SHAPING THE DIGITAL AGE:

A PROGRESSIVE BROADBAND AGENDA

BY EV EHRLICH

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policy
institute
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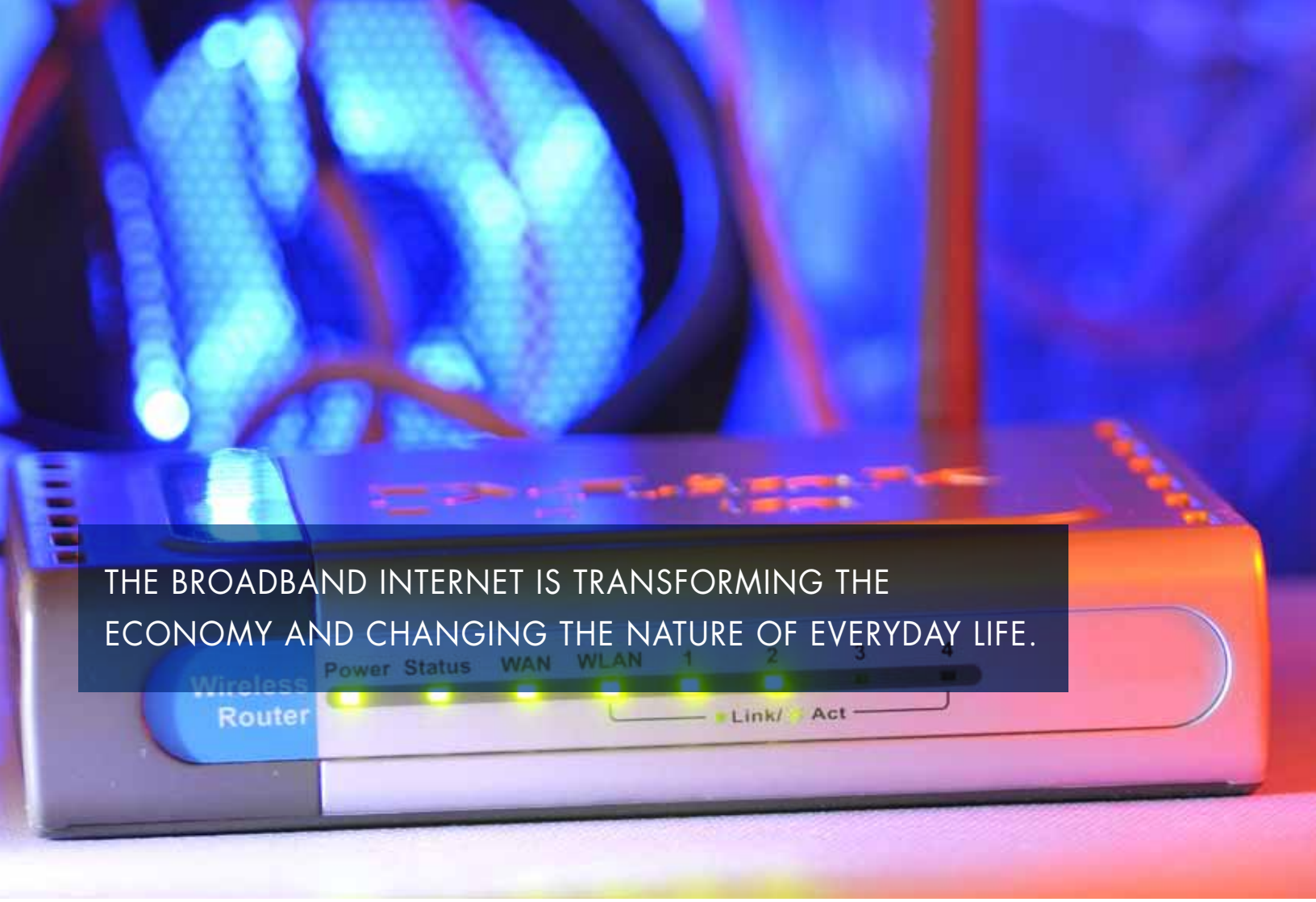

THE BROADBAND INTERNET IS TRANSFORMING THE ECONOMY AND CHANGING THE NATURE OF EVERYDAY LIFE.

INTRODUCTION

The broadband Internet is an epochal technology. It is transforming the economy and changing the nature of everyday life. Its construction and development requires large quantities of resources, and its existence generates substantial innovation and economic growth.

What is the public sector's best policy approach to this burgeoning phenomenon? Views differ across the political spectrum. The conservative vision of policy regarding the Internet is to leave it alone. Progressives find that view wanting, but what is their corresponding vision?

The answer is unclear. To some advocates, it involves an aggressive regulatory stance, whether in the form of "net neutrality," "common carriage," limitations on the sale of spectrum, or other policies that limit the latitude and operations of the companies that build and manage broadband networks. The most recent example of this type of advocacy is Susan Crawford's Captive Audience: The Telecom Industry and Monopoly Power in the New Gilded Age.[1] To others, this agenda seems excessive, but plays to an innate skepticism about large (and older) companies in general—particularly when contrasted to such new corporate Goliaths as Apple, Google, or Facebook, which have made their fortunes by existing on the Internet, rather than by providing it.

What should the progressive agenda be? Are our choices either to embrace this aggressive regulatory agenda or to accede to conservative laissez-faire? This essay argues that there is a third, and far more promising, option for such a progressive broadband policy agenda. It balances respect for the private investment that has built the nation's broadband infrastructure with the need to realize the Internet's full promise as a form of social infrastructure and a tool for individual empowerment. It turns

away from problems we may reasonably fear but that simply do not exist—most importantly, the idea that the provision of broadband services is dominated by an anti-competitive "duopoly" that stifles the broad dissemination of content. And it forthrightly addresses new ones—such as the need to create mechanisms to develop broadband as a ubiquitous social asset, to create institutions that do not second-guess its unpredictable and burgeoning growth, and to protect consumer privacy and users' right to control the use of their personal information.

This paper consists of three sections. The first discusses what progressives should want from the Internet, the second examines the true state of competition in the broadband sector, and the third lays out a progressive agenda.

I. BROADBAND TECHNOLOGY AND THE PROGRESSIVE WORLDVIEW

It's axiomatic, if not trite, to note that the broadband Internet is transforming our economy and society, and is a primary driver of economic growth and new employment. Numerous studies have made that much clear. So, simply from the perspective of economic growth and employment, it's vital to "get it right" with respect to broadband policy.

But for many progressives, "getting it right" means addressing what they see as undue market power in the provision of broadband and the potential for the abuse of that market power. It is here that many progressives enter the broadband policy wormwood.

