THE BROADBAND DEBATE, A USER'S GUIDE

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INTRODUCTION

"What ever happened to 'Hands off the Net?' "[1]

Back in the 1990s, Internet communications policy was easier. It was easy to agree that the network's growth ought not be impended by excessive government regulation. It was easy to hope that the Internet would solve all of its own problems. Yet it turned out that the success of the network was hiding strong differences of opinion. Today, the euphoria is gone, and the divide in Internet communications policy has become clear and unmistakable. It most clearly a divide between two distinct groups: the self-proclaimed "Openists" and "Deregulationists."

This divide will do much to inform the reform of the Telecommunications Act in general, and Broadband policy in particular.

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1. Adam Thierer, *Congressional Tech Agenda for Rest of Year = Just More Regulation*, THE TECHNOLOGY LIBERATION FRONT (Sept. 7, 2004), *at* http://www.techliberation.com/archives/014257.php.

Accordingly, this Article is meant as a user's guide to the broadband policy debate: a guide to what separates us, and what might make reconciliation possible. It is optimistic that policy reconciliation is possible, though aware that saying so doesn't make it likely.

The summary of the debate is critical. I fault the Openists for being too prone to favor regulation without making clear the connection between ends and means. For example, too few Openists have asked the degree to which the structural "open access" remedies pushed by independent service providers actually promote the Openists' vision.[2] Meanwhile, I fault the Deregulationists for two reasons. First, the Deregulationists have overlooked the fact that limiting government, as they desire, sometimes *requires* government action. Remedies like network neutrality, for reasons I suggest, may be as important for control of government as of industry. I also fault the Deregulationists for an exaggerated faith in industry decision-making. I suggest that some Deregulationists have failed to familiarize themselves with the processes of industry decision-making before demanding deference to it. This is a particularly serious problem given that the telecommunications industry has a recent track record of terrible judgment and even outright fraud. An important example is the demand of some Deregulationists that deference is due to a so-called "smart pipe" vision, without analysis of whether that vision has any independent merit.

The article, finally, explores a reconciliation of the broadband debate with the network neutrality principle as a starting point. Deregulations and Openists, while divided along many lines, share a common faith in innovation as the basis of economic growth. Both sides, in short, worship Joseph Schumpeter and his ideas of competitive, capitalistic innovation. Fidelity to this shared faith should mean mutual surrender of idealized models of either government or powerful private entities, respectively, in exchange for a shared cynicism. We should recognize that both government and the private sector have an unhappy record of blocking the new in favor of the old, and that such tendencies are likely to continue.

Reconciliation, I (optimistically) believe, is possible. The Deregulationist and Openist ought remember their common dedication to a single principle: free and unmediated market entry, symbolized by the rubber-cup of Hush-A-Phone.[3] It is by returning to such points of consensus that the reconciliation of communications policy can begin.

2. *See also* Tim Wu, *Network Neutrality, Broadband Discrimination*, 2 J. ON TELECOMM. & HIGH TECH. L. 141 (2003) (expanding on this point).

3. *See* Hush-A-Phone Corp. v. United States, 238 F.2d 266, 269 (D.C. Cir. 1956) (holding that the FCC cannot block the attachment of reasonable network attachments,

I argue that neither Deregulationists or Openists should have reason to oppose Network Neutrality rules that create rights in users to use the applications or equipment of their choice. This is a position that many Deregulationists, including FCC Chairman Michael Powell, have come to endorse. What both sides should want in an inevitable regulatory framework for broadband are rules that pre-commit both industry and government to open market entry. It must be remembered that rules creating rights in users also guarantee the right of operators to enter the application market, free of government hindrance. For these and other reasons discussed below, limited network neutrality rules should on reflection be attractive to both sides.

Section I describes the emergent divide in the visions of the future that underlie today's policy divisions. Section II explains some of what unites and divides in the economics of the Deregulationists. Section III argues for broadband reconciliation premised on user rights to access the content, applications and equipment of their choice.

I. VISIONS OF THE FUTURE

Communications theorists, like everyone else, have their visions of an ideal future that drive more of their arguments than they would like to admit. While the theorist's utopia has much less sand and sunshine than the average person's, its importance is nonetheless axiomatic.

A. The Openists

In the communications world some technologies attract what you might call a high chatter to deployment ratio. That means the volume of talk about the technology exceeds, by an absurd ratio, the actual number of deployments. "Videophones" are a great historical example, as is "Video-on-Demand" and, of course, the glacial sixth version of the Internet protocol (IPv6). In the 1990s, the technology named Voice over IP (VoIP) was a starring member of this suspect class. The technology promises carriage of voice signals using Internet technology, an attractive idea, and in the 1990s and the early 2000s it was discussed endlessly despite minimal deployment.

The discussion usually centered on the question: when would broadband carriers deploy VoIP? And the answer was always, "not quite yet." There were reasons. Many within the industry argued that VoIP was not a viable technology without substantial network improvements. Engineers said that the Internet Protocol was too inconsistent to guarantee voice service of a quality that any customer would buy.

namely the "Hush-A-Phone" device that attached to a handset and insulated telephone conversations against background noise).

Industry regulatory strategists, meanwhile, were concerned that offering voice service would attract federal regulation like honey attracts bees. As for the Bell companies, the main Digital Subscriber Line (DSL) providers, there was always the problem of providing a service that might cannibalize the industry's most profitable service.

But everyone was watching the wrong companies, for where broadband operators were timid, a company named Vonage was brave. In late 2003 Vonage leapfrogged the broadband operators and began selling VoIP directly to large volumes of customers. Vonage did so not by cooperating with broadband operators but avoiding them. It sold a plug-in device: an actual telephone that connects directly into the network and provided phone service for a fraction of the normal cost. It is true that the quality of the Vonage connection was not, to a telecommunications engineer, strictly of the same quality as that available on a traditional phone network. Yet Vonage's quality was fine to an American people schooled by cell phones; its many users claim they cannot tell the difference. Vonage, offered what everyone said no one would buy, and became the Internet's success story of 2004.[4]

The Vonage story captures much of the Openist's vision of what the Internet revolution has meant for communications policy. Without Vonage, VoIP would have arrived on the carrier's schedule: later or perhaps never. Vonage shows why Openists see the nation's communications network important, first and foremost, as an *innovation commons*—a resource for innovators from anywhere to draw upon.[5] The Openist credo is to care about the nation's communications infrastructure, not so much of itself, but for how it catalyzes the nation's economic and creative potential. Vonage was free to enter the market with a new way of selling voice service only because the network is open, its standards as "free as the air to common use."

The Openist's theory of an innovation commons can be broken into three prescriptive principles. The first is the *Infrastructure* principle. It is an insistence that the most important purpose of a communications network is as public infrastructure, with particular meaning attached to that concept. It means that the principal value of the network is indirect: it as a source of positive spillovers, or externalities, that enable the work of others. It suggests that the highest potential of the network will be achieved not by the accomplishments of network *owners* but by what creative users and developers can do with a fast and reliable connection

4. *See* Stephen Wildstrom, *At Last, You Can Ditch The Phone Company VOIP Lets You Make Clear, Fast Calls Over The Net, Using A Plain Phone*, BUS. WK., May 17, 2004, at 26.

