Governing the Tele-Semicommons

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The Telecommunications Act of 1996 divides entitlements to network elements between incumbents and recent entrants. This Article analyzes this mandatory sharing regime as a semicommons, a property regime which combines interacting elements of private and common property. The telesemicommons exhibits problems of strategic behavior and requires complex governance rules to abate them. These problems are particularly acute when they impede needed change in the governance regime. The Article therefore suggests a greater role for sunset provisions in the mandatory sharing regime.

Introduction

That the Telecommunications Act of 1996 was a revolution has achieved the status of conventional wisdom. Most obviously, the Act 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)

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can normally demand that any incumbent local exchange carrier (ILEC) lease some or all of its network elements on an unbundled basis. If, as is also normally the case, the CLEC and the ILEC cannot agree, then mandatory arbitration will set the rates. As for how to set these mandatory rates, thus far the FCC has been wed to the total element long-run incremental cost (TELRIC) approach.

At first blush, there is a potentially tragic commons in aspects of the network, at least to the extent that the TELRIC prices are undercompensatory. If so, then CLECs can be expected to overuse the unbundled network elements (UNEs) just as those with unrestrained access will overfish a pond or overgraze a field. I will argue, however, that many of the difficulties with the Telecommunications Act system stem from the fact that it sets up a semicommons, a property regime which combines elements of private and common property such that the two parts of the hybrid potentially interact with each other. Like farmers in the medieval open fields who owned strips of land privately for grain-growing but in common for grazing, members of a semicommons, from joint venturers to ILECs and CLECs, have incentives to maximize the value of their private property, externalizing costs to the commons and others’ private property. Because each has access to the entire resource through the commons, high-cost and potentially inflexible governance regimes are required to prevent strategic behavior.

Part I of this Article introduces the notion of a semicommons. I show that a semicommons is useful when it allows multiple use, 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 rely on costly governance strategies, which are elaborate systems of use rules. I then show that the system of forced sharing of UNEs and TELRIC pricing constitutes a semicommons, one that involves extreme problems of governance and little place for inexpensive exclusionary rules. Part II explains why governance of the type involved in mandatory unbundling often leads to reliance on liability rules

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2 Id. §§ 251-252, 110 Stat. at 61-70.
3 Id. § 252(a)(2), 110 Stat. at 66.
4 See Verizon Communications Inc. v. FCC, 535 U.S. 467 (2002) (upholding the FCC’s authority to adopt the TELRIC approach).
rather than property rules. All the problems with forgoing exclusion and property rules potentially plague the TELRIC pricing regime. In Part III I turn to the dynamic costs of semicommons governance. I suggest that viewing mandatory unbundling and TELRIC pricing as a semicommons suggests the need for some kind of sunset or phase-out provisions to achieve the benefits of facilities-based competition. If semicommons governance is flexible, over time a cheaper regime of exclusion can emerge, based on competition between holders of private property.

I. Delineating Shared Use

The Telecommunications Act of 1996 sets up a semicommons in network elements. The Act aims to encourage competition in the provision of local telephone services. To generate competition, the Act establishes a semicommons, allowing multiple use of existing network elements. But a semicommons also has 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 necessary to curb it. As a result, a semicommons presents problems beyond even that of the familiar tragedy of the commons.

A. Semicommons Property

A semicommons exists when a given resource is governed as 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. In a semicommons, different sets of attributes can be subject to different property regimes, private or 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 have characteristic costs. It sometimes makes sense to incur these costs, because 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. Thus, if land can be used for growing trees and for limited hunting, the scale for an orchard might be much smaller than the tract needed to hunt a wide-ranging species. Often the multiple use requires access by both users. Bird watchers and loggers might need access to the same forest.

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The "open field" system prevalent in medieval and early modern England (and northern Europe more generally) is the classic example of a semicommons. In the open fields, farmers had private property in strips of land for purposes of growing grain 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 during fallow seasons. The open fields thus combined elements of private and common property. The common property was, like purer forms of grazing commons in medieval and early modern England, limited rather than open access; the right of common access belonged only to some subset of the members of the community.8

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.9 Because information is difficult to subject to exclusive rights and because multiple use of a nonrivalrous resource is desirable, semicommons are almost inevitable in areas like copyright. In 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 affect each other. Thus, if a patent or piece of equipment is used in a joint venture, the venturers 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. For example, if one joint venturer retains a given patent, that actor will favor research and development that adds to the value of that patent (and might oppose, at the margin, research and development that would benefit the patents owned by other joint venturers). To foreshadow, this type of joint venture is a voluntary version of the mandatory sharing scheme imposed on the ILECs by the Telecommunications Act. 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 to avoid taking on the risk of making timely investments in new facilities. The ILEC has no incentive to make the network attractive to the CLEC and will be expected to underinvest in current and improved facilities.