The concern expressed by the "activist" camp in the progressive community is that the purveyors of broadband access have the motive and means to exert undue market power over the dissemination, substance, and character of the Internet itself—to rule the Internet universe and, therefore, to control the flow of content over its labyrinth. If there is an intellectual underpinning to the various proposals criticized in this essay—net neutrality, unbundling and mandated access to infrastructure, even the idea of a "public utility" Internet—it is the assertion that broadband

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providers have undue market power and therefore the potential to limit what users might be able to access and experience. Similarly, critics argue that the non-competitive nature of Internet provision leads to slower adoption and less innovation than would otherwise be the case (although a recent paper by the Information Technology and Information Foundation undercuts many of the assertions that the U.S. trails the world in broadband quality and adaptation). And there is the more specific concern that providers will restrict or impede content that competes with that of the system's purveyors, such as online entertainment. This framework has taken on an even greater importance as video content comes to dominate the Internet and the need to manage the burden it places on the system as well as the congestion it creates for other users grows. One person's sound engineering practice is another's unequal treatment of notional equals.

But beyond these economic issues lie the Internet's effects on society—its role as a public good, or more precisely, its social character. Conservatives see the high-speed Internet as the ultimate tool for individual empowerment. It allows people to pursue their own interests and achieve their own excellence, acquiring knowledge and skills, starting businesses or otherwise seeking opportunity, formulating plans that take risks in pursuit of prospective reward. Ayn Rand would approve.

Progressives don't deny that aspect of life in the broadband world. But beyond these effects,

progressives see the Internet as a landmark tool for social and political openness and empowerment.

Social empowerment has to do with broadband's potential to re-invent the "social" sectors of our economy—health care, education, environmental management and remediation, and state and local government. These sectors' performance will depend on a variety of reforms and policy changes, including a greater role for market forces. But at some point, progressives recognize that these sectors are inherently different from those parts of the economy in which markets are allowed free reign. The differences between progressives and conservatives in this regard are never black and white—Newt Gingrich has developed a variety of ideas as to improving the performance of the health care sector using broadband. But, to progressives, markets can only go so far. They can help make the education and health systems more productive, but public schools have many aspects of a public good, and health care is a human right conveyed by a system in which consumers rarely have adequate information to be fully-fledged market participants. But the high-speed Internet creates the possibility of re-engineering—"reinventing"—the health care system, the way our children learn, the way we monitor and address environmental degradation, and even the public sector Leviathan itself. So broadband gives these "non-market" sectors a powerful tool to improve productivity and social welfare.

In contrast to social empowerment, the concept of political empowerment sees the broadband Internet as a source of countervailing power for typically unorganized constituencies among consumers, citizens, or workers. This progressive view of the Internet as a tool for empowerment is already visible in the broadband landscape. The Internet was central to the defeat of the Stop Online Piracy Act and the Protect IP Act, which would have had a chilling effect on the dissemination of content. The culminating event of the response to those proposals was a protest in which over 115,000 websites suspended or sharply curtailed their operations. It was the first true protest held in Internet space. Similarly, the worldwide attention now placed on human rights criminal Joseph Kony is almost wholly due to a video about his activities that was seen almost 100,000,000 times on the Internet, and only one example of the use of the Internet as a tool for activism.

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At a more mundane level, a variety of companies have found that consumer opposition to price increases, fees, or other activities is far more successful when carried by the Internet—for example, Bank of America's attempts to charge customers a monthly fee for using their credit cards, or Verizon's proposed fee for one-time bill payments. And that is the concern—what if Verizon had some monopolistic power over access to the Internet and could use that market power to restrict the speech and expression that prompted the company to reverse itself (although clearly it didn't)?

So the threat of market power, for progressives, would not only produce economic losses, but would undermine the Internet's existence as a source of empowerment of the individual and countervailing power for underrepresented groups in society. It's for that reason that they share the concern, first raised by Commerce Department's Assistant Secretary Larry Irving, that our society faced a "digital divide." But these concerns are built around a larger assumption—that there is undue market power in the provision of broadband access and that there is a reasonable danger of its current or prospective monopolization. Absent this assumption, there would be little basis for the kinds of intervention critics advocate, much as there is little basis for that level of intervention in the competitive markets for other products—T-shirts or peanut butter.

Thus, whether the Internet and its attendant services are provided in a competitive fashion becomes central to the reasonableness of

progressives' concerns and the efficiency with which they will reach their goals. That is the next issue addressed here.

II. IS THE INTERNET "COMPETITIVE?"

To some critics, the case that the Internet's services are not competitively supplied is simple and straightforward. Providing wireline access requires substantial up-front investment and, as a result, that access is only provided by the two entities that physically connect to the home—telephone companies (telcos) and cable television companies. The dominance of these two classes of providers in physical (wireline) connection leads critics to label them a "cable/telco duopoly".

This section will argue that this argument is specious on ever-broader grounds;

- First, Internet provision by physical connection does not resemble the kind of goods or services economists describe in the "duopoly model";
- Second, this view requires that we ignore wireless broadband, which is not only an ever more effective substitute for wireline, but also risks displacing it in many circumstances; and
- Third, and ultimately more importantly, broadband access providers find themselves in a strenuous and, for the consumer, incredibly productive, multi-dimensional competition with the providers of the devices, applications, and services that rest on their infrastructure. This "cage match" or "platform" competition is the key to understanding the future of broadband.

Let's examine each of these points in order.

The first argument concerns nature of "duopoly." In 1838, Augustin Cournot pioneered the theory of duopoly, a theory updated and refreshed by the modern mathematician, Nobel-winning economist, and feature movie subject John Nash. Duopoly theory notes that, in markets with only two competitors, each will improve their profitability by colluding and coordinating their decisions to restrain output and raise prices.

But even if we were to limit our analysis of the broadband market to wireline connections provided by cable and telco companies, there are important reasons why the duopoly model doesn't describe the market for connectivity.

The first reason is innovation. Duopoly theory holds that two competitors will collude by agreeing not to reduce price. But the implicit assumption in this theory is that the only way one competitor can make further inroads into the market at the expense of the other is through price. There are no other "dimensions" of competition in the duopoly model—price is the only way to take market share from a competitor. The oligopolies of the 1950s—most famously, the steel industry—fit this view. Technology was stable and the product evolved very little—the only way to sell more was to price less.

But imagine a world in which cable and telco broadband providers colluded on prices. Over time—and not very much time—the market would move to the provider with better service, as measured by speed, reliability, or whatever else consumers value. The loser in that technological competition would have no recourse but to respond by lowering prices, or abandon a massive investment. In other words, it's impossible to sustain prices above market levels when technological innovation is the most important dimension of competition. This is even more true once the fixed costs of physical infrastructure build-outs have been borne, as improving speed on the system can often be done relatively less expensively through software and engineering.

A second problem with applying the duopoly model to broadband is the presence of high fixed costs. In the standard duopoly model, the firm's marginal costs—the cost associated with producing additional output—rise with production. This means that expanding production degrades profits, which gives classic duopolists the incentive to curtail their output. But broadband infrastructure has very high fixed costs, which means that added customers and added volume add to profits, as they allow fixed costs to be spread over a larger number of users. Moreover, this high-fixed cost character reproduces itself throughout the system. The

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costs of system backbone can be spread over more local loops; the costs of local loops can be spread over more households as they connect to them. So, in contrast to classic duopolists, the profits of broadband providers improve when more units are sold, the reverse of the non-competitive outcome.