5. *See, e.g.*, Lawrence Lessig, *The Internet Under Siege*, FOREIGN POL'Y, Nov. 1, 2001, *available at* http://www.lessig.org/content/columns/foreignpolicy1.pdf.

between every human on earth.

One way of understanding this vision of the network as "infrastructure" is to contrast it directly with its foil, the idea that a network is a "service" or "product" sold by a company. At the podium at the 2004 Silicon Flatirons Conference, speaker Mark Cooper put this *product / infrastructure* distinction in vivid terms:

> The proprietary platform folks are talking about a BETA Max, an Atari and an Xbox;
> I am talking a general purpose technology, a cumulative, systemic technology, like the railroad, electricity or the telephone.
>
> For them the end-to-end principle is an obscure garden variety interface;
> For me it is a fundamental design principle of an enabling technology.
>
> When they analyze the proprietary standards wars, there are few if any externalities;
> When I analyze a bearer service like the digital communications platform, externalities dominate.[6]

The second principle is the *Neutrality* principle. It holds that to reach its highest potential, a communications infrastructure must not discriminate as between uses, users, or content. As FCC Commissioner Michael Copps puts it: "From its inception, the Internet was designed, as those present during the course of its creation will tell you, to prevent government or a corporation or anyone else from controlling it. It was designed to defeat discrimination against users, ideas and technologies."[7]

The third principle is the *End-to-End* (e2e) principle. Whatever its meaning elsewhere,[8] in broadband policy e2e stands for a theory of

6. Mark Cooper, Remarks at the Silicon Flatirons Telecommunications Program Conference, University of Colorado School of Law (Feb. 8, 2004) (transcript available from the Silicon Flatirons Telecommunications Program, http://www.silicon-flatirons.org) [*hereinafter* Cooper Remarks].

7. *See* FCC Commissioner Michael J. Copps, The Beginning of the End of the Internet? Discrimination, Closed Networks, and the Future of Cyberspace, Address Before the New American Foundation (Oct. 9, 2003) (transcript available at http://www.newamerica.net/Download_Docs/pdfs/Docs_File_194_1.pdf).

8. In the telecommunications industry, the term "end-to-end" is used for a variety of purposes, many of which are quite meaningless, or roughly synonymous with "good." *See, e.g.*, MOTOROLA, INC., MOTOROLA NEXT LEVEL COMMUNICATIONS, END-TO-END, *at* http://broadband.motorola.com/nlc/solutions/endtoend.asp (last visited Jun. 26, 2004). Christopher Yoo, meanwhile, writes in this volume that the end-to-end principle as originally described by the network engineering literature has been misunderstood by Openists. *See* Christopher S. Yoo, *Would Mandating Broadband Network Neutrality Help or Hurt Competition? A Comment on the End-to-End Debate*, 3 J. ON TELECOMM. & HIGH TECH. L. 23, 42-46 (2004).

innovation. It rejects centralized, planned innovation, and holds that the greatest rate of technological development is driven by delegating decisional authority to the decentralized "ends" of any network. The reason is fairly simple: the "ends" of the network are numerous, or nearly unlimited, and delegating authority to the ends opens the door to more approaches to a given technological challenge. The e2e principle assumes that innovation is an evolutionary process, driven by contests between competing approaches to a problem. For Openists, the e2e principle puts as many players in the contest as possible to ensure the true champion emerges.

Openists believe these three principles are what made the Internet different from other communications networks; they hold that the embedding of these principles in the design of the Internet is the essence of the revolution. Their founder's story rejects technological determinism, or the idea that the Internet was destined to occur. They instead see the founding engineers, men like Paul Baran, Vint Cerf and Robert Kahn, as heroic figures and communications revolutionaries. [9]

The Openist vision just described can seem abstract to regulators and policy-makers. For that reason, in recent years Openists have advanced a more concrete regulatory model to explain what neutrality would entail. That model suggests that the Internet will continue its success if we come to understand it as a more humble but nonetheless highly successful innovation enhancing network: the nation's electric grid.

While today taken for granted, the electric network is probably the greatest innovation catalyst of our age. The radio, the air conditioner, the computer and other giant innovations have all depended on a predictable and reliable supply of electric current.[10] This multipurpose network is like the railways of the 19th century or the first roads of ages past: among the foundations of the national economy.

Openists point to the electrical grid and say it is successful precisely because we don't care about electricity as a product, but care instead about what the electric grid makes possible. It provides a standardized platform for the development of appliances that serve human needs, such as the hair dryer or DVD player. Sony and IBM do business safe in the assumption that American electricity will be predictable, standardized, and provided without preference for certain brands or products. There is

9. An example of the heroic version of the Internet's invention is KATIE HAFNER & MATTHEW LYON, WHERE WIZARDS STAY UP LATE, THE ORIGINS OF THE INTERNET (1996).

10. The electric grid model appears in Mark Cooper's remarks at the Silicon Flatirons Conference. *See Cooper Remarks, supra* note 6; Tim Wu, *Application-Centered Internet Analysis*, 85 VA. L. REV. 1163, 1165 (1999); *see also* LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE (2000).

no built-in favoritism for the VCR over the DVD player. You do not ask the electric companies permission before plugging in a new cordless phone. This makes the electric grid, Openists say, one of the greatest models of network neutrality the world has ever known.

The electric grid model returns us to the Vonage story that opened the section. The long term vision is a future where still other services long-centralized will finally be decentralized. Freestanding IP-televisions, IP-stereos, and many other services should be available based on plug-in devices, developed by independent, competing companies. This vision, in the Openists' view, is far from inevitable. It requires defense of the network against forces that want, for a variety of reasons, to close the network to market entrants.

B. The Deregulationists

The contrasting vision of the communications future begins with the decades-old idea of *media convergence*. Convergence means a natural technological progression toward a single network for communications services. Voice, data, and video, historically carried over different networks will, in the future, be carried over a single "pipe." There was a time, namely the 1990s, when twin visions of "convergence" and "commons" could maintain a peaceful coexistence. But today the visions are rivals, for the underlying principles are in conflict.

The convergence vision focuses on the *owners* of the networks and the services they will offer on the converged network "telecosm."[11] As Peter Huber puts it:

> Convergence among technologies is doing more than networking the networks. It is transforming the services; the vast capacities of broadband networks make nonsense of the traditional regulation distinction between "carriers" and "broadcasters." . . . Broadcasters, in short, are mastering the art of keeping the "broad" while switching the "cast." Telephone companies are keeping their switched, addressable capabilities while widening their bandwidth and their reach. Nobody casts drift nets anymore. They are all fly fishermen now.[12]

The Deregulationist position can also be reduced to several principles. First is the *Propertization* principle: any given resource will generally reach its best use when mapped out as property, and assigned owners. When Deregulationists think "commons," the word "tragedy" is never far

11. The idea of a "telecosm" was described most vividly in GEORGE GILDER, TELECOSM (2000).

12. PETER HUBER ET AL., FEDERAL BROADBAND LAW § 1.2.4 (1995).

from mind. Property owners can be expected to maintain and steward only what they have the right to exclude others from.[13] Additionally, the creation of transferable property rights will facilitate private, welfare-enhancing transactions. As Frank Easterbrook famously put it in *Cyberspace and the Law of the Horse*: "we need to bring the Internet into the world of property law . . . without which welfare-increasing bargains cannot occur."[14]

The second principle is the *Incentive* principle, which is just a simple reminder that communications networks are expensive investments and that companies will only build when given the prospect of a reasonable return on investment.[15] To speak, as Openists do, of a pure public infrastructure may have made some sense when the government was funding and building the network, but by now is seriously out-of-date. Some Deregulationists will accept that aspects of the Internet that have the character of a public good or natural monopoly and therefore might be best provided by an entity outside of the market (Internet addresses might be an example). But in general, and for most of the network and its applications, the private sector responding to appropriate incentives will drive and fund the future.

