

Before the
FEDERAL COMMUNICATIONS COMMISSION Washington, DC 20554

In the Matter of)	GN Docket No. 09-191
Preserving the Open Internet)	WC Docket No. 07-52
Broadband Industry Practices)	
)	

MEANINGFUL NET NEUTRALITY STARTS AT THE LAST MILE:
KEY ECONOMIC AND POLICY REQUIREMENTS FOR MEANINGFUL NET
NEUTRALITY POLICY AT THE LAST MILE

REPLY COMMENTS OF THE
NATIONAL LAWYERS GUILD,
COMMITTEE ON DEMOCRATIC COMMUNICATIONS

Respectfully submitted,

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Executive Summary

On the Internet, economic and social problems spring from the same source, a lack of competition at the last mile.

The Internet market is a duopoly at the last mile. As a result, ISPs have disproportional power in controlling users' right to connect. Network Neutrality regulations are needed to separate ISPs as wholesale broadband Internet providers from ISPs as last mile Internet providers, to increase competition along the last mile. This will benefit users because increased competition will protect users from unreasonable network management practices like blocking and degrading Quality Of Service (QoS), while keeping the price of QoS and bandwidth low.

A solution needs to generate competition at the last mile. Regulating the existing duopoly is not a proper solution because users would be left with regulated monopoly prices. Since broadband Internet is a natural monopoly, building more broadband pipelines is unlikely and probatively more expensive. The current pipelines need to be opened to competition, or limits need to be placed on how many networks a given ISP can control. Mandating ISPs to open the existing pipelines is the best short-term option. Allowing competition to lease pipe

space and install its own maintenance equipment can reduce the cost to enter the market and increase user choice.

There are many models for opening broadband pipelines. The most common form is an incumbent leasing pipeline to competition. The United Kingdom has a virtual separation model, in which the incumbent Telecom was required to separate retail and wholesales division. “The wholesale division manages the pipes, and the retail division sells broadband and other services in competition with many other broadband service providers.” This approach to opening the pipelines should be adopted in the United States because it addresses ISPs internal conflict of interests. Under this approach, network management practices have less incentive to discriminate against individual users or applications. Removing network management from ISPs is vital to the preservation of Network Neutrality. This approach may discourage large investments in building or improving networks; however, competition at the last mile will encourage new forms of technology including new forms of Internet access. Furthermore, the resale of pipeline is a limited resource with high demand, so it is likely that the resale will be a valuable endeavor.

Opening the existing pipelines is not sufficient to protect the social welfare of users. Therefore the FCC needs to adopt and codify the right to connect.

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I. Introduction

The National Lawyers Guild was founded in 1937 on the proposition that human rights are more important than property rights. Throughout its 63 year existence it has worked with progressive human rights organizations and individuals to make sure that they have access to the legal system and that it serves rather than impedes their efforts. The Committee on Democratic Communications focuses on the right of all peoples to a world-wide system of media and communications based upon the principle of cultural and informational self-determination. The Committee formed in 1987 to work for the First Amendment and for the Right To Communicate as an international human right. The Committee supports independent media organizations and forms of communication, such as micro-radio, public access television, and grass roots cyberspace resources, and works to ensure that they can function free from government or big business control. The Committee offers legal advice and representation to groups and individuals seeking to establish and sustain such forms of communication.

Most Network Neutrality debate has been limited to two approaches, the Antitrust-economic approach and the First Amendment-social & regulatory approach.

Most analysis attempts to use each approach in isolation rather than in conjunction. The analysis in this Comment applies aspects of both approaches to find a solution to increase competition at the last mile. The proper approach to improving consumers' social and economic welfare is to protect, by regulation and statute, the Four Internet Freedoms previously enunciated by the then chair, Michael Powell, of the Commission as the "Right to Connect", this requires the Commission to protect and promote Network Neutrality.