Then there's the straightforward evidence that wireline systems do compete. In fact, the ultimate proof of this proposition is that, according to the FCC, one out of six customers change providers every year and more than one out of three do so every three years. And service providers understand this and compete for this business—AT&T, Comcast, and Verizon are among the top 10 advertisers in the U.S. In fact, their competition is now even more arduous as most consumers have left dial-up for better connections, and their expectations and standards have increased commensurately.

A second and even more fundamental problem in applying the duopoly model to the cable-telco provision of broadband is that the provision of broadband is no longer limited to cable and telco companies. The arrival of wireless technology in the form of LTE and other 4G connectivity allows wireless to be substituted for wireline connections in a broad range of applications that satisfy many—perhaps most—household and small business users. While wireless delivers a slower connection speed than wired alternatives, households continue to accept this difference in exchange for the greater convenience they associate with mobility. This is particularly true for younger households, renters (who more frequently move and may not have wired housing units), lower-income households, or other populations. And this competition from wireless will burgeon in the coming years as compression techniques improve, more spectrum becomes available, and as satellite provision of high-speed wireless (equivalent to LTE fourth generation mobile devices) enters the market.

In fact, in direct contrast to the advocates who claim that only wireline will suffice for such future applications as telemedicine, remote education and training, job search, and the like, all of these could end up on mobile platforms in coming years, while the exceptionally high speeds only available through landlines could end up being a specialized, premium product. Wireless is already a growing medium for such tasks as watching video and doing homework. And as it grows in power and popularity, it would be irrational to believe that employers, retailers, schools, service providers, and other institutions won't figure out how to configure their services so that they can be provided over wireless networks and devices. Thus, while activists claim that only a high-speed, wireline connection will suffice, consumers are moving in an entirely different direction, towards wireless. They are driven by their own needs and preferences, whether it is because they rent or move, because they prefer mobility and convenience, because they can accomplish whatever tasks they want to do on a mobile system, or for other reasons. Demanding that they have access to a wireline system in the name of "competitiveness" is a waste of resources and an elitist substitution of planners' preferences for a competitive market.

But these issues—the inapplicability of the duopoly model and the growing interchangeability of wireline and wireless access—however important, seem minor compared to the larger issue of how the market for broadband goods and services has evolved.

THE NEW MARKET FOR BROADBAND SERVICES: "CAGE MATCH COMPETITION"

The telephone system of the last century existed to support phone calls—the system was an end in and of itself. But the broadband world brings together signal, whether wired or wireless, devices such as "smart phones," tablets, and other digital appliances, applications, and services. Telephony has become a subset of these products and services—the tail, not the dog.

Some observers of the broadband system naively see these various elements of the broadband

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experience—infrastructure, devices, applications, and services—as being fundamentally independent of each other. According to this view, they compete in "stovepipe" markets that are limited to the specific product or service in question.

There are two major problems with this view. The first is that companies continually jump over these industry boundaries. Amazon, a service provider, is now a leading provider of the "cloud," the most rapidly growing form of infrastructure; Google is fundamentally a search provider but now provides services (Android phones) and infrastructure. Apple was a hardware manufacturer that went into services, went back to devices, and is now spread across all of these categories. The hard and fast boundaries of the old telephone world do not exist in the broadband one.

But even more importantly, all of these components—signal, devices, applications, and services—compete against each other to become the focal point of the consumer's broadband experience. In the old phone system, the receiver in the home was the choke point for the entire system. But the computer, laptop, or device is no longer the organizing framework of the entire array of broadband experience. Does the customer purchase an iPhone so she can get access to broadband, or does she purchase broadband so she can use the iPhone? Or does the customer purchase that iPhone and broadband to gain access to Facebook or some other favorite application? Which is the driver of consumer behavior? The reality of the broadband market today is that all of these

components of the broadband experience compete to gain a larger share of the value created by the total, integrated broadband experience.

In a landmark article that followed the introduction of the iPhone, Jonathan Sallet termed the array of services, devices, applications, and other entities that competed to be the integrator of all these different aspects of the broadband experience the "value circle," because they surround the consumer and any of them can be the gateway to the others. The consumer's primary interest, attention, and allegiance may be to a carrier such as AT&T, Verizon, or Comcast, to a device manufacturer such as Apple or Samsung, a systems provider such as Microsoft, an application producer such as Facebook, or a service provider such as Google (with the understanding that these narrow labels no longer adequately describe each and any of these firms). Thus, they all compete to be the integrator of the user's broadband experience. In fact, these firms see the world in precisely those terms—Eric Schmidt of Google straightforwardly addressed this dynamic as "platform competition"—a competition among all of these elements of the broadband experience to be the platform on which the others rest.