The final principle is *Deregulation* itself. The Deregulationist is naturally suspicious of government regulation outside of the assignment of property rights. This can be understood as a different interpretation of the Internet revolution: the greatest factor in the success of the Internet was the fact that the Commission and Congress largely stayed out of the way. The idea of technological destinies, discussed above, is important to this position. Deregulationists are generally technological realists, believing that power more than ideas determines the course of history. Government may slow but it cannot stop the inevitable. So while Openists may try to slow or stop it, in the long term the power of private network owners will drive the next-generation Internet.

Much of this is as abstract as the idea of an Internet commons. When asked for a more concrete vision of what Deregulationist policies may lead to, Deregulationists have turned to the vision of the "smart pipe." The smart pipe (also known as the "Quality of Service (QoS) Internet" or the "value-added service" model) is the central dogma of innumerable industry white papers. The basic idea is this: broadband operators will increase revenue and profit by selling applications bundled

13. *Cf.* Garrett Hardin, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968).

14. Frank H. Easterbrook, *Cyberspace and the Law of the Horse*, 1996 U. CHI. LEGAL F. 207, 212-13 (1996).

15. *See, e.g.*, ADAM D. THIERER, "NET NEUTRALITY" DIGITAL DISCRIMINATION OR REGULATORY GAMESMANSHIP IN CYBERSPACE? (The CATO Institute, CATO Policy Analysis No. 507, Jan. 12, 2004), *available at* http://www.cato.org/pubs/pa507.pdf.

with a basic connection. Stated in industry jargon, broadband operators using "next-generation" technologies can offer their customers a host of "value-added" services, such as telephony, video-on-demand, and so on.[16] The incentive for this new model, at least on the authority of projection, is profits that far exceed what can be earned from selling "commodity bandwidth."

Equipment vendors have pushed this vision aggressively for the last decade. As a current Cisco White Paper instructs cable operators:

> Tomorrow's cable business growth, however, will come from offering value-added services to consumers such as video on demand (VOD), interactive TV, and cable telephony.[17]

How? As Cisco explains to cable operators, in a FAQ rich with industry jargon:

> The Cisco MSOC solution defines a multiservice network infrastructure for delivering HFC-based, revenue generating enhanced IP-based services. Cisco MSOC provides best-practice design guidelines for building a well-engineered, reliable, highly available and quality-of-service (QoS)-enabled cable network capable of supporting real-time sensitive applications (such as VoIP and commercial services). . . . The largely untapped market for enhanced IP-based services, beyond high-speed Internet, will primarily fuel the future revenue growth for the cable operators.[18]

In short, the vendor industry and Deregulationists predict that the next great wave of innovation will occur at the center of the network, not the ends.[19] That directly contradicts the end-to-end principle, but that's fine: most Deregulationists believe blind adherence to the end-to-end principle is what is in fact slowing technological progress today. Economists Bruce Owen and Gregory Rosston, for example, argue that "openness inevitably has a price," and that certain innovations "have been

16. *See, e.g.*, Ira Brodsky, *Telecom Carriers Need to Smarter Up Their Pipes,* NETWORK WORLD FUSION, (Jan. 15, 2001), *at* http://www.nwfusion.com/columnists/2001/00280817.html.

17. CISCO SYSTEMS, RESIDENTIAL CABLE SERVICES (2003), *available at* http://www.cisco.com/application/pdf/en/us/guest/netsol/ns289/c714/ccmigration_09186a008014e05f.pdf.

18. CISCO SYSTEMS, MULTISYSTEM OVER CABLE SOLUTIONS (2003), *available at* http://www.cisco.com/en/US/netsol/ns341/ns396/ns289/ns269/netqa09186a0080113708.html.

19. *See, e.g.*, BRUCE OWEN & GREGORY ROSSTON, LOCAL BROADBAND ACCESS: PRIMUM NON NOCERE OR PRIMUM PROCESSI? A PROPERTY RIGHTS APPROACH 21 (STAN. L. & ECON., Olin Working Paper No. 263, 2003), *available at* http://ssrn.com/abstract=431620.

slowed or even blocked because of the [e2e's] requirement that the network not have embedded intelligence."[20]

Finally, while Openists favor the story of the Internet founders, Deregulationists invoke a different prescriptive saga: the birth of cable television. As Peter Huber puts it "Cable was the prototype of the broadband future."[21] The development of the cable networks was a story of private ingenuity's victory over governmental perfidy and, in the mind of many Deregulationists, a story with clear lessons for broadband 2000.

The Commission in the 1960s was anxious to preserve certain ideal visions of television. The two most important were that it be free and that it be local. Whatever the theoretical merits of those views, Deregulationists point out that the practical effect was to slow the spread of cable television for a full decade and to stop it from penetrating urban markets.[22] It was only by the 1970s that the Commission finally relaxed its grip and let competitive forces run their course. (Today cable companies are the TV's dominant players, so much so that cable operators rather casually bid to acquire broadcasters, their one-time overlords.)[23]

This, the Deregulationists would suggest, is what's happening in broadband policy, though our proximity makes us incapable of realizing it. There are certain parallels that anchor the obstructionist story. First, physical broadband networks, whether cable, twisted pair, or wireless spectrum, are indeed the subject of intensely complex federal and state regulation, rather like those to which the cable industry was subjected in the late 1960s and early 1970s (one writer described the cable regulations of 1972 as the "most complicated scheme ever devised by the mind of man"[24]). The ongoing regulatory asymmetry of DSL, cable, and wireless services is perhaps the most obvious example of a governmentally introduced distortion.

Second, the Commission in this view is still attached to some inappropriately utopian visions, which do not correspond with technological destiny. Today, the Deregulationist would contend, replacing "localism" and "free television" are similarly impractical ideals

20. *Id.* at 21.

21. PETER HUBER, LAW AND DISORDER IN CYBERSPACE 62 (1997).

22. *See* Leonard Chazen & Leonard Ross, *Federal Regulation of Cable Television, the Visible Hand*, 83 HARV. L. REV. 1820, 1820 (1970); Stanley M. Besen & Robert W. Crandall, *The Deregulation of Cable Television*, 4 LAW & CONTEMP. PROBS. 77, 94 (1981) ("Cable entered the 1970s as a small business relegated primarily to rural areas and small communities and held hostage by television broadcasters to the Commission's hope for the development of UHF.").

23. See Alison Beard, *Comcast Must Spell Out Plan for ABC*, FIN. TIMES, Feb. 17, 2004, *available at* 2004 WL 70205529 (discussing Comcast's planned acquisition of ABC).

