



A Brief History of Internet Regulation

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EXECUTIVE SUMMARY

Proposals to regulate the Internet are often presented as “new” solutions to deal with modern problems, but the most significant of these proposals, such as “network neutrality” and common carrier rules on unbundling and interconnection, are actually vestiges of long-outmoded ways of thinking about telecommunications policy. This paper explores the relevant regulatory history, offering critical context to today’s Internet policy debates.

From the early days of the AT&T monopoly well into the 1990s, regulators, the courts and the Congress engaged in a lengthy effort to protect consumers and ultimately bring competition into the markets for local and long-distance telephone service. This included strict “common carrier” utility regulations and mandatory interconnection requirements and ultimately the 1984 Modified Final Judgment, which forced the breakup of AT&T into regional Baby Bells.

From the beginning of “community antenna TV” through the 1990s, a parallel but more limited effort was made to regulate the nascent cable industry. While these regulations had some success, technological change quickly outstripped them—both in the telephone business and the emerging field of high-speed data—and a bipartisan consensus formed in the early 1990s that additional steps were needed to promote competition in all these arenas.

The result was the Telecommunications Act of 1996, watershed legislation that marked the end of the telephone age and the beginning of the Internet age from a policy perspective. The Act embraced and codified the FCC’s distinction between traditional telephony/telecommunications services and the emerging world of information services, with strict common carrier rules limited to the former. On the telephone side, this meant a stifling regime of mandatory “unbundling” and rigid price controls, while giving the private

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sector more latitude to innovate and invest on the “information services” side. The 1996 Act may not have specifically contemplated the rise of the broadband Internet (the idea of an “information superhighway” was in the air, but the exact form it would take was still unclear as a matter of both technology and policy), but by protecting information services from the common carrier framework, the Act set the stage for the dynamic growth we have seen in American broadband.

The result was a boom in cable broadband investment that telecommunications providers attempted to counter by offering DSL services. But any new DSL capability they constructed had to be leased out to competitors at below market prices under the unbundling regime, which limited their efforts. When fiber and DSL were relieved of their unbundling obligation in the early 2000s, however, capital poured in and these services flourished as fixed-broadband competitors to cable. In fact, that competition drew a competitive response from cable, in turn leading to a virtuous cycle of improvement and enhancement resulting in the United States ascending to the upper reaches of the International broadband rankings.

This background sheds important light on current calls to impose “new” regulations on broadband either through “network neutrality” rules or by reclassifying it as a “telecommunications service” subject to common carrier obligations. While advocates suggest otherwise, these proposals are clearly not new, but would represent a return to the dated—and in the view of this paper failed—approach that the bipartisan 1996 Act was designed to sweep away. Most of these proposals for network micromanagement, forced sharing of investments, and government influence on pricing have been associated with low investment and innovation. These rules may have made sense when the problem was how to protect consumers in the days of the sanctioned Ma Bell monopoly, but the business and consumer landscape is dramatically different today in almost every regard.

Ultimately, three key lessons emerge from this policy review. First, information services and telecommunications services really are different, and broadband has flourished as an information service free from ill-fitting and stifling common carrier constraints. Second, investment and capital flow to where regulation (or the absence thereof) encourages them to flow. And third, technology, business models, and consumer behaviors change and, as they change, the meaning and effect of different regulatory proposals change as well.

INTRODUCTION

An active public policy debate is underway regarding Internet regulation. At its core lie a series of proposals that address what some advocates perceive as an absence of competition in the broadband industry. Most important among these are the imposition of “net neutrality” rules that would compel all Internet traffic to travel at the same speed and on the same terms; restrictions on usage-based pricing or other broadband business models, including prohibitions on creating a “two-sided” market in which Internet-based business might pay to reach network users (much as advertisers pay to reach newspaper readers); mandatory interconnection rules that would empower regulators to dictate prices or procedures for the exchange of data among networks in the Internet’s labyrinth; limits on the participation of selected firms in auctions of electromagnetic spectrum; and facilities “unbundling,” which would require providers of Internet infrastructure to make portions of their physical networks available to all competitors at prices set or approved by the government.

Some advocates claim that these “new” ideas are needed to address new problems; they contend that Internet service is not provided competitively or that it is too important to leave unregulated. In a separate paper, we will argue that there is no “competitiveness” problem in the provision of broadband when conventional yardsticks such as investment, innovation, or prices and profits are considered.¹ But regardless of the merits of the assertion that the provision of broadband is

uncompetitive, the regulatory proposals that make up this debate are not, in fact, new ideas. Instead, most of the proposals for Internet regulation are the regulatory tools government applied to the telephone system during its period as a regulated, government-sanctioned monopoly decades ago.

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But the circumstances then were very different from those we face today. For that reason, a review of the history of Internet policy, from the formation and break-up of the Bell system to the current-day court cases that address many of the underlying questions regarding the legal framework for regulation, is in order. Where were these policy proposals first raised, and in what context? And what can be learned from our experience with them? Those are the questions this paper will address.

The next section provides a brief history of U.S. regulatory policy towards the Internet from the perspective of telecommunications.² That is followed by an attempt to identify the roots of leading contemporary policy proposals in that history and to apply the lessons learned from this review.

TELECOMM ROOTS

By the 1910s, AT&T had a commanding position in the U.S. long-distance telephone market, and it used that position to begin acquiring local companies, often by denying others interconnection. In 1913, facing a federal antitrust suit, AT&T entered into the “Kingsbury

Commitment,” under which it would allow non-Bell local companies to connect to its interstate (long distance) system. It also made other concessions (including divesting Western Union, the second “T” in its name) in return for a government sanctioned monopoly.

The deal hardly held AT&T back. The behemoth still used access to the long distance market as a way to disadvantage local competitors. Regulation of its acquisitions was lax. And, meanwhile, in a different realm, radio was burgeoning. All of this combined to create pressure for a new federal framework towards telephone and radio, which led to the Communications Act of 1934 (the “1934 Act”).

The 1934 Act established a framework for telephone regulation that would last for half a century. AT&T’s interstate long-distance lines would be subject to federal regulation, and intrastate lines would be regulated by the states. Interconnection among these systems was mandatory and regulated, and a system of settlements was created to allocate revenues and costs between and within the long-distance company and local operating companies and to balance accounts. The 1934 Act created the Federal Communications Commission (FCC) to carry out the federal regulatory role in both interstate telephony and radio.