One condition for a semicommons is that the two elements of private and common property interact. The problem in a semicommons is that someone

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engaged in using the commons may strategically alter his behavior in order to distribute benefits to "his" part of the commons (the private part of the system) and steer bads to others' parts. In the open fields these goods and bads were manure and trampling, respectively. The commons users may then agree 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 similar.

Many of the problems surrounding mandated cooperation under the Telecommunications Act can be characterized as flowing from a semicommons. Most clearly, forced sharing decreases the incentives of both ILECs and CLECs to invest in new and better equipment and in new technologies. This problem flows from the fact that the infrastructure is no longer a purely private asset.

For the ILEC, the basic question is, as usual, the rate of return that gives the right incentive for investment in view of the possibilities that returns will be low (CLECs will not lease the element) or that returns will be high (when CLECs will likely use the TELRIC arbitration process). For the CLECs, it is advantageous to wait and see which type of potential innovations pay off and to avoid giving up any second-mover advantage. Resting on the free options provided by TELRIC is an effort to maximize the value of their existing bundles of rights and to externalize the costs of generating valuable options to bundles associated with the ILECs' property. Empirical evidence suggests that the mandatory sharing regime has dampened investment by both CLECs and ILECs. When conflicts go beyond investment incentives, claims on both sides become more difficult to evaluate: the existing users have better information about efficient uses than outsiders. It goes beyond the scope of this paper to evaluate these problems directly, but it is worthwhile to point out that the claims ILECs and CLECs make of uncooperative behavior by the other side are consistent with the strategic behavior characteristics of a semicommons.

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10 Smith, supra note 6, at 134-38.
13 See Crandall et al., supra note 11 (presenting evidence of lessened investment by CLECs and ILECs); Ingraham & Sidak, supra note 11 (presenting evidence of diminished CLEC incentives for investment).
The problem of "line-splitting" illustrates the incentive of a CLEC, especially a large one like AT&T in some markets, to impose costs on the ILEC by requesting arrangements using the most costly parts of the line. On the one hand, the benefits of competition from CLEC access would be lost if ILECs can offer the CLECs only inferior services and facilities. On the other hand, CLECs can externalize costs if the governance structure allows them to demand unrealistically high levels of performance at no cost and with no commitment to use the facilities. More generally, unbundling through structural separation requires complex rules and conduct remedies because the ILEC still has an incentive to take actions that favor itself over the CLEC, and the CLEC has no reason to minimize the ILEC's costs (if the CLEC is large enough, the CLEC may have an incentive to impose unnecessary costs). On a more mundane level, mandated sharing often requires easements or licenses (as well as physical improvements and security) for hookup and physical access to switches. This all requires monitoring to make sure that damage to retained private property does not occur.

The solution to a semicommons is usually a governance regime rather than exclusion rules. Property rights can be delineated using various strategies, which can be ranged along what I have argued is a continuum from exclusion to governance. Each strategy has its 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 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 (with a signal fully correlated with a particular use, at the limit). In the context of land, governance regimes can come off the rack, as in a rule of proper use from nuisance law and zoning, or they can be custom-made and privately provided through covenants. In a semicommons, those with access to some of the resource have access to all of the resource, at least at certain times. This means that pure exclusion will not work to prevent unauthorized use. Before turning to a tangible example in the open fields, notice that for intangible property limited access is particularly difficult and often undesirable. Limited access requires expensive policing of particular kinds of uses. In copyright, the semicommons is governed by complex provisions and doctrines such as fair use, compulsory licenses, and the merger doctrine.
In the semicommons of the open fields, the system mixed exclusion and governance. Exclusion was used for the outer perimeter and for the grain-growing strips during the non-commons periods: non-commoners were excluded from the field as a whole, and an individual firmer could exclude everyone else from his own strips during the grain-growing 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. These were based on the amount of land the peasant owned, and preserved the system from overuse: Garrett Hardin's image of inexorable ruin —"tragedy"—did not obtain in his primary example, the village grazing commons, which was neither open-access nor tragic. During the centuries in which the open-field system (and other commons) prevailed in England, these stints and other rules seem to have become more or less stringent depending on the intensity of the problem. Other governance rules included limitations on times for grazing, provisions for a common herdsman, and many others. Governance rules such as these 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. Keeping an eye on the activities of a common herdsman or the trajectory of sheep is much more difficult than keeping them out altogether.