24. Besen & Crandall, *supra* note 22, at 81-91 (documenting FCC activity constraining the growth of cable).

like the "end-to-end principle," "open access" and, of course "network neutrality."

A related similarity is what Deregulationists decry as an effort to prop up doomed businesses in the name of lofty ideals. In the 1960s, the Commission placed much hope for the future of television in a new generation of UHF broadcast stations.[25] UHF stations did have many appealing qualities: they were locally owned, free over the air for recipients, and available in greater quantity than VHF stations. But UHF was hopeless as a technological competitor to cable. Today, Deregulationists contend, we see the scenario repeating itself. Independent Internet Service Providers (ISPs) are kept alive in the vain hope that they may somehow make the broadband world a better place.

So what is the Deregulationist's vision of the future? Some argue that the FCC and Internet old-timers are holding back, not promoting the natural progress of broadband networks. Innovation, they contend, can happen anywhere, not just at the "ends." Dreams of a neutral network may be holding back the next communications revolution, one that will arise from the center of the network. That vision will necessarily be driven by private network owners and will bring consumers both what they want and are willing to pay for and what the old Internet could never have provided.

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It is between substantive visions of the future where the Openist – Deregulationist divide is most stark. That is perhaps because the contrasting utopias depend mainly on intuition and aesthetics, and faith in the private and public sectors, respectively. Yet nonetheless the sides are not precise opponents. Openists are primarily focused on the ends—the innovation commons. Deregulations care most about the means, most of all wanting to prevent disastrous and long-lasting governmental intervention. There is room, in other words, for reconciliation.

25. This was one of the arguments of the 1958 Cox Report. Kenneth Cox, The Problem of Television Service for Smaller Communities. *Staff Report to the Senate Committee on Interstate and Foreign Commerce*, 26 December 1958.

II. SHARED ECONOMIC FAITHS

A. Schumpeter

It is worth reemphasizing that the greatest unifying belief as between the Openist and Deregulationist is a common idolization of innovation. Both sides, with a few exceptions,[26] worship at the shrine of economist Joseph Schumpeter and admire his concept of innovation as "creative destruction."[27]

The core of what is agreed upon can be stated simply. Both sides take innovation, and not price competition, as the principle driver of economic growth. Proximity to the industries of high technology leads naturally to favoring or at least acknowledging what economists call "dynamic" economic models. Both the Openists and Deregulatists do not believe that reaching market equilibrium is a particularly attractive ideal: instead, new companies, new services and new products are the primary source of increased efficiency and economic growth. That belief, for both sides, put innovation policy at the center of national economic policy.

How, then, does innovation happen? As Schumpeter said, "Creative Destruction is the essential fact about capitalism."[28] Schumpeter's "capitalist" or "competitive" theory of innovation is centered on the "process of industrial mutation . . . that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one." Both sides also agree with Schumpeter that the greatest barrier to innovation is "ordinary routine." As he put it "knowledge and habit once acquired becomes as firmly rooted in ourselves as a railway embankment in the earth."[29] As a result, even "in the breast of one who wishes to do something new, the forces of habit raise up and bear witness against the embryonic project." The

26. There is a dissenting Openist viewpoint that sees the value of open infrastructure primarily in terms of providing positive social externalities as opposed to for its role in spurring innovation. (We value open parks for walking and socializing, not because they lead to new inventions—the same should go for the Internet). This view is well expressed in Brett M. Frischmann, An Economic Theory of Infrastructure and Sustainable Infrastructure Commons (2004) (working manuscript, on file with author).

27. Much as Schumpeter admired Karl Marx. See JOSEPH A. SCHUMPETER, CAPITALISM, SOCIALISM, AND DEMOCRACY 61 (1950) [*hereinafter* SCHUMPETER, CAPITALISM, SOCIALISM, AND DEMOCRACY] ("Can capitalism survive? No. I do not think it can"). Most of his account of capitalism as a system of growth through innovation as opposed to price competition is summarized in Ch. VII. *Id.*

28. *Id.* at 83.

29. JOSEPH A. SCHUMPETER, A THEORY OF ECONOMIC DEVELOPMENT 84 (1961) [*hereinafter* SCHUMPETER, ECONOMIC DEVELOPMENT].

greatest threat is social resistance, particularly from "the groups threatened by the innovation."[30]

As I said, most Openists and Deregulationists consider themselves Schumpeterians. With all this agreement, where do the differences arise? The difference between Openists and Deregulationists in Schumpeterian terms is over who the agents of creative destruction are. It boils down to something quite simple: the two sides have different attitudes toward size. Many Deregulationists, like the later Schumpeter, see large and powerful companies as the central agents of creative destruction. Big firms are the winners, the success stories, the smartest and strongest. For the Openists, conversely, size is not necessarily a sign of continuing success but instead suggestive of some knack for blocking market entry. The Openists like the early Schumpeter, and his younger focus on the entrepreneur as the seed of creative destructive. The difference in opinion over size can be as intractable as how one sees Sport Utility Vehicles or modern skyscrapers. Some see a mighty work of man, others see a wasteful monster. Yet since Schumpeter himself managed to reconcile the role of large and small in his work, it ought be possible for his latter-day followers.

First, the vision of the Deregulationists' Schumpeter: "What we have got to accept" said Schumpeter in 1943, is that the "large-scale establishment" is "the most powerful engine of [economic] progress and in particular of the long-run expansion of total output."[31] Putting faith in "perfect competition" among numerous competitors was, in his view, folly, for "the firm of the type that is compatible with perfect competition is in many cases inferior in internal, especially technological, efficiency."[32]

The reasons for this belief can be specified more carefully. First, in a dynamic market, when a firm successfully establishes a new market through product innovation, the result is inevitably at least a short-term market advantage, even a monopoly. Yet that market power is no cause for concern, as it will erode quickly under the pressure of capitalistic competition. Indeed, short-term monopoly profits are not a social ill but rather social boon. For it is the very existence of potential monopoly profit that fires the pistons of creative destruction. It is only the possibility of a giant and seemingly unfair payoff that motivates risky and otherwise irrational innovative behavior. Under Capitalism, Schumpeter said, "spectacular prizes much greater than would have been necessary to call forth the particular effort are thrown to a small minority of winners,

30. *Id.*
31. SCHUMPETER, CAPITALISM, SOCIALISM & DEMOCRACY, *supra* note 27, at 106.
32. *Id.*

thus propelling much more effaciously than a more equal and more 'just' distribution would."[33]

Second, large, powerful firms have advantages that in this view make them the only entities truly capable of producing meaningful progress. One idea, not strictly Schumpeterian, is that the large firm with a secure market may carry out product innovation in a planned and careful way, and decrease the waste from competing innovative processes.[34] Another idea from Schumpeter is that large firms are simply smarter, stronger, and better. Schumpeter argued that "there are superior methods available to the monopolist," and that "monopolization may increase the sphere of influence of the better, and decrease the sphere of influence of inferior brains."[35]

In the broadband context, this vision sees the great firms—mainly, the greatest of cable operators and powerful Bell Operating Companies—as the agents of perpetual revolution. Their battle for the giant profits that await the champion, the single broadband monopolist, are the driving force behind broadband innovation and the future of the Internet.