This system survived for decades, but was ultimately undone by technological change, beginning in the long distance market. Microwave technology created new competitors in the long-distance market, led by MCI. The long-distance market was particularly ripe for picking, as regulators generally allowed inflated long-distance pricing to cross-subsidize universal service, emergency response, and other local services, especially residential phone service. AT&T fought these competitors in court and through discrimination in its practices (for example, requiring competitor long-distance companies to use a “dial-in” number to get access), but ultimately, the pressure of technological progress became too great. In 1982, AT&T and the Justice Department entered into an antitrust consent decree—the

“Modification of Final Judgment” (“MFJ”). While the name may sound like a panel on the ceiling of the Sistine Chapel, it actually restructured the telephone market.

A bipartisan consensus gradually emerged in response to these developments that steps were needed to promote competition in all of these arenas.

The MFJ’s major provisions were, essentially, three-fold. First, AT&T would divest itself of local affiliates and become a long distance company (inter-exchange carrier) in a competitive market. Second, the local telephone companies would be organized into seven regional competitors that would be barred from providing long distance and information services, and whose local services would continue to be regulated, predominantly by the states. And, third, the local telephone companies were barred from manufacturing both telecommunications network equipment and telephones and other so-called “customer premises equipment,” buttressing the FCC’s earlier decision to end the Bell System’s monopoly over this hardware.

The regulation of cable proceeded on a parallel track. Today we think of telecom and cable companies as being in the same business. But their roots were obviously different. Cable was subject to local regulation, but the profusion of inefficient, disparate regulatory standards and procedures led government and industry alike to embrace the 1984 Cable Communications Policy Act, which imposed some discipline on the process, gave the companies more latitude to price, and fed a cable investment boom in that decade and afterwards.

But the increasing prices of cable services and then-minimal competition (satellite competitors

did not appear until the 1990s) contributed to a backlash that led to the Cable Television Consumer Protection and Competition Act (“Cable Act”) in 1992, which gave the FCC authority to regulate cable prices and mandated that content developed and owned by the cable companies (e.g., HBO at that time) be made available to competitors. The FCC soon imposed price rollbacks on cable services using its new authority, with disastrous results for investment in both the cable system’s *physical* networks (which limited their ability to emerge as an important source of telephone competition) and cable *programming* services (which, confusingly, are also commonly referred to as “networks”).

Like the 1934 Act, the MFJ and the Cable Act “worked” so long as their underlying premises regarding technology and market structure did not change. But the prospect of greater competition in both long-distance and local telephony was clear—long-distance rates were dropping and long-distance providers were beginning to bypass local loops in some situations. There was already some local competition for business communications in local phone markets. Meanwhile, Direct Broadcast Satellite (“DBS”) entered the market and cable companies were experimenting with what then seemed to be futuristic systems involving hundreds of channels and even “high-speed data,” even as cable investment slowed in response to price regulation.

A bipartisan consensus gradually emerged in response to these developments that steps were needed to promote competition in all of these arenas—local telephony, long distance, cable, and even the prospect of “video dial tone,” that is, television delivered by the phone system. This consensus culminated in the Telecommunications Act of 1996. That Act not only addressed that objective, but—to some extent unwittingly—set the stage for the broadband Internet of today.

THE TELECOMMUNICATIONS ACT OF 1996

The Clinton Administration brought with it a very specific view of the future of telecommunications. It saw the potential for an explosion in “information services” and believed strongly

that relying on private investment and markets would be the best route to promoting innovation, raising investment capital, and managing the uncertainties about the shape these future services would take.

It applied this perspective widely. For example, it argued in international fora that the Internet did not belong in the province of the International Telecommunications Union, since it was different than standard telephony. It made sure that the governance structure of the Internet remained in private hands—those of the user community—rather than being moved to government decision makers. It took steps to facilitate Internet commercialization. And, with the Congress’ cooperation, the Omnibus Budget Reconciliation Act of 1993 preempted state and local regulation of entry by and rates for mobile telephone services, even though these were not yet regarded as direct competitors to other pieces of the telephone industry, let alone what we now think of as the broadband Internet. And the deregulation of mobile telephony was accompanied by public auctions of spectrum to support it (championed and overseen by then-FCC Chairman Reed Hundt), the first of which took place a year later and which resulted in increasing the number of competing wireless companies. The burgeoning success of mobile telephony and, subsequently, mobile broadband has its roots in this decision.

But the most important manifestation of the Clinton Administration’s perspective was the Telecommunications Act of 1996 (“the 1996 Act” or “the Act”). The 1996 Act was the watershed event that marked the end of the telephone age and the beginning of the Internet age in the public policy realm.

Today, we regard the convergence of telephones, television, and the Internet as a fact of life. In 1996, it was considered a futuristic proposition. The purpose of the 1996 Act was both to promote the convergence of these different delivery modes through *inter-modal* competition—and to foster competition within each of its individual component sectors (*intra-modal* competition).

But, nonetheless, the 1996 Act set the framework within which the high-speed Internet arose and telephone, cable, and the Internet converged once technological change bridged the divisions among them. The Act did so through two, interrelated features. First, the Act embraced and codified the distinction between *telecommunications* services and *information* services. The former was essentially the telephone system that had evolved through the Kingsbury commitment, the 1934 Act, and the MFJ. The latter, “information services,” would soon include the cable and broadband worlds, but at that moment mostly consisted of the private data networks used by larger companies to link computers, faxes, and other gear, and the then-fledgling world of dial-up services like Compuserve and America Online. Second, the 1996 Act treated those different classes of service very differently. Information services were by law excluded from traditional common carrier regulation, while traditional telecommunications continued under this regulatory frame. Cable systems received some other limited regulatory relief, such as a sunset on some pricing regulations by 1999 (although basic rates remain regulated today unless the FCC finds that adequate competition exists in a given market). At the same time, the Baby Bells were allowed entry into the cable business, from which they had previously been barred. Yet broader deregulation of telecommunications, while an aspiration, would await the emergence of expanded competition.

