

Chapter One--The Law of Unintended Results

The United States has displayed long standing leadership in ICE markets as exemplified by its incubation and privatization of the Internet. Ironically such “best practices” leadership does not currently exist for access to broadband wired and wireless networks, or for the government stewardship possibly needed to stimulate widespread installation of such networks. Simply put the United States has lost much of its competitive and comparative advantages in ICE markets, in light of reduced or eliminated efforts to promote digital literacy and the ability of ICE equipment and service providers to thwart effective and necessary government oversight.

The United States government, in particular the Federal Communications Commission (“FCC”), has contributed to a toxic environment rife with politics, partisanship, results driven decision making, and corporate cronyism. Active players in the regulatory and judicial process understand the prudence in making sizeable investments in undisclosed sponsored research,¹ clever lawyers, creative economists and ubiquitous lobbyists. Far too many consumers lack the motivation or appreciation that they could get far more for their money if they tried harder to acquire digital literacy rather than rely on the generosity of the suppliers, the public interest safeguards provided by government and marketplace competition that may not exist at the level heralded by both suppliers and government.

These truly are the best and worst of times. Unprecedented technological change provides the potential for substantial enhancements to one’s quality of life as well as in civil society.² Yet at every turn politics or pragmatism forge a policy compromise that makes it possible for stakeholders in the regulatory process to extract government accommodations that shortchange the public. There are times when I feel as though two parallel, but mutually exclusive ICE environments exist. In one world the FCC and various regulated operators claim

the ICE sectors operate competitively and effectively, so much so that the Commission should pursue additional deregulatory initiatives. Curiously in this robustly competitive environment some stakeholders continue to secure government-sanctioned financial subsidies and they clamor for more government initiatives to create incentives for investment in next generation networks. In the other world, recognized by only a few independent observers, the lack of significant competition supports the ongoing need for government oversight, leadership and effective strategies to promote greater progress in the installation of next generation broadband networks.

The two world views clash most abruptly in wireless telecommunications. If one accepts the conventional wisdom, cellular telephone companies devote sleepless afternoons competing, innovating and sharpening their pencils to mark down rates. As cellphones increasingly provide a third screen, which augment and provide an alternative to television sets and computer monitors, wireless carriers have extraordinary incentives to invest in next generation networks that will expand the reach and scope of services, no doubt also increasing wireless carriers' average return per user ("ARPU"), a measure of the average monthly revenues generated subscribers. But the reality of the current cellular telephone business belies conventional wisdom. The industry has become so concentrated that in 2008 four national carriers shared over 88% of the market in the United States.³

The advertisements for these companies appear to evidence robust competition, but little difference exists in terms of actual cost per minute of use. Indeed most advertisements champion how the service actually works ("can you hear me now?"), or how new or existing subscribers can get a handset for little or nothing in exchange for a two year service commitment with early termination penalties reduced, if at all, by the magnanimous sum of \$5 per month. Remarkably in a nation that commercialized the Internet and has exhibited best practices in many ICE market

segments, U.S. wireless carriers derive most of their profits and comparatively rich ARPUs from providing telephone calls, ringtones and text messaging.

Elsewhere wireless handsets have become much like a Swiss Army knife providing everything from scanable bar codes for admission into concerts, electronic currency, high speed access to the Internet, real time videoconferencing and a variety of location based electronic commerce applications. Yet cellular carriers in the United States have sold just about everyone on the wrongheaded leap of faith that popularity, “free” handsets, large buckets of minutes and a desirable technology evidence a robustly competitive market having no need for government oversight, or even shared rules of the road.

In theory companies and governments have to serve their consumers and constituents to survive in the marketplace and in the next election. With this assumption one would think the marketplace rewards innovators who offer the next “killer application,” or device. But as we will discover in far too many instances innovation gets stifled so that a fair marketplace trial never occurs. Too often a level competitive playing field does not exist, largely because government institutions legislate, regulate or pass judgment in ways that unreasonably favor one group over others.

Incumbent players typically benefit from this arrangement. As evidence of this perverse outcome consider the following questions:

- How can the United States demonstrate global best practices in some information and communications technology markets, such as software and computing, but woefully lag in others, such as in wireless and broadband services?
- If the information revolution was supposed to “change everything” how did over \$1 trillion in investment largely evaporate in three years⁴?
- How can incumbent telephone companies successfully argue the need for governments to create incentives for investment in next generation networks while at the same time claiming the existence of robust competition eliminates the

need for any other sort of government involvement?

- Why does the United States lag in bridging the Digital Divide⁵ despite the fact that annually telephone service subscribers subsidize access at the rate of over \$7 billion dollars?⁶
- If the ICE marketplace has become so robustly competitive where are the usual consumer benefits of lower prices, diverse choices, and responsive customer service?
- Why does it appear that incumbent ventures can belatedly embrace new technologies yet eventually extend their market power by acquiring or extinguishing most competitive threats through mergers and acquisitions?
- Has the United States lost its comparative and competitive advantage in ICE products and services, because marketplace conditions no longer support best in class network access? and
- Will U.S. ventures successfully reshape the next generation Internet so that it loses its openness and accessibility thereby tipping the competitive playing field in favor of “walled gardens”⁷ of content and services offered by incumbents keen on disadvantaging newcomers offering the “next best thing”?

The digital literate consumer can appreciate that the current ICE environment in the United States displays some of the best and worst practices as compared to other countries. On the positive side of the ledger, the “blue sky” projections that helped fuel the first dotcom/information revolution have become realistic forecasts. In the short term most people in developed nations and urban dwellers in many developing nations will have access to “next generation” networks capable of supplying a broadband wired or wireless pipeline for accessing a cornucopia of content in text, graphical, audio, and video formats.

On the negative side of the ledger consumers in the United States will continue to face unnecessary impediments to their accessing cheap, reliable and robust broadband networks.⁸ They will have to pay rates well in excess of what a truly competitive marketplace would generate⁹ and tolerate inferior network performance. Having bought prematurely the view that a competitive marketplace exists and can self-regulate, governments, led by the United States, may

lack the resources and lawful authority to provide industry specific remedies in advance of adjudication by courts having no specific industry expertise.

Irony abounds in the current and near term ICE environment.¹⁰ One would think that the United States would rank consistently at the top in terms of global best practices for ICE innovation, accessibility, and affordability. Yet United States ICE ventures have not leveraged superior performance in software and computing to achieve top rankings in terms of consumer access to networks, such as the Internet and wireless cellular telephone services.¹¹ The United States leads the world in ICE technology incubation and marketplace exploitation, but when it comes to basic infrastructure, where incumbents have repelled much of the competitive threats, the United States barely exceeds the third world:

American visitors to Asia often return with fierce technological envy over the whiz-bang handsets on display and the routine sight of nonchalant twentysomethings updating Web sites from their cellphones. . . . References to the U.S. as a Third World country when it comes to wireless service now approach cliché.¹²

How can the United States demonstrate global best practices in some information and communications technology markets, such as software and computing, but woefully lag in others, such as in wireless and broadband services?

How can the United States **not** have multiple best in class wired and wireless networks?

Bear in mind that a significant portion of the \$1 trillion lost in the dotcom revolution funded network infrastructure, particularly new underseas fiber optic cables and local wired and wireless technologies offering an alternative to copper wire technology that telephone companies had done little to upgrade. When the Internet promised to “change everything” including basic laws of business governing such inputs as supply and demand, money flowed into the sector to fund even hastily drawn-up plans having little regard for how and when the venture would turn cash flow positive, i.e., generating more revenues than necessary to pay current liabilities. Even with

the overhang of overinvestment and excess capacity in the long haul market and failed plans to offer alternative wired and wireless networks, one would think that the essential first and last mile network access would command attention and funding year over year. These networks are essential for access to the Internet and for any service operating via the World Wide Web.