Because a semicommons involves mixing private and common elements, the users generally need access to the whole for their common use. This need for common use means that straightforward rules of exclusion are not likely to

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19 See, e.g., W.O. AULT, OPEN-FIELD FARMING IN MEDIEVAL ENGLAND: A STUDY OF VILLAGE BY-LAWS 123, 137, 141 (1972) (describing stinting of sheep); KERRIDGE, supra note 8, at 77. Depending on the nature of the animal and the size of the herd, animals could be identified using earmarking, brands, or natural markings. See, e.g., MICH. COMP. LAWS ANN. §§ 287.221-223 (West 1996) (1883 Act setting forth requirements for branding and disallowing methods such as earmarking).

20 Hardin, supra note 5, at 1244.


22 See, e.g., DOUGLASS C. NORTH & ROBERT PAUL THOMAS, THE RISE OF THE WESTERN WORLD: A NEW ECONOMIC HISTORY 19, 23-24 (1973) (noting that "manorial regulations grew more restrictive as land became scarce"); Thirsk, Common Fields, supra note 8, 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 8, at 26, which, in Ault's words, was "not a very severe restriction," AULT, supra note 19, at 47. Stints at that location were reduced to thirty per virgate in 1509 and to twenty in 1608. Id. at 26-27. For documentation of stints in other locations and times in England, see id. at 27.

23 See generally AULT, supra note 8. In related work, I have argued that the placement of boundaries served the function of denying access for those engaging in strategic behavior. Smith, supra note 6, at 144-54, 161-67.
be available to protect the private elements from misuses by the commons users, making governance a crucial aspect of a successful (or at least nontragic) semicommons. 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. But the open-field system was a rare case in which the configurations of boundaries made 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 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 (more consumptive and therefore more conflicting) the uses, the more difficult that will be.

As in a commons, the more semicommons users' interests are homogeneous, the easier it is to devise governance rules to stop strategic behavior. Homogeneity of the appropriators lowers transaction costs of governance rules for both commons and semicommons, and lowers the costs of contracting and organizational forms more generally. Where parties are similar in their endowments and abilities to appropriate, the same rule can be applied to all those with access, and each will have the same incentive to reach an agreement. Where interests are heterogeneous we should expect a commons or semicommons to be more liable to tragedy.

Heterogeneity of interests is also a well-known obstacle to achieving agreements to change a common property regime, and this holds especially for the semicommons. First, governance regimes are particularly costly to modify when conditions change. Agreement among many owners is more difficult to achieve than agreement among one or a few owners. The more rapidly the nature and identity of the uses change, the more quickly the governance regime, based as it is on rules tailored to given uses, will become obsolete. Second, in the semicommons, the ownership of some attributes in private will itself cause divergent interests among the semicommoners. Again this will make agreement on change difficult, as the long and fitful history of consensual enclosures illustrates.

24 Id. at 144-61.
26 See, e.g., HENRY HANSMANN, THE OWNERSHIP OF ENTERPRISE 136-40 (1996) (arguing that the scarcity of marketing cooperatives that handle more than one commodity can be explained by the 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].”).
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B. Commons and Semicommons

The problem of a semicommons can be usefully compared to the more familiar "tragedy" of the commons. In a situation of open access (or an unlimited-access commons), each potential user extracts 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, each actor bears only $1/n$ of the cost but all the benefit, leading the actor to push the activity beyond the optimal point. This can result in the dissipation of some, all, or more than all the rent from the resource. 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 outline four scenarios, assuming for the moment that the potential appropriators are homogeneous:

1) 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.

2) 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.

3) A private-attribute user imposes costs on private property, either (a) her own (internalized) or (b) someone else's (externalized).

4) 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, which are not mutually exclusive, are like those of the commons except that in (2) and (3) there is 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 being

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28 On the standard analysis of the commons problem, see the sources cited supra note 5.