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The Act attempted to create competition in local telephone markets in three ways still relevant today. First, it prohibited states from sanctioning any local monopoly by the “Baby Bells.” Second, it required the Baby Bells to interconnect with

emerging competitors on state supervised rates, terms, and conditions, and created telephone number “portability,” allowing users to keep their number if they switched providers in order to jumpstart local phone competition (a critical requirement both to get competition started and maintain it in the long run). Third, and most controversially, it established that emerging local competitors to the Baby Bells could get wholesale connections on the Bells’ existing local phone networks and then resell that capacity in the retail market—a procedure known as “unbundling” (since it required the phone companies to separate, or “unbundle,” the capacity on their systems that supported voice calling and sell it at a below-retail rate). Unbundling spawned a new class of “Competitive Local Exchange Carriers” (CLECs) who availed themselves of this privilege and, to a great extent, became the lynchpin of the debate over implementation and enforcement of the Act.

As mentioned, the 1996 Act didn’t expressly compel the convergence of phones, cable, satellites, mobile phones, and the broadband Internet. But, at the same time, the sense that we faced a dramatically different future was in the air. The idea of an “information superhighway” had caught on, although it was unclear exactly what it would be. The Clinton Administration, and Vice President Al Gore and Commerce Secretary Ron Brown in particular, were enthusiasts for the promise of such innovation—the Administration was busy at work on various policies to facilitate the Internet’s commercial development. And important developments were setting the stage even as the 1996 Act was being debated and written.

As the 1996 Act was being debated, important technological developments were in motion. The switch from analog transmission of signals (in which a signal such as your voice is sent as a continuous and uninterrupted stream of waves) to digital communications (in which a signal is repeatedly sampled at very high speeds and converted into 0s and 1s) was proceeding rapidly, driven by cost and efficiency concerns as well as the potential product offerings it made possible.

The first commercial point-and-click browser was developed by Netscape, and public awareness of the Internet boomed. Dial-up services such as AOL and CompuServe went from being “walled gardens” of content to gateways to the Internet. The beginnings of a race by investors to fund the digital Internet and the enterprises that would use it began, setting in motion the dot.com bubble of the late 1990s. The 1996 Act was signed on February 8 of that year, and only 10 months later, Fed Chairman Alan Greenspan soliloquized over “irrational exuberance” in the stock market.

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So, while the 1996 Act addressed the specifics of both *intra*-modal and *inter*-modal competition for traditional telephone services, it also pointed towards a radically different future that it could not define but nonetheless sensed. In 1996, the cable and telephone worlds were distinct, and reciprocal interest in competing was guarded. While some cable companies showed interest in telephony, the cable industry as a whole did not race into it, although some began offering voice services after the Act was passed and others contemplated investments in circuit-switched phone service. Phone companies had experimented with “video dial-tone” trials but there was no evidence that there would be consistent and adequate consumer demand justifying a permanent commitment. High-speed broadband (at least by today’s standards) did not yet exist in the commercial market, much less the residential market. But the Act’s intuition was that, if the markets for the two types of services were competitive, and if the two systems entered into *facilities-based competition*—meaning wholly separate systems would connect the household to

services—long-term inter-modal competition could be strengthened at the same time. As baseball executive and savant Branch Rickey is said to have remarked, “Luck is the residue of design.” Or, as Louis Pasteur said, “Chance favors the prepared mind.”

At the same time, common carrier telephone regulation remained in place—and in some ways was made stronger by the 1996 Act. The unbundling provision—the requirement that the historical local phone companies make their parts of their networks available to local competitors at government set prices—was controversial and proved difficult to implement. The problem was this: the Act was now repealing the incumbent phone companies’ life-long monopoly franchise, and theirs was the only telephone infrastructure in place. The idea that cable and wireless would supplant them was not yet popular or substantiated by experience. So the Act included the unbundling requirement in order to rein in the local phone companies’ (presumably) temporary monopoly power over local networks and to assist the interexchange carriers like AT&T and MCI that lacked local network facilities but who faced the prospect of competition from the Bells in long distance.

The pricing formula the FCC established to implement unbundling became a major issue and influence on the development of telecommunications. As opposed to using prices based on actual historical or embedded costs, past depreciation patterns, and the like, it chose to use a forward-looking method based on what a *theoretical* future provider would charge, a provider that had built the most efficient contemporary networks using the best available technology. This standard was known as (yet another oppressive acronym) TELRIC—total element long-run incremental cost. The problem was that TELRIC was about what a prospective, efficient, new competitor would experience, which was far from the actual situation of the incumbent telephone companies, who had big, expensive legacy systems left over from their previous life as heavily regulated entities. The long-run, future-oriented



wholesale price the FCC and states established for access to the phone companies’ loops, therefore, was well below the actual historical cost structure of the incumbents who, predictably, resisted strenuously.

And so, the 1996 Act left behind a trail of controversies that have made up most of the telecommunications policy agenda since then. First, where is the line to be drawn between information services and telecommunications, and would Internet services continue to be considered deregulated information services or regulated common carrier services? Second, where—if at all—should “unbundling” and sharing of facilities be required? Third, when would we decide that competition had developed to the point that market forces could be relied upon to guide it, in lieu of the public utility perspective behind these regulations, and the ultimate goal (as expressed in the preamble of the 1996 Act) of a “pro-competitive, deregulatory national policy framework” achieved? These questions defined the broadband policy agenda for much of the coming decade.

THE WORLD ACCORDING TO KENNARD

“I want to create an oasis from regulation in the broadband world, so that any company, using any technology, will have incentives to deploy broadband in an unregulated or significantly deregulated environment. And that does not mean just cable companies. We must have fast and ubiquitous deployment of broadband services and that will only happen if every sector of the industry has incentives to provide it: wireline, wireless and cable.”

Remarks of William E. Kennard before the United States Telecom Association Annual Convention, October 18, 1999

FCC Chairman Bill Kennard’s statement, made three years after the 1996 Act, was both a summary of what had happened since the 1996 Act and a statement of what was expected to happen soon thereafter.

Chairman Kennard’s vision of the long-term future of the Internet, once seen as an over-the-horizon issue, was now explicitly one of facilities-based, inter-modal competition, and the center of that competition was no longer separate markets for broadband and telephone (and potentially video), but their convergence. And it was a deregulated future—an “oasis” from regulation would be created in order to give “every sector of the industry” the incentives to invest in it.

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But perhaps the most telling part of this quote is that the deployment of broadband “does not mean just cable companies.” That reflected both reality and Kennard’s vision. It reflected reality

because the 1996 Act, in its focus on competition within telephone and cable silos, created two different playing fields for the two technologies. Cable systems were heading away from the most onerous elements of regulation of their business, and they were investing heavily. They upgraded their networks to handle digital signals after the 1996 Act was made law, and their systems, where available, provided a very high quality of service to residential users. By the time Kennard spoke in 1999, the cable companies were the cutting edge of providing broadband, deploying many of the first high-speed Internet access services in the nation.