Incumbent wireline and wireless operators have conserved capital and limited their capital investment in next generation networks. Only recently have these risk adverse operators begun to think seriously about developing new markets. Incumbent operators have claimed regulatory uncertainty, having to lease facilities to competitors at below market rates¹³ and immature technologies and markets as justifications for their reticence to invest, despite the fact that other operators scattered throughout the world have expedited network development and investment. Incumbent telephone companies in the United States belatedly have discovered the Internet and its revenue enhancing potential, but their interest lies mostly in finding new revenue streams from video services rather than upgrading their networks for all types of broadband services. Looking back in time one can see that incumbent operators have masterfully played the lobbying, regulatory advocacy and litigation games with an eye toward thwarting potential competitors while also delaying until the last possible date investment needed to upgrade networks. Incumbents would assert the prudence in conserving investment resources, particularly in light of the dotcom implosion, but the failure to plan for the future means that the United States suffers from a comparatively inferior telecommunications infrastructure, a condition likely to handicap ICE ventures in the global marketplace.

Many consumers in the United States suffer the twin insults of limited broadband access with comparatively high prices for what they can get. Incumbent telephone companies, with the notable exception of Verizon,¹⁴ seek to retrofit installed copper wire for broadband access.¹⁵

This strategy limits upfront investment in next generation networks, but delivers an inferior service compared to the transmission speeds available from fiber optic cable links. Cable television companies similarly seek to stretch the useable life of their coaxial copper wire plant. With rare exception consumers in the United States have limited broadband options, despite claims by incumbents and regulators that robust competition already exists.

How can such a dichotomy exist between the perception of the ICE marketplace by incumbents and government officials, on one hand, versus what others like me see? The answer lies in the measures one uses for defining success as well as the financial, political and other resources a stakeholder has available for disseminating a preferred message. Incumbent cable television and telephone companies want to overstate the true degree of marketplace competition and facilities deployment to encourage legislators, regulators and judges to deem unnecessary most, if not all government oversight. Market entrants want government sanctions that help tilt the competitive playing field in their favor. Relatively few industry observers exist that do not have a direct financial stake in government's perception of the marketplace and the commensurate conclusions about the need for regulation. Even many analysts affiliated with universities and think tanks now offer their research and advocacy to the highest bidder, often without disclosing the scope of such financial sponsorship.¹⁶ Likewise public relations firms create many "astroturf" organizations that claim independently to represent consumers' interests.¹⁷

Conflicting perceptions about the scope of competition and the need for government involvement have a profound and largely negative impact on the public. In the vernacular of economists stakeholders can extract "rents," i.e., revenues and other types of advantages, that consumers otherwise would capture. In other words consumers end up paying more for less,

because government has not effectively prevented anticompetitive and other behaviors unfair and harmful to consumers. When government does not safeguard the public interest, individual consumers must individually and collectively resort to self-help remedies. By self help I refer to lawful strategies that minimize the harm caused by a deliberately inattentive government, or one captive to the interests of particular stakeholders. I am not endorsing illegal practices, such as copyright piracy. However, I am endorsing the development of digital literacy, a collection of skills available to make the most of what limited competition and residual regulation can support.

If the information revolution was supposed to “change everything” how did over \$1 trillion in investment largely evaporate in three years?

As the ICE industry recovers from over \$1 trillion reduction in value¹⁸ one can hardly blame both incumbents and market entrants for their anxiety about investing in the sector. This reticence juxtaposes with often reckless spending during the dotcom revolution that ended in 2001. We will examine in great detail the reasons for the dotcom implosion, but a few highlights are worth pointing out here. First the laws of physics, mathematics, the marketplace and the business cycle apply to ICE industries. Blue sky forecasters from Bill Gates¹⁹ to your author bought the notion that the Internet would change everything including the physical limits to accommodating demand by technologies that use radio spectrum such as satellites and wireless systems, as well as the robustness of demand for the Internet. Somehow demand could double monthly for the foreseeable future. As never before, ventures could tap that demand with little regard for determining how to secure payment. A rising tide would raise all ships, regardless of how leaky or silly the business plan.

As with so many preceding bubble economies—from tulips in Holland²⁰ to real estate in Japan²¹—demand cannot rise inexorably without cyclical, sometimes dramatic reductions.

Ventures aiming to tap demand for new telecommunications capacity, Internet services, and Internet mediated content required a robust and ongoing source of funding to secure both customers and “shelf space,” i.e., a widespread marketing presence, to entice additional customers. Most ventures did not find sufficient numbers of paying customers and in turn what had constituted irrational exuberance migrated to practical or excessive pessimism.

The trillion or more dollar investment in ICE infrastructure, goods and services actually did not evaporate. Both hard assets, such as servers, office equipment and buildings became someone else’s property for pennies on the dollar. Many clever and creative business plans failed, but the best and brightest ones have survived. Indeed the survivors may have acquired an extension of time to wait out pessimism and consumer reluctance having acquired failed ventures’ assets. Out of the ashes of failed ventures have come ventures that consumers and investors now consider rock solid companies such as Google, Amazon, eBay and others.

How can incumbent telephone companies successfully argue the need for governments to create incentives for investment in next generation networks while at the same time claiming the existence of robust competition eliminates or reduces the need for any other sort of government involvement?

Questions such as the one posed above evidence the ability of companies to game the political system by creating divergent governmental perceptions of reality in different forums. No matter how intellectually inconsistent, stakeholders have convinced government decision makers to make diametrically opposite conclusions even about the same marketplace environment. For example, incumbent wireline telephone company executives insist how hard they must work to survive in a cutthroat competitive marketplace, yet these very same companies receive most of the over \$7 billion annual in subsidies from long distance telephone subscribers based on the view that the marketplace fails to provide affordable telephone service to several different types of consumers.²² Both Congress²³ and the FCC²⁴ have reached the conclusion

that the marketplace for plain old telephone service cannot function without government intervention,²⁵ including the compulsory subsidization of service to rural telephone companies, the poor, elderly subscribers and telephone companies operating in high cost areas regardless of population density.

So the local telephone service marketplace is both robustly competitive and suffering from market failure. Simple economics states that in robustly competitive markets the price for a good or service trends towards its marginal cost, i.e., the actual expenses incurred by producers to generate one more unit of capacity.²⁶ Yet the competitive marketplace apparently has not reached marginal cost or anywhere near it. Alternatively even if it has, that price remains prohibitively high to many consumers and legislatures have decided to subsidize access. Unless Congress chooses to revoke its mandate that the FCC pursue a universal service mission with billions of subsidy dollars, the so called competitive marketplace for telephone service requires a monthly 11% surcharge on long distance telephone service²⁷ to help make local telephone service within financial reach for millions of Americans.

Incumbent telephone company representatives would object to the linkage between a universal service subsidy mission and an assessment of competitiveness. Presumably a market can have robust competition, but also generate high prices, e.g., the cost of a college education, even one subsidized by taxpayers. But in the case of telecommunications, stakeholders claiming marketplace competition argue for governments to abdicate responsibilities to serve the public interest, because the unfettered marketplace can self-regulate. Incumbent telephone companies gladly accept government-mandated subsidies, but reject government involvement elsewhere in the sector.

Why does the United States lag in bridging the Digital Divide despite the fact that annually telephone service subscribers subsidize access at the rate of over \$7 billion dollars?

Notwithstanding all the competition claimed to exist throughout the ICE sectors, including telephone and cable television service, such competition has not fully extended into digital markets, like broadband access to the Internet. Alternatively the marketplace has not solved access problems for both basic and advanced ICE services. Again some stakeholders and government officials reject these claims. They fervently deny that the United States comparatively has a poor record of achieving widespread access to the Internet and other digital services. To some the United States has a problem, notwithstanding competition, but to others no such problem exists thanks to competition.

The degree of robustness and competition in the ICE marketplace depends on the agenda and perspective of the observer. When seeking financial support and incentives to invest in infrastructure ICE ventures will point to market failure, even as these same players point to competition as a better regulator than government. We will examine whether and how a digital divide exists in a later chapter.

