THE UNE ANTICOMMONS

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ABSTRACT

The United States is losing its competitive edge in telecommunications partly because of FCC mistakes in fragmenting property rights in, and 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 forgo 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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I. INTRODUCTION

Why is the United States losing its role as a global pacesetter for telecommunications innovation? For example, why is 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 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 a large, hidden economic cost.[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 US by 10-15 years, with a cost in lost consumer welfare

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[1] *See, e.g.*, Roger Crockett, *How to Get US Broadband Up to Speed*, BUSINESSWEEK ONLINE, Sept. 8, 2003, at * (Quoting one investment analyst's statement that the US "is on training wheels" when it comes to broadband); George Gilder, *Stop the Broadbandits*, WALL ST. J., Mar. 4, 2004, at * ("Although by conventional measures the US now ranks 11th among nations in broadband penetration, by Asian standards the US 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?* B.E. J. ECON ANAL. & POLICY 3 & n. 6 (forthcoming 2004) (presenting empirical evidence of lower investment and collecting sources on 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?* 1, 15 (draft Feb. 2003, on file with author) (reporting empirical findings that TELRIC pricing has decreased ILEC's incentives to invest in their own networks).

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-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

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[3] Jerry Hausman, *Valuing the Effect of Regulation on New Services in Telecommunications*, BROOKINGS PAPERS ON ECONOMIC ACTIVITY: MICROECONOMICS (1997); *see also* Kenneth Arrow, et. al., *Nobelists' Report for Verizon*, Nov. 18, 2003, at 10-11, 23 (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).

[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, MICHAEL K. KELLOGG & JOHN THORNE, FEDERAL COMMUNICATIONS LAW (2d. ed., Cumul. Supp. 2004).

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 II of this Article explains the tragedy of the anticommons metaphor. Part III shows how this metaphor helps illuminate the stakes in the fight over "unbundled network elements" (UNEs) and why anticommons tragedy might matter to innovation and investment. As the DC 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.

II. 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

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[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 Telecom Assoc. v. FCC, * F.3d *, * (DC Cir. 2002).

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

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 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? One reason was that transition governments often failed to endow any individual with a bundle of rights that represents full ownership. Instead, fragmented rights were distributed to various socialist-era stakeholders, including private or quasi-private enterprises, workers' collectives, privatization agencies, and local, regional, and federal governments. No one could set up shop without first collecting rights from each of the other owners.

A second example can be seen in the privatization of upstream biomedical research in the United States. In this setting, privatization takes the form of intellectual property claims to the sorts of research

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[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 *, at 621-26; Heller & Eisenberg, *supra* note *, at 698.

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.[12]

III. 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.[13] Like with 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

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[12] The FTC recently issued a report suggesting the possibility of anticommons tragedy in the biotech area. FTC, *To Promote Innovation: The Proper Balance of Competititon and Patent Law and Policy* (Oct. 2003). For a skeptical reply, see Richard A. Epstein & Bruce N. Kuhlik, *Navigating the Anticommons for Pharmaceutical Patents: Steady the Course on Hatch-Waxman* (Mar. 2004) (manuscript on file with author); *see also* John P. Walsh, Ashish Arora & Wesley M. Cohen, *Working Through the Patent Problem* 299 SCIENCE 1021 (2003) (reporting survey findings that respondents did not see patent blockades emerging).

[13] The historical material on telecom privatization in this section is drawn from HUBER, ET. AL., *supra* note *, at 1-35.

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 the telephone itself. 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. The struggle over innovation here was not technological in any significant way, but largely about regulatory leverage and control, a hallmark of socialist systems as well. Moving this tiny aspect of the telecom world from the regulated to the competitive market took over 20 years, culminating in the mid-1970s.[14]

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 20 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 similar structure 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

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[14] HUBER, ET AL, *supra* note *, § 2.3.2 at 50-53.

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. In other words, the fact of competition was seen as more important than the details of how it was structured and implemented. At least that seems to have been the Congressional hope for its 1996 Telecommunications Act reforms.

Much has already been written on how the Federal Communications Commission translated the 1996 Act into practice.[15] 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 uneconomic for CLECs to re-create them from scratch in their entirety. 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.[16] 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.

In brief, the FCC interpreted the second part of its mandate to require the ILECs to break down their integrated operations into thousands of discrete fragments – unbundled network elements (UNEs) – 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 elements that they needed to combine with their own investments in new facilities to create new networks. Making UNEs available to CLECs was hoped to be a transitional step to transition step to creating new firms, new investment, and finally, competitive markets.

However, local facilities-based competition has not emerged. The failure here should not be surprising once the structure of property rights

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15 *See generally* HUBER, ET. AL, *supra* note *, 37-231, *passim*.

16 HUBER, ET. AL, *supra* note *, § 2.5 at 80.

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, pricing matters too. Breaking up a network into thousands of fragments is a costly enough exercise, one that an unregulated market player would be quite unlikely to undertake on its own. But if it did so, it would expect to recoup its investment 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 instead created an elaborate government-controlled pricing scheme based on a fictional notion of costs. So-called TELRIC pricing prices UNEs 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 accounts for risk. 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 would approximate or exceed that charged already by the ILECs for that service. But instead, the bundled price for unbundled elements, so-called UNE-P, has been priced below simple resale of ILEC phone service. From a market perspective, TELRIC pricing makes no sense.[17]

Even more costly has been the fragmentation among levels of governments that the FCC has imposed. TELRIC pricing is complicated enough if the FCC operated as a single 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.[18] Multiple local, state, and federal regulators can create inconsistent regulatory schemes, or layers of delay that operate to create a regulatory

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[17] Robert S. Pindyck, *Mandatory Unbundling and Irreversible Investment in Telecom Networks*, Dec. 2003, at 1, 4 (on file with author) (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.").