The response to the cable-based broadband offerings by the telephone systems was the more vigorous deployment of DSL (Digital Subscriber Line), a technology that allowed digital data services to be provided on the same copper wire as voice by using a higher frequency along the line. Phone companies began introducing DSL by the end of the decade, driven by consumer demands and in direct response to cable’s Internet offerings, but they generally lagged behind their cable competitors.

The slow response by phone companies to the new interest in the high-speed Internet was probably also driven by the imbalances found in the 1996 Act. A cable company, as a provider of information services under the 1996 Act, had something closer to the customary right to deploy its investment as it saw fit, although it still had a variety of regulatory mandates to fulfill. But the 1996 Act limited the incentives of telephone companies to invest in Internet improvements by imposing regulatory “unbundling requirements,” which required telephone companies to share their copper phone lines at the TELRIC price standard. In essence, anyone who wanted to pursue it could lease access from the phone company and enter the business in competition with the phone company at wholesale prices, whether used for voice communication or broadband connection service. This put the phone companies in a Catch-22. They had to sell the most important component of DSL service—the network that conveys it—to their competitors. But if they made the significant investments needed

to offer a better product—for example, by laying optical fiber for the “last mile” from the network to the home—they could find themselves forced to resell that improved capacity to competitors as well. As a result, they had little incentive to make new investments, and were being outcompeted due to regulation of the old ones. They were frozen in place, (a situation that now confronts the European Union, which uses a similar system and is falling behind the United States).

The freezing of the phone companies in this fashion slowed the nation’s overall rate of investment in high-speed Internet via fiber and DSL. Critics of the industry often seize upon this performance and use it as an argument to impose yet-stricter regulation of Internet providers. But, as described below, once the FCC eliminated unbundling requirements for new fiber networks in 2003, and the courts set aside line-sharing unbundling more generally in 2004, telco investment in fiber, either directly to the home (Verizon) or to neighborhood nodes (AT&T), began quickly and earnestly. Unconstrained by mandatory unbundling, cable companies had already responded with new versions of their DOCSIS high-speed data standard that met or exceeded the speeds of their rivals who, now similarly treated, responded in turn. As a result, the United States, driven by new competition between the telcos, cable companies, and wireless providers, now lags only Japan among the G-7 nations, and only highly urbanized Japan and Korea (nations with very high population densities, a key cost consideration in providing wired service) in connection speeds. So industry critics found themselves in the awkward position of advocating unbundling as the policy needed to improve U.S. broadband’s performance, even though that specific policy was directly responsible for the lag in U.S. high-speed broadband adoption. The industry sprang forward, both in absolute speed and in international rankings, only once the policies the industry’s critics advocated were abandoned.

The inroads made by cable during this period also hurt both the telcos and the telcos’ regulation-

induced DSL competitors, who had built broadband businesses based on unbundled wholesale access to the Baby Bell’s physical networks. While still a competitor in today’s market, Earthlink’s revenues peaked in 2003. Covad was valued at \$10 billion in 1999 and close to nothing a few years later. These meteoric rises and precipitous falls reflected the nature of these companies—they made no investments in their own infrastructure, which limited their ability to innovate, and their profitability was a product of regulatory privilege, not their own inherent ability to create value.

By the end of the 1990’s, these dynamics were coming to dominate the debate. Cable was winning the race to provide high-speed broadband, and telephone competitors were at a disadvantage due to the unbundling requirement. The vision laid out by Chairman Kennard in the above quote was widely understood and had bipartisan support—in that year, he went further, and laid out a visionary plan for the FCC’s role in a competitive, post-regulatory environment.³ But the vision still had to be reconciled with the questions left behind by the 1996 Act—where was the line between an information service and a telecommunications service to be drawn, and was such a line an eternal fact of life, or a creature of the technologies available at the time? Was the transitional device of “unbundling” really just a transition? To whom would it apply, and when might it end? The next decade would answer many of these questions.

THE RISE OF INFORMATION SERVICES

As technology progressed on many fronts, the convergence of the many sources of broadband connectivity began in earnest, and true competition was the result. While this was an unambiguously good thing, it left an important issue unresolved—was broadband access in all cases an “information service” or was it a “telecommunications service” that should be subjected to the same type of common carriage utility style regulation that applied to voice communications?

While the original intent of the Clinton Administration and the Congress seemed clear, it was not until after a series of regulatory pronouncements and court decrees that common carriage was taken off the table for all services except local phone networks.⁴ And, through these decisions, the regulators and courts made important statements about “information services” and “telecommunication services,” and the networks over which they were provided.

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In 2002, after a regulatory process that spanned two Administrations of both parties, the FCC under Chairman Michael Powell ruled that Internet access provided by cable companies should be classified as an “information service” and not a “telecommunications service,” removing the specter of wholesale imposition of a wide range of common carrier requirements, including unbundling. Opponents had claimed that, even though cable modem service brought consumers the entirety of the Internet (and that was why consumers purchased the service) the underlying transmission was itself the sale of telecommunications to the public and thus should be classified as telecommunications (i.e. common carrier) services. But, in a March 14, 2002, Declaratory Ruling, Chairman Powell announced that the FCC had “settled a debate over the regulatory classification of cable modem service and launched a proceeding to examine the proper regulatory treatment of this service” and that cable modem service did not contain a separate and distinct “telecommunications service” offering

that would make it subject to common carrier regulation.

Then on August 21, 2003, the FCC released a “triennial review order” that eliminated the unbundling requirement for fiber-to-the-home broadband capacity. (It also eliminated the unbundling requirement for “hybrid” fiber and copper loops, but allowed that states may find it necessary to re-impose those measures when some local competitors would be “impaired” by disallowing them wholesale access.) Verizon almost immediately began formulating and implementing plans to deploy fiber into neighborhoods and ultimately, to residential premises now that the disincentive to do so had been eliminated.

