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Introduction

Defining Net Neutrality

The Internet¹ as it is known today has become more than just a medium of communication; it is a tool that can both grant and deny users freedom, power, and mobility. The meanings users attribute to the Internet vary tremendously, as they interpret and reinterpret the purpose of the Internet with each use. Despite how necessary and integrated the Internet has become to many citizens' daily lives, it is not immune to misuse and misinterpretation. Also at play are private, moneyed interests that do not reflect the liberatory politics believed to be brought about by Internet use.

The recent question of the Internet's legal regulation has called into question its broader purpose, limits, and political bias. In the last decade, the details of such regulation have become key points of deliberation and contention among experts and everyday users alike. The current and potential future attempts by government and the Federal Communications Commission (FCC) to contain the Internet's rapid sprawl through regulation give rise to technical and philosophical dilemmas for users as well as for providers of Internet content and service.

Currently an adviser to the New York State Attorney General, Tim Wu coined the phrase "Net Neutrality" (short for "Network Neutrality") in his 2003 paper *Network Neutrality, Broadband Discrimination*. Wu and his mentor (and co-founder of the non-profit organization Creative Commons) Lawrence Lessig were among many pioneering voices in Internet freedom advocacy who popularized the issue of Net Neutrality. Net Neutrality refers to

¹ Throughout this thesis, "Internet" refers to both the physical network of interconnected cables and computers as well as the virtual network of websites, via the World Wide Web.

the debate over the extent to which the Internet should be federally regulated; this regulation involves not only the providers of Internet service but also the data and technical infrastructure that physically and virtually make up the Internet. Another concern is whether and how the Internet should be legally classified, and the consequences of this classification for different types of users. In his 2003 paper, Wu defines network neutrality broadly as “a system of belief about innovation policy” that is itself made possible through “open access and broadband discrimination.”² Open access, according to Taylor Reynolds of the Directorate for Science, Technology, and Industry in the Organisation for Economic Cooperation and Development, refers to “an arrangement where network providers offer capacity or access to all market participants under the same terms and conditions. Operators of open access networks must allow competitive access to the network on non-discriminatory terms.”³ Broadband discrimination advocates, on the other hand, believe bandwidth demand itself should drive network policy, not specific Internet content and application demand.

While the Internet’s internal open and flexible infrastructure allows for competition and diversity, “the traditionally modular and layered nature of the Internet” could be at risk if “a dominant provider in any one layer of the Internet [acts] in ways that stifles competition and innovation in adjacent layers with the effect of reducing overall consumer welfare.”⁴ In other words, if a powerful broadband Internet service provider were to charge content providers and customers for higher speed access to certain content over others (i.e., a wealthy user who can pay

² Tim Wu, 2003. Network Neutrality, Broadband Discrimination. *Journal of Telecommunications and High Technology Law*, 2. 144. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=388863

³ Taylor Reynolds, “The Role of Communication Infrastructure Investment in Economic Recovery.” *OECD Directorate for Science, Technology, and Industry*. 19 May 2009. p. 25. <https://www.oecd.org/sti/broadband/42799709.pdf>

⁴ Jonathan Nuechterlein and Philip Weiser, *Digital Crossroads: Telecommunications Law and Policy in the Internet Age*. 187. Cambridge, MA: MIT Press, 2013. Print.

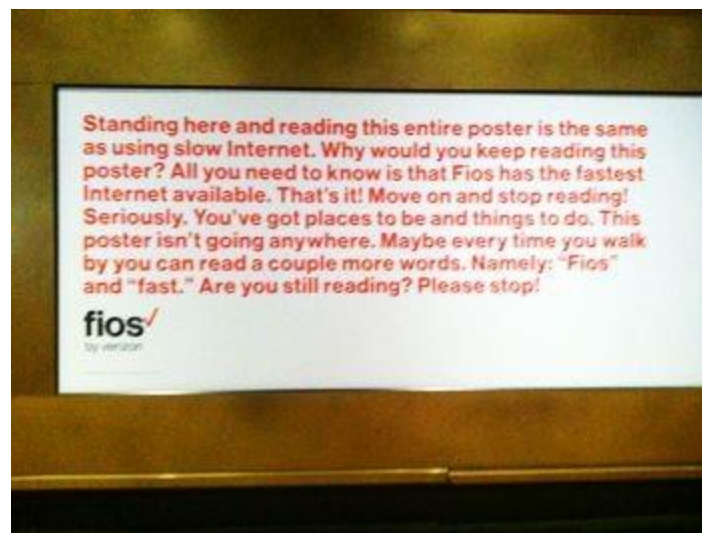
more for a faster Netflix stream versus a less wealthy user having only enough money for lower speed access), would the Internet be network neutral? And if not, what is the value in preserving a “neutral” network and technology? What are the roots of protest to a non-neutral web? In such a case of a “dominant provider” hampering others’ innovation and welfare, the decisions of whether the government intervenes, as well as when and how, could set precedents for future decisions regarding the federal regulation of critical information and communication technologies yet to be imagined.

Communicating Net Neutrality

In 2015, Verizon Fios® installed massive signage in Grand Central Terminal that asserted, in bold red letters, that “All Internet is not created equal.” They want to convey that they have the fastest service available, and any choice made otherwise is an utter waste of time. None of these posters indicates what this superior service costs. How would a prospective customer – say, a recent college graduate penny-pinching in New York City – know if this service is worth its price tag? What is an alternative for this customer? If the Internet is “created” through coded data transmission, does Verizon mean to imply that the unequal treatment of data is not “creating” an “equal” web? Or are they using speed as a mere selling point?



"All Internet is not created equal."



"Standing here and reading this entire poster is the same as using slow Internet . Why would you keep reading this poster? All you need to know is that Fios has the fastest Internet available. That's it! Move on and stop reading! Seriously. You've got places to be and things to do. This poster isn't going anywhere. Maybe every time you walk by you can read a couple more words. Namely: "Fios" and "fast." Are you still reading? Please stop!" [Photos taken by Divya Pathak, 30 September 2015]

A different communication of the Net Neutrality debate came from John Oliver, a British comedian and the host of a late-night political satire talk show called *Last Week Tonight*. Episodes air on Home Box Office (HBO), but are also all available for free on YouTube. In June of 2014,

he humorously and informatively dedicated one of these episodes to the issue of Net Neutrality.⁵ By urging viewers to demand that the FCC uphold a neutral net, Oliver inspired thousands to flood the FCC's website with written comments. This caused its website to crash. Oliver also questioned the appointment of current FCC Chairman, Tom Wheeler. To Oliver's comment that appointing Wheeler to oversee Net Neutrality -- given that he previously lobbied for cable and broadband corporate interests -- could be likened to parents allowing a dingo to babysit their child, Wheeler responded: "I would like to state for the record that I am not a dingo."⁶



These ads and Oliver's attention show how the issue of Net Neutrality is increasingly entering the public sphere and being publicly challenged. The implications are complex: Why would it matter whether certain content is privileged over other content? Can users, if they even care to, conceptualize data transfer, treatment, and even general speed? Are telecommunication providers' interests and decisions informed by end users' relationships with the Internet at all? How do the variety of user experiences impact current efforts at Internet regulation from the FCC, if the FCC is even the right place to be making definitive decisions about the Internet?

⁵ John Oliver, "Last Week Tonight with John Oliver: Net Neutrality." Youtube video, 13:17. Posted [1 June 2014]. <https://www.youtube.com/watch?v=fpbOEoRrHyU>

⁶ Tom Risen, "FCC Chairman Tom Wheeler: 'I Am Not a Dingo.'" *U.S. News and World Report*. 13 June 2014. <http://www.usnews.com/news/blogs/washington-whispers/2014/06/13/fcc-chairman-tom-wheeler-i-am-not-a-dingo>

These two examples of communicating Net Neutrality -- Verizon's advertisements and John Oliver's show -- prompt these questions and help shape the scope of my investigation. I set out to argue that considering the Internet's history, technical infrastructure, and social flexibility as a technology, the current regulatory framework upheld by the FCC is limiting and the debate of its "neutrality," misdirected. As the Net Neutrality debate continues, the American public must re-evaluate and expand its understanding of Internet technology and of the government's hand in Internet regulation; furthermore, the public must question whose voices have the final say.

I begin by uncovering the Internet's technical infrastructure. Having a basic technical literacy is essential to engaging with the Net Neutrality debate. The public can more actively participate in the decision-making process once it has learned the information that is often left reserved for the "experts." Chapters 2 and 3 present histories that will help readers understand the current state of debate: Chapter 2 details the history of AT&T, the modern telecommunications industrial giant and its continued presence beneath the surface of policy debate. In chapter 3, I explore Internet regulation through specific legislation passed by Congress. Knowing this history places the relationship between business and government as it relates to technology in a wider context. I outline Net Neutrality's current state and its major participants in chapter 4. In the final chapter, I complicate the notion of technological neutrality and discuss the connection between the social and the technical.

1

Internet Infrastructure

“All this talk about Homeland Security, but look what someone could do in here with a chainsaw.”⁷

-- Jon Auer, a network engineer interviewed by Andrew Blum in *Tubes*, on the fiber-filled basement that is Milwaukee's municipal data network

Brief History

To engage with Net Neutrality at an optimal level, it is important to familiarize oneself with the web's history and technical infrastructure. What is the Internet today, and where did it come from? How do computer users connect to the Internet? Data terminology is ubiquitous when it comes to Net Neutrality news, but what is “data” and how does it move? What is the medium over which data travels?

The Internet officially opened to the public in 1995⁸, after nearly 35 years as a project of the Advanced Research Projects Agency (ARPA) in the U.S. Department of Defense. It then came under the auspices of the National Science Foundation (NSF) as NSFNet.⁹ In Janet Abbate's *Inventing the Internet*, she notes that “the network was not originally to be a medium for interpersonal communication; it was intended to allow scientists to overcome the difficulties of running programs on remote computers.”¹⁰ The Cold War climate in which the concept of an Internet developed recognized the need for a “robust communications network as a necessity in

⁷ Andrew Blum, *Tubes: A Journey to the Center of the Internet*. New York: HarperCollins Publishers, 2012. 23. Print.

