ARE "DUMB PIPE" MANDATES SMART PUBLIC POLICY?

VERTICAL INTEGRATION, NET NEUTRALITY, AND THE NETWORK LAYERS MODEL

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ABSTRACT

Many academics and some public policymakers are increasingly advocating the adoption of regulations mandating "open" or "dumb" broadband networks over "closed" or proprietary systems. While such an "open-vs.-closed" distinction grossly over-simplifies the issue, it would be a mistake for lawmakers to implement regulations choosing network architectures. Such regulatory proposals are based on the mistaken belief that vertical integration between the "layers" of the Internet is inefficient or at least discriminates against firms or consumers operating in other layers. To the contrary, vertical integration can play a vital role in ensuring the development of a more robust broadband marketplace and offering consumers a wider array of service options. "Dumb pipe" mandates might also have a discouraging effect on competition in the creation of entirely new networks and services if these regulations formally prohibit vertical integration between network layers.

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INTRODUCTION

We hear a lot of talk these days about "open" versus "closed" systems in the field of high-technology and Internet policy. Examples include: "open spectrum" versus privately-held wireless properties; "open source" versus proprietary software; and mandatory "open access" versus private (contractual) carriage for telecom or broadband networks. Oftentimes, this debate is also cast in terms of "dumb pipes" versus "intelligent networks." A purely dumb pipe, for example, would be a broadband network without any proprietary code, applications, or software included. An intelligent network, by contrast, would integrate some or all of those things into the system.

One problem with this open-versus-closed or dumb-versus-smart system dichotomy is that it greatly oversimplifies matters. "Open" or "dumb" systems are almost never completely open or stupid; "closed" or "smart" systems are almost never completely closed or perfectly intelligent. Nonetheless, an important question raised by these debates is whether as a matter of public policy lawmakers should be mandating one type of business arrangement or system architecture over another. More specifically, debates over open versus closed systems raise the question of

whether vertical integration within the communications and broadband marketplace is to be feared or welcomed.

That question is receiving increasing attention in Internet policy circles today as numerous scholars begin to conceptualize this market in terms of layers. Most of these "network layers" models divide our increasingly packet-based Internet world into at least four distinct layers: (1) Content Layer; (2) Applications Layer; (3) Logical/Code Layer; and, (4) Physical/Infrastructure Layer. The layers model is an important analytical tool that could help lawmakers rethink and eventually eliminate the increasingly outmoded policy paradigms of the past, which pigeonholed technologies and providers into discrete industrial regulatory categories. But should the layers model be taken a step further and be formally enshrined as a new regulatory regime? And should a layer-breaker be considered a law-breaker? Some scholars and policymakers appear to be moving in that direction with their advocacy of dumb pipe mandates that insist that providers essentially stay put in their primary layer of operation.

For example, fearing the supposed ill effects of greater vertical integration in the broadband marketplace, some scholars and policymakers are advocating "Net neutrality" mandates that would limit efforts by physical infrastructure owners to integrate into other layers, especially content. Net neutrality proposals illustrate how the layers model could be used to restrict vertical integration in this sector by transforming the concept into a set of regulatory firewalls between physical infrastructure, code or applications, and content. You can offer service in one layer, but not another.

Variations on this theme have already been seen in the debate over Microsoft's integration of a web browser or media player into its Windows operating system and in the AOL-Time Warner merger. In both cases, fears about vertical integration into adjoining layers drove numerous open access regulatory proposals. Had the proposed Comcast-Disney merger moved forward, similar arguments likely would have been raised since the combined entity would have been a major player in the physical infrastructure, applications, and content layers.[1] Undoubtedly, however, the proposed deal foreshadows similar combinations to come that will raise such policy issues. And recent rumblings about treating search engine provider Google as a public utility as it grows larger provides another example of how layer-jumping could result in a regulatory response.

This article argues that far from being antithetical to innovation and competition, however, vertical integration can play a vital role in ensuring

1. Michael Feazel and Brigitte Greenberg, *Comcast Bids $66 Billion for Disney, 'Huge' Political Reaction Seen*, COMM. DAILY, Feb. 12, 2004, at 2 (subscription req'd).

the development of a more robust broadband marketplace and should not be restricted through an overly rigid application of the network layers model or Net neutrality mandates. As broadband service providers (BSPs) and other Internet service and applications providers seek to expand and diversify their range of consumer offerings by integrating into other network layers, policymakers should not proscribe such layer-jumping. Rather, they should be agnostic with regard to the intelligence of broadband networks in general. Moreover, while the dumb pipe approach may have great merit as a business model and eventually become the approach many BSPs adopt over time, it should not be enshrined into law as a replacement regulatory regime. Added network "intelligence" in the form of bundled applications and services can provide the public with an expanded array of choices that make their Internet experience more user-friendly. More importantly, dumb pipe mandates might have a discouraging effect on competition in the creation of entirely new networks and services if these mandates come to be a formal prohibition on vertical integration between layers. For these reasons, a dumb pipe mandate would be quite dumb indeed.

This article begins, in Section I, by laying out dumb pipe theory and the many variations on the network layers model. Section II attempts to draw a linkage between the network layers model, dumb pipe theory and emerging Net neutrality regulatory proposals. After outlining these theories and proposals, the article shifts gears and critiques efforts to enshrine these principles into law. Section III discusses the potential disincentives to innovate and create entirely new broadband platforms that might accompany the adoption of dumb pipe mandates or Net neutrality regulations. Section IV argues that if there is anything to dumb pipe theory, "openness" and (semi-) dumb pipes will likely prevail naturally in the marketplace, making government regulation a risky proposition. In particular, Section V warns that if past history is any guide, the potential for regulatory capture is quite real and worth considering before adopting such mandates. Questions are also raised regarding the applicability of property rights concepts within the field of broadband networks. Section VI discusses the importance of pricing flexibility and warns that if dumb pipe/Net neutrality regulation prohibits pricing freedom, innovative business models and pricing methods may be preempted. Section VII discusses concerns about market power in the broadband marketplace and argues that the increasing contestability of communications markets make *Carterfone*-like regulatory mandates unnecessary. Section VIII concludes by discussing some short-term developments worth watching that should help us gauge how policymakers might apply network layers models or dumb pipe mandates in the future.

The article concludes that a dumb pipe mandate—whether applied though a network layers law or Net neutrality mandates—would not constitute smart public policy. Such legal mandates are not needed to deter supposed "discrimination" or preserve the Net's "openness."

I. THE NETWORK LAYERS MODEL AND DUMB PIPE THEORY

Officials with MCI have been aggressively pushing a new study around Washington entitled, *A Horizontal Leap Forward: Formulating a New Public Policy Framework Based on the Network Layers Model*.[2] MCI's white paper is the most succinct articulation to date of the Internet protocol-based "layering concept" previously sketched out by academics Lawrence Lessig,[3] Lawrence Solum and Minn Chung,[4] Kevin Werbach,[5] Philip J. Weiser,[6] and Douglas Sicker[7] among others.

Although there is some disagreement within this literature about how many layers can be identified, as the MCI white paper notes, most of these models divide our increasingly packet-based Internet world into at least four distinct layers:

(1) *Content Layer*: speech, communications, text, music, video, music

(2) *Applications Layer*: e-mail, word processors, Voice-Over Internet Protocol (VoIP), web browsers

(3) *Logical / Code Layer*: TCP / IP, HTTP, FTP

(4) *Physical / Infrastructure Layer*: DSL, cable, satellite, Wi-Fi, fiber optics

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2. RICHARD S. WHITT, MCI PUBLIC POLICY PAPER, A HORIZONTAL LEAP FORWARD: FORMULATING A NEW PUBLIC POLICY FRAMEWORK BASED ON THE NETWORK LAYERS MODEL (Mar. 2004), *available at* http://global.mci.com/about/publicpolicy/presentations/ horizontallayerswhitepaper.pdf.

3. *See* Lawrence Lessig, *The Architecture of Innovation*, 51 DUKE L.J. 1783 (2002), *available at* http://www.lessig.org/content/archives/architectureofinnovation.pdf; LAWRENCE LESSIG, THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD 19-25 (Random House 2001); 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).

4. LAWRENCE B. SOLUM & MINN CHUNG, THE LAYERS PRINCIPLE: INTERNET ARCHITECTURE AND THE LAW (Univ. of San Diego Pub. Law and Legal Theory Research Paper No. 55, June 2003), *available at* http://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID416263_code030616630.pdf?abstractid=416263.

5. Kevin Werbach, *A Layered Model for Internet Policy*, 1 J. ON TELECOMM. & HIGH TECH. L. 37 (2002).

6. Philip J. Weiser, *Regulatory Challenges and Models of Regulation*, 2 J. ON TELECOMM. & HIGH TECH. L. 1 (2003).

7. Douglas C. Sicker & Joshua L. Mindel, *Refinements of a Layered Model for Telecommunications Policy*, 1 J. ON TELECOMM. & HIGH TECH. L. 69 (2002).

These layering models are important because they challenge traditional technological, legal, and regulatory assumptions about the way the communications marketplace operates. The traditional vertical "silo" model of communications industry regulation views each industry sector as a distinct set of entities that do not interact and which should be regulated under different principles. For example, telephone companies are governed under Title II of the Communications Act as common carriers. Wireless providers and broadcasters fall under Title III and receive licenses to operate "in the public interest;" while cable providers operate under Title VI and face neither common carrier obligations nor licensing requirements but are governed by local franchising boards.