We can think of the Internet as electricity. A user plugs a device into an electrical socket, and the device receives power. Electricity is generated regionally at a power plant by converting coal, nuclear, solar, or other source. The electricity travels from these regional hubs over networks via power lines, until a power line connects the user's home to the network. Manufacturers can produce devices that use electricity. The manufacturers know the standard format for electricity, and they know the electric provider will not degrade the quality of service nor block access of individual homes or devices.

The Internet is similar to electricity because it is delivered to individual users via a vast series of networks. A user plugs an Internet enabled device to an Internet supply, and the device connects to the Internet. One of the greatest appliances that consumers plug into the Internet is the World Wide Web, networks of hyperlinks connecting users whose Web-enabled devices speak a common language to communicate and link to each other. The Internet's many uses are due largely to the open nature of its structure. The same way producers rely on electricity to operate uniformly for all consumers, Internet content and application providers have developed a similar reliance of uniform operation.

The Internet has fundamentally changed economic and social life in a few short years. What began as a tool for academics to share text electronically has transformed into a more efficient way of life. Network Neutrality proponents believe the Internet's development is

because of the physical design itself, an open and neutral series of layered networks. That is, a non-neutral Internet is an oxymoron. However, the same physical design of the networks has created a market with very high entry and maintenance costs. Phone and Cable telecommunication companies currently dominate this market because its existing networks allow IP data to travel at fast and reliable speeds. Specifically, these telecommunication companies control the “last mile” Internet access to each individual customer. Network Neutrality proponents fear that this duopoly will use its market power to harm consumer welfare by managing the networks in anticompetitive ways such as blocking and degrading the quality of service. Network Neutrality proponents also fear that this duopoly will harm social welfare by censoring and restraining access to Internet content and applications. Therefore, this Comment proposes that legislation is needed to stimulate competition in the last mile Internet service while furthering the principles set forth in the Four Internet Freedoms.

The first section of this Comment will explain the impact of broadband’s natural monopoly on the human right of the Right to Connect, and the importance of the Internet as a public forum. The natural monopoly of broadband Internet access held by Cable and DSL creates a lack of competition at the last mile of service to E-commerce and individual Internet users. From this common source springs two problems, economic and social harms. The CDC is concerned with protecting two intertwined rights, individual users’ and third parties’ right to access any legal content or applications, and protecting the First Amendment rights of all Internet users. The first right protects the economic welfare of users and producers by preventing unreasonable constraints upon innovation. The First Amendment protects the social welfare users have come to expect and rely upon from Internet access.

In 2004, then chairman of the FCC, Michael Powell, recommended the Four Internet Freedoms, to encourage the migration from slower Internet connections towards faster Internet connections, specifically broadband.¹ The CDC has incorporated these freedoms by advocating for users to have the right to access any legal content or application, the right to attach any legal device to their home network, and the right to receive quality information about the Internet services. These freedoms combine to protect users’ economic and social welfare in what we call the Right to Connect.

The Internet is a public forum, and the freedom of speech needs to be protected on this forum. Examples of ISPs restricting speech are not as obvious or egregious as violations of the anticompetitive behavior, however, the potential for such violations are present. The same network management argument can be used by ISPs to block or degrade access to content or the market place of ideas with little oversight.

The next section describes the internal conflict of interests facing ISPs, and how they have used anticompetitive behavior in response to this conflict. Essentially, ISPs argue that to maintain the integrity of the entire network, ISPs need to restrict certain applications and content through network management practices. This resolves some network congestion, but some network management practices have become unreasonable by encroaching further and further upon users’ right to connect and First Amendment rights. Two examples of unreasonable

¹ Powell, M. (2004, Feb 8). *hraunfoss*. Retrieved Feb. 27, 2009, from hraunfoss: http://hraunfoss.fcc.gov/edocs_public/attachmach/DOC-243556A1.pdf.

network management practices shows that affirmative action is required addressing the internal conflict of interest. Blocking, the denial of access, was done by a relatively small ISP provider because it disfavored VoIP technology. Degrading Quality of Service (“QoS”), reducing or altering data sent or received by a particular user, was done by one of the largest players, Comcast, because they disfavored peer-to-peer technology. These examples provide the evidence that an internal conflict of interests exists and needs to be addressed.