⁸National Science Foundation, “An End and a Beginning.” Accessed October 2015.
<http://www.nsf.gov/about/history/nsf0050/internet/anend.htm>

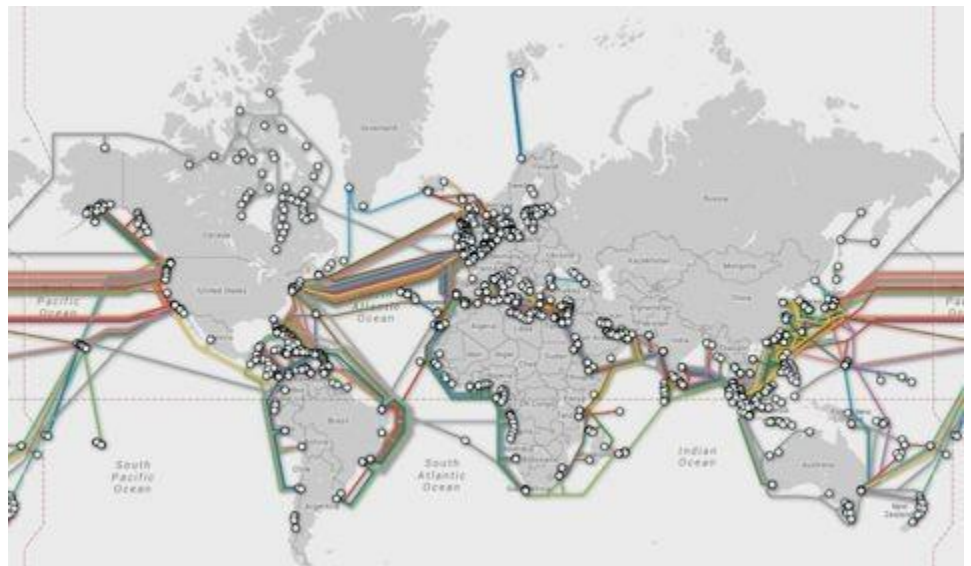
⁹ Ibid.

¹⁰ Janet Abbate, *Inventing the Internet*. Cambridge: The MIT Press, 1999. 2

any nuclear confrontation.”¹¹ The process through which the Internet evolved from military to public communication technology is closely tied to the computer and telephone’s politicized development prior to the ARPANet research that heralded the Internet. Moreover, concurrent political and technological growing pains of the time between the 1960s and 1990s continuously justified the need for an expanded and indestructible telecommunications and information infrastructure, a need most intricately linked to the interest of national security.¹²

Where is the Internet?

The Internet is a network of computers linked by Internet servers and nodes through which packets of encoded data travel transnationally and electronically over undersea fiber optic cables. The map displays current submarine cables and the Internet Exchange Points (IXP) to which they connect.



¹¹Abbate, 9

¹² This is detailed significantly in Tim Wu’s *The Master Switch: The Rise and Fall of Information Empires*. Such “growing pains” included (politically) monopoly disintegration, industry deregulation, post-Cold War politics including the breakup of the Soviet Union and (technologically) television and cable broadcasting, nuclear warhead development and proliferation, and the rise of personal computers. Since the Net Neutrality debate concerns Internet data and capabilities as they are controlled by various parties, I do not extensively detail the parallels in military and computer history.

It was not until he was without it that journalist Andrew Blum set out to uncover the Internet's physical reality. In his book *Tubes*, Blum explores just that -- the series of tubes that house the cables that make the Internet possible. To do so, he visits the centers, known as Internet Exchange Points (IXPs for short), that house these tubes. What piqued his interest? A cold day some years ago, his Internet stopped working. A repairman arrived the next day. After following cables that led to a "rusty switch box," and testing them one by one, he determined that the squirrel that darted away along the wires running between poles could have been the cause of Blum's misfortune. Without rewiring the entire backyard system, "there was nothing he could do." Astonished, Blum writes,

Here was the Internet, the most powerful information network ever conceived! Capable of instantaneous communication with any place on earth! Instigator of revolutions! Constant companion, messenger of love, fountain of riches and beloved distraction. Stymied by the buckteeth of a Brooklyn squirrel.¹³

Blum is hit with the realization that the Internet *exists*. It is made of seemingly magical "pulses of light." This light is "produced by powerful lasers contained in steel boxes housed (predominantly) in unmarked buildings. The lasers exist. The boxes exist. The buildings exist. The Internet...has a physical reality, an essential infrastructure, a 'hard bottom,' as Henry David Thoreau said of Walden Pond."¹⁴ Blum sets out to find these buildings, boxes, and lasers. His search first leads him to TeleGeography, a leading organization that conducts telecommunication cartography.

The Washington DC-based market research firm "polls telecommunications companies around the world for their latest information about the capacity of their data lines, their busiest

¹³ Blum, 2

¹⁴ Ibid., 10

routes, and their plans for expansion.”¹⁵ The map pictured on the previous page is taken from TeleGeography’s gallery of maps and “depicts active and planned submarine cable systems and their landing stations.”¹⁶ A quick visit to their website even allows users to experience this map interactively. A user can click on any cable and read “the cable’s profile, including the cable’s name, ready-for-service (RFS) date, length, owners, website, and landing points.”¹⁷

Throughout Wu’s paper, owners and providers of services are referred to as cable and broadband operators. He defines a broadband operator as a “service provider that provides high-speed connections to the Internet using whatever technology, including but not limited to cable networks, telephone networks, fiber optic connections, and wireless transmission.”¹⁸

It may seem that an Internet service provider (ISP) is simply an entity that distributes Internet service for a cost,¹⁹ but both Blum and Wu provide a more complex context behind the ISP. Blum speaks to the networked nature of networks themselves: “one company might own the actual fiber-optic cables, while another operates the light signals pulsing over that fiber, and third owns (or more likely rents) the bandwidth encoded in that light.”²⁰ Blum shows that while Internet delivery seems magical and mysterious at the basic technical level, there exist money, business, and ownership politics at every step.

Blum visits some of the major IXPs where these submarine cables start and stop. As for what they are located, Blum clarifies that the “rationale for an Internet exchange is

¹⁵ Blum, 14.

¹⁶ “Submarine Cable Map,” TeleGeography. Accessed January 2016.

<https://www.telegeography.com/telecom-resources/submarine-cable-map/index.html>

¹⁷ Ibid.

¹⁸ Wu, 170

¹⁹ FCC, Telecommunications Act of 1996

²⁰ Blum, 19

straightforward...: get your packets to their destination as directly and cheaply as possible, by increasing the number of possible paths.”²¹ Evident in its name as an Exchange Point, Internet Service Providers (ISPs) and Content Providers meet at an IXP to exchange data.

The Palo Alto Internet Exchange (PAIX) in Palo Alto, California is Blum’s first large-scale IXP stop. If the previous building Blum had visited in Milwaukee, “the main access point for Milwaukee’s municipal data network,” is the “Internet equivalent of a small regional airport, with just one or two airlines flying to a couple big regional hubs,” PAIX is like “San Francisco International, or even bigger -- ‘a major global connectivity hub,’ in the words of Rich Miller, a key industry observer.”²²

Physical proximity to such a hub would become a high priority to the prominent firms today, including Google, Facebook, Microsoft, Verizon, and Time Warner, who established themselves in Northern California. Global telecom companies of all sizes established themselves there as well, especially those serving the Pacific Rim: “everyone from Singapore Telecommunications to Swisscom to Telecom New Zealand to Qatar Telecom to Bell Canada.”²³ Inside PAIX, Blum describes powerful routers moving large volumes of data in hundreds of different directions. Forging connections between the networks that send these volumes of data in one location was, from Blum’s interviews, both a physical and social process -- networks agreed on connections “with a handshake and consummated with the plugging in of a yellow fiber-optic cable.”²⁴

²¹ Blum, 109

²² Ibid., 78

²³ Ibid., 29

²⁴ Ibid., 80

Infrastructure and Ownership: Private Investment for a Public Good

The majority of submarine and transnational cables are owned and supported by private investments. Tata Communications is a name that appears frequently on the interactive TeleGeography map of submarine cables. According to their website,²⁵ Tata communications is the “world’s largely wholly owned submarine fiber network,” into which it initially invested \$1.19 billion. With “more than 500,000 kilometers of undersea fiber,” its network comprises nearly a quarter the world’s Internet routes. The company started and is based out of India, though three quarters of its annual revenue (which in fiscal year 2013-2014 was \$3.2 billion) was generated outside of India. The following table summarizes eight cables: a quarter of these cables are partially owned by Tata Communications, three out of the eight are intercontinental.²⁶

Cable Name	Year Ready for Service	Cable Length	Owners	Landing Points
SEACOM/Tata TGN-Eurasia	2009	15,000 km	Industrial Promotion Services, Remgro Limited, Herakles Telecom LLC, Convergence Partners, Shanduka, Tata Communications	Cities in Tanzania, Djibouti, Saudi Arabia, Mozambique, Kenya, South Africa, India, Egypt
Tata TGN-Atlantic	2001	13,000 km	Tata Communications	Highbridge, UK & Wall Township, NJ, USA
Tata TGN-Gulf	2012	4,031 km	Tata Communications	Cities in Saudi Arabia, Qatar, Bahrain, UAE, Oman

²⁵ Tata Communications, “About Us.” <http://www.tatacommunications.com/about>. 2016.

²⁶ TeleGeography, Submarine Cable Map. <http://www.submarinecablemap.com/>

Tata TGN-Intra Asia (IA)	2009	6,700 km	Tata Communications	Cities in Philippines, Singapore, Hong Kong, Vietnam
Tata TGN-Pacific	2002	22,300 km	Tata Communications	Cities in Japan, Oregon, California, Guam
Tata TGN-Tata Indicom	2004	3,175 km	Tata Communications	Changi North, Singapore & Chennai, India
Tata TGN-Western Europe	2002	3,578 km	Tata Communications	Cities in Spain, UK, & Portugal
TE North/TGN-Eurasia/ SEACOM/Alexandros	2011	3,634 km	Telecom Egypt, Cyta, SEACOM, Tata Communications	Cities in Egypt, France, and Cyprus

Between 2016-2019, 37 new submarine cables are anticipated to be ready for service.²⁷

The remaining 75% of non-Tata cables are a combination of other private multinational corporations and private regional operators. What is the significance of privately funded telecommunications to a technology promoting public, global use? To begin to think about this question, Internet service and the network that creates it must be regarded as critical infrastructure. Just as with transportation, utilities and electricity, public health, and agriculture, a strong and widely accessible telecommunications system is vital to citizens' economic and social well-being. The private and public sectors interact to create these systems and ensure their long-term functionality, but understanding this interaction also illuminates inherent tensions.