If the ICE marketplace has become so robustly competitive where are the usual consumer benefits of lower prices, diverse choices, and customer service?

With all the alleged competition in the ICE marketplace, one would expect a consumer windfall in terms of price, diversity of options and satisfaction. Ask yourself what options you readily have in terms of ICE equipment and services? In some sectors competition does exist and consumers can “vote with their feet” and walk away from poor service and high prices. Long distance telephone service and wired telephone handsets fall into this category. But in many key sectors you may not have many options at all. When it comes to broadband Internet

access few consumers have more than two facilities-based competitive options: 1) cable modem service²⁸ or 2) Digital Subscriber Line service.²⁹ Internet access via satellite requires the purchase or lease of costly equipment and typically offers lower bit processing rates, i.e., the number of bits that can be delivered per second, at higher prices than cable modem and DSL service.³⁰ Terrestrial wireless service may constitute a cost competitive option in urban and suburban areas. However vast regions of the United States lack high speed wireless Internet access. Access using conventional cellular telephone networks constitutes a costly and slow option.³¹

Similarly how many facilities-based options to basic telephone service do you have available? Increasingly consumers consider wireless telephone service a competitive alternative to wireline service, albeit at two to three times the price. Voice over the Internet Protocol (“VoIP”)³² and other Internet-delivered telephone services do provide a competitive alternative, but again one must consider the actual out of pocket cost for such services. A \$24.99 “all you can eat” local and long distance service package³³ appears both competitive and attractive to wireline service. However some of the allure wanes when you consider that most cable television systems do not offer telephone service on a standalone basis. You can get it only as part of a bundle of service that includes video and Internet access. As well the \$24.99 plan does not factor in the cost of broadband access that you also must have. If you add the cost of Internet access to the \$24.99 service plan, you again reach a price point three times the conventional wireline rate.

Why does it appear that incumbent ventures can belatedly embrace new technologies yet eventually extend their market power by acquiring or extinguishing most competitive threats through mergers and acquisitions?

The question above notes that the more things appear to change in ICE markets, the more

they stay the same. In other words it appears that incumbents belatedly understand the need to adjust to a digital future where converging technologies and markets require single ventures to offer a combination of ICE services. Incumbents, particularly ones with the deepest pockets and the most retained earnings, have proved adept at acquiring both failed and successful competitors.

Critics of Microsoft accuse the company of executing an “Embrace, Extend and Extinguish” strategy vis a vis competitors.³⁴ They allege that when Microsoft finds itself behind the development curve, as occurred at the onset of the dotcom, Internet revolution, the company can make up for lost time by first exploring joint ventures with competitors. Whether rejected or welcomed Microsoft can either buy out the company, or devise ways to weaken the competitor, e.g., by bundling as a free feature in its software the service offered for pay by the competitor. Microsoft allegedly extinguishes competition by having the financial staying power to offer something as a free additional, value-adding feature for which a competitor used to charge.

Will the United States lose its comparative and competitive advantage in ICE products and services, because marketplace conditions no longer support best in class network access?

This book will examine the above question from a number of different perspectives. For the time being it is worth noting that some, but not all, assessments of digital readiness and market penetration place the United States well below global best practices.³⁵ In a classic shoot the messenger strategy United States government officials have challenged the negative assessment, and the criteria used.³⁶ Few in government care to consider whether and how the United States has lost some of its competitive edge and comparative advantage in ICE sectors.

Clearly the United States remains a leader in many ICE markets. Silicon Valley and other commercial incubators for software, Internet services and equipment attest to ongoing

global leadership. However such superiority does not extend to the telecommunications infrastructure needed to switch, route, process and transport bits throughout the Internet cloud.³⁷ Will it continue to be possible for United States ventures to retain global leadership in the devices and services that ride over wired and wireless networks? Not too many years ago Motorola dominated the wireless infrastructure and handset marketplace. This company risks a further drop to third in the rankings of cellular telephone service handset behind industry leading Nokia, based in Finland and Samsung, based in Korea.³⁸ Might a correlation exist between the robustness of a nation's telecommunications infrastructure and the global marketplace success of its native companies?

Will the Internet become a non-neutral collection of networks whose owners control access to content, applications and software?

As the Internet becomes the key medium for most ICE services, industry observers, academics, consumer representatives and others have expressed concern whether service providers will manage their networks fairly. Advocates for "network neutrality" seek carrier assurance and possibly regulator-established rules to ensure that the Internet continues to operate in a nondiscriminatory manner, both in terms of how subscribers access and receive Internet transmitted services and how content and other service providers reach subscribers.³⁹ Throughout the phases of its development, the Internet has benefited from prudent decisions by governments to use a light hand when regulating and safeguarding national interests. Governments correctly recognized that they could rely on the motivations of mostly private stakeholders to build the telecommunications links and to diversify the services available from the World Wide Web. But on the other hand as the Internet consolidates previously discrete ICE services, the stakes have risen in terms of whether a competitive playing field exists for consumer access to the variety of services available via the Internet, and for service provider

access to consumers.

The Internet continues to evolve as it incorporates technological innovations and becomes a conduit for many services that previously traversed dedicated telecommunications networks. As the Internet begins to offer convergent services, such as Voice over the Internet Protocol (“VoIP”) ⁴⁰ telephone services and Internet Protocol Television (“IPTV”), ⁴¹ some operators may perceive the opportunity to accrue a financial or competitive benefit by deviating from a plain vanilla, “one size fits all” Internet, characterized by nondiscriminatory, best efforts routing of traffic ⁴² and “all you can eat” subscriptions.

Some Internet Service Providers (“ISPs”) seek to diversify the Internet by prioritizing bitstreams and by offering different quality of service guarantees. To some observers this strategy constitutes harmful discrimination that violates a tradition of network neutrality in the switching, routing and transmission of Internet traffic. To others offering different levels of service provides the means for consumers and carriers to secure and pay for premium, “better than best efforts” service if so desired.

Little middle ground exists between net neutrality advocates and opponents, but practically speaking the Internet will continue to deviate from a one size fits all network. Accordingly one should consider net neutrality in terms a dichotomy between types of discrimination that make economic sense and will not harm consumers and those that constitute unfair trade practices and other types of anticompetitive practices.

Opponents of network neutrality correctly state that external, non-market driven constraints on their ability to price discriminate can adversely impact their incentive to invest in broadband infrastructure and their ability to recoup that investment. ISPs have avoided common carrier responsibilities and the Internet largely functions as a product of countless

interconnection arrangements flexibly negotiated and executed free of government oversight.

ISPs correctly note that only in rare instances has an interconnection dispute triggered allegations of anticompetitive practices, or resulted in consumers losing access to a content source, or email addressee as a result of network inaccessibility or balkanization.

On the other hand, network neutrality advocates have identified actual instances where ISPs unilaterally have blocked traffic, to reduce subscribers' network demand, handicap a competitor, punish ventures for not agreeing to pay a surcharge and to stifle criticism about the ISP and its parent corporation.⁴³ Even if one were to dismiss such evidence as anecdotal or exceptional, it appears that an ISP's incentive and ability to discriminate in the switching and routing of bits matches or exceeds the ease with which employees of electric generating companies were able to create artificial congestion and false bottlenecks to accrue exorbitant profits. Employees of Enron and other electric utilities engaged in a number of anticompetitive practices that caused the spot market price for electricity to skyrocket based on tactics designed to mimic a dramatic increase in demand that the electricity distribution grid could not handle.⁴⁴ If Enron employees could manipulate the market for the switching and routing of electrons, then ISP employees might engage in similar tactics when switching and routing packets. Policymakers should consider seriously the potential for harm to consumers and content providers when ISPs deviate from network neutrality.

