allow the Commission to reduce regulation once true facilities-based competition develops'").

⁷¹ See, e.g., Crandall, Ingraham, & Singer, *supra* note 61; Sidak & Spulber, *supra* note 13, at 460.

⁷² See Robert P. Merges, Contracting into Liability Rules: Intellectual Property Rights and Collective Rights Organizations, 84 Cal. L. Rev. 1293 (1996).

(change in use is unlikely) or the regime comes to an easy or automatic end.⁷³ If one doubts that conditions will remain stable or the benefit of long term reliance on the particular governance regime is not too great, a sunset provision or other phase out can ameliorate the rigidity. For example, in the area of real covenants, developers sometimes specify that certain provisions will last for only a certain length of time, or require a renewal by majority vote at some time in the future.⁷⁴ Sometimes statutes prescribe these devices off the rack, although it is less than clear why these provisions need to be mandatory.

In the case of the sharing regime in telecommunications, the system is mandatory because of fears of market power, but here too one could avoid the rigidity of governance by adopting some form of sunset or phase out over time.⁷⁵ The most effective but most difficult way to accomplish this would be to amend the statute. Alternatively, the implementation of the “necessary” and “impairment” standard could incorporate a strong enough view about the possibilities of alternative facilities (built by CLECs or supplied by alternative means such as cable) that the semicommons would not be a quasi-permanent regime. Or mandatory sharing could have to be periodically justified under an increasingly higher standard over time. If a CLEC and an ILEC knew that this was in the offing, investments that would be unattractive in light of the semicommons might be forthcoming in view of the possible change of regime. The telecommunications area is changing quickly technologically, so that a stable but rigid semicommons is probably not called for. Instead some responsiveness to new conditions is likely to be particularly valuable.

⁷³ In some cases, parties or the law will furnish exit options from semicommons and other governance regimes. For example, co-ownership can be wound up unilaterally if either party seeks partition. 4A Richard R. Powell, *Powell on Real Property* ¶¶ 607, 618(2) at 50-43 to 50-61, 51- 20 to 51-21 (1995); cf. Hanoch Dagan & Michael A. Heller, *The Liberal Commons*, 110 *Yale L.J.* 549 (2001) (arguing that costs of governance in co-ownership need not be great but also arguing for important role for exit).

⁷⁴ See *supra* note 18 and accompanying text.

⁷⁵ The FCC concluded that a sunset provision after five years of mandatory cellular resale would promote building of networks. See *Petitions for Rule Making Concerning Proposed Changes to the Commission’s Cellular Resale Policies*, 7 *FCC Rcd.* 4006, 4010 (1992).

V. CONCLUSION

The Telecommunications Act of 1996 creates a semicommons, which requires costly governance. By combining elements of private and common property, a semicommons can potentially capture the benefits of use by multiple parties, in telecommunications in the form of limited forms of competition, but a semicommons usually requires all parties to have access to more features of a resource than they own. In particular, users in their capacity as commoners will be able to engage both in familiar overuse of the commons and in strategic appropriation of benefits and dumping of costs based on who own what in the private regime. Nor will users in their private capacity be inclined to maximize the value of the commons or of others' private property. In its interconnection, resale, and especially sharing mandates, the Act subjects UNEs to a semicommons regime that requires detailed regulations of use, including officially determined prices. Concerns about lack of investment in facilities and cherrypicking are characteristic of a semicommons. Also endemic to semicommons is their rigidity over time. This inflexibility is particularly costly in an area like telecommunications that is subject to rapid technological change. One solution to this inflexibility is to build into the statute or regulations a sunset date or other phase out device in order to move toward facilities-based competition. Over time the regime would place greater reliance on lower-cost exclusionary strategies for delineating property rights and less on governing a semicommons.