The role of private investment in public goods is not a new topic; it is one that has kept economists busy for at least the past fifty years.²⁸ In their article on simultaneous

²⁷ TeleGeography, Submarine Cable Map

²⁸ Lars-Hendrik Roller and Leonard Waverman, "Telecommunications Infrastructure and Economic Development: A Simultaneous Approach." *The American Economic Review* 91, no. 4 (Sept 2001): 910

telecommunications infrastructure development and economic growth, Lars-Hendrik Roller and Leonard Waverman recognize that “one seemingly important characteristic of telecommunication technologies, which is not present in other types of infrastructure, is *network externalities*: the more users, the more value is derived by those users.”²⁹ It is this reason that telecommunications infrastructure warrants not only technological attention, but economic attention as well. One group in particular, the Organisation for Economic Cooperation and Development (OECD) has kept its eye on telecommunications infrastructure and its correlation to national economic health. In a 2009 report, Taylor Reynolds of the OECD Directorate for Science, Technology, and Industry discusses telecommunications infrastructure investment in the context of economic recovery, specifically referring to the economic crisis of 2008.

Despite his response to a particular economic situation, he draws wider connections between government and investment, calling for government to “carefully consider their decisions to ensure competition in the market which lowers prices, boosts speeds and encourages innovation.” He writes that if telecommunication networks are to be publicly, federally funded, the investment “must be used to foster competition and not to entrench existing operators at the expense of potential new entrants.” However, a risk he identifies is that governments “tend to have to choose winners in the market. Once one network is built or strengthened there is relatively low chance of another infrastructure-based provider entering the market given the financial advantage already awarded to the incumbent via government funding.”³⁰

²⁹ Ibid., 911

³⁰ Taylor Reynolds, “The Role of Communication Infrastructure Investment in Economic Recovery.” *OECD Directorate for Science, Technology, and Industry*. 19 May 2009. p. 25
<https://www.oecd.org/sti/broadband/42799709.pdf>

Reynolds also writes that policy makers must prioritize the range within which funded networks can operate. He states they can either “spend the limited funds available extending high speed networks all the way to a few users,” or push “high speed connectivity much closer to considerably more users -- creating an environment for rural ISPs to prosper.” He posits that “policy makers may find the latter to be the most effective because small ISPs have the means to distribute connectivity locally but may lack the resources or scale to bring high-speed connectivity to all the small towns throughout a region.”³¹ This difference in fund deployment reflects a political process of identifying the specific geographical areas and populations to serve first and foremost.

Roller and Waverman also ask what “market structure might be suited best to appropriate...returns” on telecommunications investments. For them, “this includes the specific role of government, if any, in providing an efficient infrastructure to foster growth and competitiveness,”³² and is a topic that needs further exploration. Public-private partnerships, or PPPs, are increasingly responding to the dilemmas presented by rising infrastructure demands and limited state funding. An important concept explained by Thomas Cheng, Ioannis Lianos, and Daniel Sokol in their book Competition and the State is that of “competitive neutrality.”³³ They write that “when firms in the public and private sectors are in direct competition in some business activity, the public firms should not benefit from competitive advantages (or disadvantages) created by virtue of its governmental links.” Examples of such benefits are “preferential tax treatment, explicit or implicit debt guarantees, and exemption from various regulations,”³⁴ among others.

³¹ Ibid., 34

³² Roller and Waverman, 921

³³ Thomas K. Cheng, Ioannis Lianos, and D. Daniel Sokol. *Competition and the State*. Stanford: Stanford University Press, 2014. p. 60. Print.

³⁴ Ibid.

The public sector is disadvantaged when certain obligations, “including universal service and common carrier obligations” are imposed on them: “common carrier obligations have been imposed in network industries such as railroads, postal services, public airlines, and taxicabs, among others.”³⁵ They continue to explain that “competition neutrality is particularly relevant in those cases where there is a new private entrant in a market that was previously an exclusive state monopoly”³⁶ It will become apparent in chapter 2 why, because of the history of AT&T, the current tension between private ownership and public regulation exists.

Data Details

Knowing how the Internet is physically composed is only half the picture. How is it *virtually* composed? When an Internet user clicks a link to download content³⁷, they have sent a signal to communicate with a computer server carrying the content they wish to receive. Information that makes up this content (images, word documents, video, etc) on every computer is stored in terms of “bits,” denoted binarily through 0s and 1s. These bits are divided into “packets” of “data” that vary in size.

Data must pass through a network of “nodes” to reach their final destination, and the packets may travel over different nodes. Each node “decides” how to route packets. Nodes share links between one another. Packets that arrive at a single node must wait to be sent along with other packets that may have arrived. A node with four paths stores packets in a queue and must

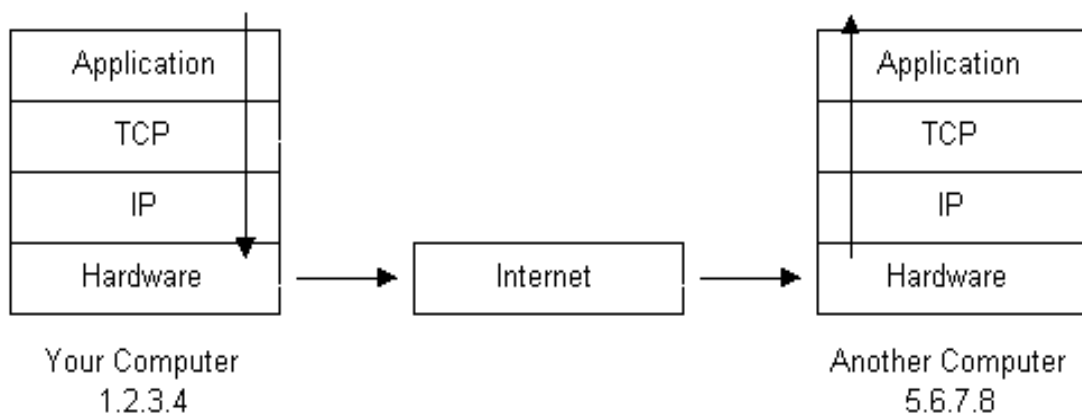
³⁵ Ibid.

³⁶ Ibid.

³⁷ I want to recognize that even in this opening phrase, there is immense detail behind the creation and clicking of “links,” “uploading” and “downloading” content, and the relationship between “servers” and other categories of computerized devices that play a role in delivering the Internet, among many other features and processes. This detail is widely available on the Internet for the reader’s information and unfortunately cannot be included here due to its indirect involvement in Net Neutrality matters.

accommodate these packets over the amount of bandwidth to which they have access. If the node runs out of queue storage, some packets get thrown away. This queue is first come-first serve, but this could easily be otherwise where companies (a nodal location) could favor and forward a packet to the front of the line.

Internet Protocol (IP) is the language by which data is broken up and sent. Transmission Control Protocol (TCP) uses IP to figure out if packets are out of order or are lost. It guarantees that all packets arrive and are in the appropriate order. Finally, Hypertext Transfer Protocol (HTTP) uses TCP to fetch and display web pages. Routers will send data to the nearest available node until all packets are sent to the receiving IP address. Data packets undergo many steps and travel through what are known as “layers” before they can finally be delivered and displayed. The following diagram is one of many from computer scientist Rus Shuler’s white paper titled, “How Does the Internet Work?” used on a Stanford University course website.³⁸



The IP language itself was “designed to follow the end-to-end principle, and is famously indifferent both to the physical communications medium ‘below’ it and the applications running

³⁸ Rus Shuler, “How Does the Internet Work?” Pomeroy IT Solutions, 2002.
<https://web.stanford.edu/class/msande91si/www-spr04/readings/week1/InternetWhitepaper.htm>

‘above’ it.” Data packets move “over glass and copper, ATM and Ethernet, carrying .mp3 files, bits of web pages, and snippets of chat.”³⁹ But there is much more to IP than meets the eye, and understanding its nature and behavior elucidates some confusion surrounding technicalities of neutrality and data non-discrimination. As Wu explains in *Network Neutrality*, applications must be taken into consideration:

As the universe of applications has grown, the original conception of IP neutrality has dated: for IP was only neutral among *data* applications. Internet networks tend to favor, as a class, applications insensitive to latency (delay) or jitter (signal distortion). Consider that it doesn’t matter whether an email arrives now or a few milliseconds later. But it certainly matters for applications that want to carry voice or video. In a universe of applications, that includes both latency-sensitive and insensitive application, it is difficult to regard the IP suite as truly neutral among all applications.⁴⁰