The Indictment: A Legislative, Regulatory and Judicial Process that Disserves the Public

ICE policy, by its very nature, can trigger significant disagreements on how to proceed. Law and regulations affecting this sector can impact speech and citizens' right of expression. Additionally economic and political philosophies can suggest different preferred outcomes. However, ICE law and policy does not by its nature cleave along political party lines. Most FCC

Commissioners seem to think it does. With increasingly regularity FCC Commissioners vote along party lines on ICE issues that have a profound national impact. The FCC's Commissioners, and the Presidents who nominate them, have made ICE policy rife with politics and partisanship.

With politics driving decision making it follows that the Commissioners color their perception of a case or controversy with built-in assumptions. Indeed the FCC has become infatuated with the "science" of economics, including suspect, new theories cooked up by sponsored academic researchers. Because the output generated by economic analysis typically requires assumptions, the assumptions become essential predicates for policy recommendations.

Long ago Commissioners who served at the FCC used to assess issues based on the public interest and the facts presented, not a political litmus test, or self-serving assumptions. They did not write concurring statement in the form of a *Wall Street Journal* editorial either. Now we have Chairmen and Commissioners quite willing to use the political party registration of a fellow Commissioner as grounds for derision.

My research has come up with no prior instance where the official statement of a Chairman or Commissioner preceded the name of a fellow Commissioner with his or her party affiliation. So in 2007 FCC Chairman Kevin Martin and Commissioner Deborah Tate made history of a sort when they went out of their way, in a statement on the AT&T's acquisition of BellSouth to express displeasure at their "Democrat" colleagues as though their party affiliation was grounds enough to disagree:

Importantly, however, while the Democrat Commissioners may have extracted concessions from AT&T, they in no way bind future Commission action. Specifically, a minority of Commissioners cannot alter Commission precedent or bind future Commission decisions, policies, actions, or rules. . . . [T]he Democrat Commissioners want to price regulate not only AT&T but also Verizon and Qwest.⁴⁵

The FCC has sunk into a morass of partisanship, pseudo science, fuzzy math, creative interpretation of economic principles and legal concepts, selective interpretation of the facts, innovative collection of statistics and flawed thinking. Partisanship at the top even changes the behavior of civil servants, who hold important decision making jobs presumably without regard to which political party dominates Congress, or the party affiliation of the President and individual Commissioners.

Even if party affiliations had less of an impact FCC Commissioners and staff increasingly rely on baseline philosophies to drive policy outcomes. In other words, if a Commission employee embraces a pro-marketplace orientation, then it follows that her recommendations will suggest deregulation regardless of countervailing facts. Similarly a Commission employee predisposed to find regulation as a necessary safeguard will hold steadfast to this principle. One can readily appreciate the role of predisposition that colors policy analysis. But predisposition has become bias. Couple bias with what comes across as a deliberate attempt not to acquire empirical data and the FCC appears to engage in results driven decision making.

For example, if a majority of the FCC Commissioners believe that the broadband, Internet access marketplace has become robustly competitive, then they will make decisions predisposed to favor marketplace regulation. But what if the facts do not support the Commissioners' assumptions and beliefs? Worse yet, what if the FCC shapes its empirical research and data gathering to support the false conclusion that robust facilities-based competition exists? A reasonable interpretation of the FCC's broadband market penetration statistics might support the view that such competition exists, but only because the FCC has used measures designed to overstate the case.

For over a decade the FCC defined broadband as handling traffic at 200 kilobits per

second (“kbps”) in one direction.⁴⁶ In a time when consumers expect their broadband links to support full motion video, 200 kbps does not constitute a minimum baseline rate for broadband service, particularly in light of the fact that true broadband networks in the United States and abroad offer multi-megabit per second service, i.e., millions of bits transmitted per second. Additionally the Commission totals the number of broadband providers without regard to whether they operate their own facilities or resell DSL and cable modem service. The Commission totals up a single raw number of broadband competitors based on whether service is available anywhere within a zip code.⁴⁷

The FCC’s performance in broadband statistics compilation supports the view that there are “lies, damn lies and statistics.”⁴⁸ Embedded in the statistical compilation is the recognition that two types of facilities-based operators, the cable television and telephone companies provide over 88% of all broadband access in the United States. So is the market robustly competitive as the FCC alleges and as countless sponsored researchers echo,⁴⁹ or is the market monopolized by two operators in many localities?

The FCC states that my residential zip code has eight broadband service options, down from nine in 2006.⁵⁰ But practically speaking, when one considers price and performance, I have one and only one option. Despite the fact that I live six miles from a major Big Ten University, I cannot get DSL service. So my options include cable modem service, or satellite service offering less than half the bit rate at twice the cost. Wireless data service providers do not yet offer a price competitive alternative outside major cities, in light of typical bitrates rarely exceeding 500 kbps.⁵¹

In addition to creative statistics the United States Executive Branch has chosen to “shoot the messenger” when other statistical compilations do not show success. For the better part of a

decade, the United States has lagged in broadband development largely because stakeholders invested in long haul capacity and failed local loop alternatives. Incumbent telephone company managers have emphasized regulatory uncertainty and “confiscatory” FCC sharing requirements, but the fact of the matter is that over \$1 trillion was invested in the dotcom boom, a significant portion of which targeted burgeoning demand for telecommunications transmission capacity.

Now that the FCC has largely eliminated requirements that incumbent carriers provide network access to competitors at below market rates,⁵² the United State’s comparatively poor performance in broadband market penetration the federal government has started to shoot the messenger reporting continuing poor penetration rates. Both the National Telecommunications and Information Administration (“NTIA”) and the State Department challenged the statistics compiled by the Organization for Economic Cooperation and Development that ranks the U.S. 15th globally in broadband subscribers per 100 inhabitants (down from 12th in 2006).⁵³

The State Department has made the issue something of a diplomatic affront to the United States and NTIA offered explanations why scope of broadband access in places such as government offices and coffee shops means that the OECD ranking underestimates market penetration. So first stakeholders could blame the government for mandating common carriage facilities unbundling and interconnection. Now the government can blame outside data collectors as underestimating the kind of success the FCC found when it used zip codes as the relevant market penetration measure.

The FCC has become captive to assumptions and political philosophy at the expense of common sense and empirical evidence. If the FCC concludes that competition exists, no doubt resonated by stakeholders who benefit from this assumption, then at some point the FCC stops questioning whether the facts support the assumption.

Rent Seeking Stakeholders Support FCC Assumptions

Beneficiaries of the FCC's deregulatory instincts recognize the need to shore up the Commission's decision making with science, what some might consider fuzzy science. Far too many academics and think tank affiliates "contribute" to a public policy debate thanks to an undisclosed benefactor who surely expects something back for the hundreds of thousands invested. Thanks to that wonderful concept of plausible deniability the sponsored researcher can state with a straight face that he or she does not receive any direct financial support for the White Paper, law review article or legislative testimony that just happens to offer unqualified support for a particular stakeholder or group viewpoint.

The money gets laundered. A stakeholder supports a think tank's general mission with a sizeable grant. In turn the think tank's staff or affiliates just happens to come up—unsolicited for sure—with creative thinking about a public policy issue that resonates with the stakeholder's political and public relations agenda. The stakeholder's grant helps pay for the employees' or affiliates' income, albeit indirectly. Hence no direct quid pro quo.

I refuse to believe that so many public policy initiatives in ICE policy, first announced through the writing of an academic or think tank affiliate, arose completely unsolicited. For example, we can thank undisclosed, but sponsored research for such innovative rethinking of economics and the law to support the view that compulsory common carrier interconnection responsibilities "confiscated" incumbent carrier property.⁵⁴

Rent Seeking Versus Profit Seeking

Managers of commercial ventures invariably have to decide the proper balance of profit seeking investments and efforts versus seeking benefits (rents) from various government programs. For example, a professional sports team might leverage the possibility of leaving a

city if the local or state taxpayers do not underwrite construction of a new stadium. In telecommunications incumbent carriers have engaged in similar leverage: limiting investment in next generation networks unless and until government creates financial incentives or other inducements, e.g., removing “regulatory uncertainty” which might just mean unfavorable and costly regulatory obligations. For example, a telephone company might not build a fiber optic network capable of providing video competition with incumbent cable television ventures in a particular state or region unless and until the newcomer can avoid having to secure operating authority (a franchise) from each and every municipality within which the newcomer wants to operate.

