

The UNE Anticommons: Why the 1996 Telecom Reforms Blocked Innovation and Investment

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The United States is losing its competitive edge in telecommunications partly because of FCC mistakes in fragmenting property rights in, and in the regulatory oversight of, local telephone facilities and services. As with post-socialist transition, reformers created a “tragedy of the anticommons” in which too many owners and regulators each can block the others’ investments and all players forego innovation. By forcing existing companies to unbundle network elements (UNEs) and sell them too cheaply, the FCC has created an industry where the players cannibalize the legacy network, divert resources to regulatory arbitrage, and have little incentive for bold new investments.

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Introduction

Why is the United States losing its role as a global pacesetter for telecommunications innovation? For example, why is the new Japanese and South Korean broadband an order of magnitude faster than the United States standard?¹ The answer depends, in part, on a host of familiar explanations

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¹ See, e.g., Roger O. Crockett, *How To Get US Broadband up to Speed*, BUSINESSWEEK ONLINE, Sept. 8, 2003, at http://www.businessweek.com/magazine/content/03_36/b3848084

regarding private entrepreneurial energy, America's geographic sprawl, government industrial policy, and so on. But in significant measure, the comparative shortfall in telecom investment and innovation results from a badly drawn property rights regime. Small mistakes in how those rights are structured have large, but often invisible, ripple effects downstream.

This Article argues that badly drawn property rights are discouraging telecom competition and investment, and imposing large, hidden economic costs.² The costs of foregone telecom investments can be striking. For example, FCC regulatory hurdles are thought to have delayed introduction of cellular wireless in the United States by ten to fifteen years, with a cost in lost consumer welfare of perhaps \$33 billion per year.³ Broadband now appears to be suffering a similar fate.

All investment and innovation requires a coherent property rights structure. But certain economic sectors, such as telecom, are particularly sensitive to the regulatory climate. Telecom typically requires large up-front capital investments, followed by lower cost marginal investments to extend networks. In this sense, telecom resembles pharmaceuticals with its large initial push to discover drugs but low marginal costs to produce the actual pills.⁴ For such industries, the incentives to invest and innovate depend largely on the initial specification and security of property rights. Why invest at all if others can free ride on successful projects later?

In a somewhat less obvious way, telecom also resembles the mortgage finance or insurance sectors—investments made today may take years or decades to pay off profitably.⁵ For such investments, long-term stability of property rights proves crucially important to ex ante investment decision-

_mz063.htm (quoting one investment analyst's statement that the United States "is on training wheels" when it comes to broadband); George Gilder, *Stop the Broadbandits*, WALL ST. J., Mar. 4, 2004, at A16 ("Although by conventional measures the US now ranks 11th among nations in broadband penetration, by Asian standards the U.S. has no household connections at all. South Koreans and Japanese enjoy links some 10-to-50 times faster than our fastest connections to homes.").

² See, e.g., Robert W. Crandall et al., *Do Unbundling Policies Discourage CLEC Facilities-Based Investment?*, 4 TOPICS ECON. ANALYSIS & POL'Y 2, 3 & n.6 (2004) (discussing the theoretical and anecdotal linkages between unbundling and the incentives to invest by both incumbent providers and competitive carriers); Allan T. Ingraham & J. Gregory Sidak, *Mandatory Unbundling, UNE-P, and the Cost of Equity: Does TELRIC Pricing Increase Risk for Incumbent Local Exchange Carriers?*, 20 YALE J. ON REG. 389, 404 (2003) (reporting empirical findings that TELRIC pricing has decreased ILECs' incentives to invest in their own networks).

³ Jerry Hausman, *Valuing the Effect of Regulation on New Services in Telecommunications*, in BROOKINGS PAPERS ON ECONOMIC ACTIVITY: MICROECONOMICS (1997); see also Kenneth Arrow et al., Nobelists' Report for Verizon 10-11, 23 (Nov. 18, 2003) (unpublished manuscript, on file with author) ("Even modest delays in new product introduction can have significant adverse effects on consumer welfare.").