Despite the rapid convergence of these formerly distinctive industry sectors, discrete regulatory regimes and policies continue to exist that are at odds with emerging technological realities. In particular, the rise of the packet-based Internet and high-speed broadband networks challenge traditional assumptions about the vertical silo model of regulation. In other words, although the communications/broadband marketplace is becoming one giant fruit salad of services and providers, regulators are still separating out the apples, oranges, and bananas and regulating them differently.

The layers model is an important analytical tool that could help public policymakers rethink and eventually eliminate these increasingly outmoded regulatory paradigms. But should it remain merely an analytical framework, or should it be enshrined into law as the new regulatory paradigm for the communications marketplace? And more importantly, in replacing vertical silos with horizontal layers, will vertical integration between the layers become verboten?

Recently, MCI issued a follow-up paper also authored by Richard Whitt, entitled, *Codifying the Network Layers Model*, which begins to answer some of these questions.[8] In this latest piece, Whitt criticizes the Federal Communications Commission (FCC) for its recent push to classify broadband services provided by telephone and cable companies as "information services," effectively exempting them from traditional telecom/common carrier regulations.[9] He proposes that cable and telco BSPs instead: (1) be required to make their networks available to rivals on a wholesale basis or, (2) not be allowed to vertically integrate into other layers.

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8. RICHARD S. WHITT, MCI PUBLIC POLICY PAPER, CODIFYING THE NETWORK LAYERS MODEL: MCI'S PROPOSAL FOR NEW FEDERAL LEGISLATION REFORMING U.S. COMMUNICATIONS LAW (Mar. 2004), *available at* http://global.mci.com/about/publicpolicy/ presentations/layersmodelfederallegislation.pdf.

9. Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, 67 Fed. Reg. 9232-9242 (proposed Feb. 28, 2002) (to be codified at 47 C.F.R pt. 51).

> In this specific context of entities possessing the ability to leverage market power into otherwise competitive markets, policymakers generally have two choices: restrict (quarantine) the upstream dominant firm, or regulate that firm to some degree (which requires regulation of wholesale price and quality of access). While a restriction on vertical integration would more directly address the market dominance concerns, appropriate regulation designed to facilitate nondiscriminatory access at various layers appears sufficient in most cases to largely negate those concerns. Many forms of vertical integration can and do bring efficiency benefits to consumers, and a relatively small likelihood of harming competition. At the same time, layers analysis helps reveal those notable instances where powerful firms at one level should not be allowed to leverage that power unfairly into adjacent levels, causing significant damage to competition and innovation. Broadband transport provided by the incumbent LECs is one such instance meriting careful regulatory scrutiny.[10]

This clearly raises the prospect of the layering model becoming a series of formal regulatory firewalls or quarantines to encourage or even mandate a "dumb pipe" approach to the provision of communications and broadband services in the future. Layering proponents, like Lessig, often argue that "a dumb pipe is critical," meaning that it would be best for BSPs not to provide any integrated content or applications over the lines they own for fear of discrimination against independent suppliers.[11] Lessig and most other proponents of layering models also stress that their models build on, and in some cases seek to protect, the "end-to-end" network design principle that has governed the Internet for so long. The end-to-end principle was first articulated by Jerome Saltzer, David P. Reed, & David D. Clark in 1984.[12] As Lessig summarizes:

> The end-to-end argument says that rather than locating intelligence within the network, intelligence should be placed at the ends: computers within the network should perform only very simple functions that are needed by lots of different applications, while functions that are needed by only some applications should be

10. WHITT, *supra* note 8, at 6, 7.

11. Teri Rucker, *Coalition Urges FCC to Craft Rule on Broadband Access*, NAT'L J. TECH. DAILY (PM ED.), Apr. 24, 2003, *available at* http://nationaljournal.com/pubs/techdaily/ (quoting Lawrence Lessig). *See also* Simson Garfinkel, *The End of End-to-End?*, MIT TECH. REV (July/Aug. 2003), *at* http://www.technologyreview.com/articles/03/07/garfinkel0703.asp?p=1.

12. Jerome H. Saltzer, David P. Reed, & David D. Clark, *End-to-End Arguments in System Design*, 2 ACM TRANSACTIONS ON COMPUTER SYS. 277 (1984).

> performed at the edge. Thus complexity and intelligence in the network are pushed away from the network itself.[13]

Thus, the relationship between the layers model, the end-to-end principle, and "dumb pipe" or "stupid network" mandates becomes evident. As Solum and Chung note, "The layers concept is implicit in the end-to-end argument," and from the two usually flows a series of assumptions about the wisdom of integrating additional intelligence into the core of the network.[14]

Until recently, however, the "dumb pipe" or "stupid network" thesis did not really have any clear public policy implications. It functioned more as an ideal to which the industry should aspire. For example, throughout the 1990s, technology guru and *Telecosm* author George Gilder repeatedly stressed the importance of dumb pipes, "dark fiber," and "stupid storage." In fact, one of Gilder's "20 Laws of the Telecosm" was "The Law of Conduits and Content":

> This law comes in the form of a commandment to *divorce content from conduit.* The less content a network owns the more content flows through it. If you are a content company, you want your content to travel on all networks, not just your own. If you are a conduit company, you want to carry everyone's content, not restrict yourself to your own. Companies that violate this rule . . . tear themselves apart. The dumber the network the more intelligence it can carry.[15]

More recently this perspective was echoed by Don Tapscott, a management consultant and author of *Digital Capital: Harnessing the Power of Business Webs*, when he argued in a *Wall Street Journal* column that, "[T]he rule is that content wants all the distribution it can get. And distribution wants all the content it can get."[16] Similarly, former AT&T engineer David Isenberg was advancing this same thesis as far back as 1997 in a now-famous essay on the *Rise of the Stupid Network*:

> A new network "philosophy and architecture" is replacing the vision of an Intelligent Network. The vision is one in which the public communications network would be engineered for "always-on" use, not intermittence and scarcity. It would be engineered for intelligence at the end-user's device, not in the network. And the

13. Lessig, *supra* note 3, at 34.
14. SOLUM & CHUNG, *supra* note 4, at 19.
15. GEORGE GILDER, TELECOSM: HOW INFINITE BANDWIDTH WILL REVOLUTIONIZE OUR WORLD 269 (2000).
16. Don Tapscott, *The Magic Kingdom as Content*, WALL ST. J., Mar. 30, 2004, at B2.

> network would be engineered simply to "Deliver the Bits, Stupid," not for fancy network routing or "smart" number translation. *Fundamentally, it would be a Stupid Network.* In the Stupid Network, the data would tell the network where it needs to go. (In contrast, in a circuit network, the network tells the data where to go.) In a Stupid Network, the data on it would be the boss.[17]

But Gilder, Tapscott, and Isenberg were generally making the case for why dumb pipes and "stupid networks" made sense from an engineering or business perspective. Again, the question left unanswered was whether the dumb pipe approach was merely a conceptual tool and a business model, or whether it should become the central animating principle for future regulation of the entire broadband/Internet marketplace. As we turn to the debate over so-called "Net neutrality," or "digital discrimination" regulation, we see that the latter may soon be the case.

II. DUMB PIPES LITE: THE NET NEUTRALITY PROPOSAL

Since the implementation of the Telecommunications Act of 1996, federal and state policymakers have been fixated with the question of how much access should be provided to the platforms owned by wireline telecom companies and cable operators.[18] While incumbent local exchange carriers have faced an extensive array of infrastructure sharing mandates, cable operators have thus far escaped similar mandates to share their networks with rivals at regulated rates. In fact, federal regulators have essentially crafted an asymmetrical industrial policy that has quarantined cable operators from forced access regulations in order to ensure they become formidable rivals to the Baby Bells. As a result of this regulatory forbearance, the cable industry has made significant investments in network upgrades to develop a high-speed, two-way pipe to the home. Eighty-four billion dollars has been invested by the industry since 1996 to upgrade infrastructure,[19] and the cable industry now controls 64 percent of the high-speed broadband market.[20]

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17. David Isenberg, *Rise of the Stupid Network*, COMPUTER TELEPHONY, Aug. 1997 (emphasis in original), *available at* http://www.rageboy.com/stupidnet.html.

18. *See generally* ADAM THIERER & CLYDE WAYNE CREWS, JR., WHAT'S YOURS IS MINE: OPEN ACCESS AND THE RISE OF INFRASTRUCTURE SOCIALISM (2003).

19. NATIONAL CABLE AND TELECOMMUNICATIONS ASSOCIATION, 2004 MID-END INDUSTRY OVERVIEW 2 (2004), *available at* http://www.ncta.com/pdf_files/Overview.pdf; Adam Thierer, *Cable Rates and Consumer Value*, 53 TECHKNOWLEDGE (July 25, 2003), *at* http://www.cato.org/tech/tk/030725-tk.html.

20. Alex Salkever, *Will Naked DSL Chill the Cable Guys?*, BUS. WK. ONLINE (Feb. 27, 2004), *at* http://www.businessweek.com/technology/content/feb2004/tc20040227_8296_tc047.htm.