The Openists reject or temper this "naive" faith in great firms, both with the work of Schumpeter himself, and that of later evolutionary economists. Consider first the early, German-language Schumpeter who spent his time on individual entrepreneurs, and the challenges they face.[36]

Openists think that many have misunderstood Schumpeter: that he didn't truly believe that the large firm had an inherent advantage over the small firm. As economist Jan Farberberg argues, "In fact, Schumpeter seemed to be much more concerned with the difference between new and old firms than between small and large firms."[37] Meanwhile, the early Schumpeter's theory of entrepreneurs is distinct and compelling. They are to him unusual characters, risk-seeking individuals with a "special quality," who are spread through the population like undercover superheroes. What distinguished this class of individuals, said Schumpeter (foreshadowing the "open source" movement), was that profit would be but one motive and not the most important one. Instead, the entrepreneur was generally driven by "the dream or will to

33. *Id.*

34. *Cf.* Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265 (1977).

35. SCHUMPETER, CAPITALISM, SOCIALISM & DEMOCRACY, *supra* note 27, at 101

36. *See* SCHUMPETER, ECONOMIC DEVELOPMENT, *supra* note 29.

37. JAN FAGERBERG, A LAYMAN'S GUIDE TO EVOLUTIONARY ECONOMICS 15 (Centre for Technology, Innovation and Culture, Oslo, TIK Working Paper, Sept. 2002), *available at* http://folk.uio.no/janf/downloadp/02fagerberg_evolution.pdf.

found a private kingdom;" "the will to conquer: the impulse to fight, to prove oneself superior to others" and finally the "joy of creating."[38]

The Openist also directs those of Schumpeterian faith to the work of recent evolutionary economists like Richard Nelson and Sidney Winter. An essential element of such neo-Schumpeterian work is the emphasis on the uncertainty and contingency and of technological outcomes. It predicts multiple possible equilibria, rather than a single, predictable outcome. One reason is that this branch of economic thinking takes a much more sophisticated view of how firms decide what to do, rejecting the premise that firms will generally arrive at "maximizing" decisions.[39] Firms instead generally depend on a set of routines that survive unless the firm dies or manages to mutate its way of doing business. This latter capacity is limited by the limits of humans' ability to predict or foresee the future. There is, for writers such as Nelson, simply too much information to process: firms will usually lack the capacity to understand it all and understand what routines it needs to change to arrive at the best of all possible worlds. The odds, then, of any single actor treading the optimal path of technological development are exceedingly low.

When cognitive limitations combine with the phenomenon, in at least some markets, of path dependence (that is, technological "lock-in," or "network externalities"),[40] then reaching suboptimal technological outcomes is not only possible but likely. Evolutionists, pace Dilbert, consider firms to be unimaginative creatures whose ideas of the future tends to be closely tied to the present, like the 19th century farmer who asks for a better ox instead of a tractor. The "network" benefits of doing business in accord with the way everyone else does it adds to the problem. The result can quite easily become technological complacency, the graveyard of economic growth.

Here lies the link between neo-Schumpeterian economics and the e2e principle described in the opening section. The e2e principle can be understood as the implementation of an evolutionary innovation policy. E2e mandates that innovation is the job of the many (the ends), not the few (the center). By prescribing non-discrimination, it also sets conditions necessary for a fair fight, so that what survives is the truly the fittest and not merely the favored. E2e can help erase through

38. SCHUMPETER, ECONOMIC DEVELOPMENT, *supra* note 29, at 93.

39. *See, e.g.*, RICHARD NELSON & SIDNEY WINTER, AN EVOLUTIONARY THEORY OF ECONOMIC CHANGE 14 (1982) ("we reject the notion of maximizing behavior as an explanation of why decision rules are what they are").

40. *See generally* W. BRIAN ARTHUR, INCREASING RETURNS AND PATH DEPENDENCY IN THE ECONOMY (1994).

competition the invariable mistakes that a centralized network planner will make.

This hostility toward centralized, planned innovation should, for Openists in particular, spill over to an attitude toward government. Government, no more than any human entity, is likely to have a good idea of what the future should be, so centralized technological planning is no better option. But the developments in evolutionary economics and post-Schumpeterian thought should direct Deregulationists to rethink their argument. It cannot be denied that the unregulated companies favored by the deregulation can become among the forces that resist the new. The new work suggests that this is not only possible, but likely.

All of these teachings lead to a single principle that should be an absolute policy consensus. Lost-cost market entry is the common foundation of the innovation theories that both Deregulationists and Openists subscribe to. That means preventing any single actor, governmental or otherwise, from becoming lord of the technological future. A multiplicity of innovating actors, even if suffering from the same inability to accurately predict the future, may nonetheless stumble upon the optimal path. But all should understand that the process will be an ugly, Darwinian affair, an interminable exercise in trial and error, and not the well-calculated elegance of monopolistic prophecy.

B. Vertical Integration & New Institutional Economics

While the study of vertical integration may seem to be a technical topic, it has become central to understanding the division between Openists and Deregulationists, and what the possibilities for reconciliation are.[41] For the work in this area proposes that the ends favored by Openists—namely, the innovations commons—may be reached by Deregulationist means. The analysis of vertical integration has highlighted weaknesses in the Openist position. Strong opposition to all vertical integration, expressed in the "open access" laws, has failed to answer to the challenge implicit in examples of "good" vertical coordination.

Why pay any attention to vertical integration at all? The specific reason is the "open access" debate. Some Openists, early on, suggested that the best means of preventing an erosion of the neutrality of the network would be laws limiting vertical integration of broadband carriers with Internet service providers. Keeping these two economic units separate, suggested Lawrence Lessig and Mark Lemley in early work, is

41. A far better overview of this aspect of the debate is provided by Joseph Farrell & Philip J. Weiser, *Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age,* 17 HARV. J.L. & TECH. 85 (2003).

likely to prevent content discrimination on the Internet.[42] The counter-argument is by now familiar for those who follow the debate. First, as Phil Weiser and Joseph Farrell reminded, vertical integration often leads to important efficiencies.[43] Second, as Jim Speta and others have pointed out, broadband operators, even if vertically integrated, want to make their product as valuable as possible and can therefore be expected to provide their customers with wide access to content and services.[44] Weiser and Farrell express this as the "ICE presumption," a presumption that a platform monopolist will "internalize complementary externalities."[45]

The literature has focused on a narrow but crucial question: how likely is it that private firms will create an innovation commons when that would be economically desirable? The answer begins by recognizing that the value of a broadband operator's (or any platform owner's) service ultimately depends on what applications and content it supports. The value of a game console to a consumer is chiefly a function of the games you can play on it (imagine an advanced game console that offered only "Pong"). We ought therefore expect the broadband operator to do everything possible to maximize the platform's value to its customers, including the adoption of whatever strategies will lead to the best environment for developing applications. For example, a service that only allowed Comcast customers to email Comcast customers would be less valuable, making it unlikely that Comcast would impose such a limitation. Similarly, if an "open" application development model yields the best applications, then the platform owner will provide an open model.