⁴ See Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCIENCE 698 (1998).

⁵ For a cross-country analysis showing the role of a stable regulatory framework for the emergence of a mortgage finance sector, see SHLOMO ANGEL, HOUSING POLICY MATTERS: A GLOBAL ANALYSIS (2001).

making. Why invest today when you face a long future of capricious regulation?

Smart telecom regulation requires a lot from regulators: both a coherent initial specification of property rights, and an up-front, believable commitment to stability regarding those rights. The current telecom regulatory regime provides neither coherence nor stability. More specifically, the FCC's tortured attempts to implement the 1996 Telecommunications Act illustrate exactly how not to create property rights if one's goal is to spur innovation or investment. The FCC's regulatory efforts have created an alphabet soup of players—ILECs, CLECs, CAPs, and BOCs—fighting over an array of property—UNEs, EELs, BSEs, and CPEs.⁶ You know the government has made a hash of policy when it is impossible even to write a sentence in the field without resort to multiple acronyms.

This Article explains how recent telecom policy has gone astray through the prism of the "tragedy of the anticommons" metaphor.⁷ This metaphor points attention to the potential underuse of scarce resources that may emerge when property rights are broken up too much. When there are too many hands stirring the pot, each user may block the others, coordination becomes difficult, investment is deterred, and resources are wasted. Part I of this Article explains the tragedy of the anticommons metaphor. Part II shows how this metaphor helps illuminate the stakes in the fight over "unbundled network elements" (UNEs) and why the anticommons tragedy might matter to innovation and investment. As the D.C. Circuit wrote recently, each unbundling of an element imposes costs of its own, spreading the disincentive to invest in innovation and creating complex issues of managing shared facilities.⁸ A brief Conclusion reiterates the main point: that the structure and stability of property rights can matter as much as clarity.

Regulators often overlook the danger that shifting property rights around is not always a positive sum game, nor even zero sum. Poorly crafted property rights can create an anticommons tragedy, a negative sum game in which the overall value that scarce resources contribute to society is less than the sum of the parts. As with failed socialist policies in Eastern Europe and the former Soviet Union, to date, the FCC's implementation of the 1996 Act seems positively value-destroying.

⁶ For a thorough introduction to these terms and to the controversies surrounding implementation of the 1996 Telecommunications Act, see Chapters 1 and 2 of PETER W. HUBER ET AL., *FEDERAL COMMUNICATIONS LAW* (2d ed. Supp. 2004).

⁷ See Michael A. Heller, *The Tragedy of the Anticommons, Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621 (1998).

⁸ *United States Telecomm. Ass'n v. FCC*, 295 F.3d 1326 (D.C. Cir. 2002).

I. Defining a Tragedy of the Anticommons

A. *Mirroring Commons Tragedy*

In 1967, Garrett Hardin introduced the metaphor “tragedy of the commons” to help explain overpopulation, air pollution, and species extinction.⁹ People often overuse resources they own in common because they have no incentive to conserve. Today, Hardin’s metaphor is central to debates in economics, law, and science, and a powerful justification for privatizing commons property. While Hardin’s metaphor highlights the cost of overuse when governments allow too many people to use a scarce resource, it misses the possibility of underuse when governments give too many people rights to exclude others.

Anticommons property can best be understood as the mirror image of commons property.¹⁰ A resource is prone to overuse in a *tragedy of the commons* when too many owners each have a privilege to use a given resource, and no one has a right to exclude another. By contrast, a resource is prone to underuse in a *tragedy of the anticommons* when multiple owners each have a right to exclude others from a scarce resource, and no one has an effective privilege of use. In theory, in a world of costless transactions, people could always avoid common or anticommons tragedy by trading their rights. In practice, however, avoiding tragedy requires overcoming transaction costs, strategic behaviors, and cognitive biases of participants, with success more likely within close-knit communities than among hostile strangers, as in our telecom example. Once an anticommons emerges, collecting rights into usable private property is often brutal and slow. In the interim, valuable resources are stranded in inefficient uses while regulators and owners battle to sort out a more sensible property rights regime.