The last section offers a solution for resolving the problems caused by the natural monopoly. Mandated opening of the pipelines to competition is not the magic bullet, but it can bring new competition to the last mile and promote disclosure of network management practices as selling points. The right to connect and First Amendment rights are also furthered by this separation approach. Violations of the right to connect also violate First amendment rights when the network management practices target content. Thus, the separation of wholesale broadband Internet access from retail user sales will reduce the fear that ISPs will abuse its power to censor content on the Internet or otherwise block access to the Internet as a public forum. Anti-child pornography laws are examples of a government mandated reasonable network practices that benefits society. However, the decision to censor content should not be left to the discretion of ISPs. Only an open, neutral, separated network can provide the continued guarantee of the right to connect, and the access to the Internet as a public forum.

II. Natural Monopoly’s impact on the Right to Connect

The Network Neutrality debate is focused on solving the problem of congestion. ISPs would like to resolve congestion by using reasonable network management to discriminate against certain kinds of packets. By charging higher fees for higher QoS, ISPs believe they will generate the capital needed to expand their networks. Proponents of Network Neutrality believe the solution to congestion is greater competition along the last mile. Competition will force ISPs to offer better QoS and lower prices under traditional free market principles. Furthermore, ISPs have demonstrated bad faith by violating the Four Internet Freedoms in previous network management practices like blocking and degrading QoS. As technology improves, ISPs unreasonable network management practices are becoming more difficult to detect and remedy. Since ISPs have violated the Four Internet Freedoms in the past, legislation is needed to prevent future violations. Violations of the right to connect violates the First Amendment guarantee of free speech and public forum, as will be discussed later.

a. The Four Internet Freedoms: the Right to Connect

In 2004 Michael Powell, then Chairman of the FCC, proposed Four Internet Freedoms to promote the migration of consumers toward broadband Internet access.² This proposal accompanied Congressional findings to the benefits of broadband Internet services to support broadband’s adoption and deployment nationwide.³ The FCC in a non-binding policy statement

² Powell, M. surpa note 2, at 8 The Four Freedoms are: First, consumers should have access to their choice of legal content. Second, consumers should be able to run applications of their choice. Third, consumers should be permitted to attach any device they choose to the connection in their homes. Fourth, consumer should receive meaningful information regarding their service plans.

³ 47 U.S.C.A. § 1301, 1302, 1304.

adopted these freedoms.⁴ In combination, the four freedoms create a consumer expectation of freedom to connect to whatever applications and whatever content they choose. The accompanying responsibility to this right is for ISPs not to discriminate against applications or content by tampering with network management to their competitive advantage, or to the competitive advantage of the highest bidder. This right to connect and the accompanying responsibility needs to be protected by law.

The right to connect incorporates both consumer social and economic welfare. Economic welfare is protected by the freedoms to connect devices to your home network, and the right to competition among network providers, applications, and service providers. Social welfare is protected by the freedoms to access content, run applications, and use services of their choice. The right to connect was a given at the dawn of the Internet, and fueled its rapid development, but that right is at risk from those who would suppress it in order to capitalize on the value inherent in that right – a value they did not create but, rather, was created by the policies adopted by the originators of the Internet and by the connectivity itself. Only legislation can preserve the right to connect that has allowed for innovation and competition on the Internet to thrive.

b. The Public Forum

Network Neutrality should be legislated incorporating the principles of the First Amendment to protect the social welfare of Internet users. The same unreasonable network management practices that hinder competition poses an even greater harm of violating the First Amendment rights of Internet users. The First Amendment includes access to public forums from which to speak. The Internet, although privately owned in large part, has become a public forum for speech. The government has the least ability to restrict speech in traditional public forums like parks, sidewalks, and streets because “in places which by long tradition or by government fiat have been devoted to assembly and debate, the rights of the state to limit expressive activity are sharply circumscribed.”⁵ Private property can become a public forum from which the marketplace of ideas thrives the more the owner opens the property for public use.⁶ The Internet itself would not be the Internet but for its public forum nature.