The tension between rent seeking and profit seeking has adversely affected the pace of next generation network deployment. Too many actual or prospective investors recognize the benefits in seeking government-generated incentives to invest. It becomes difficult to determine when competitive necessity would have forced an investment without government assistance and when incentive creation was necessary.

The recent substantial infusion of capital investment by incumbent carriers into next generation networks may evidence a healthy response to the elimination of unbundling and below market access pricing regulations. But it may evidence the fact that incumbent ventures, cable television and telephone companies alike, could not longer rely on core and previously captive revenues streams. How much longer could the incumbent local exchange telephone companies see declining local voice service revenues, before they had to find and serve new profit centers? When stakeholders demand government incentives, it probably makes sense to ask whether the stakeholders would make the investment and take the risk without special accommodations.

Consumers Not Blameless

The public, as consumers and the electorate, are not blameless for the pitiful state of affairs in ICE law and policy. Far too many people do not appreciate the stakes involved when the FCC acts and what the public loses when the FCC accommodates special interests.

Acquiring digital literacy takes time and effort, well compensated by cost savings and other benefits on the back end. But digital literacy requires people to appreciate the costs of laziness and blind expectation that governments or corporations will serve the public interest.

Consider the monthly rental cost of the cable television set top converter, a device consumers think they must have to “qualify” for access to digital cable television content. It simply is not true. Cable television subscribers can eliminate the set top box rental by substituting something called a CableCard,⁵⁵ provided they have television sets that contain a slot for the card. CableCards substitute for most functions performed by set top converters at a fraction of the cost. Acting on a Congressional mandate to provide consumers with an alternative to compulsory rental of cable television company supplied set top converters, the FCC has directed the companies to support CableCards or downloadable copyright protection and service tiering functions.⁵⁶

It has taken more than 10 years for the FCC to get serious about mandating the CableCard and other options, during which time cable operators have accrued countless extra millions by not having to do so. It should come as no surprise that the cable companies have no enthusiasm for widespread use of these cards, because they will force the companies to find new ways to offer on screen navigation, copyright protection and security functions. Had more consumers demanded the cheaper CableCard option it might not have taken ten years for the FCC to force cable operators to support this option.

The Situation is Not Hopeless

There are plenty of instances where the FCC has not served the public interest when it excessively accommodates particular constituencies. But there are also many instances where consumers have resorted to self-help to compensate for abandonment by the FCC. This book will examine what the public can do in its capacity as consumers and citizens to acquire digital literacy and possibly a level competitive playing field.

ENDNOTES

¹ Sponsored research refers to research performed by professors, think tank occupants and others who receive outside financial support. Researchers should disclose such funding, because it can influence their work product and readers should know of this potential conflict of interest. Not all sponsored research results in a biased work product, but most the sponsors of research typically seek to influence the legislative and policy making process.

² Civil society refers to an environment where government operates transparently and fairly with an engaged and vigilant electorate.

³ See Twelfth Report, Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, FCC 08-28, 17 (rel. Feb 4, 2008); available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-28A1.pdf; Leslie Cauley, *AT&T eager to wield its iWeapon*, USA TODAY (May 21, 2007)(displaying statistics compiled by Forrester Research); available at: http://www.usatoday.com/tech/wireless/2007-05-21-at&t-iphone_N.htm.

⁴ “CNNfn.com asked the market data and research firm Birinyi Associates of Westport, Conn., to calculate the market value of the 280 stocks in the Bloomberg US Internet Index at their respective 52-week highs and their current market value. The combined market values of the 280 stocks had fallen to \$1.193 trillion currently from \$2.948 trillion at their peak, a loss of \$1.755 trillion, most of which occurred between March and September of this year.” David Kleinbard, CNN Money, *The \$1.7 trillion dot.com lesson* (November 9, 2000); available at: <http://money.cnn.com/2000/11/09/technology/overview/>.

⁵ The Digital Divide refers to the gap between people with the financial wherewithal and interest in acquiring the equipment, services and skills needed to access digital information, communications and entertainment services and those lacking such resources. See Digital Divide.org, *USHERING IN THE SECOND DIGITAL REVOLUTION*, available at: <http://www.digitaldivide.org/dd/index.html>. The Digital Divide separates “those [people] with access to new technologies and those without.” Department of Commerce, National

Telecommunications and Information Administration, FALL THROUGH THE NET: DEFINING THE DIGITAL DIVIDE, Introduction, xii (July, 1999); available at: <http://www.ntia.doc.gov/ntiahome/fttn99/fttn.pdf>; see also Digital Divide Network World Wide Web site; available at: <http://www.digitaldivide.net/>; Jaime Klima, *The E-Government Act: Promoting E-Quality or Exaggerating the Digital Divide?*, 2003 DUKE L. & TECH. REV. 9 (Apr. 15, 2003), at <http://www.law.duke.edu/journals/dltr/articles/2003dltr0009.html>; James E. Prieger, *The Supply Side of the Digital Divide: Is There Equal Availability in the Broadband Internet Access Market?* 41 ECON. INQUIRY 346 (2003); Peter K. Yu, *Bridging the Digital Divide: Equality in the Information Age*, 20 CARDOZO ARTS & ENT. L.J. 1 (2002); Organization for Economic Cooperation and Development. *Understanding the Digital Divide* (2001) at <http://www.oecd.org/dataoecd/38/57/1888451.pdf>.

⁶ Universal service funding seeks to promote access to basic telephone service by offering financial subsidies to qualifying individuals that defray the non-recurring cost to initiate service and the recurring costs for dial up telephone service. Additionally wireline and wireless telephone companies receive funding to offset higher costs incurred to provide service primarily in rural areas lacking sufficiently high population density. “Outlays from the U[niversal] S[ervice] F[und] grew from \$3.3 billion in fiscal year 1999 to \$5.7 billion in fiscal year 2004.” Congress of the United States, Congressional Budget Office, FINANCING UNIVERSAL TELEPHONE SERVICE, Summary, viii (March, 2005); available at: <http://www.cbo.gov/showdoc.cfm?index=6191&sequence=0>; Funding increased to 6.5 billion in 2005. Universal Serv. Contribution Methodology, WC Docket No. 06-122, (FCC adopted June 21, 2006) (report and order and notice of proposed rulemaking), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-06-94A1.pdf. The Universal Service Administrative Company, which disburses universal service funds, estimates that it paid out \$6.95 billion in 2007. Universal Service Administrative Company, Universal Service Fund Facts, available at: <http://www.usac.org/about/universal-service/fund-facts/fund-facts.aspx>.

⁷ A walled garden refers to an easily accessed source of content provided by a service provider with an eye toward making it more costly or inconvenient for subscribers to access content elsewhere. For example, America Online and Yahoo offer subscribers readily available access to content in lieu of subscriber searches for similar content available via the World Wide Web.