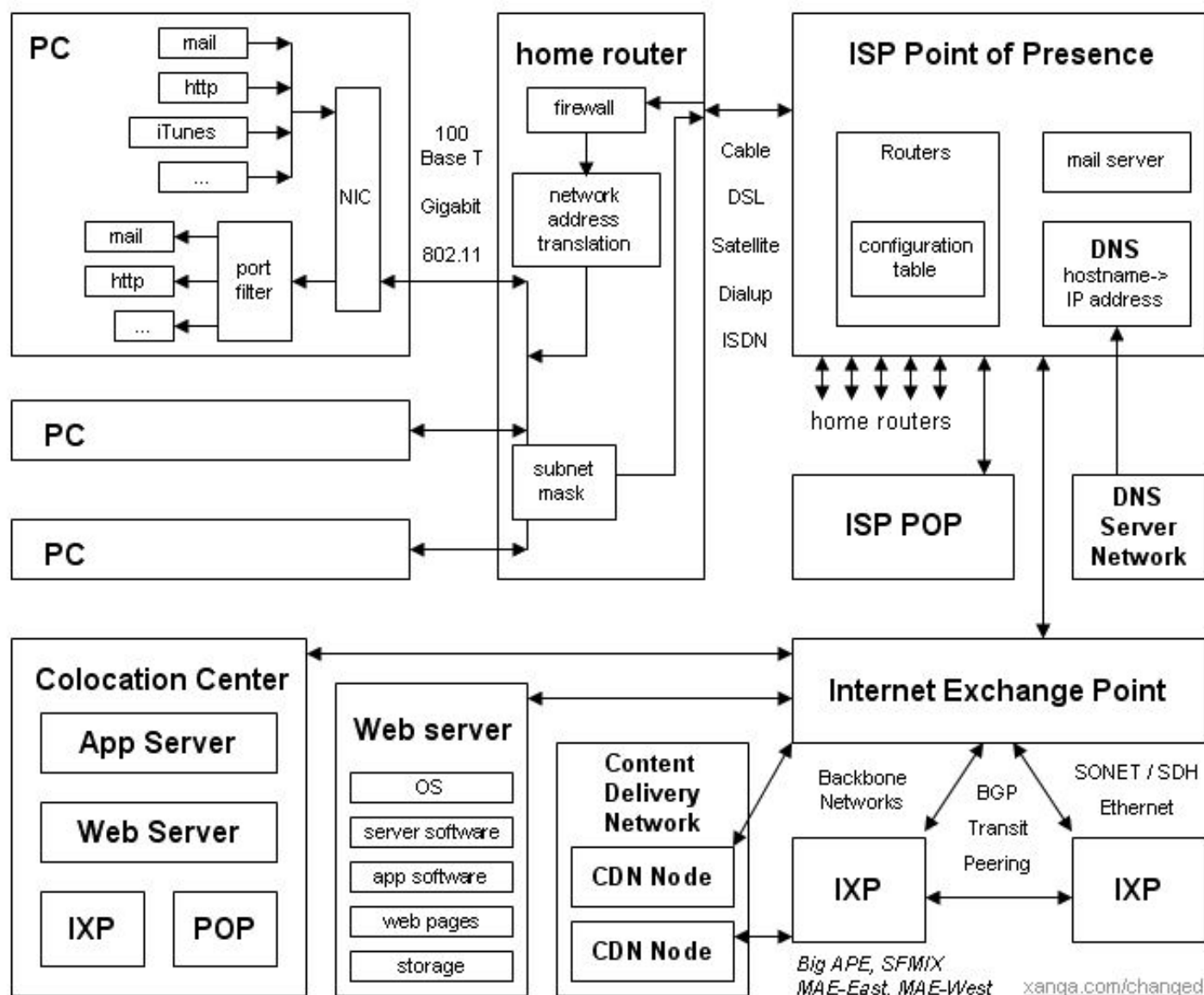
Wu proceeds to breakdown technical misconceptions about and mismatches between IP, data, and applications. He explains that the technical reason as to why IP favors data applications is that “it lacks any universal mechanism to offer a quality of service (QoS) guarantee. It doesn’t insist that data arrive at any time or place.” Instead, IP takes a “‘best-effort’ approach,” it delivers packets as fast as it can, which “may range from a basic 56K connection at the ends, to the precisely timed gigabits of bandwidth available on backbone SONET links. IP doesn’t care: it runs over everything. But as a consequence, it implicitly disfavors applications that do care.”⁴¹ Realizing the rules and limitations of the language behind user content allows users to distinguish the jargon of data, content, and applications that make up net neutrality discussions.

To visualize the connections between the many different parts that compose the Internet, I have included the following map found on an Internet user’s Xanga site (a free blog website):

³⁹ Wu, 146

⁴⁰ Ibid., 149

⁴¹ Ibid.



Key

PC: Personal Computer

NIC: Network Interface Controller

DNS: Domain Name System

POP: Point of Presence

IXP: Internet Exchange Point

CDN: Content Delivery Network

OS: Operating System

App: Application

Bandwidth and Broadband Discrimination

Wu advocates in favor of broadband discrimination instead of open-access. He presents an example of a user whose primary purpose of the Internet is for gaming. Online gaming applications, he writes, “tend to be bandwidth intensive, particularly compared with episodic applications like email.”⁴² A neutral solution carriers concerned with bandwidth consumption should consider would be investing in “policing bandwidth usage, not blocking individual applications.”⁴³ Users, instead of receiving “permission to use a given application,”⁴⁴ would have to purchase more bandwidth access if they want a better gaming experience.

If carriers block the applications like games that consume high amounts of bandwidth, competing applications would be given a “market advantage,” but a more even-playing field is achieved “if broadband carriers only police bandwidth...It may be that the expense of more bandwidth leads people to choose different ways to spend their money. But if so, that represents a market choice, not a choice dictated by the filtering policy of the broadband carrier.”⁴⁵ Were broadband discrimination to dictate network policy, users would be granted more agency in deciding how to spend their money and thus experience content. The product consumed would also then be standardized across users: bandwidth, not the data travelling over bandwidth. This way, carriers and providers do not interfere, privilege, or disadvantage Internet applications and content.

⁴² Ibid., 171

⁴³ Ibid.

⁴⁴ Ibid.

⁴⁵ Ibid.

Knowing some historical and technical background of the Internet is important to understanding the dimensions of the Net Neutrality debate today. How can everyday users truly advocate for one side or the other when they do not even know how their Internet data manifests or how they are bound to the interests of big business? The influence of big business in political and government decisions is not unique to the present moment; to gain another level of engagement with the current debate, the public should also understand the legacy of a particular monopoly that has defined telecommunications in the last century: American Telephone and Telegraph, better known as AT&T.

Imperial Information

“Almost like the weather, the flow of information defines the basic tenor of our times, the ambience in which things happen, and ultimately, the character of a society.”

--Tim Wu, *The Master Switch*

Wu reminds readers that those who created the Internet “faced a world in which the wires were owned by AT&T and computing was a patchwork of fiefdoms centered on the gigantic mainframe computers, each with idiosyncratic protocols and systems.” One of the paradoxes of the Internet Wu goes on to note is that the Internet “works over an infrastructure that doesn’t belong to those using it.” The Internet’s owner is and was “always someone else, and in the 1970s, that someone was generally AT&T.”⁴⁶

But long before the 1970s, AT&T had been an accepted monopoly headed by a man (regarded as a telecommunications titan) named Theodore Vail. Wu profiles Vail extensively in his book *The Master Switch: The Rise and Fall of Information Empires*. The book details the pattern major information empires (telephone, radio, television, film, and now the Internet) have historically followed, a pattern Wu names “the Cycle.” The Cycle describes the “oscillation of information industries between [politically, economically, socially] open and closed.”⁴⁷ Wu elaborates this pattern, noting that “we see in fact a succession of optimistic and open media, each of which, in time, became a closed and controlled industry like Vail’s. Again and again in the past hundred years, the radical change promised by new ways to receive information has seemed,

⁴⁶ Wu, *The Master Switch*, 197-198

⁴⁷ *Ibid.*, 7

if anything, more dramatic than it does today.”⁴⁸ As applied to the Internet, Wu forewarns readers of this information empire’s fate. “If the Cycle is not merely a pattern but an inevitability,” Wu writes, “the Internet, whose present openness has become a way of life, should prove as much subject to the Cycle as every other information network before it, the practical consequences will be staggering. And already there are signs that the good old days of a completely open network are ending.” The signs to which Wu is referring are likely the outcomes of network politics and dealings taking place at the time of the book’s publication (i.e., the FCC Open Internet Order of 2010), five years prior to the official and more specific FCC ruling of Net Neutrality.

What does Wu’s profiling of Theodore Vail have anything to do with the Internet? Since “after all, these are far different times: our own most important network, the Internet, would seem to be the antithesis of Vail’s Bell system: diffusely organized - even chaotic - where his was centrally controlled; open to all users and content (voice, data, video, and so on). The Internet is the property of no one where the Bell system belonged to a private corporation.”⁴⁹ It is vital to know the history of Vail and of his domain, AT&T⁵⁰, to “understand the forces threatening the Internet as we know it” today. Through understanding “how information technologies give rise to industries, and industries to empires,” we can more fully grasp “the nature of the Cycle, its dynamics, what makes it goes, and what can arrest it. As with any economic theory, there are no laboratories but past experience.”⁵¹

⁴⁸Ibid., 5

⁴⁹ Ibid., 5

⁵⁰ Wu uses “AT&T,” “The Bell Company,” and “Bell” interchangeably

⁵¹ Ibid., 7

Wu paints Vail as “a full-throated capitalist” who “rejected the whole idea of ‘competition.’” Having experienced “both monopoly and competition at different times...he judged monopoly, when held in the right hands, to be the superior arrangement,”⁵² writes Wu. Situating Vail more effectively in his historical context adds more dimensions to the lens through which he is understood. Vail

came to power in an era that worshipped size and speed...and in which there prevailed a strong belief in both human perfectibility and the unique optimal design of any system. It was the last decades of Utopian Victoriana, an era of faith in technological planning, applied science, and social conditioning that had seen the rise of eugenics, Frederick Taylor’s ‘scientific management,’ socialism, Darwinism, to name a few disparate but systematizing strains of thought.⁵³

It is in this climate that AT&T rose to power, “building a privately held monopoly yet one that pledged commitment to the public good. It was building the world’s mightiest network, yet it promised to reach even the humblest American with a telephone line.”⁵⁴ In 1910, Vail had “already realized an ideology - the Bell ideology - and built a system of communications that would profoundly influence not just how people spoke over distances, but the shape of the television, radio, and film industries as well: in other words, all of the new media of the twentieth century.”⁵⁵ I would extend Wu’s last statement to reiterate that these forms of new media (television, radio, and film), among many others, now converge in the cyberspace known as the Internet, further illuminating how vast a legacy AT&T has left on media and telecommunications technology today.

In tracing AT&T’s trajectory from a natural monopoly to a regulated monopoly, much is revealed about underlying technological concerns. As a natural monopoly, a simple network, in

⁵² Ibid., 8

⁵³ Ibid.

⁵⁴ Ibid., 9

⁵⁵ Ibid.

which there is little to no competition, thrives. But common carrier regulations must exist and be implemented, as there is no other competitor to offer the same service under a different carriage standard and price. Technological compatibility across all levels of service and its reliability are two positive by-products of a natural monopoly: AT&T required all customers to use its equipment, as its service provision would not function on non-AT&T devices. This too discourages competition and potential technological innovation. It was not until telephone and other industry deregulation in the 1970's that telephone features such as mobile capabilities or even caller ID were possible. Is the question a matter of pragmatism and sensibility? Would it make economic sense to have multiple phone lines all performing the same service? Or, as another example, to have multiple railroad tracks running competing train lines carrying the same goods?