There are three basic types of public forums traditional, voluntarily open, and non-traditional.⁷ Traditional public forums such as streets and parks are held in the public trust and used for the purposes of expressive activity with a principal purpose of promoting the free exchange of ideas.⁸ Since its inception, the Internet’s principal purpose is the promotion of the free exchange of ideas in the form of emails, e-bulletin boards, blogs, and other forms of

⁴ Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, Policy Statement, 20 FCC Rcd. 14,986, p 4-5.

⁵ Perry Educators’ Association v Perry Local Educators’ Association, 460 U.S. 37 (1983).

⁶ Marsh v Alabama, 326 U.S. 501 (1946) (A Jehovah’s Witness was arrested for leafleting on the sidewalks. Her arrest was overturned by the Supreme Court which held, “the more an owner, for his advantage, opens up his property for use by the public in general, the more do his rights become circumscribed by the statutory and constitutional rights of those who use it.”)

⁷ Stone, S. S., *The First Amendment*, 316, Austin: Aspen Publishers Third edition ed. 2008.

⁸ *Id.* at 301.

expression. This interest is the key to the Network Neutrality debate because ISPs have the technology and motive to prevent, control and monitor the free exchange of ideas.

Any individual, group, organization, or company can create a webpage, post blogs, use social networks, or an array of other Internet applications to inform a wide array of people about issues that concern them. The Internet allows users to circumvent traditional barriers to mass media communications. ISPs should not have the discretion of which voices are heard on the Internet because ISPs own and maintain the current barriers to older forms of mass media communication. The public forum doctrine promotes three important goals. First, it ensures that speakers can have access to a wide array of people to press the concerns that other citizens may forget.⁹ Second, it allows speakers to have access to specific people and specific institutions with whom they have a complaint.¹⁰ Third, it increases the likelihood that people generally will be exposed to a wide variety of people and views.¹¹ The Internet embodies these same goals. For example the Internet application the World Wide Web gives users connectivity and access to a wide array of people far greater than any street, park, or sidewalk. A user can input the proper URL or conduct a web search using other websites to locate content, upload or download content, or store content about issues concerning them. This is in accordance with the first goal of the First amendment.

As commercial industries adapt to an Internet based economy, they avail themselves more on the Internet, which promotes the second goal of the Public Forum doctrine access to specific people and institutions. Companies dedicate web pages to allow consumers to post questions, reviews, complaints, or comments. In fact, the Internet has allowed for consumers with similar problems to communicate and troubleshoot together. This also promotes the third goal of public forum exposing people to a wide variety of views. The Internet currently allows for individuals to research various views for a relatively low cost and high convenience Thus the Internet supports important goals of the First Amendment, and provides a better forum for the expression of ideas.

ISPs can prevent all the benefits and functions of the Internet by discriminating at access points along the last mile. ISPs have the technology to violate this important First Amendment right using the same unreasonable network management practices of blocking and degrading. Current network management practices allows for such discrimination.¹² Madison River provides an example of the direct prevention of idea exchange. Madison River disfavored third party VoIP, so it denied access to VoIP technology, which prevented the free exchange of ideas of customers communicating via long distance phone calls using third party VoIP service. Comcast disfavored peer-to-peer technology, so it prevented the exchange of ideas among any peer-to-peer communications. Although content has not been directly targeted like emerging

⁹ Stone, S. S., *surpa* note 46, at 301.

¹⁰ *Id.*

¹¹ *Id.*

¹² For example, an ISP can disagree with a particular website's content and decide to disrupt any attempted connection to the site by slowing the connection speed at a router. The ISP can make a similar argument to Comcast's argument that during peak Internet usage, this particular site is overcrowded and slowing the network, therefore the ISP degrades the QoS of that site in favor of QoS for the rest of the network.

technologies have been, ISPs have demonstrated the ability to adversely affect applications they disfavored.

Network Neutrality is critical to the continued First Amendment rights and goals expressed on the Internet. ISPs blocking access to content and applications have an adverse effect on both innovation and demand. Maintaining equal access to the Internet by both users and content providers is vital to the Internet's survival as new technologies and content transforms the way the Internet is used. More is needed than ISPs promise to not engage in discriminatory, arbitrary, and anticompetitive practices.