But despite ongoing pleas by some policymakers and regulatory advocates for the application of structural open access mandates to both telco and cable operators, there are signs that the days of full-blown structural access may be numbered. On the cable side, federal regulators still show little interest in imposing such infrastructure sharing mandates, and no municipal government has thus far been able to gain the legal right to do so. Meanwhile, while still shackled with a host of unbundling and resale mandates, telco operators chalked up an important victory in March 2004 when the U.S. Court of Appeals for the District of Columbia handed down a blistering decision vacating most of the FCC's latest revision of the rules.[21] The Bush Administration did not seek a Supreme Court review of the rules meaning many of the unbundling mandates may gradually disappear and be replaced by voluntary access and carriage agreements.

But while these *structural* access regulations may be withering away, a new push is underway to impose *behavioral* access regulations on both telco and cable network operators. These Net neutrality/digital non-discrimination mandates have recently been advanced by several major software and e-commerce firms who have formed the Coalition of Broadband Users and Innovators (CBUI). CBUI petitioned the FCC to adopt rules ensuring that cable and telephone industry BSPs will not use their control of high-speed networks to disrupt consumer access to Web sites or other services.

In the name of preserving end-to-end openness on the Net, CBUI members argue the FCC must adopt preemptive "non-discrimination safeguards" to ensure Net users open and unfettered access to online content and services in the future. CBUI members claim such regulations are necessary because the current market is characterized by a cable-telco "broadband duopoly" that will "define the Internet for some time, and [allow] network operators to infringe or encumber the relationships among their customers or between their customers and destinations on the Internet."[22]

Consequently, CBUI members have proposed the FCC adopt what they regard as a "simple rule" to safeguard against online discrimination by BSPs. In a March 28, 2003, presentation before the agency, CBUI argued that, "The FCC can and should be proactive and act in anticipation of future harm by taking simple, non-intrusive, measured

21. United States Telecom Ass'n. v. FCC, 359 F.3d 554 (D.C. Cir. 2004).

22. *Ex parte* Filing of the Coalition of Broadband Users and Innovators, Appropriate Framework for Broadband Access to the Internet over Cable Facilities, *Declaratory Ruling & Notice of Proposed Rulemaking*, (F.C.C. filed Jan. 8, 2003) (CS Docket 02-52), *available at* http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6513401671.

steps."[23] What exactly is the supposedly "simple rule" or "measured steps" that Net neutrality proponents would have the FCC (or potentially even state regulators) adopt for BSPs? In a January 8, 2003, filing to the FCC, CBUI requested that the FCC adopt regulations that guarantee Net users the ability to:

> 1. lawfully roam over the Internet;
> 2. run the applications they want using the equipment they choose;
> 3. gather, create, and share information;
> 4. connect to websites absent interference by network operators.[24]

While the FCC has so far taken no action on the CBUI proposal, there are several proceedings pending at the agency to which a Net neutrality proposal could be attached.[25] In addition, Net neutrality mandates could be imposed as a condition of merger approval in the future by either the FCC or antitrust officials at the Department of Justice.

Meanwhile, state regulators have already outlined what they think a Net neutrality rule should look like. On November 12, 2002, the National Association of Regulatory Utility Commissioners (NARUC), which represents state regulatory agencies and officials, adopted a *Resolution Regarding Citizen Access to Internet Content* that claimed, "Providers of broadband services or facilities have the technical capability to create a 'walled garden' or 'fenced prairie,' that is designed to attract customers to preferred content but that also could keep consumers from reaching content other than those of the providers' choosing."[26] Moreover, the NARUC resolution continued, "It is conceivable that some providers of broadband service or facilities may have an incentive to

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23. Coalition of Broadband Users and Innovators, Discrimination on the Broadband Network: Why the FCC Should Adopt Connectivity Principles to Ensure Unfettered Consumer's Access to the Internet, Presentation to the FCC's Local & State Governments Advisory Committee 8 (Mar. 28, 2003) (transcript on file with author).

24. Filing of the Coalition of Broadband Users and Innovators, *supra* note 22, at 3-4.

25. These FCC proceedings include: Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities, (GN Docket 00-185); *Appropriate Framework for Broadband Access to the Internet over Cable Facilities* (CS Docket 02-52); *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities* (CC Docket No. 02-33); *Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services*, (CC Docket 01-337); *Computer III Further Remand Proceedings*, CC Dockets 95-20 & 98-10).

26. NAT'L ASS'N OF REG. UTIL. COMM'RS, RESOLUTION REGARDING CITIZEN ACCESS TO INTERNET CONTENT (2002), *available at* http://www.naruc.org/ associations/1773/ files/citizen_access.pdf.

restrict Internet access to favored news sources, and if they chose to do so, it could significantly harm free and open information exchange in the marketplace of ideas."[27] Therefore, NARUC resolved that broadband wireline and cable modem users should:

> 1) Have a right to access to the Internet that is unrestricted as to viewpoint and that is provided without unreasonable discrimination as to lawful choice of content (including software applications); and,
>
> 2) Receive meaningful information regarding the technical limitations of their broadband service.[28]

More succinctly, Tim Wu of the University of Virginia Law School has articulated the following general Net neutrality principle or rule: "[A]bsent evidence of harm to the local network or the interests of other users, broadband carriers should not discriminate in how they treat traffic on their broadband network on the basis of inter-network criteria."[29] Although Wu admits that, "the newness of [the Net neutrality] concept means much unavoidable vagueness as to its operation," he argues that regulators will be able to enforce the rule by examining the positive versus negative externalities associated with carrier restrictions.[30] Wu argues that carriers should be left free to impose restrictions on network use if those restrictions generate positive externalities (or benefits) for subscribers.[31] For example, a BSP prohibition on the release of viruses on its network would generate positive externalities for almost all users and, therefore, in Wu's opinion, be allowed.[32]

But in Wu's construction of a Net neutrality rule, BSP restrictions that impose negative externalities or costs on users should be forbidden.[33] For example, a ban on Wi-Fi attachments by BSPs should be forbidden according to Wu since it would impose unnecessary burdens or costs on most network users.[34] Of course, defining positive versus negative externalities is open to its own set of disputes which regulators would have to resolve, probably over the course of numerous rulemakings. And which "costs" are under consideration here? As noted below, it seems as if many Net neutrality supporters are only concerned with the costs

27. *Id.*
28. *Id.*
29. Tim Wu, *Network Neutrality, Broadband Discrimination*, 2 J. ON TELECOMM. & HIGH TECH. L. 141, 168 (2003).
30. *Id.* at 172.
31. *Id.* at 150-51.
32. *Id.*
33. *Id.* at 150-51.
34. *Id.* at 143.

borne by users at the "edge" of the network, not the costs imposed on network owners or potential new entrants into the platform-building industry.

In essence, the CBUI and academics that support Net neutrality regulation are asking the FCC to mandate a "dumb pipe-lite" approach to the provision of broadband services. In other words, as a matter of public policy, BSPs should be discouraged from bundling new services and software into their broadband pipes. Much like the antitrust battle over which applications Microsoft should be allowed to bundle into its Windows operating system, regulatory proponents in this case are asking for restrictions on the vertical integration of content, applications, and conduit by BSPs. In the Microsoft skirmish, regulatory proponents sought the equivalent of a "dumb browser;" in the Net neutrality battle, they seek a dumb pipe.

But would a dumb pipe mandate constitute smart public policy? Is such a mandate really needed to deter supposed "discrimination" and to preserve the Net's "openness"? There are good reasons to question the assumption that such regulations are needed, even in cases where incumbent providers have significant market power at present.

III. DISINCENTIVES TO INNOVATE AND CREATE ENTIRELY NEW PLATFORMS

Do we just want one big dumb pipe, or many competing dumb *and* smart pipes? The Net neutrality proposal will force policymakers to put that question front and center. It would be highly unfortunate, and somewhat ironic, if the net result of a Net neutrality mandate is to discourage the development of alternative, competing network infrastructures. But that is exactly what it might accomplish. As Christopher Yoo, associate professor of law at Vanderbilt Law School, argues:

> [I]mposing network neutrality could actually frustrate the emergence of platform competition in the last mile. Put another way, protocol standardization tends to commodify network services. By focusing competition solely on price, it tends to accentuate the pricing advantages created by declining average costs, which in turn reinforces the market's tendency towards concentration. Conversely, increasing the dimensions along which networks can compete by

> allowing them to deploy a broader range of architectures may make it easier for multiple last-mile providers to co-exist.[35]

If a Net neutrality/dumb pipe mandate is put in place, carriers might struggle to find ways to recoup their significant fixed costs of doing business and be discouraged from further innovating. Andrew Odlyzko of the University of Minnesota's Digital Technology Center frames the question as follows: "That is the real dilemma for telecom service providers. Can they extract enough money from their customers to pay for broadband, if broadband is just a pipe?"[36]

Some argue that there may indeed be good reasons to believe that a dumb pipe *business model* has great merit and would allow adequate cost recovery by BSPs. Anton Wahlman and Brian Coyne of the equity research firm Needham & Company argue that, contrary to popular opinion, the real value in broadband networks is the bandwidth itself, not the content that flows over it.[37] High-speed connectivity, in their opinion, turns out to be the real "killer app," not content or applications.