29 See Terry L. Anderson & Peter J. Hill, Privatizing the Commons: An Improvement?, 50 S. ECON. J. 438, 441, 447 (1983); see also DENNIS C. MUELLER, PUBLIC CHOICE II 232 (1989) (arguing that in a rent-seeking model, when one relaxes any of the three assumptions of risk-neutrality, symmetric positions, or free entry, one can derive a total amount expended on rent-seeking that is either more or less than the total rent). "Rent" here refers to the stream of benefits that a natural resource provides without having to be created by humans. Efforts at capture reduce the net value of the resource.
borne by the actor. The additional problem of the semicommons comes from the chance for the user to influence these probabilities: to ensure that internalization of harms happens less than $1/n$ of the time by steering harms away from one’s own privately owned attributes, and to ensure that externalization happens more than $(1 - 1/n)$ of the time by steering harms 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 may be important enough to be worth the trouble. Often, the reason multiple access is desirable is that two uses have different optimal scales. In the open fields, for example, grain-growing is a small event and the benefits and costs can be internalized through relatively small plots, but grazing is thought to involve economies of scale requiring one large plot. 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 had rights to pick berries or hunt birds, and these activities did not interact much (or the interaction was easy to police).

Capturing the benefits of multiple use involves regulating 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. At one end is the exclusion strategy in which rough signals not directly tied to use are employed 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 in it, read in it, etc.), or can use it to grow plants, or to park cars, or whatever else. By having a right to exclude, all these use-privileges are protected without having to be separately delineated by—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 (for example, limiting 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


32 See Smith, supra note 14, at 1741-42.
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 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. 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 the 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, riparian rights to water, and parts of nuisance law are use rules that serve to
modify but not replace the basic exclusionary regime. As a result, the common
metaphor of property as a bundle of sticks is only partially apt: property is not
built up by use, stick by stick. Building up packages of rights use by use
is the election of an expensive governance regime for all use conflicts. Rather,
much property comes "pre-bundled" so that many use conflicts can be decided
based on who invaded whose rights, in accord with the traditional lay view—an
exclusion regime. As a matter of clear line-drawing and information costs,
some reliance on this approach is almost inevitable.

In a semicommons, those with access to the commons cannot easily be
excluded from its 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 takes place despite all cost-effective
policing). In the open fields this was accomplished in part through scattering
the strips so that strategic picking and choosing was made more difficult. In a
joint venture, rules for what one can do with assets might ameliorate the
problem.


C. The Tele-Semicommons

For regulating assets subject to very intense use and investment, the Telecommunications Act 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 move the regime closer to a semicommons. First, the act requires that ILECs 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. Second, the statute provides for resale by competitors who have a right to purchase from ILECs at wholesale. Third, and most controversially, the Act requires that most ILECs make available unbundled network elements (UNEs) to competitors. In the course of its decision on mandating unbundling, the FCC must consider whether a proprietary element is necessary to the potential CLEC and whether, in the case of other elements, the failure to gain access to them would impair the competitor in its ability to provide service. The various attempts the FCC has made to implement unbundling have all involved it heavily in evaluating the use that competitors might make of an element—requiring the FCC to create a wide-ranging governance regime. Accompanying detailed governance rules are the rates at

40 Id. § 251(c)(3).
41 Id. § 251(d)(2). For general discussion, see, for example, PETER W. HUBER ET AL., 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).
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which the mandatory access must be provided. The Act provides that the ILECs may charge a “just and reasonable rate” for the UNEs.\(^4\) If the CLEC and the ILEC cannot agree on such a price, then mandatory arbitration is provided for, and the FCC has opted for TELRIC prices. TELRIC prices are supposed to be based on the most efficient technology and the lowest-cost configuration currently available.\(^4\)

The benefit that the Act seeks to achieve is multiple use—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 by the CLECs impacting 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 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 to owners and need not address first-order use questions (for example, how to use the property, or how much to use it). 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.

As in tangible property, the need for dynamic change, especially where interests are heterogeneous, leads to additional cost in a semicommons. In telecommunications, this dynamic 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.\(^4\) An important challenge in telecommunications law is therefore 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.\(^4\)

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\(^4\) Triennial Review Order. This delegation of unbundling decisions to state utility commissions was struck down in *United States Telecommunications Ass’n v. FCC*, 359 F.3d 554 (D.C. Cir. 2004).


The unbundling and sharing regime of the Telecommunications Act mandates a semicommons of the heterogeneous sort. The ILECs have basic ownership of the local networks. 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. For the shared elements, the entitlement is 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 commons-like aspect. Governance rules are needed. Rules setting out the terms under which interconnection and sharing of the network elements occur are governance rules, because they regulate behavior in a partially shared resource. Government-mandated governance rules are often paired with official prices; where individual uses are being regulated, officials may try to harness private information (for example, about user valuation of the resource) by “pricing” the use through damages from marginal external harm. Official prices are rules designed to induce proper use. 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 in (2) 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 the Telecommunications Act, a CLEC could impose costs on its (now) rival ILEC by making requests to use the network as onerous as possible; certainly there is no incentive to reduce the impact of such requests on the part of the network not 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: she has the opportunity to impose costs on them (and would generally do so if it results in even a small private benefit).