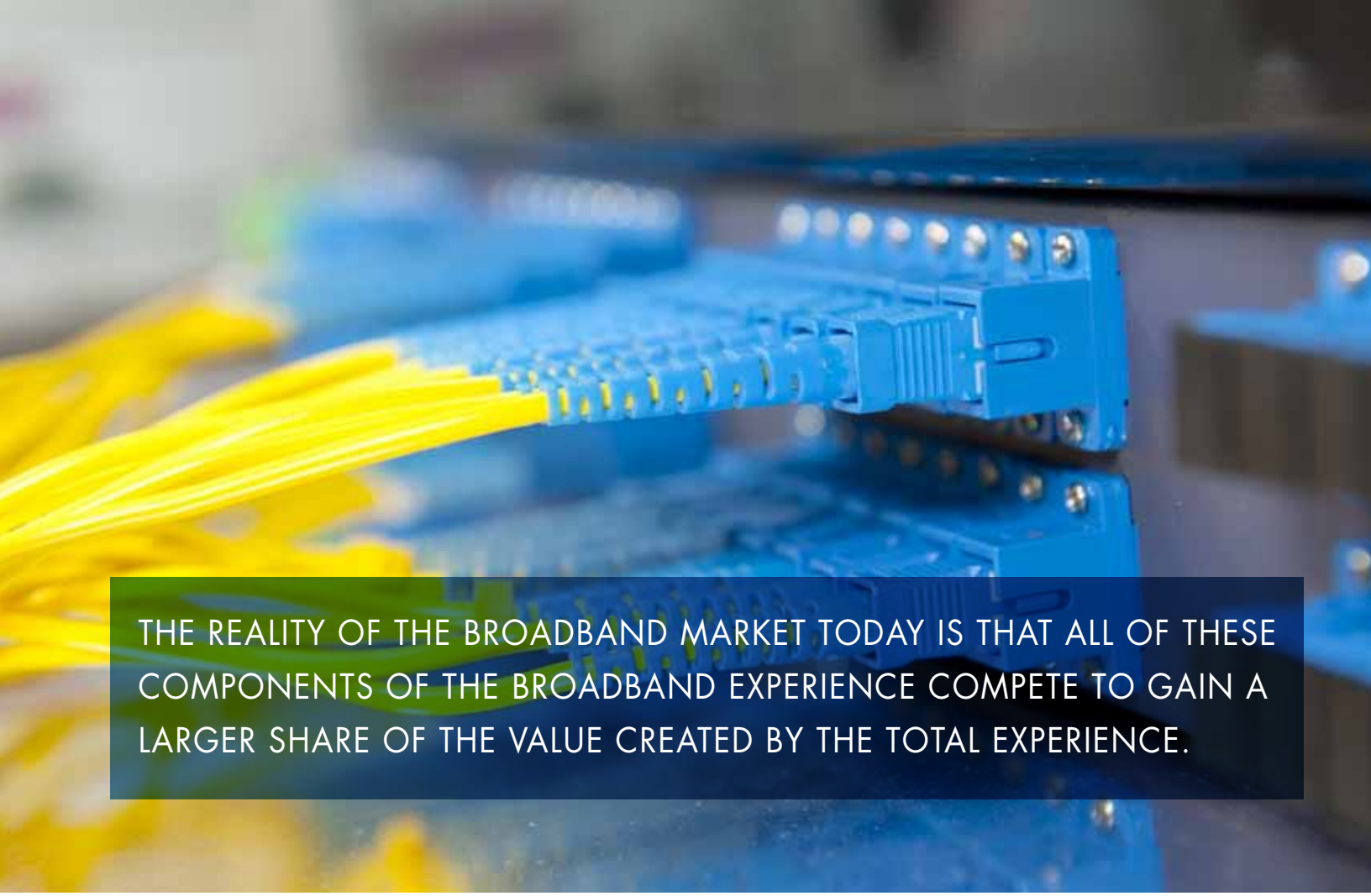
Moreover, many aspects of the broadband "value circle" are as important as is the market for wireline broadband access and may be as concentrated if not more so. There are only a few operating systems for mobile phones, only a few dominant firms in Internet search, only a few leaders in social media, and so on—these markets are far more "concentrated" than the market for connectivity. But the saving grace of the broadband sector is that all of these firms compete to be the integrator—the platform, in Eric Schmidt's term—of all the elements of the broadband experience. And instead of the linear sprint that provides a metaphor for "conventional" competition—Coke versus Pepsi, Oreo versus Hydrox—the multidimensional competition among signal, devices, applications, and services is more like a wrestling "cage match," in which many participants continually form and reform alliances to gain an advantage.

In fact, the December 1, 2012 issue of The Economist focused in its cover article on the competition among Amazon, Apple, Facebook, and Google to be this integrator of the broadband experience. What was impressive from the perspective of this essay is that not a word was written in that reporting about the providers of wireline or wireless signal. And there was certainly no intimation that signal was somehow less innovative or more expensive than it should or could be, to the detriment of these on-line behemoths.

In fact, seen through this lens, the signal providers are at a profound disadvantage. Companies such as AT&T, Verizon, or Comcast are known and "established," but they are smaller, generally less profitable, and typically less well-capitalized than many of their competitors—compare Google and Facebook, for example, to AT&T or Comcast in any of these financial metrics. These downstream "platform" companies have more customers, enter more households, and lack the substantial fixed costs the signal providers must undertake to expand their market presence. And they benefit directly from the innovation of their competitors; when mobile phone signal improves, it can support better devices and more extensive services and features, which capture the lion's share of the value created by better signal.

Downstream "platform" companies benefit directly from the innovation of their competitors.

This is a story that every user understands. Signal providers innovate and invest in faster and more reliable signal, only to find that device manufacturers find ways to utilize that greater capability, essentially capturing much of its value. For example, the ability to have a SIRI-type voice-recognition feature in an iPhone has existed for a long time. What has changed is the availability of a signal that allows the phone to be in continual and robust contact with cloud computers that make SIRI happen. It is an "Apple innovation" that



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was made possible by the innovations of signal providers. That is how competition works in the integrated market for broadband signal, devices, and services; that is how competitors innovate and improve their offerings in the "cage match." This puts the signal providers in a position familiar to anyone who sells into a competitive marketplace—they must innovate to survive, but cannot capture the rewards to their innovations, which are taken away through competition. Far from a deviation from the competitive model, this multidimensional "cage match" competition is a perfect example of how competition works to the benefit of consumers.

So perhaps the greatest paradox inherent in "cage match" competition is that, while advocates champion more intrusive regulation, the signal providers are in the fight of their business lives. The benefits of their innovation and investment are being appropriated by the devices and services that use the signal; their stock values and capitalizations are listless compared to the companies that make devices and applications; they have made commitments in the tens of billions to build infrastructure that cannot be reversed. And they are trapped in a vicious circle: they innovate to improve signal quality and availability, these innovations make possible new devices, applications, and services that capture consumer allegiance, these other aspects of the broadband experience appropriate value and make signal more commodity-like in the eyes of consumers, which forces the providers to further improve their product, perpetuating the cycle. They are the economy's front line for investing in and innovating for our broadband infrastructure, and perhaps they benefit from that investment and innovation the least.

"NEUTRALITY," "UNBUNDLING," AND OTHER PROGRESSIVE POLICY FAILURES

The evolution of progressive thinking about an agenda for broadband reflects both ideology

and history. The Internet sprang from the telecommunications system in its technology, its cast of characters, and its original function. However, it has now gone far beyond its telecommunications roots. But those roots create, to some sensibilities, a "regulatory entitlement"—if telecommunications warranted regulation, then the broadband Internet, which is in some eyes the telephone system to some cosmic exponent, must warrant a proportionate regulatory response.

But this syllogism overlooks the underlying realities. The phone system was regulated because one provider—the Bell system—was given a monopoly franchise over the entire domain. The Bell companies made investments with the certainty that they would receive a guaranteed return with only engineering risk, if that. And various regulatory rulings made it impossible for other devices, services, or applications to rest on the carrier's signal. Thus, the Bell system was centrally managed, with dumb devices at the ends. And every time the system was used—every "call"—could be tracked by the system's central management—who made the call, to whom, when, and for how long.

In contrast, the broadband world is one in which many networks co-exist—there is no central management, protocols can be influenced by any participant, and no-longer do "dumb" devices compete with the network itself in terms of functionality. And the broadband world is one in which companies invest their own funds without guarantees, in which competition exists in every element of the customer value proposition, and in which technological progress, company strategies, and consumer preferences are continually evolving and reshuffling the deck.

The primary focus of the activist camp in the broadband policy debate is to protect consumers from the harm inflicted by allegedly uncompetitive (duopolistic) providers. But if the fundamental axiom underlying this view is untrue—if there is a competitive industry bringing the consumer the entire broadband experience—then the interventions the activists suggest have no compelling benefit and, in fact, risk doing substantial harm.