Arguing that consumers derive the most value out of a simple, high-speed on-ramp to the Net and other data networks, they come to the conclusion that "the dumb pipe is the only money pipe." That is, broadband operators who become fixated with adding numerous bells and whistles to their broadband package will ultimately miss the real value proposition consumers care about: a speedy and reliable Internet connection. Many years ago George Gilder labeled this approach *The Law of Wasted Bandwidth*, and argued that, "The governing abundance of the information age is bandwidth: communications capacity. This law is a commandment to *waste bandwidth*. The companies that exploit bandwidth recklessly will profit by it."[38] Similarly, Odlyzko has long argued that, "[C]ontent is not king . . . . [T]here is far more money in providing basic connectivity. That is what people have always valued more, and have been prepared to pay more for."[39]

It may very well be the case that it makes good business sense for BSPs to just stick to providing a fast, dumb pipe to consumers. But,

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35. 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, 63 (2004).

36. Andrew Odlyzko, Pricing and Architecture of the Internet: Historical Perspectives from Telecommunications and Transportation 6 (last revised Aug. 29, 2004) (unpublished manuscript, on file with the University of Minnesota Digital Technology Center), *available at* http://www.dtc.umn.edu/~odlyzko/doc/pricing.architecture.pdf.

37. ANTON WAHLMAN & BRIAN COYNE, NEEDHAM, EQUITY RESEARCH NOTE: THE DUMB PIPE IS THE ONLY MONEY PIPE, 2-3 (Dec. 15, 2003), *available at* http://www.vonage.com/media/pdf/res_12_15_03.pdf.

38. GILDER, *supra* note 15, at 267.

39. Odlyzko, *supra* note 36, at 27-28.

again, as a matter of public policy, should dumb pipes be mandated as the law of the land? Should it be illegal for BSPs to provide integrated intelligence or affiliated content and applications if they so choose? This could be the upshot of a Net neutrality/dumb pipe mandate after all.

As the following section discusses, there are good reasons to allow competition in network architectures between dumb and smart systems to see which consumers truly prefer. But the most important reason to reject dumb pipe mandates lies in the investment disincentives for both existing and potential infrastructure operators. A dumb pipe regulatory mandate would essentially tell infrastructure operators and potential future operators of high-speed networks *your networks are yours in name only and the larger community of Internet users—through the FCC or other regulatory bodies—will be free to set the parameters of how your infrastructure will be used in the future*. Hearing that message, it is fair to ask why a network operator or potential operator would ever want to invest another penny of risk capital in a sector that was essentially governed as a monolithic commons or public good. As Stanford University economists Bruce Owen and Gregory Rosston argue:

> The difficulty is that if we assign property rights in access to users rather than suppliers, resulting in an efficient price of access (zero), there will be no long run supply of Internet services. A zero price yields zero revenues—a lesson many dotcoms learned too late. While the benefits of the Internet can be made available to a *particular* user at zero cost, they cannot be made available to *all* users at zero cost.[40]

Thus, they continue, "If providing Internet service is costly and there are no revenues, or revenues are less than costs, obviously there will be no Internet. Having no Internet is worse than having an inefficiently small or exclusive Internet."[41] They conclude, therefore, that:

> The commons approach simply ignores supply-side problems that arise because the demand for transmission is dependent on the supply of content, and vice versa, and because one kind of content may increase or decrease the demand for other content, or for transmission. These effects can often be taken into account by pricing, but sometimes require internalization by a single supplier. Net neutrality would ban both of these solutions.[42]

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40. BRUCE M. OWEN & GREGORY L. ROSSTON, LOCAL BROADBAND ACCESS: PRIMUM NON NOCERE OR PRIMUM PROCESSI? A PROPERTY RIGHTS APPROACH 24-25 (Stanford Inst. for Econ. Policy Research, Discussion Paper No. 02-37, 2003) (emphasis in original), *available at* http://siepr.stanford.edu/papers/pdf/02-37.pdf.

41. *Id.*

42. *Id.*

The core of the problem here is that Net neutrality regulation—like all other open access proposals before it—falls into what might most appropriately be called the "assume a platform" school of thinking. That is, proponents of forced access regulation seem to ignore market evolution and the potential for sudden technological change by adopting a static mindset preoccupied with micro-managing an existing platform regardless of the implications for the development of future networks. They see an existing platform—a railroad system, an electrical grid, a telephone network, a cable system—and they imagine that is the only network society can ever hope to have at its disposal. But what about other platforms? Is one platform enough? Can't we expect other platforms to be built? Should regulators merely regulate the most popular existing platform(s) to ensure consumers get as much out of them as possible?

This static, zero-sum mentality dominates much of the thinking over Net neutrality regulation and explains why commons proponents are preoccupied with demand side concerns and blithely assume away supply side concerns. Professors Lessig and Wu presented a perfect example of this sort of demand-side, assume-a-platform reasoning in a joint filing to the FCC, where they advanced the following justification for pre-emptive Net neutrality regulation:

> The question an innovator, or venture capitalist, asks when deciding whether to develop some new Internet application is not just whether discrimination is occurring today, but whether restrictions might be imposed when the innovation is deployed. If the innovation is likely to excite an incentive to discrimination, and such discrimination could occur, then the mere potential *imposes a burden on innovation today* whether or not there is discrimination now. The possibility of discrimination in the future dampens the incentives to invest today.[43]

Lessig and Wu obviously feel quite passionately about the question of innovation at the edge of the network. But where is the concern for innovation at the core of the network, or the innovation and investment needed to bring about entirely new network infrastructures? Apparently content with the networks of the present, Lessig and Wu seeming feel comfortable imposing regulations on existing BSPs to ensure that innovation is maximized at the edge of those existing systems.

But is such pessimism about future technological development or entirely new networks warranted? History and common sense suggest

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43. *Ex parte* Letter of Tim Wu & Lawrence Lessig 24-25, Appropriate Framework for Broadband Access to the Internet over Cable Facilities, *Declaratory Ruling & Notice of Proposed Rulemaking* (F.C.C. filed Aug. 22, 2003) (CS Docket 02-52) (emphasis in original), *available at* http://faculty.virginia.edu/timwu/wu_lessig_fcc.pdf.

the opposite is the case. Ours is an innovative culture. New technologies and industry sectors have developed in the past, and will be developed in the future, but only if creators: (1) believe they can reap the fruits of their labor and, (2) are not directly or indirectly prohibited by government from entering new markets or providing new services.

Still, skeptics will claim that the fixed costs associated with network development and deployment are substantial, so much so that it is foolish to assume rivals will rise up to offer truly competitive alternatives. Apparently, the best we can hope for once a network has been built is for its owners to share those facilities with other rivals, or at least allow the government to establish a set of regulatory standards for consumer use of that network. Genuine facilities-based competition is assumed to be an impossibility given the prohibitively expensive upfront costs of offering service.

This logic explains why CBUI members and other Net neutrality proponents premise their call for preemptive regulation on the notion of a "broadband duopoly" that will "define the Internet for some time."[44] But, as discussed in Section VII, this static thinking ignores the amazing strides that have already been made by many companies and technologies in this nascent market. Furthermore, it pretends that consumers have little more to look forward to in the broadband future. Such a conclusion seems particularly unwarranted given the fact that most consumers had not even heard of the Internet just ten years ago. No one knows what networks and technologies consumers will be using even five years from now, especially with wireless technologies now in the broadband mix.

Instead of becoming preoccupied with merely maximizing consumer welfare within the confines of existing systems, Net neutrality proponents—especially the impressive list of well-heeled companies that are part of CBUI—need to put more thought and energy into the question of how the networks of the future are going to get funded and built. The principle that CBUI members and dumb pipe proponents seem to ignore is that *competition in the creation of networks is as important as competition in the goods and services that get sold over existing networks*. Net neutrality mandates are at cross-purposes with that goal. As Ken Ferree, chief of the FCC's Media Bureau, concludes:

> [T]he effect of the regulatory overlay that the proponents of government-mandated openness seek would be to shift subtly the balance of power—hence the economic power—from the owners of distribution to the so-called fringe. That will not be without ramifications. Most importantly from my perspective is that investment will shift along with it away from platform development.

44. Filing of the Coalition of Broadband Users and Innovators, *supra* note 22.

> It is a regulatory thumb on the scales, and—at this point at least—I think the wrong side of the scales.[45]

IV. OPENNESS AND (SEMI-) DUMB PIPES WILL LIKELY PREVAIL NATURALLY

What is the optimal configuration for the high-speed networks of the future? Net neutrality proponents seem to think they know the answer to that question and want the government to take steps to preserve their preferred model well into the future. But instead of boxing this sector into today's favored approaches, isn't there something to be said for competition in network architectures? Stated differently, is today's Internet the only one we will ever know? Is it unthinkable to envision a world with multiple Internets, or "Splinternets"?[46] Although "layers" offer a fitting way of thinking about today's world, just as vertical silos made sense in the past, it could be the case that horizontal layers will not accurately describe the Internet, or Internet*s*, of the future. For this reason, Solum and Chung, leading proponents of the layers model, have argued it might be a mistake to codify the layers principle as a formal regulatory paradigm:

> Why shouldn't the layers principle be treated as a rule rather than a presumption? . . . The layers principle is supported by sound considerations of network engineering. But there is no reason to believe that these principles of network design are written in stone for all time. As the Internet evolves, it is possible that superior architectures may be conceived. Moreover, just as the Internet changed the total electronic communications system, there may be similar revolutionary innovations in the future. An absolute rule (especially a constitutional rule) would be based on the assumption that the general facts on which the argument for the layers principle relies are eternal facts, but we have no reason to believe that this is the case.[47]

Proposals to formally codify the layers model, adopt Net neutrality regulations, or impose dumb pipe mandates would largely ignore this logic and instead force a rigid new regulatory regime upon this sector in the name of preserving "openness" on today's existing systems. "[T]o give the phrase 'code is law' literal rather than figurative meaning," argues

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45. W. Kenneth Ferree, Speech at the Progress & Freedom Foundation Conference on Net Neutrality 2 (June 27, 2003) (transcript available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-235879A1.pdf).