Third, the private user has an incentive to dump costs on and withhold benefits from the commons. Any investment in or activities involving the privately owned attributes that improve the commonly owned attributes are externalized to the extent they are not impounded into the officially determined price. Neither an ILEC nor a CLEC has an incentive to improve or build facilities to take pressure off elements that bear the sharing under the current regime.47

II. Liability Rules and the TELRIC Semicommons

Mandatory sharing of assets usually involves not only governance rules but also protects entitlements through officially determined prices, or “liability

47 See supra notes 11-14 and accompanying text.
rules" in Guido Calabresi and A. Douglas Melamed's famous framework.  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 unilaterally take the entitlement as long as he pays officially determined damages. The scheme of TELRIC pricing under the regulations pursuant to the Telecommunications Act is 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 an 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. When an owner has property in an asset the law in effect delegates decisions over a wide range of uses to that owner; absent special intervention such as zoning or regulation, the law thus restricts itself to a basic second-order delegation to owners of first-order choices among—and investments in—uses of assets. This higher-order choice to delegate lower-level choices among uses, characteristic of an exclusion regime, is usually paired with property rules. 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 large information-cost advantages of exclusion and property rules.

By contrast, much of recent law and economics prefers liability rules. As I argue elsewhere, this is in part because a great deal of economics rests on the assumption that uncertainty can be assimilated to risk. Frank Knight noted that some but not all variability in outcomes can be captured by a probability distribution, which is the familiar notion of risk. But he distinguished from risk other variability in outcomes that cannot be quantified in this way, and termed this uncertainty. As an example of risk, consider an asset that is worth

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50 See Smith, supra note 33.

51 See supra note 49.

52 See Smith, supra note 14, at 1725-28, 1753-90.

53 FRANK H. KNIGHT, RISK, UNCERTAINTY AND PROFIT 19-21, 197-232 (1921).
$100 with 75% probability, and $40 with 25% probability. The asset’s expected value is the sum of the values discounted by their probabilities: (.75 \times $100) + (.25 \times $40) = $85. There is risk but no uncertainty because there is knowledge of all the possible states, their probabilities, and their pay-off values. If the value of the asset were uncertain in Knight’s terminology, some or all of this knowledge would be missing. Knight argues that it is uncertainty that gives rise to the role of the entrepreneur. 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, like the asset above. If so, then liability rules are attractive because the government price can be set on the basis of known probabilities and values of outcomes—using information known to or knowable by all. As long as the liability level is not systematically biased and the actor on whom the liability falls is risk-neutral (which is often thought to 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 rules can be seen as a response to uncertainty. First, delegation of first-order use choice to owners has the benefit of allowing judges and other officials to be ignorant of the value or even the identity of possible uses, much less the highest-value uses of assets. Officials therefore need not have 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, because prices can be set in a decentralized fashion by market participants.

In the face of uncertainty we also have to worry about the incentives of potential takers and owners to exploit judicial uncertainty. If takers can anticipate the level of liability that will be associated with taking various

54 Id. at 264-90; see also ISRAEL M. KIRZNER, DISCOVERY AND THE CAPITALIST PROCESS (1985) (arguing that entrepreneurs’ alertness in situations of uncertainty drives the competitive process).

55 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, Neoactuarialism: Comment on Kaplow (1), 23 J. LEGAL STUD. 403, 403-06 (1994).

56 Kaplow & Shavell, supra note 49, 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) (presenting “fixed point result” under which a liability rule is superior to property rules if damages under the liability rule are set at the mean expected victim value conditional on taker’s actual value at the point where this conditional mean equals taker’s actual value).


58 For a more detailed version of these arguments for property rules, see Smith, supra note 33.
assets, they can exploit mistakes in government pricing by cherrypicking assets that are undervalued by the liability rule. 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 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 inefficient incentives for owner self-help. Owners with valuable assets may find it cheaper to opt out of the system by defending their assets through secrecy and other measures to make access by potential takers difficult.