For example, consider net "neutrality," the concept that everything on the Internet must travel at the same speed and under the same conditions. If this were put into effect in response to some systemic pattern of manipulation by carriers, then it could have a beneficial effect, by allowing suppressed content to find its way to the marketplace. But there is no pattern of suppressed content. In fact, the episodes in which advocates claim that connectivity providers have restricted content are so infrequent that they are all repeated every time the list is reproduced.

To the contrary, the value proposition offered by broadband access providers is that they won't limit a customer's range on the Internet—who would buy access from a provider who limited access? This fundamental truth about the Internet's value proposition explains why there are so few examples of content suppression, and no prospect of it. Moreover, were it to occur, there would be a variety of other ways to address it, from the First Amendment to anti-trust law.

In the end, the theory that signal providers would suppress content or speech makes no intuitive sense. Signal providers' main business is selling broadband access to speech and content of all types. Limiting speech means limiting their market. In fact, the most important issues regarding suppression of content come from other sources—political suppression from China, Syria, or other nations and, to a lesser extent, economic suppression as suggested by the FTC's case against Google, although the track record of companies in general is far superior to that of governments in this regard. And if there is no systemic behavior to correct, then intrusive rules that are driven by the fear that content will be restricted have the potential to do substantial harm.

One source of this harm is restrictions on network management. "Neutrality" became a buzzword to some great extent after an incident in San Diego in 2008, in which Comcast slowed down transmissions using the file-sharing program BitTorrent to manage congestion on its network. But the FCC used the Comcast case as a springboard to implement neutrality, with important ramifications.

A first and immediate one is that, at times when the net is congested, companies are put in a very difficult position in managing the congestion; their only acceptable option is, in essence, to slow down all traffic "equally," meaning almost randomly.

But an even more serious problem for the long term in a "neutral" world is that companies who are major users of the Internet don't have to pay for the congestion they create. Half of the traffic on the Internet at peak periods is now video; YouTube, Netflix, and other video content providers now soak up more bandwidth than the entire Internet of less than a decade ago. In fact, some content providers have consciously hidden behind the neutrality concept to justify getting access to the network without paying for what they use. A few years ago, a company called Level 3 signed a deal with Netflix stipulating that Netflix would pay Level 3 to carry its movies to the Internet backbone so they could find their way to you. But the amount of bandwidth Level 3 needed to carry this video library was far in excess of anything they'd ever done before and far beyond the reciprocal agreements that lead networks to trade and manage data flows, so Comcast told them they would have to buy additional ports on their backbone infrastructure to carry the load. Level 3's response was to race to the FCC and argue that Comcast was violating the neutrality principle by making them pay for the traffic and congestion they produced.

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Neutrality advocates see their principle—an Internet on which all traffic moves under the same conditions and speeds—as the expression of a democratic ideal. But, in practice, it often becomes a rule that transfers money from one company to another. For example, it benefits big websites that stand to gain by being charged the same prices for access that you pay for e-mailing your aunt in Sheboygan, regardless of the different volume of traffic and pattern of use. Moreover, the principles of neutrality make it far more difficult for prospective competitors with the big websites to offer or purchase premium services on the Net—that is, paying more for the right to move their content to tiers that offer faster or uninterrupted connections, much as Sears offers its customers "good," "better," and "best." Such a restriction on matching price and quality means less innovation, fewer new services, and less resulting growth and employment, as new services that would depend on a higher-tier connection—live concerts, telemedicine, remote learning, unbuffered videophone conversations and the like—are essentially prohibited by the neutrality mandate.

A more radical version of this "neutrality" argument holds that all devices should be interoperable—that the iPhone, for example should be portable to any connection provider. Leaving aside the engineering problems inherent in such a dictum, imagine the loss of competition that would have occurred had they gotten their way.

Had the iPhone been built to this requirement, Apple would have had to change its strategy. Right now, the iPhone and iPad are the gateways to an Apple World, in which consumers use Apple devices to obtain applications and services (now from the cloud, a further product of the signal providers' innovation). It is precisely the "walled garden" that advocates see as an evil.

But, beyond the obvious fact that consumers like the comfort and functionality of Apple's "walled garden," had the iPhone been compelled to operate on all systems, given its first mover advantages, it could have monopolized the market for smart phones. This would have precluded the imitators and then innovators using Android or other systems, and given Apple a choke point to regulate the introduction of smart phone-based applications and services. Once again, while "neutrality" is aimed at promoting competition and innovation, it would directly and significantly reduce both.

And aside from having the opposite effect as intended on innovation, neutrality could also produce losses for consumers. That is because it fails to recognize that the net is what economists call a "two-sided" market—that broadband providers compete in two distinct but related markets at the same time. A broadband access provider sells content to subscribers because the content it offers is rich and diverse, and it sells access to the subscribers to content providers because it has amassed a large and enthusiastic audience for their content. Neutrality advocates agree with all economists that a provider should not be allowed to target a particular subscriber or content provider and make them pay either a more onerous or less burdensome price than anyone else—that is price discrimination and it's illegal. But a network should be able to charge higher, set rates for content providers for faster or less interruptible levels of service just as it posts prices to consumers for various levels of download speed.

Activists suggest that such a "two-sided" market is unfair, or has the potential for abuse. But what they want amounts to price controls on one side of the market that will place burdens on the other. Imagine, for example, another two-sided market—the daily newspaper. It sells itself both to readers, through subscriptions, and to advertisers, through rates. But imagine that regulators dictated that newspaper had to carry all the advertising offered to it at "marginal cost," that is, the cost of adding one more page of advertising to the paper—the cost of the paper, ink, and press machine only, regardless of the actual value created or destroyed through the impact of a thicker, unwieldy newspaper on the desire of readers to subscribe. That would be a bad idea from a variety of perspectives—it would be unfair and make little economic sense. Absent advertising revenue, the paper would have to raise prices substantially for its readers, much as the prohibition on having a working two-sided market in broadband makes consumer prices higher than they need to be.

Or consider the implications of mandating that the New York Stock Exchange be allowed to charge investors for trading stocks, but not charge companies for offering (listing) their stocks on the Exchange. In both cases, consumers would be harmed, as they'd have to bear more of the total costs of stock trading. Yet that is precisely what neutrality proponents suggest for the Internet, with the same likely effects—more congestion and higher prices for consumers.

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Another proposal put forward by some neutrality advocates is "unbundling" or "common carriage," terms that mean that the companies that build networks must let their competitors use those networks to reach customers, and can only charge those competitors a price determined by regulators and based on "marginal cost"—a digital version of The Little Red Hen. Advocates harken back to the days of DSL, when any company had the right to use the Bell System legacy companies' phone lines at less than full cost in order to offer DSL access. The result was an explosion of companies such as Covad or Earthlink, who used their regulatory rights to gain access to other companies' wires and offer a standardized service. As neutrality and common carriage advocates argue, there were hundreds of these companies.