46. Clyde Wayne Crews, *Pick Your Net*, FORBES, Apr. 2, 2001, *available at* http://www.forbes.com/forbes/2001/0402/036.html.

47. SOLUM & CHUNG, *supra* note 4, at 42.

Yoo, would, "sanction greater governmental control over the architecture of the Internet."[48]

Open systems do have many advantages over closed systems, and if that is how markets naturally evolve, so be it. Other times, however, closed systems make all the sense in the world. But policymakers should not dictate the outcome of this standards battle one way or another. They should remain fundamentally agnostic with regard to network architecture. In the end, the Internet—or whatever future interactive platforms develop—will probably be a mix of open and closed systems, and that is probably how it should be. As Owen and Rosston argue:

> While 'end-to-end' architecture has benefits, those benefits standing alone do not prove that the architecture was or will continue to be optimal. The benefits must be put onto the scales with the costs, most of which may involve the loss of services that never came into existence, as the relative prices and functionality of processors, storage, and communication links have evolved.[49]

BSPs would be committing economic suicide if they attempted to foreclose all of the network connections or opportunities that their users desired. It is in the best interests of network operators to ensure that a great degree of "openness" remains intact if they hope to retain their customers and expand their networks. As Wahlman and Coyne argue: "Consumers will gravitate to pipe providers that do not restrict their activities . . . . Any pipe provider who tries to restrict uses of the pipe to favored services (voice, video or data) in a 'walled garden' will likely be at a severe or impossible disadvantage, with consumers leaving for other pipes."[50]

Because broadband communications networks exhibit strong network externalities and "bandwagon effects,"[51] this is almost certainly likely to be the case. That is, because the value of a network tends to grow in proportion to the number of individuals using that network, the more users the better since greater interconnectedness generates substantial benefits for all users of the network *and* the network provider.[52] If BSPs were to interfere with the routine activities in which web surfers engaged, it would likely discourage network utilization and

48. Yoo, *supra* note 35, at 47.

49. OWEN & ROSSTON, *supra* note 40, at 21-22.

50. WAHLMAN & COYNE, *supra* note 37, at 5.

51. JEFFREY H. ROHLFS, BANDWAGON EFFECTS IN HIGH-TECHNOLOGY INDUSTRIES 30-31 (2001).

52. *Id.* at 29 (Another variant of this theory is known as "Metcalfe's Law," after Bob Metcalfe, the inventor of Ethernet and the founder of 3Com. Specifically, "Metcalfe's Law" states that the value of a network goes up as a square of the number of its users, which not exactly the same thing as saying that value is directly proportional to network size.).

expansion, thus sacrificing future profits. Such meddling would be bad for business and generate negative publicity. Moreover, such meddling would send a powerful signal to rival BSPs that an opportunity existed to enter that market and offer consumers a more open web surfing experience.

It is in the best interests of broadband providers to carry as much traffic as possible and even allow other firms to lease capacity from them and resell service on their own. From the incumbent's perspective, it will often make more sense to encourage a competitor to serve the public over the incumbent's existing wires rather than encouraging them to build new platforms and offering consumers a way to bypass the incumbent's network altogether. Incumbents will want to set the wholesale rate just high enough to recoup their fixed costs without charging so much as to drive rivals off their network entirely. Debates over mandatory open access regulation often overlook this point.

To summarize, network restrictions or bundling efforts may not always yield beneficial results for BSPs. As Odlyzko argues, "Open networks are likely to win because they can attract more revenues from users."[53] Gilder agrees: "In a broadband world . . . the most open network will flourish and proprietary networks will wither. Content providers will naturally want to put their programming on everyone's conduits, and conduit owners will want to carry everyone's content."[54]

For example, recognizing the potential value of this business approach, Qwest announced in early 2004 that it would offer consumers "naked DSL" service that did not include bundled phone service. "Customers are telling us that they want greater flexibility when it comes to selecting communications services, which is why we decided to offer DSL with no phone service," said Qwest Chairman and CEO Richard Notebaert in announcing the plan.[55] "We're in a competitive situation in all our markets," Qwest spokesman Tyler Gronbach told *Forbes*, noting that Qwest is losing local phone line sales as customers substitute wireless or Internet telephone services for traditional wireless access. "If we can keep a customer by giving them a broadband service that's what it's all about," he said.[56]

Business Week also reported that consumers and analysts can "Expect other Baby Bells to follow suit as the Qwest offer will likely prove contagious. More important, Notebaert's move underscores the growing realization by telecomm providers that broadband hookups will

53. Odlyzko, *supra* note 36, at 28.
54. GILDER, *supra* note 15, at 172.
55. Salkever, *supra* note 20 (quoting Qwest Chairman and CEO Richard Notebaret).
56. Reuters, *Qwest to Offer DSL Without Voice, National Mobile*, FORBES (Feb. 25, 2004), *available at* http://www.forbes.com/markets/newswire/2004/02/25/rtr1274740.html.

become a bigger revenue source sooner rather than later. This will be made possible as more and more households sign up for a fat pipe while cutting their landline or opting for cheaper Net telephony service from their cable companies."[57] Indeed, in the summer of 2004, Verizon announced plans for "naked DSL" offerings in 12 states to remain competitive with cable.[58]

Nonetheless, it would be unwise for regulators to adopt a rule mandating BSPs provide consumers with a completely "dumb pipe" since policymakers have no way of knowing what the optimal arrangement might be. Again, some BSPs may experiment with varying degrees of vertical integration and layer-jumping in an attempt to provide a bundle of services that is profitable for the company and useful for consumers. And, importantly, many broadband customers will *not* want a purely dumb pipe. The addition of certain integrated services and applications may enrich the web-surfing experience for entry-level broadband subscribers, or at least make it easier for them to get started.

It is easy for highly-skilled Internet engineers and academic digerati to imagine that they speak for the hoi polloi when it comes to dumb pipe mandates. They presume that their personal preferences would make sense for the broader universe of Internet users. In reality, they speak only for that segment of our society who has more extensive experience with high-speed networks, Internet technologies and online services.

Early adopters and technology mavens are not representative of the broader population of average or first-time Internet users. For the relatively unskilled or inexperienced Net surfer, just figuring out how to turn on their computer can sometimes be a challenge. It is hard to imagine how these consumers would be well-served by a purely dumb pipe approach that prohibited a BSP from integrating any intelligence whatsoever into their networks. As Odlyzko notes, "The 'stupid network' is only stupid in the core, and imposes huge burdens on end users. Many of those users might be willing to sacrifice some of the openness and flexibility in order to be relieved of the frustrating chore of being their own network administrators."[59] This might explain the continued popularity of America Online's "guided tour" approach to Web surfing. If consumers really wanted a pure dumb Net connection, then why does AOL's walled garden have over 30 million subscribers worldwide while charging $23.90 per month?[60]

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57. Salkever, *supra* note 20.

58. Marguerite Reardon, *Verizon to Offer 'Naked' DSL*, CNET NEWS.COM (May 26, 2004), *at* http://news.zdnet.com/2100-9584_22-5221095.html.

59. Odlyzko, *supra* note 36, at 23.

60. AMERICAN ONLINE, WHO WE ARE, *at* http://corp.aol.com/whoweare/index.shtml (last visited Mar. 22, 2005).

Moreover, there are other reasons why BSPs might need to configure network architectures differently or even restrict certain online activities. As they already do today, carriers may adjust the speed traffic flows to provide faster downloads than uploads. Similarly, to ensure steady traffic flows and network integrity, network operators may seek to curb excessive bandwidth usage by some users, or at least price discriminate to encourage bandwidth conservation. Concerned about theft of service, some carriers may also take steps to restrict network sharing through wireless devices. Again, price discrimination may be utilized to solve that problem without directly prohibiting certain activities. Finally, many subscribers will expect their carriers to take steps to prevent viruses or block excessive Spam. While all these actions would technically violate the "end-to-end" principle and "Net neutrality," in general there are strong incentives for policymakers to permit such practices.

Finally, more sophisticated web surfers who prefer the pure dumb-pipe approach will probably be able to largely achieve it on their own anyway, and they are already capable of doing so today. If they don't like seeing the BSP's default website when they first get online, they will almost certainly be able to switch to another. And even integrated applications and devices that BSPs designate for use on their networks will probably be fairly easy to evade if consumers do not find them useful or interesting.