B. *Two Evocative Examples*

I first developed the anticommons concept by looking at privatization in post-socialist economies.¹¹ One promise of transition to markets was that new entrepreneurs would fill the stores that socialist rule had left bare. Yet after several years of reform, many privatized storefronts remained empty, while flimsy metal kiosks, stocked full of goods, mushroomed up on the streets. Why did the new merchants not come in from the cold?

⁹ Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1967).

¹⁰ See James Buchanan & Yong J. Yoon, *Symmetric Tragedies: Commons and Anticommons*, 43 J.L. & ECON. 1 (2000).

¹¹ This Section is drawn from Heller, *supra* note 7, at 621-26; Heller & Eisenberg, *supra* note 4, at 698.

When privatizing stores, Russia's leaders had been determined to give socialist managers a stake in reform. So they re-labeled many old socialist interests as private property. One old socialist manager received the "right to sell" a store, a second to "lease" out the same store, a third to "occupy" it, and so on. To open a store, an aspiring merchant had to assemble a bundle of rights.¹² Any one owner could block the deal, and often did. Rather than agree to share the rent, many new owners felt entitled to it all. So leasing stores proved slow and brutal. Hand grenades and drive-by shootings, rather than handshakes and deal-making, sorted out many early conflicts. By contrast, kiosks were a safer bet. To open an illegal kiosk on a sidewalk, an entrepreneur had only to bribe a few local officials and pay a mafia gang for protection.¹³

A second example can be seen in the privatization of upstream biomedical research in the United States.¹⁴ In this setting, privatization takes the form of intellectual property claims to the sorts of research results that, in an earlier era, would have been made freely available in the public domain. In biomedical research, as in post-socialist transition, privatization holds both promises and risks. Patents and other forms of intellectual property protection for upstream discoveries may fortify incentives to undertake risky research projects and could lead to a more equitable distribution of profits across all stages of R&D.

But privatization can go astray when too many owners hold rights in prior discoveries that constitute obstacles to future research. Upstream patent rights, initially offered to help attract further private investment, are increasingly regarded as entitlements by those who do research with public funds. The result has been a spiral of overlapping patent claims in the hands of different owners, reaching ever further upstream in the course of biomedical research. Each upstream patent allows its owner to set up another tollbooth on the road to product development, possibly adding to the cost and slowing the pace of downstream biomedical innovation.¹⁵

¹² Heller, *supra* note 7, at 633-42.

¹³ *Id.* at 642-47.

¹⁴ See generally Heller & Eisenberg, *supra* note 4.

¹⁵ The FTC recently issued a report suggesting the possibility of anticommons tragedy in the biotech area. FED. TRADE COMM'N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (2003). For a skeptical reply, see RICHARD A. EPSTEIN & BRUCE N. KUHLIK, NAVIGATING THE ANTICOMMONS FOR PHARMACEUTICAL PATENTS: STEADY THE COURSE ON HATCH-WAXMAN (Univ. of Chi. Law & Econ. Olin Working Paper No. 209, 2004); see also John P. Walsh et al., *Working Through the Patent Problem*, 299 SCIENCE 1021 (2003) (reporting survey findings that respondents did not see patent blockades emerging).

II. Anticommons in the Telecom Sector

A. Early "Successes"

Reforms in the telecom sector parallel the post-socialist transition quite closely. For most of its history, telecom was understood as a natural monopoly, and operated largely within a dense regulatory environment.¹⁶ Similar to their socialist counterparts, federal and state regulators micro-managed rates, returns, and indirectly, the pace and direction of investment and innovation. Privatization of both socialist and telecom sectors has not been a single uni-directional story of success or failure. Paying close attention to the details of property rights created during privatization turns out to matter crucially. For example, in the post-socialist Russian context, housing privatization mostly succeeded quite rapidly because, for the most part, homeowners received the apartments they already occupied, but enterprise privatization was much more fraught because of the more convoluted property rights regime that privatizers imposed.