The decision to liberate fiber was not universally acclaimed. One FCC Commissioner argued that “today’s decision chokes off competition in broadband. Consumers, innovation, entrepreneurs and the Internet itself are going to suffer. . . . This is not a brave new world of broadband, but simply the old system of local monopoly dressed up in a digital cloak.”⁵ In retrospect, it is difficult to defend that prediction. The introduction of fiber-to-the-home was both spurred by cable’s entry into broadband and, in turn, produced a competitive response from the cable industry that has improved the U.S. absolute and relative broadband performance dramatically, demonstrating the value of *facilities-based competition*. Thus, deregulation of “telco” broadband actually spurred investment by cable, telco, and wireless competitors, a cycle that continues today, as Advanced DSL and DOCSIS 3.1 are readied for market, and 4G LTE becomes ubiquitous. It is hard to imagine that we would have been better off if continued unbundling requirements had prohibited fiber deployment, much as it would be hard to argue that we would have been better off if providers of cable modems were forced to open their facilities to competitors.

Over time, the Courts provided clarity on the nature of the mandates applied to different groups of providers. For example, the FCC’s Triennial Review Order that eliminated unbundling for fiber loops did not provide the same treatment

for hybrid loops of fiber and copper under some circumstances. But when industry groups appealed that part of the order, the U.S. Court of Appeals for the District of Columbia Circuit in March 2004, essentially rescinded any unbundling requirement save for a minimal level of access—64 kbps, enough for voice service, reflecting the original intent (to preserve telecommunications services) of the 1996 Act. And in June 2005, the Supreme Court ruled in what is known as the *Brand X* case.⁶ In that case, a small Internet service provider in Santa Monica, California, argued that the cable modem ruling of 2002 was in error, that the data communication portion of a cable modem service was a telecommunications service, and that it was therefore subject to common carrier regulations requiring (among other things) cable companies to unbundle it for competitors. But the Court ruled that the FCC’s determination that cable broadband was an “information service” was reasonable and could stand.

After *Brand X* (and follow on proceedings at the FCC), the basic questions regarding the application of the 1996 Act structure to emerging Internet technologies and innovations appeared resolved (although controversies remained as the FCC worked through the implications of the decision for DSL, wireless broadband, and other services). The Courts and the FCC had converged around one view—that simply because an “information service” contained a “telecommunications” component that did not make it a “telecommunications service” subject to public utility common carrier regulation. This was the logical interpretation of the 1996 Act’s provisions in light of dramatic technological change, which was ratified immediately by capital markets that poured vast investment into companies and technologies when it became clear the common carriage regime (and, therefore, the possibility of unbundling) would not apply. In this context, at least, the policy intents of the 1996 Act and of Kennard’s 1999 vision had finally been achieved.

NET NEUTRALITY AND NETWORK MANAGEMENT

The various regulatory and legal considerations

of the difference between telecommunications and information networks discussed above have centered on their essential character. But as the last decade progressed, the debate soon moved on to their engineering and logistical nature. In particular, two policy proposals moved to the fore—“net neutrality” and the regulation of network interconnection—each of which seeks to have broadband networks behave like their telephone antecedents. These have become perhaps the most loudly debated, if not most important, aspect of policy toward the Internet today.

“Neutrality” first: The telephone system of a generation ago was “dumb”—it did little more than to set up an electrical circuit between a calling party and a called party. In the analog world, that voice signal was a continuous wave carried without interruption from one destination to another—that was the only way the system could work. If the system was overloaded, the caller got a busy signal and came back later.

By contrast, under the protocols that now govern not just voice transmission but all data, image, video, or other streams on the digital Internet, all messages are broken down into “packets” that find their way across the Internet individually and are reassembled when they arrive, a technology that lies behind the increases in speed, network utilization, quality, and declines in cost of the past decades. That means that networks can be managed to optimize their performance—they’re not “dumb,” as was the old phone system.

This difference emerged as a policy issue in the mid-2000s. In 2005, for example, the FCC fined Madison River, a North Carolina telecommunications company, for blocking Vonage’s VoIP traffic, which potentially competed with Madison River’s own telephone service. The question of limiting certain types of traffic became more nuanced in 2007, when Comcast began to manage traffic that used BitTorrent, a program used for very high volume applications like peer-sharing music, video, or other large files. To some, the decisions to limit BitTorrent

during periods of Internet congestion could be analogized to a grocery store deciding how many registers to open and how many lanes should be devoted to those customers with a limited number of items. But critics raised the possibility of Internet providers editorially managing the traffic on their system—deciding what traffic would move and at what speed based on what the providers “liked” or “didn’t like.” Perhaps this would be editorial control, perhaps they would quash traffic that competed with their own (for example, blocking Netflix because it potentially competes with a provider’s video-on-demand). These advocates ultimately petitioned the FCC to prohibit the practice as applying to BitTorrent, and the episode became an emblem for the policy of “net neutrality” (which postulates that all traffic should move across the Internet under identical terms and conditions, much as telephone calls did under the regulated, analog voice system). In essence, neutrality advocates wanted the broadband network to act the way the old phone system did. Moreover, they argued that the Internet “always worked that way,” and that this equality of treatment of all data was essential to its character.

The idea that all traffic must be treated equally sounds democratic, but can be costly and inefficient in practice, and ignores the reality that different Internet traffic can have different needs for speed and reliability.

To neutrality’s detractors, these arguments missed the point. The Internet that “always worked that way” was one that delivered files and mail to users, not data-intensive video files and other large claimants to bandwidth. Moreover, the idea that all traffic must be treated equally sounds democratic, but can be costly and inefficient in practice, and

ignores the reality that different Internet traffic can have different needs for speed and reliability. Because the broadband network has intelligence, it could readily offer different levels of service, allowing some content to move more rapidly (for instance, by keeping their packets together instead of distributing them—thus eliminating “buffering” as they are reassembled). This would be one way to resolve congestion, and the ability to use a “premium” service would greatly assist innovations that require such an unbuffered connection, such as remote medicine, distance learning, entertainment and gaming, and the like.

Net neutrality opponents argue that allowing content to pay for the higher quality of their signal (much as we allow households to pay for the higher speed of their connection) could reduce the share of network costs borne by end users. An analogy can be made to a newspaper—it charges advertisers to reach its readers, and readers to see its advertisements—it is a “two-sided market.” If a newspaper were prohibited from charging advertisers for space, the cost of the newspaper to readers would be much higher. *Not* charging content (websites) for premium access, therefore, potentially increases costs to users, who end up subsidizing content, including content they may not use and that others in the market would readily support.

This debate over neutrality rages today. The purpose of this paper is not to resolve it, but to place it in historical context.