⁸ Despite technological superiority in many areas the U.S. lags in broadband market penetration. The Organization for Economic Cooperation and Development reports that the United States ranked 12th among the developed OECD nations in broadband penetration as of June 2006. OECD BROADBAND STATISTICS TO JUNE 2006 available at: http://www.oecd.org/document/9/0,2340,en_2649_34225_37529673_1_1_1_1,00.html#Data2005. The most recent ranking places the United States 15th. OECD Broadband Portal, Table 1d. BROADBAND SUBSCRIBERS PER 100 INHABITANTS (Dec. 2007), available at: <http://www.oecd.org/dataoecd/21/35/39574709.xls>. The International Telecommunication Union ranked the United States 15th in the world in terms of broadband penetration per 100 inhabitants as of 1 January 2006. International Telecommunication Union, Strategy and Policy Unit Newslog - ITU Broadband Statistics for 1

January 2006; available at:

<http://www.itu.int/osg/spu/newslog/CategoryView.category.Broadband.aspx>; The ITU's broader benchmarking of the most important indicators for measuring a nation's capability to promote information and communications technologies and the "Information Society" ranked the United States 21st in the world. International Telecommunication Union, Digital Opportunity Index (using 2005 statistics); available at <http://www.itu.int/osg/spu/statistics/DOI/index.phtml>.

⁹ Many broadband customers in the United States pay some of the highest rates per 100 kilobits per second. However, some customers in urban areas enjoy significantly lower rates near parity with the lowest rates available globally. The ITU ranks the United States tenth in broadband prices per 100 kilobits per second. International Telecommunication Union, *digital.life*, ITU INTERNET REPORT 2006, Broadband prices per 100 kbits/s top 75, 2006, p. 174 (Geneva, 2006)[hereinafter cited as ITU Internet Report].

¹⁰ Such irony may have spanned more years. See ROBERT HORWITZ, *THE IRONY OF REGULATORY REFORM THE DEREGULATION OF AMERICAN TELECOMMUNICATIONS* (Oxford University Press, 1989).

¹¹ The ITU ranked the United States 61st in the world for mobile subscribers per 100 inhabitants. ITU Internet Report 146. The United States ranked 24th in mobile broadband penetration per 100 inhabitants. *Id.* at 157.

¹² Jon Fine, Mobile Broadcasting: Manana, *BUSINESSWEEK*, No. 4028, p. 24 (April 2, 2007).

¹³ "Unbundled network elements were mandated too widely, without regard for the disincentives such wholesale access would likely have in the construction of advanced systems and competitive networks." Thomas W. Hazlett, *Rivalrous Telecommunications Networks With And Without Mandatory Sharing*, 58 *FED. COMM. L.J.* 477, 508 (June, 2006); Michael A. Heller, *The UNE Anticommons: Why the 1996 Telecom Reforms Blocked Innovation And Investment*, 22 *YALE J. on REG.* 275 (Summer, 2005); Allan T. Ingraham & J. Gregory Sidak, *Mandatory Unbundling, UNE-P, and the Cost of Equity: Does TELRIC Pricing Increase Risk for Incumbent Local Exchange Carriers?*, 20 *YALE J. on REG.* 389, 404 (2003) Alfred E. Kahn, Timothy J. Tardiff & Dennis L. Weisman, *The Telecommunications Act at Three Years: An Economic Evaluation of Its Implementation by the Federal Communications Commission*, 7 *INFO. ECON. & POL'Y* 319 (1999).

¹⁴ Verizon's fiber optic service provides 30 megabits per second ("Mbps") downloads and 5 Mbps uploads. See Verizon, Who Wins – FiOS vs. Cable?; available at: <http://www22.verizon.com/content/consumerfios/about+fios/v/who+wins+fios+vs+cable/who+wins+fios+vs+cable.htm>.

¹⁵ AT&T offers a mix of fiber optic and copper cable. See AT&T, U-verse, How AT&T U-verses TV is Delivered, available at: http://www.att.com/Uverse/files/HowUverseIsDelivered_2-22.pdf.

¹⁶ See, e.g., Greg Sidak and Hal Singer, *Überregulation without Economics: The World Trade Organization's Decision in the U.S.-Mexico Arbitration on Telecommunications Services*, 57 FED. COMM. L.J., No. 1, 1-48 (Dec. 2004); available at:

<http://law.indiana.edu/fclj/pubs/v57/no1/Sidak.pdf>. The piece contains a disclaimer that the American Enterprise Institute takes no position on specific legislative, regulatory, adjudicatory, or executive matters. But the reader gets no disclosure whether or not TelMex provided AEI any funding before or after this legal scholarship made its way into print.

¹⁷ “An examination by Larstan Business Reports of publicly available documents indicates that certain ‘independent groups’ claiming to represent consumer interests are actually undercover stalking horses for the special interests of the large phone companies.” Larstan Business Reports, RECORDS INDICATE BELLS ENGAGED IN “ASTROTURF” LOBBYING, CREATION OF FAUX CONSUMER GROUPS DESIGNED TO INFLUENCE PENDING LEGISLATION (Nov. 2, 2006); available at:

http://www.larstan.net/NewsWire/records_indicate_bells_engaged_i.htm. See also, Source Watch, Center for Media and Democracy, available at: <http://www.sourcewatch.org/index.php?title=Astroturf>.

¹⁸ David Kleinbard, CNN Money, *The \$1.7 trillion dot.com lesson* (Nov. 9, 2000); available at: <http://money.cnn.com/2000/11/09/technology/overview/>.

¹⁹ BILL GATES, *THE ROAD AHEAD* (Penguin Books, 1995).

²⁰ See MIKE DASH, *WHEN THE TULIP BUBBLE BURST* (Crown Publishers, 2000).

²¹ See Shigenori Shiratsuka, Institute For Monetary and Economic Studies, Bank Of Japan, ASSET PRICE BUBBLE IN JAPAN IN THE 1980S: LESSONS FOR FINANCIAL AND MACROECONOMIC STABILITY, Discussion Paper No. 2003-E-15, available at: <http://www.imes.boj.or.jp/english/publication/edps/2003/03-E-15.pdf>.

²² See Rob Frieden, *Killing With Kindness: Fatal Flaws in the \$6.5 Billion Universal Service Funding Mission and What Should be Done to Narrow the Digital Divide*, 24 CARDOZO ARTS AND ENTERTAINMENT LAW JOURNAL, No. 2, 447-490 (2006).

²³ Sec. 254 of the Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996) (codified in scattered sections of 47 U.S.C.) codifies a national universal service policy. 47 U.S.C. §254 (2006).

²⁴ “The Federal Communications Commission (FCC) and Congress recognize that telephone service provides a vital link to emergency services, government services, and surrounding communities. To help promote telecommunications service nationwide, the FCC, as directed by Congress and with the help of the Universal Service Administrative Company (USAC), administers the federal Universal Service Fund.” Federal Communications Commission, THE FCC’S UNIVERSAL SUPPORT MECHANISMS, available at:

<http://www.fcc.gov/cgb/consumerfacts/universalservice.html>. See also, Jonathan Weinberg, *The Internet and "Telecommunications Services," Universal Service Mechanisms, Access Charges, and Other Flotsam of the Regulatory System*, 16 YALE J. on REG., 211 (1999).

²⁵ “The notion that everyone should be provided the opportunity to receive basic telephone service at an affordable rate, regardless of geographic location or economic status, has been widely adopted as national policy. The goal of quality, widely available and reasonably priced telephone service has been achieved through a myriad of regulatory policies such as rate averaging, cost support funds and loan programs.” Patricia M. Worthy, *Racial Minorities and the Quest to Narrow the Digital Divide: Redefining the Concept of “Universal Service*, 26 HASTINGS COMM. & ENT. L.J. 1, 4 (2003).

²⁶ Samuel L. Baker, Economics Interactive Tutorial, Marginal Cost and the Output Rate Under Competition (2000); available at: <http://hspm.sph.sc.edu/COURSES/ECON/MCost/MCost.html>.

²⁷ See, Federal Communications Commission, Contribution Factor & Quarterly Filings; available at: <http://www.fcc.gov/omd/contribution-factor.html>.

²⁸ Cable modems provide Internet access by modulating a digital signal via a small portion of the bandwidth previously used by cable television companies to provide video service. See Cable-Modems.org, The Cable Modem Reference Guide, available at: <http://www.cable-modems.org/>.