Similarly, in the telecom sector, privatization has had quite a varied history. Consider "customer premises equipment," that is, the telephone attached to the wall in your home. For decades, telephone customers could not attach their own phones inside their homes, but were limited to the bland choices provided by the phone monopolies.¹⁷ The struggle over innovation here was not technological in any significant way, but largely about regulatory leverage and control,¹⁸ a hallmark of socialist systems as well. Moving this tiny aspect of the telecom world from the regulated to the competitive market took over twenty years, finally culminating in the mid-1970s.¹⁹

In a sense, creation of competitive markets for "consumer premises equipment" was a success in that a new property rights regime catalyzed creation of a vibrant market without destroying underlying incentives for investment in the sector and without stranding massive investments by the regulated monopolies. But against this success must be counted the direct costs of regulatory battle, along with the indirect costs of consumer welfare lost during a twenty-year period of non-innovation. So, even a successful story of "post-socialist" telecom reform must be given a tempered review.

The recent history of telecom has been one of increasing privatization and competition, along more and more margins of the industry, including wireless, long distance, and information services. Each of these examples though has a

¹⁶ The historical material on telecom privatization in this Section is drawn from HUBER ET AL., *supra* note 6, at 1-35.

¹⁷ *Id.* at 50 ("The Bell tariffs contained various foreign attachment provisions that prohibited any non-Bell System product from being interconnected with Bell's network.").

¹⁸ See, e.g., *id.* at 51 (discussing lengthy regulatory battle over telephone interconnections).

¹⁹ *Id.* at 50-53.

structure similar to the battle over consumer premises equipment. Stories of success must be qualified by noting the costs of foregone investment from regulatory delay—the decade or more that these services were technologically feasible, and in place in other countries, but tied up here because of regulation and litigation.

B. *The UNE Fiasco*

Rapid growth across the privatized segments of the telecom sector likely lulled regulators into a false sense of confidence regarding their ability to design a value-creating property rights structure for local competition. Post-socialist reformers thought the same: just break up state-controlled resources and let the market sort it out. Also, in the biomedical research area, there was an early confidence that the fact of upstream privatization was crucial, but the structure of the private property rights that were being created did not much matter. So, if hotly competitive markets eventually had emerged in wireless or long distance, then surely the same would happen in opening up local competition and spurring investment in new facilities. Congress' 1996 Telecommunications Act reforms instructed the FCC to create competition, but did not give much effective guidance on how to structure and implement that task.²⁰

Much has already been written on how the Federal Communications Commission translated the 1996 Act into practice.²¹ The goal was to force the incumbent local exchange companies (ILECs) to open up their networks so as to allow new competitive local exchange companies (CLECs) to enter the local telephone market. Because of the huge fixed network investments already in place, it would have been inefficient for CLECs to recreate them from scratch in their entirety, as if building multiple bridges over a small section of the Mississippi River. So, new competitors were thought to need access to some "essential" elements of this existing plant as they ramped up provision of their own facilities-based competition.

More specifically, the FCC preempted state and local regulators, as a way to break down all entry barriers for potential CLECs, and required ILECs to share their existing facilities and services with the newcomers at government-set prices.²² The preemption part is not a problem. Indeed, stripping away opportunities for regulatory arbitrage and rent-seeking at the state and local levels could be a valuable direction for further reform in the sector. The problems arose in the second prong of the FCC implementation of the 1996 Act, which allowed new competitors to appropriate existing network facilities and services.

²⁰ *Id.* at 80-83 (contrasting Congress' "single sweeping and breathtakingly simple" statutory language with the FCC's complex, heavily litigated attempts to implement that language).