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 a residual claim protected by a property rule that would lead it to investment risks in developing uses—the investor would bear the risk of the investment, but the benefit could be partially appropriated by the taker. Further, there is a concern that TELRIC prices, if predictable by CLECs, can lead to cherrypicking of network elements underpriced by TELRIC. In response, ILECs could be expected to drag their feet and not to make access easy as they would in a (hypothetical) competitive market. The complexity of various layers of regulation, from interconnection agreements to Carrier to Carrier Guidelines and Performance Assurance Plans, reflects the many costly-to-police margins needed for a governance regime. In the case of Performance Assurance Plans, which are meant to ensure access even after the FCC has granted an ILEC permission to enter the long-distance market, self-executing penalties rely on proxies for inadequate service that are complex and still of questionable accuracy.


60 See Kaplow & Shavell, supra note 49.

61 Ideally one would want to build incentives to invest into the price implied by the liability rule, but this would require a great deal of information. Further, it would require that asset classes be quite small if investment levels differ from one asset in the original liability-rule class to another.

62 Self-help has figured in the literature on liability rules. See, e.g., Haddock & McChesney, supra note 59, at 38-39; Kaplow & Shavell, supra note 49, at 769 (asserting that the problem of takings in the absence of liability and under liability rules is a matter of degree).

63 HUBER ET AL., supra note 41, § 5.5.3.3.


65 See, e.g., Memorandum Opinion and Order, Application by Bell Atlantic New York for Authorization Under Section 271 of the Communications Act To Provide In-Region, InterLATA Service in the State of New York, 15 F.C.C.R. 3953, 3959, 4164-73 (1999), aff'd on other grounds,
example, Performance Assurance Plans rely on percentage cut-offs for instances of timely performance on service requests by CLECs, at which point sanctions kick in.  

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 thought to have natural monopoly characteristics is in a position to exercise market power and foreclose competition. This is the reason a regime of exclusion and property rules failed to create competition. 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. In the (post-)realist world of the bundle-of-sticks approach to property and heavy reliance on liability rules, the conventional wisdom approves of this scheme of mandatory sharing. 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 many commentators and even some recent tort cases have been too hasty in making (or advocating) this shift. Further, when the shift to governance is made, it is often important to hem it about with some 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. And the point of the institutional safeguards is to make it more

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67 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).


69 See Merrill & Smith, supra note 36; Smith, 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.

70 Richard Epstein has argued that liability rules are generally paired with institutional brakes, even in the Mill Acts, which the liability rule literature treats as a take-and-pay scheme. Compare Epstein, supra note 68, at 2111-20 (stressing procedural safeguards in Mill Acts), with Ian Ayres & J.M. Balkin, Legal Entitlements as Auctions: Property Rules, Liability Rules, and Beyond, 106
likely that such liability rules as are used are really necessary and are not undercompensatory. As the history of the multiple rounds of litigation over access demonstrate, it takes a lot of process to decide on the amount of access for CLECs to UNEs, and it would appear that TELRIC still undercompensates for incumbent risk-taking. Aside from these problems, there remain other issues of how to avoid making governance regimes inflexible and static, to which I now turn.

III. The Dynamics of the Semicommons

One of the central problems in the law and economics of property rights is when to expect "more" property, what more property is, and what additional property might emerge. Elsewhere I have argued that in some situations the "more property" that evolves and solves new externality problems can take the form of more or stricter governance rules rather than simply greater amounts of exclusion. Once created, however, governance rules are difficult to remove in favor of radically different regimes, like parcelization. The Telecommunications Act's semicommons, with its elaborate governance regime, threatens to be inflexible over time, suggesting some role for devices like sunset provisions.

A. The Evolution of Property Rights and the Problems of Governance

In a 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. Without specifying the mechanisms, Demsetz predicted that an increase in a resource conflict would lead to the emergence of property rights. Because he assumed that transaction costs among those with access to a common resource would always be higher than the costs of exclusion, Demsetz 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 trade as an example of this process. 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. And examples are forthcoming of decreases in resource values leading to weakening of property rights. For example, decreases in the value of cattle and horses led to less property-rights activity and abandonment, respectively, in the nineteenth-century west.

I have argued elsewhere that a rise in resource values can lead to an increase in governance rules. 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.

Of particular interest in this framework 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 increased exclusion costs faster than it increased the benefits of exclusion. Elsewhere I have argued that the conditions necessary for this to happen are quite restrictive.

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. If so, then technology also pushes in the direction of consumption. See Smith, supra note 6, 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 the complex of property rights in beaver hunting territories and noting evidence of strategic behavior).

On the capital costs of setting up rights and marginal costs of holding them in further periods, see David D. Haddock & Lynne Kiesling, The Black Death and Property Rights, 31 J. Legal Stud. 545 (2002).