Where are those companies today? They're all but gone, made irrelevant by better connections on cable, fiber, and wireless. They disappeared because they made few investments of their own, did little to invent or innovate, and ended up offering customers little more than the regulatory process allowed—they lived off the fat of the land. Moreover, once the courts decided that they did not have the right to live off the systems other companies built, not only did these smaller companies disappear, but the infrastructure companies that were forced to host them began making substantially larger investments in fiber networks, a clear and unmistakable demonstration that these regulatory features can have a substantial, if not devastating effect on investment.

The weight of the evidence, therefore, suggests the activist agenda leads progressives to a dead end. It addresses a problem that doesn't exist—the absence of competition in broadband—and compromises another and more important objective—investment in broadband leading to ubiquitous broadband access. In reality, access providers have made massive investments in high-fixed cost broadband wired and wireless capacity that they can only justify by competing for market share and that are continually improving. The case that they are suppressing or might suppress content—either editorially or competitively—is virtually non-existent. In fact, an access provider who chose to limit what its customers could see and do on the Internet would destroy the very value proposition it offered to consumers in the first place.

All of these realities speak to the dead end inherent in net neutrality, common carriage, and other schemes for regulating the broadband Internet. But this does not mean that we should turn that part of the economy into a laissez-faire island. There are other priorities that can rise to the surface, priorities that constitute a more faithful representation of what progressives believe. This is the broadband policy agenda progressives ought to pursue. Exploring these prospect guides the remainder of this paper.

III. A PROGRESSIVE BROADBAND POLICY AGENDA

A progressive broadband agenda is based on five key pillars:

- Extending the combined wired/wireline broadband network to all Americans;
- Creating an active market for spectrum;
- Using broadband to advance, if not revolutionize, key non-market sectors of the economy, particularly education, health care, environmental protection, and government, including making sure every family with a child in K-12 education has access to a computer;
- Protecting personal privacy in broadband-based interactions; and,
- Defining the role of the FCC as a catalyst, honest broker, and market enabler rather than a regulatory implementer

EXTENDING THE INTERNET

The first and paramount objective of progressive broadband policy must be to extend the reach of high-speed Internet so that every American has access to it, whether through wired or wireless means as economics dictate. Two decades ago, Larry Irving first described the "digital divide" between Internet haves and have-nots, a divide based on race and class. The divide still exists today, even if less pronounced (in large part because of the arrival of wireless), and the policy goal it suggests remains. If broadband Internet is going to be the dominant social thoroughfare of the future, then it must be available to all.

But the objective of a universal Internet faces a variety of obstacles. Economics—income and price—are only a minor part of the picture. Surveys—most recently and famously, by the Pew Center and by the Department of Commerce's National Telecommunications and Information Administration—demonstrate that households without broadband access often simply don't see its relevance or convenience, or simply wish not to be engaged. In the NTIA survey, fully 46 percent of respondents without broadband simply saw no compelling reason to have it. Such is their right, although it's also true that the government has a role to play in making broadband more relevant (as we'll discuss below). But consumers should have the ability to make that choice, which means extending access to the remaining people and places that lack it.

Surveys—most recently and famously, by the Pew Center and by the Department of Commerce's National Telecommunications and Information Administration—demonstrate that households without broadband access often simply don't see its relevance or convenience, or simply wish not to be engaged.

The good news is that this task is becoming easier, as a mixed wire-wireless Internet comes into being. This reduces up-front costs and gives planners more options for extending connectivity. Dense urban neighborhoods allow a wired approach that spreads fixed loop costs over a larger base; dispersed rural populations probably require a cloud-based, wireless framework, or a mixed system in which signal is taken over wirelines to hubs that serve wireless customers. But the idea that "it must be wired" has been dispelled by the rapid advance of wireless broadband—in many areas available spectrum allows for distribution to rural areas and can reach long distances. And satellite can now offer 8 to 10 meg download speeds and up to 2 megs uploads—far from cutting edge or what wireline can provide, but ample for many households' demands. Moreover, building this kind of flexibility into extensions of the system would improve the system's ability to adapt as the relative strength and cost of wireless versus wired signal change in unpredictable ways in the future.

A PROGRESSIVE BROADBAND AGENDA

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3. Using broadband to advance, if not revolutionize key, non-market sectors of the economy, particularly education, health care, environmental protection, and government, including making sure every family with a child in K-12 education has access to a computer
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The Administration's proposed reforms of the Universal Service Fund reform, shifting the existing system to broadband subsidies where needed, encouraging bidding by companies to provide subsidized broadband connectivity in areas where it is not available, and reducing waste (i.e., not subsidizing multiple carriers as happens today) provides a model for managing this task. Connecting unserved populations should be put out to bid to private sector providers. The diversity of approaches that would result would produce a mix of various approaches and technologies—wireline, wireless, and satellite—and would have a strong chance of completing the task at a manageable cost.

But all too often, when we talk about the goal of "universal service," we instinctively think of a wholly wired network. That's an anachronism. Extending broadband must be done by inducing investment in wireless capacity as well, and that means bringing more spectrum to market.

A MARKET FOR SPECTRUM

The growing importance of wireless must be accompanied by greater availability of the electromagnetic spectrum on which it relies. In the National Broadband Plan, FCC Chairman Julius Genachowski took a decisive step in the right direction. He announced that, between now and 2020, he would bring 500 MHz of spectrum to market to help alleviate the growing spectrum crunch. And since then he's explored a variety of sound means to get this done: the greater use of auctions, which allow spectrum to go to the bidders who can get the greatest value out of it (as opposed to giving or denying it to specific companies as if he knew the right outcome beforehand); by encouraging technological advancements that allow for spectrum to be shared by several users; and by looking at the government to give up spectrum it's now hoarding, not using. Thirty years ago, Nicholas Negroponte made the startling pronouncement that telephony would move from being transmitted by wire to moving through the air, while television would move from moving over the air to moving by wire. His then-daring prediction has come true, although the burgeoning growth of video over wireless telephony may yet challenge it. This reciprocal transition is an ongoing part of progress and economic growth, but it has run up against a constraint. Decades before Gilder's prediction, government gave large swaths of the electromagnetic spectrum to over-the-air broadcasters, who in turn used it to broadcast programming and, in exchange, promised to serve some public purpose.

Whether this purpose was served, the television business is now entirely different. In fact, the broadcast networks now make the great bulk of their revenue not from over-the-air broadcast, but because the law requires cable systems to carry their signal. So broadcast television still holds the spectrum that gives them the right to send signal over the air, but at the same time is profitable because they are carried over wires.

The broadcast television industry, therefore, is one of many places in the economy where spectrum is not put to its best use, and as with other instances in which things have more value elsewhere, the solution is to let spectrum be bought and sold like any other asset. The FCC has taken initial steps towards allowing spectrum to be bought and sold among companies, but its process involves time-consuming regulatory approvals and large amounts of spectrum have yet to be produced in this manner. We also need a program to liberate the substantial amounts of spectrum held idle in the public sector—allowing government agencies, starting with the Defense Department, to hoard spectrum forces companies that seek it to serve customers to pursue transactions that are more complex and less efficient than a simple acquisition of spectrum. It is remarkable that government agencies cannot rent their own offices or buy their own office supplies—the General Services Administration does that for them—but they are allowed to determine their own needs when it comes to this pivotal and extremely scarce resource.