²¹ See generally *id. passim*.

²² *Id.* at 80.

In brief, the FCC interpreted the second part of its mandate to require the ILECs to break down their integrated operations into fragments—unbundled network elements (UNEs) including local loops, transport, and switching²³—which would then be available to CLECs for their use in assembling and providing new service. The notion was that CLECs would select the essential features, functions, and capabilities that they needed to combine with their own investments in new facilities to create new networks. Making UNEs available to CLECs was supposed to be a transitional step to creating new firms, new investment, and finally, competitive markets.

But the transition imposed hidden costs. The costs make sense once the structure of property rights is understood. Property rights to use the ILECs' facilities do not consist just in the physical parameters of the fragmented UNEs, but also in the limits on use and transfer that are imposed. In other words, after the FCC forces ILECs to market UNEs, they enter into a spiral of regulation. Breaking up a network into fragments is a costly enough exercise, one that an unregulated market player would be quite unlikely to undertake on its own. But if ILECs did so, they would expect to recoup their investments in the fragmentation process itself as well as pricing the fragments profitably.

Instead of allowing markets to price UNEs, which would be difficult given the forced nature of the exchange, the FCC created an elaborate government-controlled pricing scheme based on a complex and hypothetical notion of costs, the so-called Total Element Long-Run Incremental Cost (TELRIC) methodology.²⁴ Using TELRIC methodology, UNEs are priced much below the costs that the ILECs actually incurred in providing the facility or service, at a price that does not allow them to recoup their investments in the network, nor account for risk.²⁵ As anyone who has bought spare parts for a car knows, parts are expensive, and a car built by buying a pile of spare parts would cost a multiple of the assembled new car bought from a dealer. Similarly, one would expect that in a well-functioning market economy, once UNEs are bundled back together into a functional telephone platform, then the total cost might approximate or exceed that already charged by the ILECs for that service. But instead, the bundled price for unbundled elements, the so-called UNE-Platform

²³ See *id.* at 5, 114-15; Telecommunications Act of 1996, Pub. L. No. 104-104, § 251(d)(2), 110 Stat. 56, 143; 47 C.F.R. § 51.319(a)-(g).

²⁴ HUBER ET AL., *supra* note 6, at 13, 15, 118-22 (defining TELRIC pricing). On UNE prices by market, see Crandall et al., *supra* note 2.

²⁵ ROBERT S. PINDYCK, MANDATORY UNBUNDLING AND IRREVERSIBLE INVESTMENT IN TELECOM NETWORKS 3-4 (Nat'l Bureau of Econ. Res., Working Paper No. 10,287, 2004) (on file with author).

(UNE-P), has been priced below simple resale of ILEC phone service.²⁶ From a market perspective, TELRIC pricing makes little sense.²⁷

In addition to fragmenting the physical system and mandating investment-detering prices for the resulting elements, the FCC has fragmented final pricing authority and regulatory review among levels of governments.²⁸ TELRIC pricing would have been complicated enough if the FCC had operated as the sole decision-maker. But, instead the FCC tried to push much of the operation of the government price-setting system down to state and local regulators, exponentially multiplying costs and further fragmenting control and operation of ILEC facilities.²⁹ Multiple local, state, and federal regulators can create inconsistent regulatory schemes or layers of delay that operate to create a regulatory anticommons—each regulator can slow down or block innovation by an investor, but no one of them can credibly give a green light for large-scale investments.

C. *The Costs of UNE Fragmentation*

The FCC's goal in fragmenting ILEC networks was to catalyze CLEC investment in facilities-based competition.³¹ Not surprisingly, letting newcomers pick out the most valuable pieces of the existing networks for a nominal price did encourage firms to enter. During the past few years, both CLECs and ILECs have responded predictably to the new property rights regime, but not as the regulators had hoped. Instead of more investment and innovation, UNEs and TELRIC have lead to less.³¹ Indeed, it appears that the lower a state prices UNEs, the less facilities-based entry appears from CLECs.³² This bad outcome should not be a surprise. In retrospect, it is puzzling how the FCC could have thought that the particular path to competition that it chose could have worked out differently.