There may also be services where vertically coordinated, "hand-in-glove" cooperation results in more value for the customer. A car that arrived with no speedometer or tachometer would be less desirable despite the fact that the automobile and gauge market are arguably separate. In the broadband context, Comcast might, for example, want to offer its customers an integrated Voice-over-cable product. Doing so might be better with vertical coordination between itself and a telephony carrier. In short, some applications are better provided in a closed fashion, and some open. What is better open and better closed is

42. *See* Mark A. Lemley & Lawrence Lessig, *The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era*, 48 UCLA L. REV. 925 (2001).

43. See Farrell & Weiser, *supra* note 41, at 100-05.

44. See James B. Speta, *A Vision of Openness by Government Fiat,* 96 NW. U. L. REV. 1553, 1565-66 (2001); James B. Speta, *Handicapping the Race for the Last Mile? A Critique of Open Access Rules for Broadband Platforms,* 17 YALE J. ON REG. 39 (2000).

45. *See* Farrell & Weiser, *supra* note 41, at 101.

ultimately an empirical question,[46] and one that the platform owner—the argument goes—is best situated to answer.

But hold on: what if the platform owner is a monopolist—won't it try to "leverage" its platform monopoly into a second monopoly? For example, might a monopolist broadband operator begin to try and give itself a monopoly over all Voice-over-IP revenue? Here, for a Deregulationist, the relevance of the "single-monopoly profit" principles emerges. To a platform monopolist, the applications are its inputs, and the monopolist has the same interest as any other party in minimizing its input costs.[47] Hence, if allowing open application development saves the monopolist money, then it will do so. An example comes from Microsoft, monopoly owner of the Windows platform. Microsoft does not categorically bar any foreign applications, but instead integrates some functions into the operating system platform (such as, say, disk defragmentation utilities), and leaves others open to some degree of competition (such as word processors). While the merits of Microsoft as a model are debatable, the point is that even a monopoly platform owner may find it a bad idea to make everything vertically integrated.

This analysis leads to a presumption that, in the telecommunications market, vertically integrated companies, even with monopoly power, should generally be left unregulated, absent special conditions, or exceptions.[48]

But from both Weiser and Farrell's work, and from the evolutionary economic work discussed above, there is an important reason to suspect that platform owners may not implement optimal innovation policies themselves. Weiser and Farrell call it the problem of "incompetent incumbents."[49] In the terminology of Nelson and Winter, it is the observations that firms operate on the basis of routines that do not allow for suitable decisional flexibility. Perhaps most simply: the clearest problem is that no company will plan its own death, even if its death is in the social interest.

The problem for policy-makers is this: when a platform owner chooses a closed system, how can we know whether is it actually trying to "internalize complementary externalities" or just trying to protect itself? Is the platform owner truly creating a better product (like a car that

46. *Cf.* Douglas Lichtman, *Property Rights in Emerging Platform Technologies,* 29 J. LEGAL STUDIES 615 (2000) (describing certain situations in which a platform owner might choose an open platform).

47. *See* RICHARD A. POSNER, ANTITRUST LAW 177–78 (2d ed. 2001).

48. Farrell and Weiser provide a useful summary of the exceptions that have emerged from the economic literature. Two are particularly relevant to the broadband context (1) interests in price discrimination and, (2) interests in disadvantaging potential platform rivals. *See* Farrell & Weiser, *supra* note 41, at 105-19.

49. *Id.* at 114-17.

includes a speedometer) or is it, in Schumpeter's phraseology, "resisting to new ways" in an effort to prevent its own inevitable demise?[50] Effective competition will threaten the life of existing firms. As Schumpeter put it, in a true capitalist system, companies face "competition which commands a decisive cost or quality advantage and which strikes not at the margins of the profits and the outputs of the existing firms but at their foundations and their very lives."[51] If innovation presents a firm with a threat to its very existence, then its interest in a closed system may have much less to do with "internalization of complementary externalities" than it does with basic survival.

For policy-makers, the best answer to this dilemma, I believe, combines a program of education and regulatory threat. It is reasonable to agree that certain applications may be more efficiently provided open and others closed, and still see industry education as the primary challenge. Policy makers should be suspicious of the premise that internal processes of firm-decision will always or even often lead to good decisions. There are many reasons, not all of which can be discussed here, but one is that the information and signals that broadband operators are exposed to can be biased. Equipment vendors have spent years convincing broadband operators that great profits lie in capturing the applications market for themselves. In my personal experience, Wall Street analysts reward broadband operators in the short term for announcing plans to move into the applications market without serious analysis of the second-monopoly profit problem. Neither group has much to lose from sending such messages but both operators and consumers do. A vivid example came in 2000, when broadband operator Enron announced bold moves into the Video-on-Demand market and was cheered by financial and industry analysts (though obviously punished later).[52] In that case, the problem was not quite that the operator did not understand the one monopoly profit rule; it seemed to be that analysts did not seem to care.

This view sees industry education as paramount. One important tool in this respect is the regulatory threat, which can be important as a kind of signaling tool.[53] It can counteract information broadband operators get from other sources. Notably, FCC Chairman Michael Powell has taken steps toward such an educational policy. Powell has encouraged broadband owners to guarantee the neutrality of the network

50. SCHUMPETER, ECONOMIC DEVELOPMENT, *supra* note 29, at 86.

51. SCHUMPETER, CAPITALISM, SOCIALISM & DEMOCRACY, *supra* note 27, at 84.

52. *See* Cecily Barnes, *Blockbuster Tests Video Streaming,* CNET NEWS.COM (Dec. 19, 2000) *at* http://news.com.com/2100-1023-250126.html.

53. *See* Wu, *supra* note 2 (suggesting regulatory threat may force operators to consider the value of openness).

for their own sake as well as for that of consumers. His approach challenges operators to respect four "Internet freedoms" of the Internet consumer to guarantee a better network for all.[54] This message, if it reaches operators, may balance the urgings of others, such as equipment vendors and sometimes Wall Street, to seek a (unachievable) second monopoly profit.

III. RECONCILIATION

In what is perhaps an excess of optimism I consider reconciliation plausible. As the discussion above suggests, the insights of the Openists and Deregulationists are not necessarily in tension. Consider that both sides are basically interested in innovation and open market entry. The Openists are principally concerned with ends (an open network), and the Deregulationists, means (non-governmental methods). That suggests room for agreement.

A. Network Neutrality and the Model of Users' Rights

Based on the positions developed here, I believe neither Deregulationists nor Openists should oppose well-drafted Network Neutrality (NN) rules. Such NN rules are, ideally, users' rights to use the equipment or attachments that they want, following directly the open, deregulatory spirit of *Hush-A-Phone*. Neither side should have much reason to oppose a rule that creates a right of users to use whatever legal and non-harmful application "attachments" they want. NN rules, stated otherwise, can do much to advance the joint Schumpeterian interest in wide-open market entry.

NN rules are distinguished by creating rights in *users*. Rights, that is, to attach equipment or access any application or content, so long as it is not harmful or illegal. As a recent proposed rule reads:

> (b) *General Right of Unrestricted Network Usage.* Broadband Users have the right to use their Internet connection in ways which not unlawful or harmful to the network. Accordingly neither Broadband Operators nor the Federal Communications Commission shall impose restrictions on the use of an Internet connection except as necessary to: [prevent uses illegal under statute or uses harmful to the network].[55]

54. *See* Michael K. Powell, *Preserving Internet Freedom: Guiding Principles For The Industry*, 3 J. ON TELECOMM. & HIGH TECH. L. 5 (2004).