If evading those integrated applications or services proves impossible, however, that is still no reason for regulators to adopt a preemptive non-discrimination rule. BSPs should remain free to configure their networks however they wish. Moreover, excessive meddling or micro-management of the web surfing experience is likely to result in a consumer backlash over time and drive users to other alternatives. And those alternatives will likely develop even more rapidly if existing carriers attempt to over-zealously restrict online activities. As Odlyzko concludes, "We are likely to end up with a system like the multi-modal transportation system of today, which is rife with discriminatory practices (just think of the variation in prices by household moving companies), but where such practices are limited to a tolerable degree."[61]

61. Odlyzko, *supra* note 36, at 25.

V. WHAT ABOUT REGULATORY CAPTURE AND PROPERTY RIGHTS?

Surprisingly, the literature on Net neutrality and dumb pipe theory has very little to say about these two issues. Given the long and lamentable history of telecommunications regulation being captured by various interests for their own ends, it seems unusual that this point would be ignored.[62] As Judge Richard Posner has argued:

> Because regulatory commissions are of necessity intimately involved in the affairs of a particular industry, the regulators and their staffs are exposed to strong interest group pressures. Their susceptibility to pressures that may distort economically sound judgments is enhanced by the tradition of regarding regulatory commissions as "arms of the legislature," where interest-group pressures naturally play a vitally important role.[63]

Today, it is hardly remarkable to think of regulation in such terms, as news reports are replete with tales of how various special interest groups attempt to "game" the regulatory process in their favor. The debate over Net neutrality regulation is certainly not immune from such pressures or tendencies. Indeed, the motivations of some CBUI members may be less than pure in calling for seemingly innocuous rules for online networks.

It is perhaps less surprising that the literature has had little to say regarding property rights. Many economists simply ignore the question of what rights broadband service providers have in their networks, or even assume that such networks should be treated as public goods or natural monopolies and regulated at will. But this view cannot stand for long. Cable and telephone companies have genuine property rights in the networks they develop and own, and courts are increasingly beginning to acknowledge this fact.

Some critics argue that these companies do not and should not possess the same sort of property rights held by other industries or businesses given their highly regulated histories. In this sense, critics of a property rights regime for broadband networks claim that open access regulation serves as a reparations policy that can help right the wrongs of the (regulatory) past. That is, it will help provide restitution for the fact

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62. *See generally*, George Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. & MGMT. SCI. (1971), *reprinted in* THE ESSENCE OF STIGLER 243 (Kurt R. Leube & Thomas Gale Moore eds., 1986); *see also* Sam Peltzman, *Toward a More General Theory of Regulation*, 19 J.L. & ECON. 211 (1976).

63. RICHARD A. POSNER, NATURAL MONOPOLY AND ITS REGULATION 92 (Cato Institute, 30th ed. 1999).

that some companies were given an unfair advantage through years of protected franchise monopolies and guaranteed rate-of-return regulation.

But this is a weak rationale for rejecting property rights in formerly regulated network industries. Telephone companies, cable operators, and other broadband service providers are all private, shareholder-owned entities. The risks inherent in the massive ongoing investments being made by these companies now fall squarely on the shoulders of these firms and their investors. While some of the underlying infrastructure of the regulated era of the past remains in place, it is increasingly becoming obsolete and is gradually being replaced. Billions of dollars of new investment is made every year by many of today's network providers without the assumption that the government and captive ratepayers will be there to bail them out in the future. A forced access mentality, however, argues for a return to the methods of the past as costs are spread more widely throughout the industry, and networks are shared as natural monopolies or essential facilities. This represents a step backward and entails constant regulatory oversight and intervention in the Internet sector.

The reason it is important to keep property rights in mind is because Net neutrality mandates or a rigid application of the network layers model might be viewed by some judges in the future as an unconstitutional taking of a network owner's property rights. While such a position would not likely have been adopted in the regulated monopoly era of the past, it is increasingly likely that judges will take such regulatory takings claims more seriously in an era of contestable, competitive markets.[64]

VI. THE IMPORTANCE OF PRICING FLEXIBILITY

Often overlooked in discussions about Net neutrality mandates is the role of pricing, and pricing flexibility in particular. CBUI members such as Disney, Amazon, Yahoo!, eBay and others cannot really be concerned that their websites or services are at risk of ever being completely blocked by network operators. After all, if BSPs shut off consumer access to one of these popular providers, Internet denizens would be outraged and likely mount a mini-revolt. Cable and telco firms are not about to make these content providers into the darlings of the digital world.

But while outright blocking of such websites seems extremely unlikely, what may have Disney, eBay, Amazon, and others so concerned is the potential reworking of Internet access pricing schemes in the near

64. *See* Daniel F. Spulber & Christopher S. Yoo, *Access to Networks: Economic and Constitutional Connections*, 88 CORNELL L. REV. 885, 933-95, (2003).

future. One of the most interesting debates behind the scenes in recent years involves the question of how broadband access should be priced. Would a per-minute or per-bit pricing scheme help conserve pipe space, avoid congestion, and recover costs and enable BSPs to plow the savings into new capacity? Possibly, but nothing much has come of this debate, and no carrier has acted on such a plan for two reasons. First, broadband operators are probably concerned that such a move would bring about unwanted regulatory attention. Second, and more importantly, cable and telco firms are keenly aware of the fact that the web-surfing public has come to view "all you can eat" buffet-style, flat-rate pricing as a virtual inalienable right.[65] Broadband operators probably don't want to rock the boat too soon with more creative pricing schemes, but someday they may have to as bandwidth-intensive web sites start to eat up more and more pipe capacity. As Gilder has noted, "Everyone wants to charge different customers differentially for different services. Everyone wants guarantees. Everyone wants to escape simple and flat pricing. Forget it."[66]

While simple and flat pricing seems like the sensible approach, it remains highly likely that some BSPs will eventually attempt to craft tiered or metered pricing schemes. While some consumers will cry foul, a number of bandwidth-intensive Internet vendors and website operators will likely be absolutely apoplectic over such a move, and some may even run to regulators seeking redress. This raises the important question of whether or not broadband operators should have the right to price network access in this manner. And, would a dumb pipe mandate or Net neutrality rule prohibit such innovative pricing schemes from being employed in the first place?

The answer remains uncertain, but clearly, if some form of network non-discrimination rule is on the books, some website operators and content providers may push to invoke it against a BSP that suddenly announces a new metered pricing scheme for bandwidth-intensive web offerings. It would be very unfortunate if this scenario came to pass, since such creative pricing schemes may be part of the long-run solution to relieving Internet congestion and allowing carriers to accurately assess user charges for Web activities. Supply and demand could be better calibrated under such pricing schemes and broadband operators may be

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65. Odlyzko, *supra* note 36, at 29.

> Perhaps the most potent limitation on the proposed new architectures for the Internet, and the associated discriminatory practices, is posed by a range of factors deriving ultimately from behavioral economics. People react extremely negatively to price discrimination. They also dislike the bother of fine-grained pricing, and are willing to pay extra for simple prices, especially flat-rate ones.

Id.

66. GILDER, *supra* note 15, at 206.

better able to recoup sunk costs and make new investments in future infrastructure capacity or network services. As Odlyzko argues:

> Thus even if it is not optimal from a global point of view, it might be necessary to introduce complexity in order to be able to construct and operate the telecom infrastructure, especially the residential broadband networks that are so eagerly awaited by government and industry leaders. That might mean allowing carriers to charge differently for movie downloads than for Web surfing. That, in turn, might require a new network architecture. Such a move would not be unprecedented. The key (although seldom mentioned) factor behind the push for new network architectures appears to be the incentive to price discriminate. It is an incentive that has been operating since the beginnings of commerce.[67]

The bottom line is that it should be left to markets, not regulators, to determine what pricing schemes are utilized in the future to allocate scarce space on broadband pipes. The broadband marketplace is still in an early developmental stage, having only existed for a few years. What business model will prevail or make network activities profitable in the future? Pay-per-view? Advertising? Metered pricing schemes? Some hybrid of these and other systems? No one knows for sure, but policymakers need to allow network operators the freedom to innovate and employ creative pricing and service schemes so that market experimentation can answer that question.

VII. MARKET POWER, CONTESTABILITY AND *CARTERPHONE*

Vertical integration of broadband services by a network owner can have significant consumer benefits. Even if one assumes that this industry is characterized by a duopoly structure, it does not necessarily follow that cable and DSL providers will restrict output in terms of digital services. If current BSPs have significant market power, they still have a strong incentive to carry *more* content and websites to maximize consumer utility and get them to spend more money for access to the service. If a carrier attempted to greatly curtail or limit certain types of web services, it might discourage subscribership and thus reduce profits.

In his now famous 1969 *Stanford Law Review* article entitled, *Natural Monopoly and Its Regulation*, Richard Posner provocatively argued "It is not clear that an unregulated monopolist will normally charge a price that greatly exceeds what a non-monopolist would charge for the same service; nor is it clear that society should be deeply

67. Odlyzko, *supra* note 36, at 3.

concerned if a natural monopolist does charge an excessive price."[68] Even if returns did run higher than normal for a given firm considered to possess a monopoly, Posner points out that this may act as a pro-competitive stimulus for innovation and market entry. "In the long run, a persistently very large spread between price and cost may spur entrepreneurs to devise ingenious methods of challenging or supplanting the monopolist."[69] Therefore, short-run intervention is likely to be counter-productive and delay or prohibit the optimal long-run situation policymakers desire.[70]

But the good news is that the current broadband marketplace is growing increasingly competitive with each passing month.[71] The picture will only get rosier as wireless alternatives become more ubiquitous and other wireline providers (especially electric utility companies) start jumping into the broadband market.[72] It is very unlikely that whatever market power incumbent firms continue to have can be effectively leveraged over into the broadband service market.[73] Still, Net neutrality/dumb pipe proponents will persist in their argument that legislators or regulators need to implement a preemptive standard of regulatory review or consumer protection. For example, many CBUI filings stress the benefits of FCC enforcement of the device attachment standards found in the famous *Hush-a-Phone* case[74] and the FCC's *Carterfone* decision,[75] which laid out some basic guidelines for how consumers could attach certain devices to the monopolistic phone network of the time. Net neutrality proponents suggest that these

68. POSNER, *supra* note 63, at 7.

69. *Id.* at 14.