²⁶ *Id.* at 7 (noting resale discounts of 15% to 25% compared with 45% or greater discount when same service purchased through UNE-P); Ingraham & Sidak, *supra* note 2, at 2.

²⁷ PINDYCK, *supra* note 25, at 1-4 (arguing that the TELRIC pricing formula is not efficient and that "it discourages investment by both incumbents and new entrants, and over the long run could threaten the breadth and quality of the telecommunications infrastructure in the United States").

²⁸ Letter from Twenty-Two Economists to the President of the United States 2 (Mar. 25, 2004) (on file with author) [hereinafter Economists' Letter] ("[T]he current regime allows state regulators to establish the critical rules, which means there will be 50 different and frequently inconsistent telecommunications policies with which to comply, rather than just one. The problem is that uncertainty deters investment."); HUBER ET AL., *supra* note 6, at 90-91 (noting that more than 6000 agreements have been reached between ILECs and CLECs and submitted to state regulatory commissions for review under the 1996 Act).

²⁹ See Economists' Letter, *supra* note 28, at 2; Adam Thierer, *Was the UNE Triennial Review Worth the Wait?* 58 *TECHKNOWLEDGE* (Sept. 15, 2003), at <http://www.cato.org/tech/tk/030915-tk.html>.

³¹ See Economists' Letter, *supra* note 28, at 2; Diane Katz, *Telecom Victory*, *NAT'L REV.*, Mar. 3, 2004, available at <http://www.nationalreview.com/script/printpage.asp?ref=/comment/katz200403030946.asp>.

³² James Eisner & Dale E. Lehman, *Regulatory Behavior and Competitive Entry*, June 28, 2001, at 3 (draft on file with author) (finding that "states with lower UNE prices have less facilities-based entry").

1. CLECs and Facilities-Based Investment

One aspect of the UNE anticommons tragedy appears in how CLECs are operating. CLECs have not bothered with much original investment in new facilities because they have been able to acquire unfettered use of existing facilities at nominal prices and with little risk. CLECs discovered that they could build their service by cannibalizing the most profitable elements available from the ILECs. Instead of creating competitors that could expand the pie, the current regime just fragmented the existing pieces in such a way that no competitor had a strong incentive to invest.³³ In sum, one aspect of anticommons tragedy is that increasing the number of poorly incentivized CLECs has meant deterring facilities-based investment by anyone. Why take a chance building your own facilities or services when you can use the most valuable pieces of someone else's business and back out of the deal with no penalty if you so choose?

Another aspect of the telecom anticommons is that the existing property rights regime has oriented CLECs towards regulatory arbitrage rather than market-based competition. These new companies' survival relies on regulators' favorable decisions on UNE availability and TELRIC rates.³⁴ It becomes worthwhile—even decisive—to invest in influencing those regulatory decisions. But the companies have little incentive to invest in the facilities themselves, in part because they can see how vulnerable hard assets are to expropriation, and in part because they have gained little experience with investing in physical assets.

Going forward, many CLECs are not well positioned to undertake the next generation of investment. They have not had to learn how to build and maintain extensive networks and facilities, nor have they had to compete at market rather than TELRIC prices. These companies are not likely to be major investors or innovators in broadband, nor substantial competitors for cable or satellite providers of high-speed telecom services.

2. ILECs and the Legacy Facilities

A second aspect of UNE anticommons tragedy results from how ILECs have responded to the new property rights structure. As an initial matter, ILECs have reduced investment in their legacy facilities—defined as the ILEC facilities that already existed at the passage of the 1996 Telecommunications Act. Why? Because the ILECs know that competitors can simply pick off the

³³ Arrow et al., *supra* note 3, at 23 (“Entry based on UNE-P and resale of ILEC services enhances competition only for marketing, customer service, and related functions, unless it facilitates the transition to facilities-based competition. If CLECs can purchase unbundled network elements indefinitely, it could discourage investment in facilities by both ILECs and CLECs.”).