²⁹ Wireline local exchange telephone companies provide Internet access by extending the bandwidth of the copper wire local that links subscribers with central switching facilities. See Curt Franklin, HOW DSL WORKS, available at: <http://electronics.howstuffworks.com/dsl.htm>.

³⁰ See, e.g., HughesNet, Service Plans, available at: http://www.nationwidesatellite.com/HughesNet/service_plans/HughesNet_plans.asp.

³¹ See, e.g., Verizon Wireless, National Access Data Plan, available at: http://www.verizonwireless.com/b2c/store/controller?item=planFirst&action=viewPlanDetail&ortOption=priceSort&catId=408&cm_re=Global--Plans--Wireless%20PC%20Card%20Plans%20NationalAccess.

³² For technical background on how VoIP works see Intel White Papers, IP TELEPHONY BASICS, available at http://www.intel.com/network/csp/resources/white_papers/4070web.htm (last visited date); Susan Spradley & Alan Stoddard, Tutorial on Technical Challenges Associated with the Evolution to VoIP, Power Point Presentation, http://www.fcc.gov/oet/tutorial/9-22-03_voip-final_slides_only.ppt.

³³ See Vonage Web Site, available at: <http://www.vonage.com/lp/US/get1monthfree/>.

³⁴ John Markoff, *Microsoft Trying to Dominate the Internet*, THE NEW YORK TIMES

(July 16, 1996); available at: <http://www.nytimes.com/library/cyber/week/0716microsoft.html>.

³⁵ United State Government Accountability Office, BROADBAND DEPLOYMENT IS EXTENSIVE THROUGHOUT THE UNITED STATES, BUT IT IS DIFFICULT TO ASSESS THE EXTENT OF DEVELOPMENT GAPS IN RURAL AREAS, GAO 06-426 (May, 2006); available at: <http://www.gao.gov/new.items/d06426.pdf>; see also, WebSiteOptimization.com, U.S. Falls to 25th in Broadband Penetration Worldwide - US Broadband Growth Below OECD Average - April 2007 Bandwidth Report; available at: <http://www.websiteoptimization.com/bw/0704/>. Other assessments do place the United States at or near the top. See, e.g., Economist Intelligence Unit, THE 2007 E-READINESS RANKINGS (2007); available at: [http://a330.g.akamai.net/7/330/25828/20070420205432/graphics.eiu.com/files/ad_pdfs/2007Ereadiness_Ranking_WP.pdf\(ranking](http://a330.g.akamai.net/7/330/25828/20070420205432/graphics.eiu.com/files/ad_pdfs/2007Ereadiness_Ranking_WP.pdf(ranking) the U.S. 2d tied with Sweden).

³⁶ Letter from Ambassador David A. Gross, United States Coordinator, International Communications and Information Policy, Department of State to Mr. Angel Gurria, Secretary-General, Organization for Economic Co-operation and Development, April 24, 2007; available at: See http://www.ntia.doc.gov/ntiahome/press/2007/State_OECD_042407.pdf. United States Department of Commerce, National Telecommunications and Information Administration, Fact Sheet: United States Maintains Information and Communication Technology (ICT) Leadership and Economic Strength; available at: http://www.ntia.doc.gov/ntiahome/press/2007/ICTleader_042407.html.

³⁷ The Internet cloud refers to the numerous telecommunications and information networks that transport Internet traffic seamlessly and typically without delay. Network managers cooperate so well that the Internet appears as a user friendly “network of networks.”

³⁸ See Imran’s Everything Cellular, Worldwide cell phone market share 1st quarter, 2007 available at: <http://www.mobileisgood.com/statistics.php#current>.

³⁹ Network neutrality refers to the view that the Internet and other telecommunications and information processing networks should remain open, nondiscriminatory and largely managed by users rather than carriers. The principle supports end-to-end connectivity and the kind of access equality provided by “best efforts” network routing of traffic. Opponents of claim the concept would impose common carrier nondiscrimination responsibilities on information service providers, create disincentives for investment in NGN infrastructure and generate regulatory uncertainty. See Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Policy Statement, 20 FCC Rcd. 14986 (2005) (articulating network neutrality policy objectives); Rob Frieden, *Internet 3.0: Identifying Problems and Solutions to the Network Neutrality Debate*, 1 INT’L J. OF COMM., 461 (2007); available at: <http://ijoc.org/ojs/index.php/ijoc/article/view/160/86>; Rob Frieden, *Network Neutrality or Bias? -Handicapping the Odds for a Tiered and Branded Internet*, 29 HASTINGS COMM. & ENT. L.J. No. 2, 171-216 (2007); Brett Frischmann & Barbara van Schewick, *Yoo’s Frame and What It Ignores: Network Neutrality and the Economics of an Information Superhighway*, 47 JURIMETRICS J. (forthcoming 2007); Barbara van Schewick, *Towards an Economic*

Framework for Network Neutrality Regulation, 5 J. ON TELECOMM. & HIGH TECH. L. (forthcoming 2007); Barbara A. Cherry, Misusing Network Neutrality to Eliminate Common Carriage Threatens Free Speech and the Postal System, 33 N. KY. L. REV. 483 (2006); Bill D. Herman, *Opening Bottlenecks: On Behalf Of Mandated Network Neutrality*, 59 FED. COMM. L.J. 103 (Dec., 2006); Craig McTaggart, *Was The Internet Ever Neutral?*, paper presented at the 34th Research Conference on Communication, Information and Internet Policy, George Mason University School of Law, Arlington, Virginia (rev. Sep. 30, 2006); available at: <http://web.si.umich.edu/tprc/papers/2006/593/mctaggart-tprc06rev.pdf>; Tim Wu, *Network Neutrality, Broadband Discrimination*, 2 J. TELECOM & HIGH TECH L. 141 (2005); available at: <http://ssrn.com/abstract=388863>; J. Gregory Sidak, A Consumer-Welfare Approach to Network Neutrality Regulation of the Internet, 2 J. COMP. L. & ECON. No. 3, 349 (2006); Christopher S. Yoo, Network Neutrality and the Economics of Congestion, 94 GEO. L.J. 1847 (June, 2006); Adam Thierer, Are ‘Dumb Pipe’ Mandates Smart Public Policy? Vertical Integration, Net Neutrality, and the Network Layers Model, 3 J. Telecomm. & High Tech. L. 275 (2005); Christopher S. Yoo, Beyond Network Neutrality, 19 HARVARD J. L. & TECH. (Fall 2005); 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 (2004). Mark A. Lemley and Lawrence Lessig, *The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era*, 48 UCLA L. Rev. 925 (2001).

⁴⁰ Voice over the Internet Protocol (“VoIP”) offers voice communications capabilities, much like ordinary telephone service, using the packet switched Internet, for all or part of the link between call originator and call recipient. VoIP calls originating or terminating over the standard, dial up telephone network require conversion from or to the standard telephone network’s architecture that creates a dedicated “circuit-switched” link, as opposed to the ad hoc, “best efforts” packet switching used in the Internet. See Mark C. Del Bianco, *Voices Past: The Present and Future of VoIP Regulation*, 14 COMMLAW CONSPECTUS 365 (2006); Robert Cannon, *State Regulatory Approaches to VoIP: Policy, Implementation, and Outcome*, 57 FED. COMM. L.J. 479 (May, 2005); Sunny Lu, Note, *Cellco Partnership v. FCC & Vonage Holdings Corp. v. Minnesota Public Utilities Commission: VoIP’s Shifting Legal and Political Landscape*, 20 BERKELEY TECH. L.J. 859, 862 (2005); Chérie R. Kiser & Angela F. Collins, *Regulation on the Horizon: Are Regulators Poised to Address the Status of IP Telephony?*, 11 CommLaw Conspectus 19 (2003); Robert M. Frieden, *Dialing for Dollars: Should the FCC Regulate Internet Telephony?*, 23 RUTGERS COMPUTER & TECH. L.J. 47, 47-79 (1997).