[18] *See* Letter from 22 Economists to the President, Mar. 25, 2004, at 2 (on file with author); Adam Thierer, *Was the UNE Triennial Review Worth the Wait? Part II: The Substance*, 58 TECHKNOWLEGE, Sept. 15, 2003, at * ("there are plenty of other public policy issues for which devolution makes a great deal of sense, but telecom and broadband regulatory policy is not one of them.").

anticommons – each regulator can slow down or block innovation by an investor, but no one of them can give the green light.

C. The Costs of UNE Fragmentation

The FCC's goal in fragmenting ILEC networks was to catalyze CLEC investment in facilities-based competition. Not surprisingly, letting newcomers pick out the most valuable pieces of the existing networks for a nominal price did encourage entrants 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.[19] Indeed, it appears that the lower a state prices UNEs, the less facilities-based entry appears from CLECs.[20] 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.

1. CLECs and Facilities-Based Investment . One aspect of 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. Why take a chance on 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? 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 shifts some of the pieces around, running them down. It is as if the FCC had decided simply to force competition within the marketing and customer service departments of the ILECs – overall, probably a value-subtracting proposition overall.[21]

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[19] *See id.* at 2; Diane Katz, *Telecom Victory*, NAT'L REV., Mar. 3 2004, at * ("[F]aced with the prospect of having to 'share' their facilities, many incumbents have sharply curtailed capital investment that otherwise would produce new products and services. And to the extent that capital expenditures have been restricted, te entire chain of technology supply has been rattled. Simply put, the forced access regime has failed t achieve its most basic policy goal.").

[20] 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").

[21] Nobelists' Brief, *supra* note *, 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

In addition, 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. So, it becomes worthwhile, even decisive, to invest in affecting those regulatory decisions. But the companies have no 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 real 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, they have reduced investment in these legacy facilities because they know that competitors can simply pick off the most successful investments and leave them with the failures.[22] If CLECs can appropriate a substantial share of the gains of new investment in the legacy network, ILECs will cut back in investing. If the FCC had decided that the legacy of existing networks and infrastructure had no particular value, and could be safely run down to jumpstart something new, then the UNE and TELRIC 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 quite 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

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can purchase unbundled network elements indefinitely, it could discourage investment in facilities by both ILECs and CLECs").

[22] Gilder, *supra* note *, at *. ("Privatizing the risks of last mile investment and socializing the returns, the FCC capped and devalued all investment in new infrastructure and brought deployment of new local-loop facilities to a halt.").

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. For example, Verizon reports that [x,000] employees are engaged full time in Operations Support Systems, at a cost of [$] to administer and ensure compliance with the 1996 Act requirements. Given that the UNE and TELRIC system do not appear to have created entrepreneurial CLECs, the costs associated with the system appear to be a pure drag on investment.

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 can not just write them off. The existing networks provides 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 engross a substantial percentage of the resources that would otherwise be available for productive investment or innovation.

In sum, regarding existing legacy facilities, a costs of the UNE anticommons include lowered ILECs investment, dissipation of revenues in administration and compliance, and diversion of management resources to rent-seeking. ILECs, like CLECs, are progressively disabled even in managing the legacy resources under their control.[23]

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 broadband. The FCC has attempted to deal separately with construction of this next stage by not forcing the UNE requirements on ILECs for broadband fiber to new construction. But this separation of broadband fiber from legacy copper proves partial and artificial.

First, the most valuable initial sites for broadband tend to be the densest urban areas. As to these overbuild or "brownfield" areas, the

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[23] Nobelists' Brief, *supra* note *, 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.").

FCC's exemption for broadband does not apply.[24] ILECs are again forced to share control over fiber under certain circumstances and up to certain levels. 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.[25] Policing shared use is far more expensive than patrolling borders.

Further, consider Frank Michelman's discussion of demoralization costs in the takings equation.[26] The FCC's cavalier attitude about compensation for legacy facilities, evidenced by the TELRIC standards, does not give much comfort to ILECs or potential investors or creditors going forward. 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 point force the network open to rivals, who reap the benefits while skirting the risk. 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 be expropriated without compensation.[27]

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.[28]

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[24] *See* Gilder, *supra* note *, at * ("the emancipation of broadband must cover all broadband, not just "green field" projects"); Jay Lefkowitz, *What the FCC Can Do for the Economy*, 9 WEEKLY STDD. 19:*, Jan. 26, 2004 (recommending that unbundling rules not be applied to apartment buildings and condominiums).

[25] Robert C. Ellickson, *Property in Land*, 102 YALE LJ 1315, 1382 (1993).

[26] Frank I. Michelman, *Property, Utility, and Fairness: Comments on the Ethical Foundations of "Just Compensation" Law*, 80 HARV. L.REV. 1165 (1968).

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

[28] *See* Letter from 22 Economists to the President, Mar. 25, 2004, at 2 (on file with author) ("[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.").

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 innovation for 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 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.