Internet users have come to expect the freedom to choose between applications and content and to expect their choice to be treated equally. The CDC supports the concept that any form of network management needs to be narrowly tailored to addressing a specific issue of performance. The threat of Network congestion is not sufficient to allow for unreasonable denial of the right to connect, nor censorship of content and applications that violate First Amendment rights. ISPs have an internal conflict of interest in how to participate in E-Commerce. They can participate as wholesale providers of the Internet, a neutral platform with tiered pricing, to allow for all applications to run at optimal levels. Additionally, ISPs can participate as application and content producers, and must be preventing from favoring their own network, applications, and content to the disadvantage of competition. Therefore, Federal legislation guaranteeing Network Neutrality is needed to ensure the continued success of the Internet.

III. Economics of the Internal Conflicts of Interest for ISPs

a. The Economics of the Internal Conflict of Interest for ISPs

ISPs are currently experimenting with network management techniques to take competitive advantage of Internet access points and routers, which will make E-Commerce anticompetitive. ISPs are programming routers to adversely affect competing producers by denying uniform QoS, and by denying users freedom to connect. Blocking and degrading quality are especially disturbing practices that highlight the need for legislation. The broadband market duopoly combined with significant conflict of interest presents a grim future for Internet users, unless Network Neutrality legislation is passed.

Blocking occurs when ISPs degrade or prevent its users from accessing specific Internet content or applications. Blocking is the most basic form of a non-neutral network because it allows ISPs the ability to restrict how consumers use the Internet. Blocking often occurs when an ISP is attempting to preserve or gain a competitive advantage as a market supplier. Degrading is similar, and an attractive tool when third parties are allowed to bid for the ISP's higher QoS to the detriment of competitors' QoS. Just as blocking may be used by the ISP to preserve its own market interests as a content supplier, the ISP's market interests will also favor the highest bidder among unaffiliated content suppliers.

The most famous blocking was not done by an industry giant like Comcast; rather it was by Madison River Communications, which had 238,675 connections in service in 2006.¹³ Madison River was blocking their consumers' connections to VoIP services to preserve their long distance telephone service.¹⁴ The matter was quickly settled, and Madison River paid a small fine agreeing to stop blocking third party VoIP applications.¹⁵ However, this case is illustrative of the internal conflicts of interest facing today's ISPs. Madison River had a conflict between adopting a new technology to offer its own version of VoIP to compete with third parties, or to block users access to competing companies connecting with users on its network. Madison River choose to block access. Critics of Network Neutrality cite this case as evidence that no regulation is needed because the practice was stopped; however they fail to address the ever-present conflict of interest. This blatant form of prior restraint and censorship was quickly found and disposed of, but the conflict of interest was never resolved. The case did not mention that Madison River was the only provider of both telephone and Internet services, nor how this internal conflict of interest led to unreasonable network management practices. This internal conflict can easily be masqueraded as network management, however one cannot overlook the influence this conflict generates.

Now blocking is done much more ingeniously as a form of network management called "delaying". The current Internet configuration as described above creates bottlenecks of packets at routers, and delays are expected and random. Programming routers to discriminate between packets can exacerbate or reduce delays. For example, user A can send an email, while user B is streaming a movie. A router can delay some of the packets of email data in favor of packets of streaming video data. User A, the emailer, does not notice the delay in the email they receive, while the quality of the video is not lessened by excessive delays. This is positive network management and society may benefit from this example of reasonable network management. ISPs now want to charge a higher fee in exchange for lessening delay times by manipulating this reasonable network practice.