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Internet-Protocol in the United States, the European Union, and the United Kingdom, 5 J. HIGH TECH. L. 161(2005).

⁴¹ “Rather than ‘broadcasting’ a constant stream of all available programs, as cable does and Verizon plans to do, IPTV stores a potentially unlimited number of programs on a central server, which users then call up on demand. SBC will not replace the copper lines that currently run into customer premises. Instead, to make sure there is sufficient bandwidth between the neighborhood node where the optical fiber terminates and the household premise, it will upgrade the DSL equipment currently at those nodes and in households with VDSL technology. At the household, the viewer will use the IP technology to send a signal to the SBC end-office to send a particular channel or video on demand selection. That signal will be sent over the same bandwidth used for data and VoIP service. In SBC's system, a single customer line will have enough bandwidth to support up to four active television sets per household at a time, or up to two HDTV channels at a time.” Charles B. Goldfarb, *Telecommunications Act: Competition, Innovation, and Reform*, Congressional Research Service 37 (Jan. 13, 2006); available at: <http://www.educause.edu/ir/library/pdf/EPO0635.pdf>; See also Micah Schwalb, *IPTV: Public Interest Pitfalls*, 5 J. TELECOMM. & HIGH TECH. L. 305 (Fall, 2006).

⁴² “TCP/IP routes packets anonymously on a ‘first come, first served’ and ‘best efforts’ basis. Thus, it is poorly suited to applications that are less tolerant of variations in throughput rates, such as streaming media and VoIP, and is biased against network-based security features that protect e-commerce and ward off viruses and spam.” Christopher S. Yoo, *Beyond Network Neutrality*, 19 HARV. J.L. & TECH. 1, 8 (Fall, 2005).

⁴³ See, e.g., Associated Press, *Comcast Admits Delaying Some Traffic* (Oct. 23, 2007), available at: http://www.nytimes.com/aponline/technology/AP-Comcast-Data-Discrimination.html?_r=1&oref=slogin.

⁴⁴ “[I]n Load Shift, Enron traders submitted false energy schedules and bids to the California market to create the appearance of congestion on a transmission line. This would trigger payments attached to easing congestion and let Enron profit from its own lies when it used its transmission rights to ease the sham congestion.” Mary Flood and Tom Fowler, *The Fall of Enron: Ex-Trader Pleads Guilty To Schemes; Prison, Fines Likely In California Deals*, THE HOUSTON CHRONICLE, Business, p.1 (Feb. 5, 2003).

⁴⁵ Joint Statement of Chairman Kevin J. Martin and Commissioner Deborah Taylor Tate Re: AT&T Inc. and BellSouth Corporation Application for Transfer of Control, WC Docket No. 06-74 (December 29, 2006); available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-269275A2.pdf.

⁴⁶ “The Commission has also used the term ‘high-speed’ to describe services and facilities with more than 200 kbps capability in at least one direction.” Federal Communications Commission, *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, GN 07-45, Notice

of Inquiry, 22 FCC Rcd. 7816, 7819 (2007), *citing Availability of Advanced Telecommunications Capability in the United States*, GN Docket No. 04-54, Fourth Report to Congress, 19 FCC Rcd 20540, 20551 (2004). In 2008 the FCC belatedly sought to assess broadband market penetration with greater specificity by using more granular census tract data to identify service areas and by using several different bitrates. Notice of Proposed Rulemaking, Development of Nationwide Broadband Data to Evaluate Reasonable and Timely Deployment of Advanced Services to All Americans, Improvement of Wireless Broadband Subscribership Data, and Development of Data on Interconnected Voice over Internet Protocol (VoIP) Subscribership, WC Docket No. 07-38, (rel. April 16, 1007); available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-07-17A1.doc; Report and Order and Further Notice of Proposed Rulemaking, 2008 WL 2404500 (rel. June 12, 2008); available at: http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-08-89A1.doc; *on partial reconsideration*, 2008 WL 2404528 (rel. June 12, 2008) (requiring wired, terrestrial fixed wireless, and satellite broadband service providers to report, for each Census Tract and each speed tier in which the provider offers service, the number of subscribers and the percentage of subscribers that are residential).

⁴⁷ “The Commission’s data collection program requires providers to list the Zip Codes in which the provider has at least one high-speed connection in service to an end user . . .” *High-Speed Services for Internet Access: Status as of June 30, 2006* at 3. “No consideration is given to the price, speed or availability of connections across the ZIP code.” S. Derek Turner, *Broadband Reality Check-The FCC Ignores America’s Digital Divide* (2005); available at: http://www.freepress.net/docs/broadband_report.pdf.

⁴⁸ Mark Twain popularized this saying attributed to British Prime Minister Benjamin Disraeli.

⁴⁹ See, e.g., J. Gregory Sidak, *A Consumer-Welfare Approach to Network Neutrality Regulation of the Internet*, 2 J. OF COMPETITION L. & ECON. 349 (2006), available at <http://www.jcle.oxfordjournals.org/cgi/reprint/2/3/349.pdf>.

⁵⁰ Federal Communications Commission, Number of Holding Companies Reporting High-Speed Subscribers by ZIP Code as of June 30, 2007; available at: http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/hzip0607.pdf. The 2006 report identified nine options. see http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/hzip0606.pdf.

⁵¹ *Wall Street Journal* columnist Walt Mossberg calculated the cutting edge 3G iPhone offered bitrates at not terribly blazing 200-500 kbps, still an improvement over 70-150 kbps previously available via AT&T’s EDGE network. See Walter S. Mossberg, All Things Digital, Newer, Faster, Cheaper iPhone 3G Software and Online Store Will Widen Its Versatility, But There Are Hidden Costs available at: <http://ptech.allthingsd.com/20080708/newer-faster-cheaper-iphone-3g/>. In light of all the claims of the United States having best in class wireless networks, the *Economist* magazine offers a far less sanguine assessment:

PITY us poor mobile-phone users in America. While the rest of the world enjoys network

speeds that let people watch television on the move, surf the mobile web in its living glory, download videos in a trice, or exchange video messages with one another, we celebrate Apple's launch of its iPhone 3G today as if were some great leap for mankind." Economist.com, Science and Technology, The iPhone's second coming, (Jul 11th 2008); available at: http://www.economist.com/research/articlesbysubject/displaystory.cfm?subjectid=7933610&story_id=11700916).

⁵² See Section 257 Triennial Report to Congress Identifying and Eliminating Market Entry Barriers for Entrepreneurs and Other Small Businesses, 22 FCC Rcd. 21132 (2007).

⁵³ See Organization for Economic Co-operation and Development, OECD Broadband Portal; Table 1d, Broadband subscribers per 100 inhabitants (Dec. 2007); available at: <http://www.oecd.org/sti/ict/broadband>.

⁵⁴ See Richard A. Epstein, *Takings, Commons, and Associations: Why the Telecommunications Act of 1996 Misfired*, 22 YALE J. ON REG. 315, 336-47 (2005); Michael A. Heller, *The UNE Anticommons: How the FCC Deters Broadband Innovation*, 22 YALE J. ON REG. 275 (2005); Daniel F. Spulber & Christopher S. Yoo, *Access to Networks: Economic and Constitutional Connections*, 88 CORNELL L. REV. 885, 889 (2003); J. Gregory Sidak & Daniel F. Spulber, *Deregulatory Takings and Breach of the Regulatory Contract*, 71 N.Y.U. L. REV. 851, 875 (1996).

⁵⁵ CableCard refers to a small card that consumers can insert into a slot located on most new television sets that will provide digital rights management and authorization for cable television subscriber access to digital content, including premium channels.

⁵⁶ Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices, CS Docket No. 97-80, Second Report and Order, 20 FCC Rcd 6794 (2005), *pet. for review denied*, Charter Communications, Inc. v. FCC, 460 F.3d 31 (D.C. Cir. 2006).