³⁴ Ingraham & Sidak, *supra* note 2, at 2 (noting rapid stock price shifts for CLECs and ILECs in response to potential FCC revisions to UNE-P access at TELRIC pricing).

most successful investments and leave them with the failures. If CLECs can appropriate a substantial share of the gains of new investment in the legacy network, ILECs will cut back in investing.³⁵

Had the FCC decided that the legacy of existing networks and infrastructure were of little value and could be run down to jumpstart something new, then UNE fragmentation and the confiscatory TELRIC pricing system might have made some sense (even if it would not have been fair to ILEC investors). But the legacy system has substantial value in its own right, so that wasting it through fragmentation and disinvestment may impose a large social cost.

Second, along with deterring investment, implementing the UNE and TELRIC system has been expensive, imposing administrative costs that appear to be a deadweight loss. The ILECs have had to divert substantial resources away from productive uses to manage instead this new regulatory regime. Each of the thousands of interconnection agreements runs to thousands of pages. Millions of performance metrics have to be collected and presented monthly to federal and state regulators. Databases have to be created. Prices for every UNE have to be calculated and fought over. Overall, the cost of operating the system drains substantial resources and diverts management attention from prospective investments to backward-looking and defensive strategies. Given that the UNE and TELRIC system do not appear to have created entrepreneurial CLECs, the costs associated with the system seem hard to justify.

Third, the UNE system forces ILECs to orient themselves towards regulators rather than next-generation market competitors, such as cable or satellite. So much of the ILECs' fortunes are tied up in managing and extending their legacy investments that they cannot just write them off. The existing networks provide the cash flow and credibility that back the ILECs' ability to secure credit for future investments. To protect these investments, the ILECs follow the CLECs into an expensive and escalating rent-seeking posture. When regulators force hostile parties to share scarce resources, the unsurprising result is endless and expensive litigation and lobbying. Together, these costs can easily consume a substantial percentage of the resources that would otherwise be available for productive investment or innovation.

In sum, regarding legacy facilities, a cost of the UNE anticommons include lowered ILEC investment, dissipation of revenues in administration and compliance, and diversion of management resources to rent-seeking. ILECs are progressively disabled even in managing the legacy resources under their control.³⁷

³⁵ Gilder, *supra* note 1.

³⁷ Arrow et al., *supra* note 3, at 13 ("It is our view that the unbundling requirements that the FCC has imposed . . . generally threaten further technological gains by adversely affecting ILECs' and CLECs' incentives to invest in providing new services and upgrading their networks. This, in turn, could harm consumer welfare.").

3. ILECs and New Investment

The UNE anticommons imposes a final set of costs in terms of ILEC investment in next generation telecom technology, such as high speed optic fiber, also known as broadband. The FCC has attempted to deal separately with construction of this next stage by not including new broadband fiber as an element subject to unbundling.³⁸ In other words, the FCC seems to have hoped that ILECs would treat existing facilities as sunk costs from a heavily-regulated past, while new facilities would be created in a competitive market. But this separation of new broadband fiber from already-existing slow copper wire, also called “narrow-band,” proves partial and artificial.

First, the most valuable initial sites for broadband tend to be the densest urban areas, what are called overbuild or “brownfield” areas. For these areas, the FCC’s exemption for broadband does not apply.³⁹ ILECs are again forced to share control over fiber under certain circumstances and up to certain levels so that the FCC is diluting the positive incentives it had hoped to create regarding prospective investment. While it may sound easy to partition discrete portions of new broadband fiber, it is costly to do so. To paraphrase Robert Ellickson, a guard dog can easily patrol the boundaries of private property, keeping outsiders off. But if people have the right to come onto land for some purposes and not others, then the cheap mechanism of a guard dog will not serve.⁴⁰ Policing shared use—especially when the sharing is forced by regulators on unwilling owners—is far more expensive than patrolling borders.