70. For a more extensive discussion and critique of the "Chicago School" literature on antitrust theory, see Joseph Farrell & Philip J. Weiser, *Modularity, Vertical Integration, and Open Access: Towards a Convergence of Antitrust and Regulation in the Internet Age*, 17 HARV. J.L. & TECH. 85 (2003).

71. RICHARD O. LEVINE ET AL, PROGRESS & FREEDOM FOUNDATION, SPECIAL REPORT: TRENDS IN THE COMPETITIVENESS OF TELECOMMUNICATIONS MARKETS: IMPLICATIONS FOR DEREGULATION OF RETAIL LOCAL SERVICES (Dec. 2003), *at* http://www.pff.org/publications/ communications/121103specialreportcontestability.pdf.

72. Barry M. Aarons, Don't Call—Just Send Me an E-mail: The New Competition for Traditional Telecom (Inst. for Pol'y Innovation Rep. No. 175, Dec. 2003), *at* http://www.ipi.org/ipi%5CIPIPublications.nsf/0/24F9D284374552FF86256E82006DFA1F/$File/QS-TelecomCompetition-1.pdf?OpenElement.

73. Robert W. Crandall et al, *The Empirical Case Against Asymmetric Regulation of Broadband Internet Access*, 17 BERKELEY TECH. L.J. 953 (2002).

74. Hush-A-Phone v. United States, 238 F.2d 266, 269 (D.C. Cir. 1956). In the *Hush-a-Phone* decision, the D.C. Circuit held that a telephone subscriber had the "right reasonably to use his telephone in ways which are privately beneficial without being publicly detrimental." The FCC then translated this principle into a specific regulatory edict that ordered AT&T to allow telephone customers to attach devices that did not injure AT&T or impair the operation of the telephone system.

75. Use of the Carterphone Device in Message Toll Telephone Service, *Decision*, 13 F.C.C.2d 420 (1968).

regulations should be modified and applied to modern networks and carriers in a similar fashion.

But for the many other reasons discussed above, a preemptive regulatory regime would be counter-productive since it might allow others to "game" the regulatory system, or would discourage BSPs from building new network infrastructure in the first place. Moreover, regarding the *Hush-a-Phone* and *Carterfone* standards and corresponding FCC interconnection/attachment mandates, it is important to remember that those decisions and rules were handed down in an era of government-protected monopoly for telecommunications. There are no longer any protected monopolies in this marketplace. Rules structured for an environment of government-sanctioned monopoly are unnecessary in an environment characterized by open markets, competition, property rights, and freedom of contract. For example, there are no such "device attachment" regulations for the automotive industry or even the computer software sector. In those and countless other industries, market negotiations, contracts and the common law—not preemptive government regulations—are left to sort out difficult controversies when they arise.

In an environment of government created and protected monopoly, special rules must obviously apply. But in an environment free of government restraints on entry and characterized by a degree of contestability that was almost unimaginable in past decades, there is no need for *Carterphone*-like mandates. *Carterphone* rules were thought to be necessary only because competition was thought to be impossible. In today's modern marketplace, constant technological change and the threat of new entry provides the most important safeguards against the threat of consumer abuse.

VIII. WHAT TO WATCH FOR NEXT

It remains uncertain where the debate over Net neutrality and dumb pipes will turn next, but recent developments foreshadow the likely incorporation of these concepts into future public policy initiatives. In a February 2004 speech, FCC Chairman Michael Powell endorsed a list of CBUI-like principles as general guidelines, or "best practices," for industry to follow.[76] FCC Commissioner Michael Copps has gone much further and suggested the Net neutrality principles be converted into clear regulatory standards. In an October 2003 address entitled *The Beginning of the End of the Internet?*, Copps argued that the "Internet may be dying" and only immediate action by regulators can reverse the

76. Michael K. Powell, *Preserving Internet Freedom: Guiding Principles for the Industry*, 3 J. ON TELECOMM. & HIGH TECH. L. 5 (2004).

situation. Employing some fairly apocalyptic rhetoric, Copps went on to argue that:

> I think we are teetering on a precipice . . . we could be on the cusp of inflicting terrible damage on the Internet. If we embrace closed networks, if we turn a blind eye to discrimination, if we abandon the end-to-end principle and decide to empower only a few, we will have inflicted upon one of history's most dynamic and potentially liberating technologies shackles that make a mockery of all the good things that might have been.[77]

Such rhetoric seems wildly out of touch with reality, but it nonetheless foreshadows the continued push we can expect for Net neutrality mandates by some federal or state regulatory officials.

Meanwhile, unending turmoil in the telecom marketplace and regulatory arena has led to renewed calls for Congress to reopen the Telecommunications Act of 1996.[78] If the Act is revisited, it is almost certain that lawmakers will be forced to grapple with the increasingly illogical regulatory classification schemes that continue to govern this industry. This opens the door for the layering model to become the replacement regulatory paradigm for communications and broadband.

A few marketplace developments also bear watching since they each have the potential to raise similar concerns about vertical integration and layer-hopping:

A. Comcast-Disney (or whatever follows)

Although the deal has already been abandoned, Comcast's proposed merger with Disney generated a great deal of hand-wringing in public policy circles, especially since it came on the heels of a bitter debate in Washington over the relaxation of media ownership regulations.[79] Much like the earlier conduit-content marriage between Time Warner and AOL and the News Corp. and DirecTV deal, approval of the Comcast-Disney combination would have almost certainly been conditioned by numerous pipe *and* program access requirements. Of course, this deal could be resuscitated in the future, and other combinations along these

77. Michael Copps, The Beginning of the End of the Internet? Discrimination, Closed Networks, and The Future of Cyberspace, Remarks at the New America Foundation (Oct. 9, 2003) (transcript at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-239800A1.pdf).

78. Alan Breznick, *Powell Stresses Need for Total Telecom Act Overhaul*, COMM. DAILY, Mar. 8, 2004, at 1; Teri Rucker, *Sen. Stevens Seens Need for Rewrite of Telecom Law*, NAT'L J. TECH. DAILY (PM ED.), Jan. 26, 2004.

79. Farhad Manjoo, *One Cable Company to Rule Them All*, SALON, Mar. 17, 2004, *at* http://archive.salon.com/tech/feature/2004/03/17/comcast/index_np.html; Dan Fost, *Fewer Moguls, Bigger Empires Congress Wrestles With Media Ownership*, S. F. CHRON., Feb. 12, 2004, at B1, *available at* 2004 WL 7620863.

lines can be expected which raise layer-crossing concerns.[80] Ironically, while a great deal of Chicken Little rhetoric accompanied the AOL-Time Warner announcement, few headlines are being written about the deal today as it gradually unravels. And putting the merger with AOL aside, rumors have always persisted about in-house fighting among the different content providers within Time Warner.[81] Given the recent troubles the company has experienced, it may be the case that the AOL-Time Warner deal serves as vindication for the thesis put forward by Gilder and others that a dumb pipe *business model* will eventually show itself to be the more sensible path to follow. But it remains to be seen if the company undertakes the sort of voluntary divestiture of content and conduit that Wahlman and Coyne advocate.[82]

B. Telco Entry Into Video Marketplace

At various times over the past decade, telephone companies have expressed interest in expanding into the video programming business to compete head-to-head against cable and satellite multi-channel video providers.[83] Most trials never got out of the testing stage, however, due to financing considerations, questionable consumer demand, doubts about access to high-quality programming, and the inherent capacity limitations of existing telephone networks. Expanding fiber investment and deployment alleviates at least the last of those concerns. It also encourages the telecom operators to expand into the video programming marketplace to offer customers new services over those massive pipes and help recoup the cost of their initial investments. Following this logic, *Business Week* reported in May 2004 that Verizon was planning to seek cable-TV franchises in parts of Texas and eight other states to square off against cable and satellite competitors.[84] And in June of 2004, SBC Communications announced plans to invest between $4 to $6 billion in new "fiber to the curb" networks to do the same.[85]

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80. Marc Gunther, *The Bid's Dead, but Don't Say Adieu Yet*, FORTUNE, May 17, 2004, at 34.

81. Matt Welch, *The 'Big Brother' Who Never Was: AOL Time Warner Was Never as Dangerous as Some Critics Suggested*, NAT'L POST, July 27, 2002, *available at* http://mattwelch.com/NatPostSave/AOL.htm.

82. *See generally* WAHLMAN & COYNE, *supra* note 37.