Smith, supra note 72.

See id.; see also Cheung, supra note 5, at 64; Carol M. Rose, Rethinking Environmental Controls: Management Strategies for Common Resources, 1991 Duke L.J. 1, 9-36.

Smith, supra note 72, at 5478-86.

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 VADHYANATHAN, 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). Because information in particular is nonrivalrous and may often have network effects, new
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more exclusive property rights. Technological change can lead to more or less exclusion (and governance) depending on whether it raises the benefits of multiple use slower or faster than the costs of officials delineating governance rules.

Thus, rising benefits of multiple uses do not inexorably point to a semicommons, much less a government-mandated semicommons, or even towards more reliance on the governance strategy. In the context of telecommunications, governance aims at benefits flowing from multiple use of network elements, but this strategy also entails higher costs of misuse, strategic behavior, and efforts at controlling such activity. Which effects dominate—on the benefit or the cost side—is an empirical question. Often in cases in which the question is whether to delegate under the exclusion strategy or to regulate (govern) use more directly, the second-order choice has to be made without a lot of direct information about the value of uses or the costs of capturing them in governance rules. The whole point of the delegation is to avoid gathering information. It is suggestive, though, that in cases where uses interact and measurement problems are great we do find a good deal of reliance on exclusion. If the type of tasks required under the Telecommunications Act were not so costly, we might expect greater use of government pricing in other contexts where exclusion leaves something to be desired, for example in patent law. Even specific performance in contract law can be seen as a way of escaping the problems of valuation of performance under contracts. Further, growing evidence does suggest that the costs of governing the tele-semicommons are substantial. If these costs are larger than anticipated, it is worth trying to rely less on governance in the long run.

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 a classic holdout problem and leads to semicommons-style problems in the domain of transfer, where so many parties have veto power that economically beneficial transactions do not occur. The holdout problem may not lead to underuse; many people may have the right to use. But changing the pattern of use requires assembling the consent of many parties. The problem is magnified when those whose consent is required have heterogeneous interests. This is a familiar problem in political and economic organization; in property it comes through especially clearly in common-interest communities. In a condominium complex, for

82 See supra note 11 and accompanying text.
84 See supra notes 25-27 and accompanying text.
instance, developers will generally "build in" amenities either physically (say, by building the swimming pool) or in the original charter and will leave for later voting only issues that either require flexibility or do not involve heterogeneous interests and the potential for oppression of one group by another. 85

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 disregarding older rights of use. 86

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 a transfer of the resource. When 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, subject to use rules), changing rules or regimes can be costly. 87 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—so splitting the rights equitably is very difficult. 88 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 proceeding. 89 Where there are a lot of governance rules, use rights have to be valued, though 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 user and the particulars of the use that valuation becomes costly—finding comparable market prices for individualized use rights is a haphazard analogical process. Indeed one reason for a judicial regime of governance in particular, say in riparian rights, is that

86 See supra note 45 and accompanying text.
87 See, e.g., Heller, supra note 83 (fragmentation); Holderness, supra note 83 (assembling consents).
88 Barzel & Sass, supra note 85, 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").
private transacting is not likely to occur. Thus changes that involve dividing up 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. Even more difficult is splitting an award between a present possessory interest holder and holders of future interests. There is not much of a market in future interests, particularly in the charitable public goods context, so there is little basis for setting the compensation for the holder of a future interest. 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 are difficult to value and are the rights least likely to be respected, often creating great hardship to those who depend on them.

B. Semicommons Dynamics in the Telecommunications Act

In the case of mandatory sharing in telecommunications, the 1996 Act and the FCC envision eventual facilities-based competition. 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. Alternatively, because the semicommons here is a creature of the Telecommunications Act, the regulations could be changed. But such change will be difficult and costly because of the heterogeneous interests at stake and the difficult information problems (especially valuation) that use rights under the current 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 world, they are very difficult to change once they are in place. A statutory

90 Cf. Rose, supra note 35, 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 34.


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

93 See, e.g., Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers, 16 F.C.C.R. 22,781, 22,786 ¶ 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.'").

94 See, e.g., J. GREGORY SIDAK & DANIEL F. SPULBER, DEREGULATORY TAKINGS AND THE REGULATORY CONTRACT 460 (1997); Crandall et al., supra note 11.