The debate first flickered to life in D.C. policy circles when Chairman Powell spoke on “Preserving Internet Freedom” at the February 2004 Silicon Flatirons conference. The following year, the issue was joined in earnest when the FCC issued its “Internet Policy Statement,” an attempt to identify general principles that might guide the management of network traffic. That statement said that consumers were entitled to: access the lawful Internet content of their choice; run applications and services of their choice subject to the needs of law enforcement; connect to any device that does not harm the network;

and a competitive market for all components of the Internet “package”—connectivity, devices, services, applications, and the like. Although the Commission did not adopt rules in this regard, it said it would incorporate those principles into its ongoing policymaking activities.

But at the same time, it recognized that those principles were subject to “reasonable network management,” which left situations like the Comcast/BitTorrent instance in a regulatory grey area. The FCC ordered Comcast to make its network management practices transparent. But what gave the FCC the right to regulate the way information services were managed? If a telephone company in a prior age had created a system that allowed some users to bypass a busy signal, the FCC would have prohibited it, as part of its mandate to regulate a sanctioned monopoly. But broadband (an information, not telecommunications, service) exists in a competitive environment funded by investors. What gave the FCC the authority to regulate network management practices in that world the way it did in the first?

Comcast took the FCC to court over the BitTorrent order and, in 2010, the U.S. Court of Appeals for the D.C. Circuit found that the FCC had failed to show that its decision was reasonably related to its statutory authority. Taking this authority unto itself, the Court found, would “virtually free the Commission from its congressional tether,” giving the FCC the ability to impose regulations on Internet service providers that were not based on Congress’ expressed intent. A second and more basic legal challenge to the FCC’s ability to impose neutrality on the Internet will be discussed below.

A second regulatory proposal would recreate the old phone system’s practices regarding “interconnection.” The old phone system, as mentioned above, had both long distance and local carriers. Regulation required all of them to interconnect at a specified “price.” “Price” is set in quotes because what was really being set was the way in which revenues would be divided among the system’s participants. And interconnection

had to be mandatory because otherwise any of the system’s sanctioned monopolists (in either long distance or local service) could try to jack up the price of interconnection to the other by holding the system hostage, and all heck would break loose.

But the Internet works differently. Websites generally take their content (either on their own or through a contacted service provider) to one of many “backbone” networks that make up the Internet, which in turn take it to the local networks in your neighborhood. There are many of these backbone providers—not just ISPs, but also such more specialized companies as Cogent, Tata, and others—and they move data across the network to minimize cost and maximize speed and efficiency through a flexible system of arrangements. If these backbone providers billed each other every time a message jumped from one of their lines to the others, they’d go nuts processing the transactions. So, instead, when the two parties are roughly the same size in terms of volume of data transferred, they set up a peering relationship, which says that they will trade data without billing so long as the volume moving both ways is “roughly” in balance. If their traffic falls out of balance, they settle up and figure out how to manage the imbalance. When two networks’ traffic exchanges are dramatically different in size, other “settlement based” or commercial arrangements allow this exchange to occur.

“Peering” and other arrangements, therefore, are the Internet’s effective free-market substitute for mandatory and regulated interconnection, a system that makes the competitive backbone “market” work just as the old system made the prior-day, regulated monopolies work. The system has been tested, several times, most publicly in an instance involving Level 3 and Comcast. Level 3 and Comcast had a settlement-free peering agreement, one that required that traffic exchanges be roughly in balance, per the companies’ respective published peering policies. Then Level 3 entered into an arrangement to carry huge amounts of Netflix’s movies on its network, which resulted in the balance of traffic between Level 3 and Comcast falling far out of balance.

Comcast asked to move to “settlement based” peering but Level 3 refused to pay and escalated its argument to the FCC, insisting that Comcast’s demand that they renegotiate their peering was a violation of an “open” Internet and the FCC’s oft-stated principle of “net neutrality.” FCC Chairman Julius Genachowski, in remarks before Congress, leaned toward Comcast’s view, arguing that peering disputes were private business matters, and expressed the hope that companies like Level 3 and Comcast could work out their differences as was routinely done in the marketplace. (The companies did in fact work out an agreement, without regulatory intervention.)

A similar dispute is now underway with Cogent—yet another conveyor of Netflix content—and Verizon. (Note that video plays a role in both these examples.) And, again, advocates for regulating network interconnections see this dispute over traffic exchange among networks—a dispute resolved by regulation under the rules of the old phone system—as an example of the need for regulation of the new broadband system, even though the vast bulk of Internet traffic moves through these market-based arrangements without incident.

Thus, the debate over regulation of the Internet has moved from the issue of common carriage to the issue of network management. But, paradoxically, the resolution of the second question could lead us back to the first. In December 2010, the FCC issued its “Open Internet Order,” which prohibits Internet service providers from “discriminating” against any legal content among other requirements, subject to reasonable network management requirements. This is often assumed to prohibit ISPs from offering “tiered” services to Internet content providers, although it may be argued that allowing content providers to pick a service tier at posted prices is no more discriminatory than letting consumers choose among “good,” “better,” and “best” from Sears.

Verizon, in response, appealed the Open Internet Order in the courts, claiming that the FCC lacked the authority to impose the neutrality requirement,

prohibit differentiated service (so long, of course, as it didn’t violate antitrust or other consumer protection statutes), or regulate interconnection, because of the difference between information and telecommunications services, the same distinction the FCC cited when freeing the latter from common carriage requirements.

The Court’s decision in this case was delivered in January 2014. While it acknowledged the FCC’s role in promoting the Internet, it found that the FCC, having classified broadband ISPs as information service providers, could not impose common carrier-type regulations on them. In response, many advocates for neutrality and similar regulation now suggest that the FCC identify (or “reclassify”) the Internet as a telecommunications service rather than an information service, thereby undoing the distinction first made in the law in the 1996 Act, and undoing the Clinton Administration’s guiding intent.

WHAT ARE THE LESSONS?

Different analysts will take different lessons from this history. This review sees three of primary importance. They are:

- information services and telecommunications services really are different;
- investment and capital flow to where regulation (or the absence thereof) encourages them to flow; and
- technology, business models, and consumer behaviors change and, as they change, the meaning and effect of different regulatory proposals change as well.

The rest of this section examines these three propositions.