As the regulated monopoly AT&T would later become, it would follow universal service guidelines as prescribed by the FCC in addition to its common carrier obligations. Inherent in both is price regulation, all combining to produce a rather conservative technology and technological service. But in addition to the regulatory expectations AT&T had to meet, it is also important to understand its power in influence in the government by the latter half of the twentieth century. It was not only facilitating communication between family members but facilitating intercontinental communication regarding nuclear weapon development and arsenal “stewardship.”⁵⁶

It is not surprising that in the same way the Internet began to develop in response to military needs and defense purposes, AT&T was extending its reach into national defense. There

⁵⁶ Wu, *Master Switch*, 159.

was a “trust and intimacy that existed for decades between the U.S. government and the...authorized telephone monopoly;” in addition to AT&T’s takeover of Sandia National Laboratories in New Mexico (a site associated with the weapons development for the Manhattan Project), AT&T also “built a system of towers across the top of Canada and Alaska designed to warn of approaching ICBMs, a secret radio network to provide communications for Air Force One, and at least sixty hardened underground bunkers housing emergency equipment.”⁵⁷ To further enforce the intimacy between AT&T and the government, Wu reveals that The Department of Defense in fact intervened in AT&T’s breakup via the “antitrust suit in 1956, citing a ‘hazard to national security.’”⁵⁸

AT&T’s subsequent breakup despite the Department of Defense’s attempt to prevent it after the Second World War “laid the foundation for every important communications revolution since the 1980s onward.” In only three decades, there would be “an Internet, handheld computers, and social networking.”⁵⁹ But did the hope of forthcoming innovation warrant a federally driven breakup of a successful business? Wu backs up the critics of the breakup. They “have a point,” he says: “a federal breakup is an act of aggression and arguably punishes success...In fact, the ‘competitive’ industries that replaced the imperial monopolies were often not as efficient or successful as their predecessors, failing to deliver even the fail-safe benefit of competition: lower prices.”⁶⁰

A consequence that cannot be ignored is the shift the individual user’s political agency in technological choices and control, symbolized in the computer-Internet

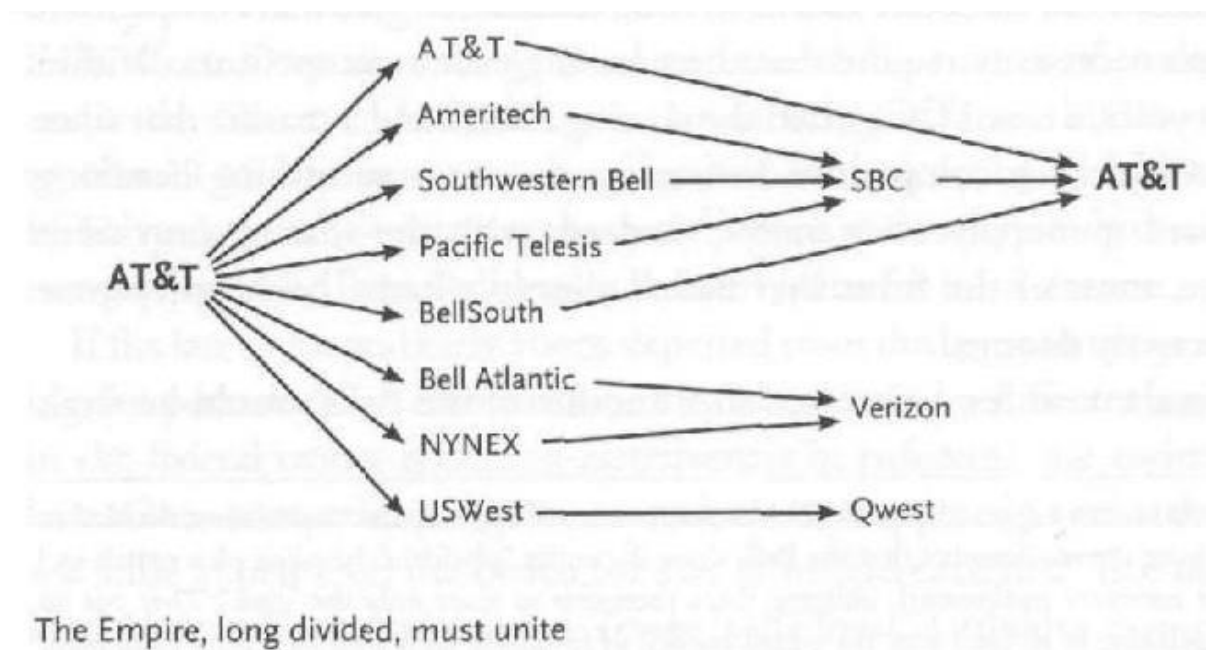
⁵⁷ Ibid.

⁵⁸ Ibid., 160

⁵⁹ Ibid., 162

⁶⁰ Ibid., 161

system. The pair allowed a degree of control and decision-making power “unprecedented in a communications system;” its “priority was human augmentation rather than the system itself. The aim was therefore an effort to create a decentralized network, and one that would stay that way.”⁶¹ When the Internet began to develop its system, “packet networking”⁶² challenged AT&T’s circuit switching system, upsetting the ideological and political order ingrained in AT&T’s reign. Though the fact that AT&T still owned the necessary physical infrastructure and would, in time, reincarnate in companies seemingly in power today turns the attention here back to the previous discussion of infrastructure ownership, and, forward to understanding its, and subsequently, the Internet’s, regulatory context in more detail.



*From Wu's The Master Switch*⁶³

⁶¹ Ibid., 170

⁶² Ibid., 173

⁶³ Ibid., 248

3

Legislation and Regulation

“Let us, then, not fail to protect ourselves from the will of those who might seek domination of those resources we cannot do without.”

-- Tim Wu, *“The Master Switch: The Rise and Fall of Information Empires”*⁶⁴

There exists a clear tie between government and business, as evidenced through AT&T’s sociotechnical reign. This tie is further reinforced by legislation passed by Congress. I present in this chapter background information about the Communications Acts of 1934 and 1996, each of which detail specific “titles” that govern categories of telecommunications utilities. I also explore how current Net Neutrality issues grew out of the confluence of these acts with new technological changes.

The concept of utility classification is currently one of the most significant determinants of reactions to Net Neutrality rules. The category under which the Internet is classified then dictates the rules and regulations by which it must abide. The category also carries historical connotations, which speak to the political and economic forces that defined its positioning within the history of technology regulation and policy. For the FCC, service categories relevant to the Net Neutrality debate include cable, telecommunication, and information. Title I regulates information, Title II regulates telecommunication, and Title VI regulates cable.

Passed under Franklin Delano Roosevelt’s presidency, the Communications Act of 1934 was established to regulate “interstate and foreign commerce in communication by wire and radio” to make possible nondiscriminatory wide public access to communication services at

⁶⁴ Ibid., 319

“reasonable charges.” Furthermore, the Act serves the purpose of “the national defense,” “the purpose of promoting safety of life and property through the use of wire and radio communication,” and “the purpose of securing a more effective execution of this policy by centralizing authority.”⁶⁵ This last portion created the Federal Communications Commission, thereby replacing the Federal Radio Commission.

It took sixty-two years before communications legislation received an overhaul. Signed under the Clinton Administration, The Telecommunications Act of 1996⁶⁶ formally amended the Communications Act of 1934, and in doing so eliminated “economic barriers to entry in local telecommunications markets,” “regulatory barriers to entry in all telecommunications markets,” and included “universal service reform.”⁶⁷ In their book, *Digital Crossroads*, attorney Jonathan Nuechterlein and law professor Philip Weiser go on to point out the ambiguity that emerged out of Congress’ inability to foresee major market shifts, through no fault of its own.

While steps were taken to make sure competition thrived between “telephone and cable companies in the provision of voice and video services, the real competition between wireline and cable platforms arose in a market that hardly existed in 1996: the market for broadband Internet access.” Since this market went unaccounted for, Congress “provided no clear legal framework for it.”⁶⁸ This dilemma set the stage for the conflicts that began to grow at the turn of the millennium, which would eventually become the Net Neutrality debate we know today.

⁶⁵ Federal Communications Commission, “Communications Act of 1934.” Accessed 11 November 2015. <https://transition.fcc.gov/Reports/1934new.pdf>. 11 November 2015.

⁶⁶ James Curran, Natalie Fenton and Des Freedman, *Misunderstanding the Internet*. 95. New York: Routledge, 2012. Print.

⁶⁷ Nuechterlein and Weiser. *Digital Crossroads*. 52.

⁶⁸ *Ibid.*, 52.

Misunderstandings between policy advocates, engineers, cable companies, Internet Service Providers (ISPs), and policy makers' diverse knowledge bases brewed confusion in the early stages of the debate's developments. Nuechterlein and Weiser explain that "open access" advocates "asked the government to ensure that consumers of cable modem service could choose among ISPs and enjoy the same sort of independent relationship with their chosen ISPs that consumers traditionally enjoyed in the dial-up context." In the hopes that "these unaffiliated ISPs would serve as logical-layer buffers between the Internet's physical layer, on the one hand, and its applications and content layers, on the other," cable companies could be hindered "from trying to leverage their presumed dominance in the broadband transmission market to discriminate against unaffiliated providers of content and applications."⁶⁹

But large corporate acquisitions and mergers made open-access initiatives unclear on the details of non-affiliate ISP broadband network integration under cable companies. Thus, from the engineering side, "this was unexplored territory." It seemed easier to "continue applying the longstanding requirement of traditional common carrier telephone companies to accommodate multiple dial-up ISPs" than to "'open' a cable modem network to multiple independent ISPs." These complexities in Internet engineering caused "key 'openness' advocates to shift their emphasis from rights of physical access by unaffiliated *ISPs* to rights of nondiscriminatory treatment for higher-layer *applications and content providers*." And hence, the Net Neutrality debate we discuss today was born.⁷⁰

It is apparent that the concept of "Open-Access" has been and continues to be an important presence in discussion, as it sometimes is even used synonymously with "Net Neutrality",

⁶⁹ Nuechterlein and Weiser, 193

⁷⁰ Ibid.

an “open Internet”, and other associations of Internet freedom. First defined in the introduction as “an arrangement where network providers offer capacity or access to all market participants under the same terms and conditions,” Nuechterlein and Weiser add that “the term open-access is used in many different ways; it generally refers to a structural requirement that would prevent broadband operators from bundling broadband service with Internet access from in-house Internet service providers.”⁷¹ One on side, if ISP and cable services are bundled, cable operators “would be in a position to destroy the neutrality of the network by foreclosing competition among Internet applications;” but there are those who doubt that “regulation is needed to prevent cable operators from foreclosing competition when it would be efficient, or ask whether network neutrality is an appropriate goal...”⁷² Wu wants to ask, “To what degree does the structural remedy of open-access actually serve its interest? Might we do better by targeting network neutrality directly with questions of broadband discrimination?”⁷³ Open-access, therefore, cannot neither be equated with net neutrality nor fall in favor of business desires and imperatives. What other strategies might companies and policy makers employ to salvage end users and their online agency?