"INFORMATING" KEY SECTORS OF THE ECONOMY

> A person has a backyard that measures 17 feet by 23 feet. Fencing comes in four foot sections that cost $8 per foot. What will it cost to fence the entire backyard?

It's telling that math teachers call this simple algebra assignment a "word problem." One way to do is it with pencil and paper or chalk and board. But another is to find a map image of such a yard, measure it on screen, go to a Home Depot website to find types of fencing, and put the problem in a real-life context. This second approach does the job of teaching algebra while rooting the lesson in life skills.

There may be a lack of a hard consensus on the best way to integrate broadband into the provision of services that lie on the boundaries of the private and public sectors—health care, education, and

government, for example. But there can be little debate that broadband has the power to transform all of these dramatically. And there is obvious value to encouraging experimentation and learning in finding the best ways to bring these technologies into the classroom.

It's hard to imagine broadband technology having a bigger impact than in the field of health care.

There is an ongoing and important debate about where the boundaries between the public and private sectors lie in these sectors of social importance, as seen in proposals for charter schools, education vouchers, health purchasing cooperatives, single payer systems, outsourcing or privatizing government functions, the so-called "smart grid," and so on. But health, education, environment, and government all will be driven by more than just market signals, and for that reason, we must pursue positive programs to improve their performance.

It's hard to imagine broadband technology having a bigger impact than in the field of health care. But while the Congress funded the transition to electronic records several years ago, progress has been halting. Split jurisdictions with different approaches often make progress by private actors difficult. Legacy systems leave providers with different systems, different interfaces, and different standards for protecting privacy. The federal government could still do more to help providers and institutions standardize their systems and make consumer health information secure, mobile, and thorough. It can use Medicare and Medicaid to accelerate remote consultation and diagnosis using the network to monitor patient conditions and to perform many routine tests. Broadband is (also) capable of putting the most advanced tools for diagnosis and treatment within reach of every practitioner. But the question is whether programs such as Medicare and Medicaid, or state licensing requirements for doctors that prohibit them from remotely diagnosing a patient, or FDA regulation (is a diagnosis app on a phone that tests for concussion symptoms a medical device?), can be flexible enough to help rather than hinder this transition. By removing barriers like these, we can promote wider adoption of the technologies and realize broadband's full potential.

The benefits of these types of programs and approaches would not only consist of better outcomes in health, education, local government, and other areas, but a greater level of broadband interest and engagement among the public. As discussed above, surveys demonstrate that the major impediment to expanded broadband dissemination is not price or income, or even access, but interest. However remarkably to those of us who see broadband as part of daily life, there are many households that do not see its relevance. This is particularly a problem for a generation of children who will need to know how to find and use information through a myriad of ways over the course of their lives. An aggressive program to build the on-line presence of schools, health service providers, local governments, and the like would strengthen those institutions, encourage experimentation and innovation in those areas, and bring more households into the broadband realm.

And, finally, recall the Pew and NTIA studies demonstrating that the primary barrier to broadband dissemination is indifference—people who fail to see its relevance, or think that it poses dangers or inconvenience. In fact, the adoption rate for broadband is very close to 100 percent for families that have a computer. Families may lack a computer because they don't want to be bothered with one. But here, economics may indeed play a role.

A recent article in the Wall Street Journal described an eighth-grader who does his homework at MacDonald's "because the fast-food chain is one of the few places …where he can get online access free once the public library closes." This is a completely unacceptable outcome, both for the child and for the economy—the child needs to learn these skills and apply them to his education as badly as the economy needs him to do so. But the proscriptions of the "neutrality" and regulatory

advocates offer nothing that will address the situation of this boy or any other children like him. If progressives are going to address this problem, it will be by making it their priority, not a pointless crusade to regulate what doesn't need regulating. We should assure that every family below some income measure with a child in K-12 education is assured of access to a computer and broadband. And we should see efforts to redesign school curricula to make use of broadband and, by doing so, teach our young people how to use the remarkable availability of the world's information to empower and develop themselves in this context.

PRIVACY

Every user's movement in broadband space creates a trail of data. Some is related to transactions into which the user enters voluntarily—a purchase or a posting on a social media site. But other data is not transactional or voluntarily offered. It comes from the trail of an Internet search, or the pattern of a person's telephone calls, or other information that is the digital equivalent of a paper trail.

Information is vital in terms of routing information on the Internet, and not all uses of it are nefarious. Companies routing requests from consumers—whether it is email or a web page—must know certain information about the device sending the request. Consumers also voluntarily provide information when they use some web sites and companies are now using that information to offer better service or more targeted advertising (for example, they are often given choices that make sense because of the information they have provided a web page). And, as is the case in other media, the ability to advertise allows the cost to the consumer to fall; there is little doubt that much of the Internet's content and services is "free" and widely available due to advertising, or that many users would prefer it that way. Moreover, the availability of what is now termed "Big Data" makes it possible not just to sell products, but avert epidemics and save consumers time and money.

That does not mean that it is open season on consumer information. Progressives should enter this debate resolutely. The right of privacy is central to progressive doctrine, as it has been interpreted to mean privacy between a person and their doctor, or privacy in the personal lives of competent adults.

The right of privacy is central to the progressive doctrine.

The Obama Administration has provided an excellent starting point for clarifying the rights of consumers and citizens to their data. Their proposed legislation would send out baseline principles or what has been called a "consumer bill of rights" such as the notion consumers have a right to expect that companies will collect, use, and disclose personal data in ways that are consistent with the context in which consumers provide the data, that is, used for a specific purpose and not others. It would require that companies adopt privacy policies and practices that would operationalize and implement the bill of rights. And because these company practices would be published publicly, they would be enforceable by the FTC if it can be proven that the company has failed live up to its commitments. This proposed baseline privacy protection legislation would move us towards a world in which users had the ability to negotiate the terms on which the data generated by their activities would be used in a transparent manner.

Clarifying the rights users have to control their trail of information not only conveys benefits to them, but allows markets to work out the problem of how to value these rights and how to trade them. It would allow the Internet to develop norms that "productize" alternative levels of privacy through a process involving representatives of websites and interest groups convened by the FTC. Users could then select among these alternative levels of privacy, or among websites offering different levels, in exchange for whatever consideration the market will support—waiving fees, other product discounts, or whatever else. This is even more crucial now that the first mover advantages on the

Internet have played themselves out, and large and often dominant sites have emerged in such areas as search, social networking, retail, auction and payment, and other areas. Transparency and choice in the area of privacy would add a new dimension of competition in these segments and allow the provision of broadband-based services to benefit consumers more efficiently.

WHAT ABOUT THE FCC?