The 1996 Act codified the distinction between information services and telecommunications services, and expressly limited common carrier regulation to telecommunications. The Internet has flourished as this distinction was put into practice and, critically, common carriage status and unbundling requirements were either lifted

or were never placed on the various information service providers that offer high-speed broadband.

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One of the intentions of the 1996 Act was to preserve the commitment made to the public in the 1934 Act—that they would have access to local telephone service at affordable rates, including emergency services such as 911. Cable was still subject to a variety of regulatory mandates—its basic tier was subject to price regulation, and it was still subject to certain carriage and tiering requirements—but the Act asserted a basic difference between telephony and cable television, data communication, or other information flows, as had past FCC regulatory practice and the perspective of the Clinton Administration. The distinction made in the 1996 Act between telecommunications and information services reflected genuine and significant differences in the nature of the two services—differences in functionality, in engineering characteristics, in their potential for innovation and improvement. The differences and distinctions between the two made in the 1996 Act were not political or semantic, but real.

The distinction between the two types of services was made so that there would be a guideline for determining where regulation and common carriage status were needed. It was imposed on providers of telephone services because these had been local monopolies and, therefore, had the only telephone infrastructure in place. Had this not been the case, the imposition of common carriage

would have been outrageous. Imagine, for instance, that we applied unbundling to peanut butter, and Peter Pan had the legal right to use Skippy’s manufacturing facilities at a price determined by what Peter Pan’s processing costs would be if they had built a new, state-of-the-art plant (which they did not and had no intention to do). That is exactly what unbundling does. The 1996 Act, therefore, imposed common carriage in a narrow area to correct for a historical fact, but it spared new forms of innovation and investment from this burden.

The differences between telecommunications services and information services recognized by the 1996 Act have been extended significantly since then, in part *because* of the way the 1996 Act treated them, and in part because of technological progress. The old phone network addressed by the 1996 Act was built by sanctioned monopolies that traded the market power the government ceded to them for a regulated return and the ability to invest in facilities with minimal risk. But Internet access has been provided by competing private parties who have risked their own investments—over a trillion dollars’ worth since the 1996 Act—without government guarantees. This extends the original basis for the distinction between the two systems—information services were financed by risk capital, in contrast to their legacy telecommunications counterpart.

The system of sanctioned monopolies also gave rise to mandatory interconnection and settlement policy regarding shared revenue (for instance, the division of dial tone revenues to local versus long distance calling). The system needed mandatory interconnection to work, and required a method for allocating revenues and costs among long distance and local traffic (which essentially determined what the price of that interconnection was) to determine profits as well as to subsidize many local services. The Internet, in contrast, is a “network of networks” comprised of many different companies’ facilities. As opposed to their regulated predecessors, these companies are in the *business* of interconnecting. Occasional cases such as Level 3 and Comcast, or Cogent and Verizon

(or Cogent and Sprint in 2008, when Cogent had again asserted that free “peering” did not require balanced traffic loads), are the rare and usually histrionic exceptions to a system that works well every day. And there is a serious risk that undue regulation in this well-working area may only generate or incite such disputes, rather than eliminate them.

Investment goes to where regulation allows and encourages it to go.

Moreover, as mentioned earlier, the old phone system was a “dumb” system that connected user to user without any control over their communication absent breaking the circuit. And the signals that it carried were homogeneous—phone calls varied only in how long they wanted their circuit to remain open. But because of packet switching and the digitization of all forms of information—voice, data, images, video, or what-have-you—the traffic carried by the Internet varies widely, meaning that the cost to the network and the implications for network management of different signals can be very different. This means that different types of traffic impose different costs on the system (through congestion) and that the economic value of traffic to the user can vary widely (for example, an interbank transaction versus your e-mail to your aunt). And if users wanted more “quality” in the regulated phone world, it happened outside the regulated system—big users bought private networks. An important difference between the two systems, therefore, is that today’s information systems *allow* the consumer to match price and quality as she or he sees fit if we allow them to do so.

A second overall lesson learned from this experience is that investment goes to where regulation allows and encourages it to go. When price regulation or common carriage is imposed, the only way to secure investment is to guarantee a return to it, with the predictable effects on innovation and expansion. That is

why those features have been reciprocal sides of the basic regulated telephone bargain. But once opportunities appeared outside the regulated system, money poured into them. The MFJ of 1982 opened the gates to aggressive investment and competition in long distance markets. Investment poured into cable television in the 1980s once the 1984 Cable Act reduced regulation and standardized it across the national market. It then backed off after the 1992 Act mandated new price regulations. But when the 1996 Act rolled back aggressive cable price regulation, cable began to attract major investment again, not just for television service, but to implement the DOCSIS standard that brought the United States into the world of wired broadband. And the absence of regulation also supported the 1990s boom in fiber Internet backbone, by allowing interconnection to be negotiated by private parties in a competitive market. Fiber is being installed at a much faster rate in the United States than it is in Europe; what would happen to investment in fiber Internet backbone in the United States if it were to suddenly and unanticipatedly be made subject to federal mandates regarding carriage and retransmission and price oversight?

The same dynamics can be found regarding wireless, DSL, and fiber-based systems. Wireless systems were freed from most price regulation in the 1993 Omnibus Budget Reconciliation Act, and wireless broadband was subsequently classified as an information service, which has allowed investment in those systems to remain strong ever since, rising from under \$20 billion annually in 1996 to about \$35-40 billion annually for most of the past decade.⁷ The rise of DSL access over a decade ago, in contrast, was wholly a matter of giving competitors access to existing infrastructure and, as a result, little new infrastructure was built. But once new fiber and hybrid system were taken out from under the burden of common carriage and threats of unbundling, investment in them was sudden and sizable, triggering a new round of competition that has brought the United States from 22nd to 9th, and rising, in international rankings.

Thus, investment goes where regulation guides it by making it either welcome or unwelcome. And both common carriage and a prohibition on service tiering have this characteristic; they throttle the flow of capital into the sector and are therefore implemented at a potentially great cost, particularly in light of the stated policy goal of expanding and improving the Internet.

A third and final lesson of this experience is that technology constantly changes, and regulations and procedures that are premised on a set of technological “facts” may be severely challenged when those facts change. The 1996 Act demonstrates this problem. While it may have mostly anticipated intra-model competition, inter-modal competition has actually blossomed as well. Moreover, broadband was a far-away-future when the 1996 Act was drafted, and wireless broadband was simply not yet imagined, although it is perhaps the fastest growing component of competitive broadband today and the one in which the United States is an unambiguous world leader.