The difference between delaying and blocking is semantics. In 2008, Comcast was fined and reprimanded for a practice of degrading peer-to-peer communications.¹⁶ Comcast disfavored peer-to-peer transmissions, so it monitored its customers' TCP connections to find how many disfavored uploads each customer was responsible for.¹⁷ If Comcast, based on internal policies and practices, determined there were too many peer-to-peer uploads for a given geographic region, then Comcast would terminate some connections by sending reset packets to each user.¹⁸ Users experienced extraordinary delays in the transmission of all content sent via peer-to-peer technology. This practice prevented users from exchanging ideas and content because their ISP disfavored the technology they used. "In layman's terms, Comcast opens its

13 www.madisonriver.net/about_us/who_we_are.php

14 Nuechterlein, *surpa* note 4, at 27.

15 *Id.*

16 In the matters of formal complaint of Free Press, 2008 WL 3862114 (FCC Aug. 1, 2008). The fine was for routing packets based on its contents rather than its destination. Although the U.S. Court of Appeals for the D.C. Circuit overturned it, *Comcast Corp. v. FCC*, No. 08-1291 (April 6, 2010), the Court of Appeals did not disturb the FCC's findings, but only its authority to address the issue under the *Free Press Order's* posture.

17 *Id.* at 13

18 *Id.*

customers' mail because it wants to deliver mail not based on the address or type of stamp on the envelope but on the type of letter contained therein."¹⁹

In addition to discriminating against peer-to-peer connections, Comcast compounded its malfeasance by withholding its "network management" practices from customers. A free market requires information about a supplier's prices and services. Consumers need to know that Comcast discriminates against peer-to-peer technology to make an informed decision about which ISP to choose. The FCC found "Comcast's practice selectively blocks and impedes the use of particular applications, and [the FCC] believe[s] that such disparate treatment poses significant risks of anticompetitive abuse."²⁰ The FCC also defined a reasonable network management test as the "practice should further a critically important interest and be narrowly or carefully tailored to serve that interest."²¹ Although this test is not binding, it does illustrate the need for regulation for Network Neutrality and the prevention of unreasonable network management practices.

b. Network Management Practices

Network Neutrality has two tenets: a ban on blocking consumer's access to content or applications "anti-blocking", and regulation of contracts between ISPs and content or application providers. The right to connect is incorporated in these tenets because the tenets address consumer social and economic welfare. Network Neutrality is the freedom for a user to connect to any legal content and run any legal application. From this basic assumption, E-commerce can thrive on the producer's certainty that its data, goods and services will be treated equally. This is distinct from the position that all content and applications should be charged the same amount. Network Neutrality is not promoting a free Internet; rather it promotes an equal one. "A communications network like the Internet can be seen as a platform for a competition among application developers. Email, the web, and streaming applications are in a battle for the attention of end-users."²² Therefore a neutral network is vital to E-commerce because it prevents anti-competitive behavior like blocking or degrading QoS, which is detrimental to consumer's economic welfare by offering access to the platform of competition. Indeed, such behavior actually dismantles the Internet, converting it into a privately negotiated system of interconnected *intranets*.

ISPs can use its dominant market power to adversely affect users and producers access speed and QoS by using unreasonable network management practices. "In most of the country, one or two providers dominate the market and therefore enjoy substantive market power over price and quality of service."²³ For example, Verizon could degrade or block the QoS for third party VoIP applications attempting to use Verizon's network while promoting the quality of their own VoIP service. End-users will use these applications, not have a pleasant experience, blame

19 Id. at 15.

20 Id. at 18.

21 Id.

22 Wu, T. supra note 17, at 153.

23 Herman, B. D. (2006). Opening the Bottlenecks: On Behalf of Mandated Network Neutrality. Federal Communications Law Journal , 104-155, 125.

the third party provider for the poor service, and either switch to Verizon's VoIP service or not adopt the new technology. Similarly, Quest Communications could favor a particular politician and block or degrade the QoS for all the opposing party's websites, emails, and other content. An ISP can easily violate a user's First Amendment rights while pursuing economic goals. Network Neutrality proponents recognize this overlap, and are concerned that the current duopoly composition of Broadband Internet access will allow for ISPs to continue to pursue higher profits to the detriment of consumers' economic and social welfare.