Further, creeping regulatory action in cutting edge technology can be demoralizing for potential investors. The unwillingness that comes from demoralization is a social cost, as Frank Michelman taught in his discussion of regulatory takings law.⁴¹ The FCC’s cavalier attitude about compensation for CLECs’ use of legacy facilities, evidenced by the TELRIC standards, could demoralize ILECs and their potential investors and creditors going forward. The alternative to demoralization would be fully compensatory pricing for network elements, what Michelman called settlement costs, that is paying the ILECs more or less market value prices for use of their networks.

Broadband requires an enormous up-front investment, one that must be recouped over many years. How does one evaluate the soundness of a broadband investment if there is a non-trivial chance that the FCC will at some

³⁸ FCC Triennial Review Order, 2003 (lifting unbundling requirements for much new broadband to encourage ILECs to invest in this area), quoted in Jay Lefkowitz, *What the FCC Can Do for the Economy*, 9 WKLY. STANDARD 19 (2004), available at <http://www.weeklystandard.com/Content/Public/Articles/000/000/003/618ydyfg.asp>.

³⁹ See Gilder, *supra* note 1 (arguing that “the emancipation of broadband must cover all broadband, not just ‘green field’ projects or ‘new fiber’ or wireless in the high microwave bands”); Lefkowitz, *supra* note 38.

⁴⁰ Robert C. Ellickson, *Property in Land*, 102 YALE L.J. 1315, 1382 (1993).

⁴¹ Frank I. Michelman, *Property, Utility, and Fairness: Comments on the Ethical Foundations of “Just Compensation” Law*, 80 HARV. L. REV. 1165 (1967).

point force the network open to rivals, who reap the benefits while skirting the risk. Thus, a hidden cost of the UNE anticommons is that it deters investment going forward. Michelman teaches that if the regulator will not pay settlement costs to ILECs, making them indifferent to whether rivals use UNEs, then instead society suffers demoralization costs from people's knowledge that they too may find their property expropriated without compensation.⁴²

Third, even if the FCC avoids the UNE anticommons by abandoning this aspect of its implementation of the 1996 Act, they may still create a regulatory gridlock by continuing to fragment decision-making authority among federal, state, and local officials. Each additional toll on the regulatory approval highway makes broadband less and less attractive an investment.⁴³

So, the tragedy of the UNE anticommons, with its forced sharing of legacy facilities, has multiple costs. It creates a world of CLECs that have little incentive to invest and little taste for innovation. It directs both CLECs and ILECs towards rent-seeking rather than market competition, towards fights over a shrinking pie rather than innovations to create a larger one. It imposes regulatory costs that could have been more productively invested, and finally, it saps the will of both CLECs and ILECs to invest in the next generation of technology.

IV. Conclusion

The United States is losing its competitive edge in telecommunications in part because of FCC mistakes in fragmenting property rights during the reform of local telephone service. Forcing ILECs to share their facilities with CLECs proves costly to all. Replacing market prices with regulated rates pushes all the players to focus on rent-seeking rather than competition. Each seeks to cannibalize the resources of the others, shrinking and redistributing the pie.

As with post-socialist transition, FCC reformers created a "tragedy of the anticommons" in which too many market players and regulators each block the others' investments and all forgo innovation. By forcing existing companies to unbundle network elements and sell them too cheaply, the FCC has created an industry where existing players are demoralized and have little incentive to invest in the next generation of innovation.

⁴² See Lefkowitz, *supra* note 38. ("[T]he companies that have the money to invest in these new networks are still being thwarted by an uncertain and often contradictory regulatory landscape.")

⁴³ See Economists' Letter, *supra* note 28, at 2 ("[T]he broadband market has been left to the devices of state and local officials who have proceeded to regulate it into something close to inertia.")