Wu lays out his framework for ensuring neutrality in *Network Neutrality, Broadband Discrimination*, assuming it is the appropriate goal. This framework “forgoes structural remedies” such as open access, “for a direct scrutiny of broadband discrimination.”⁷⁴ Harkening back to AT&T-era history, Wu reminds reader that “the link between anti-discrimination regulations and network innovation are as old as the *Hush-a-Phone* and *Carterfone* decisions,

⁷¹ Wu, *Network Neutrality*, 148

⁷² Ibid.

⁷³ Ibid., 148-149

⁷⁴ Ibid., 142.

which controlled AT&T's efforts to destroy innovative network attachments. The basic principle behind a network anti-discrimination regime is to give *users* the right to use non-harmful network attachments or applications, and give innovators the corresponding freedom to supply them.”⁷⁵

Prior to open-access, advocates came from an engineering perspective. Noting discrepancies between devices and data, these advocates recognized that “devices at the network ‘edge’ rather than by routers in the network core” more efficiently perform the “error correction and similar tasks required for most forms of inter-network data exchanges.”⁷⁶ While this design principle evolved into policy judgments that the “Internet’s constituent IP networks should remain ‘dumb’ in the sense that they should not ‘know’ what content IP packets contain, should treat every packet the same, and should leave all content-aware ‘intelligence’ to end users at the network edge,” Nuechterlein and Weiser point out that actually, anyone familiar with the realities of engineering would not “seriously argues that all IP networks should always be oblivious to the types of content contained in IP packets; some content requires special handling to function properly and some does not.” This point harkens back to Wu’s explanation of IP as an application-favoring language and illustrates a site of a technical knowledge gap between users and engineers. Users resort to absolutist rhetoric to reflect their technologically informed and infused identities whereas engineers have the technical expertise to know the nuance.

But in this debate, “the problem is that absolutist rhetoric often eclipses nuance.”⁷⁷

Proponents of neutrality employ this type of rhetoric of data packet equality and fair treatment

⁷⁵ Ibid.

⁷⁶ Nuechterlein and Weiser, 197.

⁷⁷ Ibid.

across networks. Fundamental to the popular understanding of the debate, as is frequently oversimplified in news articles and catchy headlines, is a distance from the technical components behind data origin and travel, and instead a reliance on broad conceptions of a “free,” “open” net for “all.”

A lack of technical knowledge and the “realities of engineering” among the Internet-using population might contribute to this rhetoric that Nuechterlein and Weiser consider to be a “problem.” Such “rhetoric” however communicates the underlying politics of freedom, anonymity, and agency that the web carries and allows. The belief that the Internet should be a place of data non-discrimination and that all data is, contrary to what Verizon thinks, created equal, perhaps parallels the beliefs associated with the social and political ideals of justice, democracy, and free speech. The wider policy controversy therefore arises because these ideals are not shared by all users, especially those who see users first and foremost as consumers.

4

Rules and Reactions

Having introduced the Internet's history technically and socially as well as its relationship to past telecommunication policy, I now turn to the current state of the Net Neutrality debate. What concerns are at the forefront and what recent history of the debate continues today? Whose voices are heard and whose are missing?

After further technological and legal conflict in the middle 2000's involving corporate giants like Verizon and Comcast, a preliminary Open Internet Order with rules regarding nondiscrimination and special services, the FCC passed its final rulings on Net Neutrality in February of 2015. These include the major tenets of and rules for an Open Internet. These three rules are: no blocking, no throttling, and no paid prioritization.

According to the final order available on the FCC's website, no blocking prohibits broadband providers from blocking "access to legal content, applications, services, or non-harmful devices;" The no-throttling rule states "broadband providers may not impair or degrade lawful Internet traffic on the basis of content, application, services, or non-harmful devices." Finally, no paid prioritization keeps broadband providers from favoring "some lawful Internet traffic over other lawful Internet traffic in exchange for consideration of any kind: in other words, 'no fast lanes.' This rule also bans ISPs from prioritizing content and services of their affiliates."⁷⁸

⁷⁸ "FCC Adopts Strong, Sustainable Rules to Protect the Open Internet." Released by FCC on 26 February 2015. Retrieved from <https://www.fcc.gov/document/fcc-adopts-strong-sustainable-rules-protect-open-internet>

While net neutrality rules went into effect in June of 2015, they did not signal an end to the debate. Telecommunications companies reactions to the net neutrality rules were rooted in their rejection of Internet service reclassification under Title II of the Communications Act of 1996. Internet service would now be treated as a telecommunications common carrier under Title II regulations, rather than as an information service under Title I regulations.

The only other “common carrier” to which Internet rules would parallel is landline telephone under (AT&T). As outlined in chapter 2, AT&T opened and monopolized American telecommunicative capabilities. Its breakup in the 1980s into Regional Bell Operating Companies (RBOCs) made room for competitors, innovations, and the journey into broadband. The role of the FCC as it oversaw AT&T as a formal and legal monopoly, was to approve prices and competition policies.

But can what the Internet is today, technologically and socially, be compared to landline telephone? It is far more than a two-way voice communication tool, and also far more than solely a tool for acquiring information. These are currently the only two classification categories as designated by the available legislation. Congress must pass updated telecommunications legislation to classify the Internet in a novel way that more accurately reflects the nature and necessity of Internet use today. The FCC’s recent action to expand an Internet subsidy to low-income individuals and families⁷⁹ is a step in the right direction for how the FCC should be responding and regulating Internet service today. Any further regulatory decisions should either wait for updated legislation or take place somewhere else entirely.

⁷⁹ FCC Website, “FCC Modernizes Lifeline Program for the Digital Age.”
<https://www.fcc.gov/document/fcc-modernizes-lifeline-program-digital-age>

Through March and April of 2015, US Telecom Association (USTA) and others, including a small service provider in Texas called Alamo Broadband, began filing statements suing the FCC. USTA and Alamo Broadband accuse the FCC of exceeding its authority and ignoring already established understandings in its promulgation of net neutrality rules.⁸⁰ The hearing took place on December 4th, 2015.

Groups and individuals who wrote in support of US Telecom are The Washington Legal Foundation, The Chamber of Commerce, Richard Bennett (a 35 year network and telecommunication industry veteran worker who co-founded Wi-Fi), Mobile Future, and the Multicultural Media, Telecom, and Internet Council. Supporting the FCC's rules and reclassification were the Electronic Frontier Foundation, the American Library Association, Consumers Union of the U.S., Internet Association, 2 former FCC commissioners (Michael Copps and former Chairman Reed Hundt), Tim Wu, and the Writer's Guild of America.

Clearly the FCC itself as a player in this debate with its own interests. The FCC maintains its presence not only through its authority from Congress, but also its history: beginning officially in 1934, and prior as the Federal Radio Commission, proceedings have set precedents and reaffirmed its power to remain relevant. The Chairperson of the FCC is appointed by the President for a five-year term, as are its four other commissioners. According to its website, regarding leadership, "only three commissioners can be of the same political party at any given time and none can have a financial interest in any commission-related business."

⁸⁰ Mike Snider, (2015, March 23). FCC sued over net neutrality rules. *USA Today*. Retrieved from <http://www.usatoday.com/story/tech/2015/03/23/fcc-net-neutrality-suit/70350070/>

Their rulemaking process is that of “notice and comment.”⁸¹ In this way, the issues at hand are participatory with interested members of the public: the FCC will notify the public of possible rule adoption or alterations and subsequently will seek public comment to include in its deliberations. The FCC’s final decisions must adhere to official legislation and be reviewed by Congress. However, the FCC’s authority can be challenged in federal courts, up to and including the Supreme Court. In such cases, individuals and groups can file *amicus curiae* (meaning “friend of the court” in Latin) briefs that offer specialized opinions on cases.

But to return to the question of whether the FCC is the wrong place to be making decisions regarding the Internet: is the Internet outside a singular agency’s narrow understanding of telecommunications? If so, should it therefore not be subject to its rules and regulations? Clyde Wayne Crews is an Internet user and Vice President for Policy at the Competitive Enterprise Institute (CEI), a Washington, D.C. “non-profit public policy organization dedicated to advancing the principles of limited government, free enterprise, and individual liberty.”⁸² CEI has submitted comments before the FCC regarding Net Neutrality and also recently authored and submitted an *amicus curiae* brief in support of the respondents in the recent court case of *US Telecom versus the FCC*. Crews has also written on the topic extensively. He has suggested the focus of this debate should rather shift to what he calls “Agency Neutrality.”⁸³

In formal comments submitted in July of 2014, Crews links many articles; it is a series he has named “Before Net Neutrality Eats the World.” Part 2 of this series is titled: “An Alternative

⁸¹ Federal Communications Commission, “Rulemaking Process,” Last updated 3 November 2015. <https://www.fcc.gov/about-fcc/rulemaking-process>

⁸² About, Competitive Enterprise Institute. <https://cei.org/about-cei>

⁸³ Clyde Wayne Crews, “Before Net Neutrality Eats the World (part 2): An Alternative Case for Agency Neutrality. 20 August 2013. cei.org/blog/net-neutrality-eats-world-part-2-alternative-case-agency-neutrality

Case for Agency Neutrality.” In it he argues his main point that “the FCC shall not interfere, *ever*, with the potentially boundless competitive mix of open and proprietary investment and management decisions in the marketplace, because when it does, it locks in an inferior industry structure for future generations.”⁸⁴ He is adamant that the FCC and government regulation is occurring for the sake of itself, where it is not necessary. For Crews, government and the public sector are overstepping their boundary and interfering with private sector concerns. He points out that the country is economically opposed to “any carrier or dominant content provider that attempts to bully others with inappropriate blockage or interference. The infrastructure and content sectors can fight it out—or even integrate. Companies may act badly, but infrastructure involved is private property, not public property, in the final analysis.”⁸⁵ The earlier discussion of private investment in public infrastructure and services comes into the equation with Crews’ final sentence. Would his policy opinions change were Internet infrastructure to be publicly, not privately, funded? Do companies’ private investments justify “bad” behavior?