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 regimes 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 (change in use is unlikely) or the regime comes to an easy or automatic end. If one doubts that conditions will remain stable or if 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. Sometimes statutes prescribe these devices off the rack, although such provisions should rarely if ever 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. The most effective but most difficult way to accomplish this would be to amend the statute. Alternatively, the implementation of the "necessary" and

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96 This classic justification for liability rules goes back in part to Calabresi and Melamed, at least for the case of large numbers and free riders. While Calabresi and Melamed recognized that high transaction costs were a factor arguing for liability rules, they recognized that liability rules presented their own problems. Calabresi & Melamed, supra note 48, at 1107-08. As Krier and Schwab point out, subsequent literature came down much more categorically for liability rules in such contexts. See Krier & Schwab, supra note 49, at 450-51 & n.39.


98 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 the costs of governance in co-ownership need not be great but also arguing for an important role for exit).

99 Compare Eric A. Posner & Adrian Vermeule, Legislative Entrenchment: A Reappraisal, 111 YALE L.J. 1665, 1676 (2002) (arguing that "[sunset clauses are the mirror image of entrenching clauses and might also be said to control the authority of later legislatures"), with John C. Roberts & Erwin Chemerinsky, Entrenchment of Ordinary Legislation: A Reply to Professors Posner and Vermeule, 91 CAL. L. REV. 1773, 1784-85 (2003) (arguing that sunset provisions do not bind later legislatures because the later legislature is always free to reenact). Everyone seems to agree that reenacting a law is often difficult, and these practical difficulties represent a cost if it turns out that an extension of the law would have been desirable.

100 See supra note 46 and accompanying text.

"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. Announcing a hard date for the end of a mandatory sharing regime would likely call forth its own sets of strategic behaviors and stalling tactics on the part of ILECs. Instead, given the statutory role envisioned in the Act for the FCC, it would make more sense either to condition sunset on the achievement of competition (perhaps from other platforms) or to leave some discretion in the FCC as to when exactly the sunset will take place.

No sunset provision is foolproof. If it is undesirable to announce a certain date, then regulators must have at least minimal information in order to wield the threat of a sunset effectively. How much information is not clear. Thus, if the regulator could estimate that technological change should make mandatory pricing unnecessary in five years, the regulator could announce a review at the end of five years. Or, moving from rules to standards, the regulator could wait for information to develop and then evaluate the ILECs' and CLECs' behavior and continue or terminate TELRIC pricing on the basis of ex post evaluation. This of course creates greater ex ante uncertainty, but uncertainty whether TELRIC pricing will continue indefinitely might lower the present obstacles to investment on both sides. If the ILEC invests it will have an incentive to point to the innovations as a reason to remove TELRIC, and if the CLEC does not invest it risks being caught flatfooted in case TELRIC ends. Once again, the advisability of phase-outs probably cannot be justified beyond the invocation of practice under similar circumstances in private contracts and other regulatory environments.\footnote{102}

As it turns out, there is some limited but growing experience with phase-outs in the telecommunications area itself. In its Triennial Review Order the FCC declined to extend mandatory unbundled access to new fiber optic investments,\footnote{103} and this was upheld by the D.C. Circuit as an exercise in balancing some impairment to CLECs' ability to provide a service against incentives for ILECs and CLECs to invest in infrastructure.\footnote{104} Alternatively, 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 seem 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.

\footnote{102} Also, for those who are convinced that TELRIC pricing is not worthwhile, phase-outs represent a compromise between immediate abolishment and indefinite continuance.

\footnote{103} Triennial Review Order, supra note 42, at ¶¶ 273-77, 288-89.

\footnote{104} United States Telecommunications Ass'n v. FCC, 359 F.3d 554, 578-84 (D.C. Cir. 2004).
IV. 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 through 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 owns 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 Telecommunications Act subjects unbundled network elements to a semicommons regime that requires detailed regulations of use, including government-determined prices. Concerns expressed by commentators about lack of investment in facilities and cherrypicking are characteristic of a semicommons. Also endemic to semicommons is their rigidity over time. When the set of those with interlocking entitlements to a resource must all agree to a change, the transition from one property rights regime to another is often beset by familiar problems in bargaining. Because of these difficulties, governance regimes, from grazing commons and open fields to common interest communities, are thought to pay for the benefits of multiple, complex use by incurring the costs of inflexibility. 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. How to implement such a phase out depends on familiar choices of ex ante certain rules versus ex post standards. The value of flexibility and the great cost of governance in telecommunications suggest that our regulatory regime should place greater reliance over time on lower-cost exclusionary strategies for delineating property rights and less reliance on governing a semicommons.