At the close of the last century, the man in charge of regulating the telecommunications sector made this prophesy about his bailiwick:

> "..the advent of Internet-based and other new technology-driven communications services will erode the traditional regulatory distinctions between different sectors of the communications industry…(we will have)…a competitive environment in which communications markets look and function like other competitive industries."

And in that world, he argued, the "new" FCC would have three core functions:

> "universal service, consumer protection and information; enforcement and promotion of competitive markets domestically and worldwide; and spectrum management."

The source of these quotes and the vision for the FCC about which they were made was a document entitled: Strategic Plan: A New FCC for the 21st Century, published by the FCC in August, 1999, under the direction of Chairman William Kennard. In it, the FCC imagines much of the world that has transpired since that date:

> "To date, traditional wireline telephone service providers, cable operators, wireless firms, and satellite companies have made massive investments in the new networks that will allow, for example, cable operators to offer phone service, telephone companies to offer high-speed Internet and possibly video service, and wireless companies to offer phone service reliable and inexpensive enough to compete for basic local voice telephony."

In fact, all of this has happened and more. Wireless and now satellite are becoming ever more competitive with wireline broadband, the pace of innovation continues unabated, and the nature of competition has evolved to include the online behemoths that compete with signal providers to capture the value created by the entire broadband experience.

But the vision of the FCC outlined under Kennard has yet to take root. And in the face of a wave of deregulatory sentiment, progressives must put forward a new view of the FCC's purpose—an alternative to the view that telecommunications requires a regulator using the tools of the Ma Bell era.

The best outline of that new view starts with the three priorities Kennard laid out. The first was universal service.

While the "digital divide" has narrowed, in part due to competition among providers and the growth of wireless broadband, the goal of universal service remains a fundamental one if broadband is to achieve its full potential as a source of economic, social, and political empowerment for all. But as more of the nation's population has access to the various broadband systems, the factors that stand in the way of universal service are changing. They are

less about price and accessibility, and more about consumers who do not see the relevance or want the intrusion of broadband-based interaction with the world around them.

Ensuring that there will be access, of course, remains the first priority. The "new" FCC must be the vehicle for implementing the Administration's goal of using incentives, legal changes, market forces, and, when needed, subsidies to make universal broadband access a reality. But they must also be the hub of an effort across government to modernize such functions as education, health, environment, and local government by identifying regulatory, legal, and institutional obstacles in partnership with other government agencies.

The second goal Kennard set out was the promotion and enforcement of competition, both domestically and worldwide. Too often, competition has flourished despite the FCC, not because of it. A clear statement by the FCC disclaiming its interest in policies based on the natural monopoly model that supported the regulated industry of prior generations would be a major step towards improving those incentives. This doesn't mean abandoning the goal of protecting consumers; it means changing the presumption of the absence of a competitive market that the FCC brings to the table. For that reason, the FCC should make clear that it does not regard the regulation of telephony as a model for the regulation of broadband provision (by abandoning its inquiry into whether Title II of the Communications Act should be used for overseeing broadband services).

But protecting consumers sometimes requires specific actions that undo the conduct of companies in the marketplace. That's an entirely reasonable function of government. But it raises two issues. The first is that the FCC now often presumes that competition is not the rule, and that companies must petition to have it recognize competitive conditions in an individual market. This presumption is too often at odds with the new circumstances in broadband telecommunications. As Kennard stated over a decade ago, these markets are taking on the look and feel of other competitive industries. They have only improved since then. It is time, therefore, to change the presumption so that the agency does not presume harm to consumers, but responds to it when it appears.

Moreover, in such a world, anti-trust law already provides a range of effective remedies when firms abuse market power. The FCC, therefore, should abandon its enforcement ability and turn over anti-trust enforcement to the FTC and the Justice Department as part of those agencies' broad mandates. These two steps—moving from the presumption of harm and, when possible, allowing the nation's anti-trust enforcement apparatus to address harm—would allow the agency to focus on enhancing competition and freeing up resources to that end.

Kennard's third priority was managing electromagnetic spectrum. The FCC has taken reasonable steps towards creating a market for that resource. But we are still far from having an active market that lets the economy know the real value of this resource. Spectrum has been left in both public and private hands by historical accident—whether it's the property of over-the-air broadcasters or dedicated to the telecommunications of the U.S. Mint—and needs to be reallocated. And, at the same time, there remains the issue of finding the best way to meet the needs of first responders and public safety. But the only way to make all of these judgments is to know the real value of the resource, and only markets can provide that information. Moreover, if the FCC's objective is to promote competition, then the single most effective thing it can do is to free up spectrum that would allow providers to compete.

The Internet has from its inception had an open and flexible mode of governance. The telephony-based system under which the FCC operates is the antithesis of that model. Moreover, given the high and increasing levels of competition in broadband sector, its presume-harm regulatory approach is ever more inappropriate. And the costs of that model, in terms of lost innovation, lost incentives, and lost growth and employment, are too substantial to ignore. At the same time, broadband is too important and powerful a tool to be treated as any other commodity in the economy.

Progressives should not fear this debate. Instead, they should lead the way towards a middle ground between outmoded regulation and laissez-faire. The intent of this essay is to show where that route may lie.

IV. CONCLUSION

The fact that the Internet has become a driving force in shaping daily life doesn't mean that it can't be governed primarily by market forces. In fact, those forces have already delivered a competitive, innovative, and rapidly disseminating broadband network.

Net neutrality denies this reality—it is based on the assertion that the provision of high-speed connectivity is being throttled by firms with undue market power, despite any evidence to support that contention. Moreover, it does nothing to address the leading obstacles to a ubiquitous broadband Internet, indifference and the absence of computers in the home. And, perhaps worse, it is a policy that would reduce competition and innovation rather than improve those outcomes.

There is a more appropriate policy agenda for progressives. It means finishing the job of creating a truly national high-speed network (which will of necessity mean working with the firms that provide it), using the remarkable capabilities of broadband to improve education, health care, government, and other social sectors, creating the terms on which more connectivity can be created (for example, liberating spectrum), and protecting the individual right to privacy using both legal means and market forces. That agenda would achieve important progressive goals in a way that "neutrality" and other regulatory forays cannot and will not. Progressives in the Administration and the Congress need to reconsider their strategy in the light of these realities.

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ABOUT THE AUTHOR

Everett Ehrlich is the president of ESC Company, a Washington, DC based economics consulting firm. Ehrlich served in the Clinton Administration as under secretary of commerce for economic affairs. He also served as vice president for strategic planning and chief economist of Unisys Corporation, senior vice president and research director for the Committee for Economic Development, and assistant director of the Congressional Budget Office. Ehrlich was also the executive director of the CSIS Commission on Public Infrastructure under Co-Chairmen Ambassador Felix Rohatyn and Senator Warren Rudman.

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Progressive Policy Institute
1101 14th Street NW
Suite 1250
Washington, DC 20005

Tel 202.525.3926
Fax 202.525.3941
Email info@ppionline.org
www.progressivepolicy.org