55. *See* Appendix A. This is the most recent version of regulations first proposed in an *ex parte* submission to the FCC by Tim Wu and Lawrence Lessig. *See* Tim Wu & Lawrence Lessig *Ex Parte* Letter, Appropriate Regulatory Treatment for Broadband Access to the

This distinguishes NN rules from competitor-centered rules like the various state-law "open access" regimes, or the approach of § 251 of the 1996 Telecommunications Act.[56] For example, the Portland merger condition at issue in the original AT&T open access case creates rights in ISPs, not users.[57]

The attraction to Openists of an NN rule is perhaps more intuitive. What is the attraction to Deregulationists? The key point is that creating rights in users can and will serve deregulatory purposes. American law is full of such deregulatory rights, economic and otherwise. A good example is the rights created by the dormant commerce clause to be free from discriminatory state regulation.[58] A user-centered NN rule is as deregulatory in spirit as *Hush-A-Phone* and *Carter-Phone*[59] were. It prevents government from acting as in the *Hush-A-Phone* case and agreeing to regulations that block application or network attachment. While less likely in recent years than in the 1950s and 1960s, the possibility of such action should not be discounted, for the reasons for doing so in the future cannot be predicted today. NN rules are, in short, like other rights against government: a form of pre-commitment rule for both government and industry. They prevent now what may be temptations tomorrow.

In addition, the broadband industry and some Deregulationists may be overlooking the extent to which NN rules prevent government from blocking *operator* entry into the application market. If the users have the right to access lawful applications and content, that includes those provided by the operator itself. NN rules prevent a quarantine—prevent operators from offering competitive, vertically integrated applications themselves. NN rules for these reasons have a value to the operator industry that should not be minimized.

Finally, NN rules are, at bottom, rules designed to free market entry, and should therefore be supported by those with Schumpeterian leanings, which means nearly everyone in communications policy. The NN rules create a structural bias that favors entry of any player, operator or application, or equipment-developer, into the market for consumer usage of the Internet. They are designed to make the Vonage story repeat itself. Even if Vonage dies, the Schumpeterian will admit it will have succeeded in bringing the network forward. The NN rules also do

Internet Over Cable Facilities, *Notice of Proposed Rulemaking*, FCC CS Docket No. 02-52 (filed Aug. 22, 2003), *available at* http://faculty.virginia.edu/timwu/wu_lessig_fcc.pdf.

56. 47 U.S.C. § 252 (2000).

57. AT&T Corp. v. City of Portland, 216 F.3d 871, 874 (9th Cir. 2000).

58. *See, e.g.*, Kassel v. Consolidated Freightways Corp., 450 U.S. 662 (1981) (discussing the rights created by the dormant commerce clause).

59. *See* Use of the Carterfone Device in Message Toll Tel. Serv., *Decision*, 13 F.C.C.2d 420 (1968).

not (as Christopher Yoo argues, discussed below) do anything in particular to prevent "facilities-based" entry. If anyone thinks they have a better idea than the TCP/IP protocol, they are free to build that network and see how it goes.

One Deregulationist who has not overlooked these arguments and the desirability of NN principles is FCC Chairman Michael Powell. Powell has spoken powerfully on the normative desirability of "Internet freedom," his phrase for network neutrality. "Internet freedom," he says, means "ensuring that consumers can obtain and use the content, applications and devices they want."[60] Doing so, he says, is "critical to unlocking the vast potential of the broadband Internet," and (in Schumpeterian language), "essential to nurturing competitive innovation."

Powell's discussion of "Internet freedom" focuses also on users' rights, notably, the four "freedoms" are:

> *Freedom to Access Content.* First, I believe consumers should have their choice of legal content.
>
> . . . .
>
> *Freedom to Use Applications.* Second, consumers should be able to run applications of their choice.
>
> . . . .
>
> *Freedom to Attach Personal Devices.* Third, consumers should be permitted to attach personal devices they choose to be the connections that they pay for in their homes.
>
> . . . .
>
> *Freedom to Obtain Service Plan Information*. Finally, and most importantly, consumers must receive clear and meaningful information regarding their service plans and what the limits of those plans are.[61]

These principles advocated by Powell, while done as part of an educational campaign, underline why Openists and Deregulationists should find common ground in advocacy in user-centered network neutrality rules. A shared faith in consumer choice and open market entry augurs such a result.

60. Powell, *supra* note 54, at 12.
61. *Id.*

B. Criticism of Network Neutrality

While some Deregulationists, like Chairman Powell, have endorsed principles of network neutrality, many industry players and some Deregulationists have mounted challenges to network neutrality proposals. I suggest that these challenges are generally lacking in merit, for reasons that follow.

The industry's most common challenge is this: while neutrality might be an attractive goal, any neutrality regulation is a solution looking for a problem. Such regulation or even a threat thereof, violates the principle of *Primum Non Nocere* (first, do no harm).[62] At its worst, network neutrality regulation might become a tool in the hands of application developers used to block competition from broadband operators. Imagine, for example, a rule that required FCC permission before a broadband operator could offer any service beyond a basic connection.

There are several problems with the *Primum Non Nocere* objection. First, it simply raises a question of dueling baselines. The existing design of the Internet is neutral. Why should it not be private entities who follow the principle of "do no harm" before monkeying with the proven strengths of the existing design? In this sense the slogan does nothing but restate an underlying difference in visions.

Second, the objection relies on an anti-regulatory straw-man. Because it is possible to imagine a *bad* network neutrality law, *any* network neutrality regulation is suspect. Yet it is unclear how Chairman Powell's or other's suggestions create the means for preventing competition among applications. The cable industry, the leading exponent of the do-no-harm view, has very meager support for its claim that a NN rule would block operator entry into the applications market. Its sole support is a proposal from Amazon that could be read to bar cable-operators from adding pop-up ads to web content.[63] That's far from a rule that prevents operators from entering the applications market. And as discussed above, a NN-rule that creates user's rights will give operators as much as anyone else a right to enter the applications or equipment markets.

A more powerful challenge to network neutrality rules runs as follows. It may be true that the basic, neutral Internet creates positive externalities, like the electrical grid or other neutral networks. But the metaphor is inapt for the following reason: the electric grid model fails to

62. *See* Owen & Rosston, *supra* note 19.