Technological change has affected broadband regulation in other ways. The ability to compress video, music, and other types of content has made Internet traffic far more varied, unlike the voice signals carried by the analog telephone networks of a generation ago, and unlike the simple file sharing that led to the creation of ARPANet and other precursors of the modern Internet. This legitimately raises the question of whether to allow service differentiation, which was arguably irrelevant under the old phone system or the Internet’s precursors, but is very relevant given the Internet’s great capabilities and the broad range of users and users it serves.

But perhaps the most subtle, yet pivotal, technological change that challenges our ideas about Internet regulation is the rise of devices, applications, and services, a change triggered by the introduction of the iPhone. The FCC’s various statements about the management of the Internet, going back to the Internet Policy Statement in 2005, have all been based on the view that the choke point in both telecommunications and

information systems was the network itself—they were “network centric.” The old phone system represented that view—the only purpose for the equipment you bought was to reach the network. But after the explosion in devices triggered by the iPhone, and the proliferation of “apps” and services the iPhone has allowed us to imagine, the model of how broadband creates value has changed dramatically, as first discussed in a seminal paper on “the consumer value circle” by Jonathan Sallet.⁸

The “value circle” argument sees the iPhone as turning the idea that all value resides in the network on its head. Where devices were once simple attachments to the network (such as the black Western Electric handsets that populate film *noir*, or the monopoly era’s most compelling “innovation,” the Princess phone), the network has increasingly become merely the stage on

This change in market structure, driven by both innovation in both devices and connections, has changed the market, but regulation has yet to catch up.

which the device does spectacular things. And as post-iPhone devices have grown in power and sophistication, an entire new industry emerged in applications that compete with the devices for consumer allegiance as much as the devices themselves compete with the service providers that host them. Rather than an edifice that rests on the signal of Internet providers, the broadband experience is now an integrated proposition in which signal, devices, content, and applications all compete to be the organizing framework for the consumer’s experience—the broadband value proposition. Each is now a platform in its own

right and competes to be the part of the experience to which the consumer bears allegiance, whether it's "Comcast has the fastest connections," or "the iPhone is better than all the others," or "Google is the best way to see the world's information," or "to me, the Internet is Facebook and Twitter." Each is competing for a larger slice of the "pie" of value the consumer assigns to the integrated broadband experience.

Moreover, by the traditional measures, many of these other components of the integrated broadband proposition are even more "concentrated" than the provision of signal. The leading operating systems for mobile phones hold a far larger share of their market than do the largest ISPs in theirs. The "concentration" of social media, or Internet search, or other key applications or services are also just as, if not more, concentrated than broadband providers.

This change in market structure, driven by both innovation in devices and connections, has changed the market, but regulation has yet to catch up. The Internet Policy Statement and other "network-centric" policies did not anticipate that these other value-creating elements force ISPs to compete just as another ISP would, if only because they are contesting shares of the total broadband experience. Consider this example: as wireless signal providers offer stronger and more reliable connections, the capabilities of the devices they support grow. Look at the iPhone's voice-recognition capabilities. Voice recognition, as anybody who has ever talked to a customer service "agent" knows, has been around for a long time. But it only became practical to use on a mobile device once connections became good enough to support real-time communication between your phone and the voice-recognition hardware in "the cloud." So once real-time connectivity was made possible, thanks to the investments and innovations of the mobile carriers, Apple provided an innovation that used that connectivity. That made the iPhone more valuable, but did little to improve the market power of the carriers who made the innovation possible. Instead, ISPs are

on a treadmill to provide better and better signals so that Apple or Android phones, or apps such as Facebook or Twitter, or services such as Google, can deliver more value to the consumer by using them, growing profitably in the process.

So the new business dynamics in the mobile broadband world are these; mobile ISPs invest and improve their service, which allows the functionality of devices and the desirability of apps and services to increase and, paradoxically, *reduces* the market power of carriers by commoditizing them in the eyes of the consumer. In fact, they are not "commodities"—their ongoing innovation and improvements speak to that. But their ability to gain market power is limited in the face of these new dynamics. Internet provision, because of these dynamics, is rapidly becoming a classic example of the traditional economic definition of an "epochal invention"—more money is made *using* it than *providing* it. And yet regulation is still organized around the idea that the network itself realizes all of the value created by the broadband experience, much as it realized all of the value in the phone system of a generation—if not a lifetime—ago.

CONCLUSION

We are now in the middle of a heated debate over Internet regulation, with the possibility of an even more feverish one now that the courts have ruled in *Verizon vs. FCC*. Many proposals have been made to regulate Internet providers that have their roots in the regulatory history of the telephone system, but while the history of that system and the transition away from it is now commonly known, the way in which policy proposals have interacted with the system over time is not. As this paper seeks to make clear, many of the proposals being debated as "new" and "necessary" are neither—and actually originated in a dramatically different place and time and set of circumstances that bears no relationship to the marketplace of today. Moreover, history makes clear that regulation influences investment and is often undone by technological change. Any view on regulatory proposals for the broadband world should respect that history and the lessons it has to teach.

ENDNOTES

1. See Ehrlich, the State of the Broadband Internet, Progressive Policy Institute, April 2014 (forthcoming).
2. Many other authors have investigated this history in more time and detail than allowed here. One such work is Jonathan Nuechterlein and Philip J. Weiser, *Digital Crossroads: American Telecommunications Policy in the Internet Age*, (2nd edition, MIT Press 2013).
3. Federal Communications Commission, “Strategic Plan: A New FCC for the 21st Century,” August 1999: http://transition.fcc.gov/21st_century/draft_strategic_plan.pdf.
4. That is, in contrast to the situation that existed when the Congress passed the 1996 Act, a majority of the country now relies on other than copper loop for its local phone calls—cable has replaced the phone company in many of these applications, and a steadily rising share of households use only mobile phones.
5. FCC Press Office, “FCC Commissioner Michael J. Copps Reacts to Release of Long-Awaited Triennial Review Decision,” August 21 2003: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-238137A1.pdf.
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7. US Telecom, “Broadband Investment,” 2013: <http://www.ustelecom.org/broadband-industry/broadband-industry-stats/investment>.
8. Jonathan Sallet, “The Creation of Value: The Broadband Value Circle and Evolving Market,” Structures Social Science Research Network, April 4, 2011: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1821267.

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