83. Thomas W. Hazlett, *Should Telephone Companies Provide Cable TV?*, 13 REG. 1, (1990), *available at* https://www.cato.org/pubs/regulation/regv13n1/reg13n1-hazlett.html.

84. Steve Rosenbush et al, *Verizon: Take That, Cable*, BUS. WK. ONLINE (May 24, 2004), *at* http://www.businessweek.com/magazine/content/04_21/b3884113_mz063.htm; Julie Creswell, *Is the Most Powerful Man in Telecom Pulling a Megabluff?* FORTUNE, May 31, 2004, at 120, *available at* http://www.fortune.com/fortune/technology/articles/0,15114,638374,00.html.

85. Reinhardt Krause, *SBC Will Square Off Against Cable Rivals in Video, TV Services*, INVESTOR'S BUS. DAILY, Jun. 23, 2004, at A4.

But while fiber rollout solves the capacity concerns, it will be more interesting to see how the telcos go about filling up their new high-speed pipes with value-added services and video programming in particular. Will they merely seek to cut deals with independent programmers, or even those networks already owned by other media companies? Will cable providers be forced to provide the telcos access to channels they own or carry? Or will telcos instead seek to enter the video marketplace as a full-fledged, integrated media providers by buying up content providers or developing their own proprietary in-house studios? In essence, this is nothing more than a classic "make-vs.-buy" decision. This will provide one of the most interesting dumb pipe case studies in coming years since it could be a make-or-break business model decision for telecom operators. Importantly, if they chose to provide their own content (or purchase others who could provide it immediately for them), policymakers might disallow such a proprietary business model citing common carriage precedents. And under a strict construction of the network layers model, such content-conduit integration might be prohibited even though it already exists through much of the rest of the video programming marketplace. (Think AOL-Time Warner or News Corp.-DirecTV.)

C. Wireless Broadband

The rise of licensed and unlicensed wireless broadband experiments has garnered much attention as of late, and deservedly so. Wi-Fi, Wi-Max and other types of wireless broadband infrastructures could potentially offer millions of consumers a very credible alternative to hard-wired cable or telco broadband service. But if Net neutrality/dumb pipe regulations are eventually applied to wireline broadband offerings, will they also be extended to their wireless counterparts? Cellular providers currently face no such regulations and already offer some integrated, proprietary services alongside their basic bundle of voice minutes. If this proprietary model is extended as wireless broadband develops, many licensed carriers will likely seek to offer at least *some* integrated services along with their new service bundle. It remains to be seen how policymakers will greet such a move.

D. Microsoft

The ongoing Microsoft antitrust saga will continue to provide a number of test cases for the layers model. The question of vertical integration and layer jumping has been at the very core of both the U.S. and E.U. cases against the firm. The next flashpoint will likely be the integration of VoIP (Voice over Internet Protocol) functionality into

future versions of Microsoft's operating systems.[86] Many smaller Internet telephony providers will likely decry such a move and look to use the antitrust process to limit Microsoft's ability to innovate in this fashion.

Ironically, Microsoft was one of the original and most vociferous members of the CBUI coalition as it feared physical infrastructure owners might discriminate against their products or services. But Microsoft has recently backed off and largely abandoned its support for CBUI, perhaps after realizing that its support of Net neutrality mandates was hypocritical or could even come back to haunt them in the future.[87] Perhaps the firm realized that Net neutrality regulations could eventually come to apply to the services they offer over their Xbox video game platform, which could become "the world's ultimate broadband appliance."[88] Cynthia Brumfield, president of Broadband Intelligence, states: "There are a lot of people with the view that the Xbox will be a Trojan horse into the home. Once you get it into the home, you have a base from which to deliver a whole host of telecom services. [Microsoft] wants to be the ubiquitous provider of data services."[89] Meanwhile, Microsoft is aggressively marketing its new Media Center PC suite of services, which seek to integrate television, DVD, music player, and photo viewing capabilities into one device, all powered by Microsoft's XP Media Center Edition operating system. Stephen H. Wildstrom of *Business Week* notes:

> Microsoft has long lusted after your living room. Facing a saturated market for PCs, the company sees the convergence of computing and entertainment as an opportunity to reignite its growth. The software maker has achieved some success with the Xbox game console, but the big prize is music, movies, and television.[90]

This clearly raises the prospect of Microsoft becoming a "layer-breaker" on many different levels.

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86. Dugie Standeford, *Microsoft Wants Courts to Determine How It Handles Future Innovation*, COMM. DAILY, Mar. 22, 2004, at 4-6.

87. Ben Silverman, *Gates Halts Big 'Neutrality' Push*, N.Y. POST, Dec. 15, 2003.

88. Kevin Fitchard, *Microsoft's X-Box as Broadband Trojan Horse*, TELEPHONY ONLINE (Nov. 12, 2001), *at* http://telephonyonline.com/mag/telecom_microsofts_xbox_broadband.

89. *Id.*

90. Stephen H. Wildstrom, *Microsoft's New Gig for PCs: Entertainer*, BUS. WK., Sep. 23, 2002, at 24, *available at* http://www.businessweek.com/magazine/content/02_38/b3800039.htm.

E. Google

Finally, the continuing meteoric rise of Google as a major player in the applications layer also poses some interesting questions for the layers model. *Can a Big Google Be Trustworthy?* asked the title of a recent *Associated Press* story.[91] Needless to say, that's the question many layer advocates might be asking regulators to consider as the company grows larger or allies with service providers in different layers. A recent *Wired* magazine cover story entitled *Googlemania!* presented "4 Scenarios for the Future of Google," and imagined a world in which "Googlesoft" becomes a dominant player in many different markets, including operating systems.[92] Thus, while it is dumb pipes and dumb browsers today, tomorrow it may be dumb search engines.[93] In fact, websites are already popping up worldwide that propose regulating Google as a public utility.[94]

CONCLUSION

To summarize, this paper has argued that:

- Layer breakers should not be considered lawbreakers. There can be efficiencies associated with vertical integration of broadband services, applications, and content that should not be precluded via government regulation, whether it be through network layers regulation or Net neutrality mandates.

- The goal of public policy in this matter should not be to simply optimize outcomes within existing network architectures but to encourage the development of entirely

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91. Associated Press, *Can a Big Google Be Trustworthy* (Mar. 22, 2004), *available at* http://www.rockymountainnews.com/drmn/technology/article/0,1299,DRMN_49_2747812,00.html.

92. Tom McNichol, *4 Scenarios for the Future of Google*, WIRED, Mar. 2004, at 118, *available at* http://www.wired.com/wired/archive/12.03/google.html?pg=6.

93. There are good reasons to question the wisdom of locking in Google as a public utility when search engine technology is evolving so rapidly. *See generally* Kevin Maney, *Future Search Efforts Will Make Google Look Like 8-Tracks*, USA TODAY, Mar. 31, 2004, at 4B, *available at* http://www.usatoday.com/tech/columnist/kevinmaney/2004-03-30-search_x.htm; Adam Thierer & Clyde Wayne Crews, *Google as a Public Utility? No Results in This Search for Monopoly*, TECHKNOWLEDGE No. 65, (Cato Inst., Wash. D.C.), Nov. 14, 2003, *available at* http://www.cato.org/tech/tk/031114-tk.html.

94. *See* Google Watch Web page at: http://www.google-watch.org/ (last visited May 23, 2004). *See also* Simon English, *Google Float May Make It a Target of Net Activists*, DAILY TELEGRAPH (UK), Oct. 25, 2003, *at* http://www.money.telegraph.co.uk/money/main.jhtml?xml=/money/2003/10/25/cngoogl25.xml&menuId=242&sSheet=/money/2003/10/25/ixfrontcity.html.

new network architectures, platforms, and providers. Net neutrality mandates would sacrifice long-term innovation for minimal short-term gains. Instead of being so preoccupied with merely maximizing consumer welfare within the confines of existing systems, proponents of Net neutrality need to put more thought and energy into the question of how the networks of the future are going to be funded and built.

- Policymakers should practice agnosticism with regard to the technological choice between open and closed systems, or dumb versus smart networks. There is value in allowing experimentation in terms of broadband architectures and pricing schemes, even when such experimentation conflicts with the "end-to-end" principle.

- It should not be forgotten that Net neutrality mandates could open the door to a great deal of potential "gaming" of the regulatory system and allow firms to use the regulatory system to hobble competitors. Worse yet, it will encourage more FCC regulation of the Internet and broadband markets in general.

To end where we began, it is worth reiterating how the open-versus-closed or dumb-versus-smart system dichotomy greatly oversimplifies matters. Today's Internet and the networks of the future will probably need to be a little bit of both. As Odlyzko aptly concludes:

> While the Internet should appear as a simple network, it will need sophisticated technical controls . . . as well as the right economic incentives. Thus it will require much intelligence inside, just as today's game consoles, although they appear simple to the user, often have more computing power inside than the Cray-1 supercomputer. The future of the Internet will be a competition between simplicity and novelty, and while simplicity will be essential to enable novelty, it is never likely to win completely. The blame for this belongs to us, the users, as we allow our requirements to grow.[95]

95. Andrew Odlyzko, The Stupid Network: Essential Yet Unattainable (Sep. 15, 1999) (unpublished manuscript, on file with the University of Minnesota Digital Technology Center), *available at* http://www.dtc.umn.edu/%7Eodlyzko/doc/stupid.unattainable.txt.