Another perspective on the spectrum of Internet political identities is that of John Perry Barlow. Barlow is an American cyberlibertarian who wrote lyrics for the Grateful Dead. He also was a founding member of the Electronic Frontier Foundation (EFF) as well as the Freedom of the Press Foundation. The EFF, one of the organizations on the list of those supporting the FCC in the December 2015 court case, is a leader in defending individuals’ digital rights. Barlow wrote in 1996, when the Internet was a mere one year old, his famous “Declaration of the Independence of Cyberspace.” It opens with, “Governments of the Industrial World, you weary giants of flesh and steel, I come from Cyberspace, the new home of Mind. On behalf of the

⁸⁴ Ibid.

⁸⁵ Ibid.

future, I ask you of the past to leave us alone. You are not welcome among us. You have no sovereignty where we gather;”⁸⁶ it ends with,

These increasingly hostile and colonial measures place us in the same position as those previous lovers of freedom and self-determination who had to reject the authorities of distant, uninformed powers. We must declare our virtual selves immune to your sovereignty, even as we continue to consent to your rule over our bodies. We will spread ourselves across the Planet so that no one can arrest our thoughts. We will create a civilization of the Mind in Cyberspace. May it be more humane and fair than the world your governments have made before.⁸⁷

The parts in between are certainly worth the Google search. Barlow’s sentiments represent an anarchic end of Internet political identity. This anarchic vision was stronger in the Internet’s infancy, as the advent of such a technology successfully broke down traditional barriers to access knowledge and facilitated communication across diverse people and vast distances.

On the other end, however, technology scholars like Langdon Winner see it differently. Often painted in “mythinformation” as the “great equalizer,” the computer and its capabilities, in reality, may be otherwise. It must be acknowledged that certain segments of the population disproportionately benefit from the technology and experienced a greater initial ease of access. Writing in 1986, computer and information development, Winner says, caused an “increase in power by those who already had a great deal of power, an enhanced centralization of control by those already prepared for control, an augmentation of wealth by the already wealthy.”⁸⁸

Winner believes that computing and the capabilities it allows do not demonstrate “a revolution in patterns of social and political influence,” as “empirical studies of computers and social change usually show powerful

⁸⁶ John Perry Barlow, “A Declaration of the Independence of Cyberspace.” *Electronic Frontier Foundation*. 8 February 1996. <https://www.eff.org/cyberspace-independence>

⁸⁷ Ibid.

⁸⁸ Winner, 107

groups adapting computerized methods to retain control. ... Those best situated to take advantage of the power of a new technology are often those previously well situated by dint of wealth, social standing, and institutional position.”⁸⁹ In dialogue with the opposing political philosophy that the Internet is “revolutionary”, Winner’s conclusions would thus be that instead, the Internet’s nature has “a distinctly conservative character,”⁹⁰ as opposed to a liberal or liberatory one.

Where do politicians lie in this matter of policy? Tom McClintock, the current Republican Representative of California’s 4th District, raised this issue when he addressed the House of Representatives for one minute the day after the FCC announced its Net Neutrality decision.⁹¹ The following quotes are from the transcript of his brief speech, available publicly online on the Congressional Record. He calls “Net Neutrality” a “guise” imposing “leftist ideology.” He sums up Net Neutrality his own unique way: “Net Neutrality is the notion that the latest cat video is of equal importance to a teleconference consultation for a heart patient.”

He clarifies that by classifying the Internet within the “same regulatory structure as the phone company or broadcast stations,” they have the potential to control content and destroy the “price-driven incentives for innovation, expansion, speed, economy, and service that Americans have long enjoyed.” Not only will government “pile on new fees,” “stifled” investment incentives will limit expansion. He concludes by colorfully describing the government’s hands as “fat, corrupt, [and] incompetent,” and their absence as the reason the Internet has thrived. “That era ended yesterday,” he says, “and that is a shame.”

⁸⁹ Ibid.

⁹⁰ Ibid.

⁹¹ Representative McClintock (CA) “Net Neutrality.” Congressional Record 161:34 (February 27, 2015) p. H1375. Available from the Congressional Record Online through the Government Publishing Office [www.gpo.gov].

Does Representative McClintock have a point here? Is the latest cat video as important as a medical teleconference? The answer to this depends on the interested party's regard towards the end user and whether they recognize hierarchies of content and of users themselves. McClintock's stance does seem torn, however. On the one hand, while he disagrees with the price regulations set out by service reclassification, he does consider some data to be more important than others. On the other hand, he wants government out of the Internet space to promote the laissez-faire environment in which it initially thrived as well as the business right to innovate and expand. How can these views harmonize across businesses, end-users, and policy-makers? As far as a politician's influence, citizens can become more involved with their local politics and advocate for their needs to their representatives.

Corporate giants such as Comcast, Verizon, AT&T, and Time Warner are also major players in this debate. They deliver bundled service packages to customers, and, in some cases, they may not have the option to select one component of the bundle. "Bundling" is a style of delivering products in which companies offer television, telephone, and Internet service all together in one "bundle." Not only do these companies deliver external content, there is a media trend for companies and brands to create original content, as seen through Netflix and its original television series and movies. *Cyber* content and application providers such as Netflix, Facebook, Skype, Youtube, the Google conglomerate (who, with its Fiber initiative is also becoming provider of physical infrastructure, content, and service -- it partners with businesses like Starbucks to provide its WiFi free to customers), monopolize Internet users' eyes and thereby carry tremendous influence and power in the online business realm.

Since I presented Verizon's bold advertisements in Grand Central, it is relevant to know how the company is officially reacting to the debate and communicating it to its consumer base. As established earlier in this chapter, the most recent legislation on telecommunications passed only one year after the Internet was opened to the public. To effectually govern the Internet requires legislation that reflects its more current technology and social status. It is unproductive to be working from the 20-year-old understanding of today's most essential technology, a technology that has undergone tremendous change both in itself and in how users interact with it since it was last legislated in 1996. It is this time lag that also has caused tensions between regulators and the regulated: Verizon's recent Net Neutrality statement, titled "Net Neutrality: The Path Ahead," corroborates this sentiment. Here they refer to the three rules passed by the FCC in February of 2015, as well as an added "General Conduct Standard" that they wish to see reflected in policy:

We can support these rules because we believe they are fair, even-handed, good for consumers and essential for us and others to thrive going forward. We can't predict how the court will rule. But if history is any guide, we can expect more conflict and more uncertainty over the scope of the FCC's authority and whether the current statute provides the tools the FCC needs to adopt these rules. The only way to avoid this depressing redux is for Congress to act. In the past we have criticized the FCC for applying outdated rules to the fast-moving Internet ecosystem. We still think that's true, but let's be fair: Congress hasn't updated the FCC's toolbox for over 20 years, so the FCC is working with the only tools it has, however inadequate. Congress can give the FCC the tools it needs to do this properly and on a legally sustainable basis. It should do so."⁹²

Verizon recognizes the complex relationship between itself, the FCC, Congress, the Courts, and the inhabitants of this "fast-moving ecosystem." It would like Congress to update telecommunications policy legislation so the FCC acts accordingly, but yet, the question of how

⁹² Craig Silliman, "Net Neutrality: a path forward." Verizon News. 21 March 2016.
<http://www.verizon.com/about/news/net-neutrality-path-forward>

Congress should legislate the Internet remains: would it sympathize with business or adopt a more user-centric approach? How can an accurate legislative picture of the Internet emerge? Whose Internet ideologies are at the forefront and whose are at the peripheries, and how wide is this spectrum? I hope to grapple with this question and others in the following, final chapter.

Internet Ideologies

“The law, in its majestic equality, forbids rich and poor alike to sleep under bridges, to beg in the streets, and to steal their bread.”

-from Anatole France’s *The Red Lily* (1894)⁹³

But, Anatole France, for what reason would the rich feel impelled to sleep under bridges, beg in the streets, and steal bread? This implicit bias against the poor is hidden behind the association of the law with equality. Similarly, does a blanket network neutrality requirement ignore the incommensurability between Internet users, providers, and regulators? Is “neutrality” as conceptualized in this debate *biased* to begin with? What is the relationship, then, between bias and neutrality technologically? What are the problems that could stem from *mandatory* neutrality and non-discrimination? Furthermore, if these questions must be posed, what other ideological questions arise from the complexities of the Net “Neutrality” debate as outlined thus far?

An Unfair Division?