63. *See* National Cable and Telecommunications Association Ex Parte Letter, Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities, *Notice of Proposed Rulemaking,* FCC CS Docket No. 02-52 (filed Feb. 21, 2003).

take into account the possible need to improve the grid or infrastructure itself and the creation of proper incentives to do so. As Howard Shelanski puts the point, using roads as a metaphor: "at some point the road needs to be improved and that work can be disruptive. So the question is not one of never disrupting the flow of traffic, but of knowing when to let cars run freely on the road and when to tear up the road to make it work better."[64]

This returns us to the "smart-pipe" discussion and the argument that much innovative potential is trapped in the core of the network, a point Christopher Yoo makes.[65] Yoo argues that it is critical, in a market with many vertical layers, that competition be encouraged at the layer that is least competitive. As he states, "Application of the basic insights of vertical integration theory reveals that markets will achieve economic efficiency only if each stage of production is competitive."[66] Looking at broadband, he thinks that in the application and content market, competition is robust and needs no favors. Yet he sees competition at the physical layer (between cable and DSL) least vigorous and therefore the most in need of freedom from government restraints. Network neutrality regulation, in Yoo's view, would mandate dumbness and therefore slow deployment of proprietary "smart" networks.[67]

According to Yoo, the answer is to allow or even encourage the deployment of divergent proprietary, as opposed to standardized, broadband networks. He sketches the possibility of consumers being served by three entirely different and non-standardized broadband infrastructures: "The first network could be optimized for conventional Internet applications, such as e-mail and website access. The second network could incorporate security features designed to appeal to users focusing on e-commerce. The third network could prioritize packet routing in the manner needed to facilitate time-sensitive applications such as VoIP."

Yoo's conclusions are overstated and demand several responses. First, it is unclear why Yoo believes that the existence of a neutral Internet would be a barrier to "facilities-based competition," that is, the market entry of entirely new network facilities.[68] If an operator wanted

64. Howard Shelanski, Remarks at Silicon Flatirons Telecommunications Program Conference, University of Colorado School of Law (Feb. 8, 2004) (transcript available from the Silicon Flatirons Telecommunications Program, http://www.silicon-flatirons.org).

65. Yoo, *supra* note 8, at 42-46.

66. *Id.* at 59.

67. Adam D. Thierer makes the same point. *See* Adam D. Thierer, *Are 'Dumb Pipe' Mandates Smart Public Policy? Vertical Integration, 'Net Neutrality,' and the Network Layers Model*, 3 J. ON TELECOMM. & HIGH TECH. L. (forthcoming Winter 2005).

68. *Cf.* Randal Picker, *Entry, Access and Facilities-Based Competition*, *in* AM. L. & ECON. ASS'N ANN. MEETINGS (The Berkeley Electronic Press Working Paper No. 33, Apr. 29, 2004).

to build an entirely new network designed, say, to offer voice services, it is free to do so. The existence of the Internet for new facilities deployment seems irrelevant. Indeed, Yoo seems to have it backward: if the neutral network is no good for certain applications, that would drive facilities-based competition, not inhibit it. A neutral network should be expected to drive an efficient mix of shared and facilities-based competition: those applications which can be run over the open network will be, and for those that require entirely new facilities, new facilities will be built. Much of the cell-phone networks, for example, were built in the 1990s, and the Internet proved no barrier.

In fact the facilities-based competition that Yoo sees as ideal is our present reality. The existing telephone network is Yoo's "prioritized" network that facilitates a time-sensitive application, telephony, as are the mobile-phone networks. Meanwhile, the cable television network is a network specialized for "one-to-many" video. Perhaps Yoo's point is that these various specialized networks are likely to remain in our lives, but that doesn't say much about how the Internet should be regulated.

Second, Yoo's premise that vigorous competition at every layer is always better for the consumer is overstated. He downplays, to the point of elimination, the basic economic benefits of standardization. And when it comes to technology platforms or other areas of economic development it is easy to envision scenarios where standardization means less competition but is nonetheless socially beneficial, which impeaches Yoo's premise.

Here is an intuitive demonstration of the point. Most people in the United States speak a standard language, English. This undoubtedly leads to some sacrifice. We lose, for example, the precision of German; we lack the Chinese vocabulary for food; and we lose righteousness and occasional elegance of the French language. But few would argue that vigorous and ongoing competition for a standard American language would clearly serve consumer welfare. It would be, instead, the Tower of Babel.

The same observation holds for standardized technology platforms such as the Windows operating system or the TCP/IP protocol, which bring a variety of benefits for application developers and end users. Application writers need only write for a single platform, for example, and can expect to reach a much larger addressable market, thereby justifying greater investments. End-users, given a single standard, share information with ease. All of these advantages usually go under the rough heading of network externalities, or the economic benefits of standardization. Yoo is, in essence, failing to take seriously the benefits of platform standardization in his product differentiation model. To be sure, as with language, there are costs from uncompetitive platform

markets. The result will in all likelihood be an inferior platform (for want of competition), and the possibility of anti-competitive conduct. But the fact that we face a balance of costs and benefits shrinks Yoo's point. We are left instead with the empirical question: how valuable are neutral standards and networks, and when are they worth a loss in competition in the network?

Yoo and others who favor the encouragement of market entry should in fact favor basic network neutrality rules. True enough, such rules may slow some competition for the standards for the Internet's basic protocols. But if that's truly the case, nothing in NN rules, prevent full facilities-based competition. And meanwhile NN rules facilitate market entry on the standardized and highly successful network we do have. These and other reasons should prompt those Deregulationists opposed to network neutrality principles to ask whether they are on the wrong side of the argument.

CONCLUSION

I've suggested here that reconciliation of the broadband debate is plausible, but unfortunately that doesn't make it inevitable. A serious contribution to this problem has come from the winner-take-all approach of some of the groups on each side. The Internet Service Providers have seemed committed to achieving full open access rules through litigation, again showing that companies in fear of death turn to lawyers with the same urgency that dying people turn to doctors. And the cable industry, while it has laudably adhered to neutral practices during the last period of intense scrutiny, still seems unwilling to agree with a simple neutrality rule that would codify its existing practices and do much to remove regulatory scrutiny. As this goes, it should be recognized that the age of regulatory uncertainty surrounding broadband will soon reach its first decade. That fact alone should prompt all interested parties to seek reconciliation sooner rather than later.

APPENDIX A:
DRAFT NETWORK NEUTRALITY RULE

§ 1. *General Right to Unrestricted Network Usage.* Broadband Users have the right reasonably to use their Internet connection in ways which are not illegal or harmful to the network. Accordingly neither Broadband Operators nor the Federal Communications Commission shall impose restrictions on the use of an Internet connection except as necessary to:

(1) Comply with any legal duty created by federal, state or local statute, or as necessary to comply with any executive order, warrant, legal injunction, subpoena, or other duly authorized governmental directive;

(2) Prevent physical harm to the local Broadband Network caused by any network attachment or network usage;

(3) Prevent Broadband users from interfering with other Broadband or Internet Users' use of their Internet connections, including but not limited to neutral limits on bandwidth usage, limits on mass transmission of unsolicited email, and limits on the distribution of computer viruses, worms, and limits on denial-of service-or other attacks on others;

(4) Prevent violations of the security of the Broadband network, including all efforts to gain unauthorized access to computers on the Broadband network or Internet;

(5) Serve any other purpose specifically authorized by the Federal Communications Commission, based on a weighing of the specific costs and benefit of the restriction.

§ 2. As used in this section,

(1) "Broadband Operators" means a service provider that provides high-speed connections to the Internet using whatever technology, including but not limited to cable networks, telephone networks, fiber optic connections, and wireless transmission;

(2) "Broadband Users" means residential and business customers of a Broadband Operator;

(3) "Broadband Network" means the physical network owned and operated by the Broadband Operator;

(4) "Restrictions on the Use of an Internet Connection" means any contractual, technical, or other limits placed with or without notice on the Broadband user's Internet Connection.