The current landscape of Broadband Internet access is a duopoly. "Today, cable and DSL providers control almost 98 percent of the residential and small-business broadband market."²⁴ In fact the market concentration of this duopoly has increased from 94.5 percent in 1999 to 97.5 percent in 2004 as more Americans adopt the better performance of Broadband speed Internet.²⁵ The duopoly is furthered by the natural monopoly characteristics of Broadband Internet. Like water, electricity, and sewage pipes, building duplicative piping for Broadband Internet access would "cost an enormous amount of money, significantly outweighing any consumer benefits from more competition."²⁶ This high cost to both the producer and society is why most homes only have one water, electricity, and sewage pipelines. A natural monopoly or duopoly eliminates competition at the last mile. Therefore, the duopoly of broadband Internet access will always have little to no competition at the last mile. Legislation in favor of Network Neutrality needs to address this broadband duopoly by opening access of existing pipelines while limiting the network management practices of current ISPs.

Consumers' First Amendment rights are also in danger of being violated by ISPs unreasonable network management practices. Currently routers do not look to the content, application, or service of the data they transfer. ISPs believe this nondiscrimination combined with the Internet's shift from being text-based to image-based causes inefficient networks and bottlenecks. The CDC believes that competition at the last mile will force ISPs to become more efficient and transparent in its network management practices or risk losing customers. Moreover, the CDC seeks to preserve free speech and public forum that the Internet's unique structure can provide. The Internet is a marketplace of ideas for education, politics, economics, art, health, and every other conceivable viewpoint and content. The same network management practices that threaten the economic viability of the Internet pose an even greater danger to the marketplace of ideas the Internet provides. The Internet was invented for scientist to share research, and has remained committed to the goal of connecting people and ideas. Network Neutrality preserves this goal of free speech because the network is designed to move data, and not to read and discriminate between data according to source, destination or content, based on economic incentives provided by those wishing to communicate, or by the ISP's own economic interests in suppressing or favoring certain communications.

²⁴ Herman, *supra* note 30, at 126.

²⁵ *Id.* at 129.

²⁶ Atkinson, R. D. (2009). The Digital Broadband Migration: Information Policy for the Next Administration. *Journal on Telecommunications & High Technology Law* (Winter), 1-18.

IV. Conclusion

As pointed out above, the Internet market is a duopoly at the last mile. As a result, ISPs have disproportional power in controlling users' right to connect. Network Neutrality regulations are needed to separate ISPs as wholesale broadband Internet providers from ISPs as last mile Internet providers, to increase competition along the last mile. This will benefit users because increased competition will protect users from unreasonable network management practices like blocking and degrading QoS, while keeping the price of QoS and bandwidth low.

There are many models for opening broadband pipelines. The most common form is an incumbent leasing pipeline to competition.²⁷ The United Kingdom has a virtual separation model, in which the incumbent Telecom was required to separate retail and wholesales division.²⁸ "The wholesale division manages the pipes, and the retail division sells broadband and other services in competition with many other broadband service providers."²⁹ This approach to opening the pipelines should be adopted in the United States because it addresses ISPs internal conflict of interests. Under this approach, network management practices have less incentive to discriminate against individual users or applications. Removing network management from ISPs is vital to the preservation of Network Neutrality. This approach may discourage large investments in building or improving networks; however, competition at the last mile will encourage new forms of technology including new forms of Internet access. Furthermore, the resale of pipeline is a limited resource with high demand, so it is likely that the resale will be a valuable endeavor.

The right to connect and First Amendment rights are also furthered by this separation approach. Violations of the right to connect also violate First amendment rights when the network management practices target content. Thus, the separation of wholesale broadband Internet access from retail user sales will reduce the fear that ISPs can censor content on the Internet or otherwise block access to the Internet as a public forum. Anti-child pornography laws are examples of how government mandated reasonable network practices could benefit society. However, the decision to censor content should not be left to the discretion of ISPs. Only an open, neutral, separated network can provide the continued guarantee of the right to connect, and the access to the Internet as a public forum.

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²⁷ Atkinson, supra note 33, at 15.

²⁸ Id.

²⁹ Id.