Is a truly “neutral” arena in an economy based in competition possible? By turning to critical theories of technology, I attempt to complicate philosophical notions created both within and as a consequence of politicized technologies. Wu also expresses his concern with the use of “neutrality” in the first place: “neutrality, as a concept,” he writes is “finicky, and depends entirely on what set of subjects you choose to be neutral among. A policy that appears neutral in

⁹³ Anatole France, *The Red Lily*. New York: Hardpress, 2012. Print.

a certain time period, like ‘all men may vote,’ may lose its neutrality in a later time period, when the range of subjects is enlarged.”⁹⁴

As a pair, the neutrality-bias relationship appears dichotomous. But could they be falsely so? A prominent philosopher of technology, Andrew Feenberg writes that the bias-neutrality duality is mistaken. Bias is usually conceptualized as a “deviation from fairness, which, in common usage, refers to the application of the same standard to all regardless of personal feelings.” This, he argues, makes it “impossible to make sense of the notion of biased technology since the rationality inherent in technical devices is incommensurable with personal partiality by definition.” But subtler bias that he says is “difficult to identify because the application of a single standard gives the appearance of fairness” involves “applying the same standard to individuals who cannot be compared or under conditions that favor some at the expense of others.” Neutrality, then, “is not the opposite of bias but its essential precondition.”⁹⁵

The linguistic and ideological choice of “neutrality” in this debate could itself be an ontological flaw and hindrance to an honest discussion of the situation. Feenberg suggests that “the traditional neutrality thesis reifies technology by abstracting from all contextual considerations. This approach is relatively persuasive because, as in other instances of formal bias, the decontextualized elements from which the biased system is built up *are* in fact neutral in their abstract form.” He continues, drawing upon different technologies to illustrate his point: “the gears and levers of the assembly line, like the bricks and mortar of the Panopticon, possess no intrinsic valuative implications. The illusion that technology is neutral arises when actual machines and systems are understood on the model of the abstract technical elements they unite

⁹⁴ Wu, *Network Neutrality*, 149

⁹⁵ Andrew Feenberg, *Transforming Technology: A Critical Theory Revisited*. 81. New York: Oxford University Press, 2002. Print.

in value-laden combinations.”⁹⁶ The way users assign meanings to the combinations of technical parts making up a technological whole speaks to biases present in their unique user interpretations; this makes for a confusing base from which to agree on technological neutrality and subsequent regulation.

Social versus Technical Fix

Questioning the purpose and ends of technology is crucial to understanding technological choices and influence. On the one hand, a technology develops to solve an existing problem. However, how often has novel technological developments, implementation, and continued use produced more problems than previously present? A technical fix seeks to address an existing problem, but in doing so, creates different problems. Technological engineering is conceptually placed in opposition to social engineering (in the form of regulations, policy reform, leadership and priorities, etc.) Could Net Neutrality be seen as a site of favoring social engineering over further technological innovation? Is this another case of a false dichotomy? If so, technological and social strategizing and engineering should blend together; but perhaps it is not that simple. There is the reality of technical or expert knowledge gaps between important individuals, even now in this debate.

Could federal or societal regulation be interpreted as both economic control as well as a response to new dilemmas posed by rapid broadband expansion and use? Decreased data transmission could decrease bandwidth size and capacity, in turn decreasing the costly infrastructure overhauls that would otherwise be necessary to conduct were regulation to privilege the demand for *higher* bandwidth for *faster* data transmission. In another case,

⁹⁶ Ibid., 82

privileging certain types of data over others may change the nature of media convergence on the Internet, where audiovisual might be prioritized over text. This of course, could lead to new technical dilemmas, responses, and information paradigms.

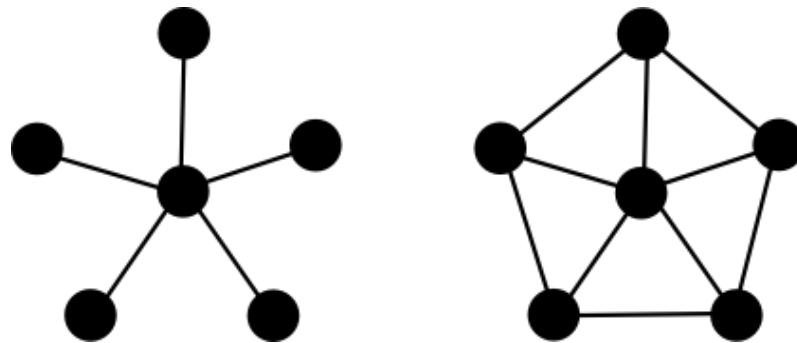
The issue of social versus technological engineering and the nature of problem solving also ties into the prevalence of rhetorical over technical considerations. Mentioned earlier, Nuechterlein and Weiser write that in this debate, “absolutist rhetoric often eclipses nuance.” The language is reminiscent of political and social justice, grounded in the nation’s founding principles, upheld to the end. A neutral, open web, with liberty, and justice for all. This sort of allegiance raises the question of what political undertones the Internet holds and could hold should “Net Neutrality” principles be overturned with a change in presidency or in majority political party in Congress.

Technical Alternatives

As for the matter of a technical fix, the alternative network topology of “mesh” networking could be a way to circumvent the problems posed by centralized Internet service provision. Mesh networking might allay the conflicts and complications arising from the dominant hub-and-spoke (or star) topology. In the following figure, the arrangement on the left depicts hub-and-spoke, where the center circle might represent an ISP, like Verizon or Comcast. The spokes then represent the subscribers to the ISP’s service.

The configuration on the right, however, depicts what a “mesh” network might look like. Rather than many users relying on a central source to dole out Internet access, all points of the network (or devices) can connect with each other in a mesh network. This organization allows for data and information to travel across many different paths rather than singular paths, making

for perhaps a more secure (though seemingly “messy”) network.⁹⁷ The mesh topology reflects more accurately the early Internet environment in which one’s network did not extend as far globally as it does today. This would require a re-prioritization of users and the content experience they value. A shift to this configuration would also require a greater degree of user knowledge of device, data, and connectivity technicalities, which would only serve to empower themselves as users even further.



Interpretations and the End User

The Internet is a unique case because it has taken two decades to grow exponentially and destabilize several modes of work and money, health and lifestyle, and both personal and public politics. Comparable prior revolutionary industrial advances took many more decades to leave an impact. It is a time where many individuals who have *not* grown up with the Internet, but have nonetheless witnessed its implementation, are in key decision-making roles.

⁹⁷ Adrienne Lafrance, “The Promise of a New Internet,” *The Atlantic*. 10 June 2014.
<http://www.theatlantic.com/technology/archive/2014/06/the-promise-of-an-alternative-internet/372501/>

These two experiences are fundamentally different: those native to the digital world may respond to regulation in a way that could be lost in translation by non- digital natives. Digital natives in the United States might as well feel that there is nothing at their disposal *but* the Internet in this debate, so how else can they participate? This consumer base might accommodate larger and larger price tags for this “service” that, to them, is more than just a service. While their provider sees them as exclusively a consumer of Internet and broadband service, the user themselves identifies with the technology in a much more complex and multi-layered way. Perhaps digital natives will change their digital habits so as to avoid exorbitant costs, and begin to navigate their realities in new ways. They may negotiate new processes and relationships for a smaller price tag. Meanwhile the business and education sectors may wholeheartedly embrace the digital world for its benefits to their purposes, like expanding their market or improving student’s performance in school.

There is tremendous diversity in the personal values and philosophies individuals hold towards their personal and increasingly digital technology. While there are those who generalize “millennials” as tech-obsessed, glued to their phones, or impatient, there may be those who qualify as a “millennial,” having grown up literally as the Internet grew up, born as it was born, who are wary of the Internet’s negative side effects on relationships or children. Conversely, while older individuals are generalized to be technologically and Internet-inept, there are those who navigate it with ease and enjoyment.

These multi-value interpretations, then, make the Internet that much more difficult to confine to one of two regulatory categories. It is both a function of multiple forces and functions in service of multiple forces.

Conclusion

Societal dependence on the Internet will only increase, while the paradox of a globalized web confronting territorial jurisdiction will remain constant, at least according to professors and lawyers Jack Goldsmith and, again, Tim Wu. At the end of their book *Who Controls the Internet: Illusions of a Borderless World*, they write that “the openness of the network is contingent, and one of the most important things it is contingent on is governmental coercion that demands a unique architecture.”⁹⁸ A unique architecture, but how so? Government interests have preconceived ideas as to what a national telecommunications network should look like and in whose hands the power should lie. Often this is intertwined with business interests, as seen through the AT&T legacy; though if not intertwined, these are increasingly in opposition to business imperatives. While technologically, the network can be open and non-discriminatory, the network can only be as culturally and philosophically “open” as it is *regulated* to be.

When it comes to Net Neutrality discourse in the U.S., companies and corporations are very consumer-focused when dealing with the potential effects of a non-neutral Internet space on consumers. Regulation seems more directed to the *providers* of Internet service than to consumers, superficially. But outcry from the recipients and users of this service comes from their self-ascribed identities as active *participants* rather than as mere consumers. Users, as participants with agency and the ability to make change, determine the shape of the Internet and its wider social meaning. Feeling as though one deserves to be involved with final regulatory

⁹⁸ Goldsmith and Wu, 184

decisions is thus founded on this understanding of the user as an important participant who completes the socio-technological feedback loop.⁹⁹

I sought in this thesis to identify the Net Neutrality debate as an important turning point in the history of the Internet. The debate has been clouded in powerful corporate interests and business deals that wish to dominate content and service across the spectrum, which seems to go against the political nature of the Internet as a liberating tool. I began by describing the net's history and technical infrastructure as background information necessary to understanding the details of the Net Neutrality debate. I then went on to outline the history of relevant telecommunications legislation and prior regulations, with the goal of setting the scene of the current controversy.

As of February 2015, the FCC had established certain rules and standards. The debate did not end with this, however, as evidenced by the variety of (both legal and non-legal) responses from many interested parties. The unique needs of each of these interested parties exemplifies just how flexibly the Internet is interpreted as a technology. Internet users, on both the individual and group level, identify with certain activities allowed by the Internet (and even more so rendered impossible without the Internet) that give wealth to their non-digital lives, whether that be playing music or campaigning for or against political candidates.

An increase in public literacy, knowledge, and discourse about Internet technology must occur. Once this happens, the Net Neutrality conversation and decisions can be made more collectively, as this reflects the inherent politics of the Internet -- a network of networks. The FCC does not have the appropriate regulatory framework to govern the Internet, thus making it

⁹⁹ Bijker, Wiebe, Thomas Hughes, and Trevor Pinch. *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge: The MIT Press, 1987. Print. 17-50.

the incorrect place for final decisions about the Internet. This is evidenced by limiting classification categories that originate in and adhere to outdated legislation.

How should policy debate proceed when two competing yet relatively valid notions of freedom define the controversy? One side of the Net Neutrality coin concerns a fear of limiting business (and consequently, technological) freedom: what is the effect of mandatory neutrality on companies' willingness to innovate and transform telecommunications, while at the same time choosing the limits of their service? On the other side of the coin, neutrality proponents claim that data and user non-discrimination preserves the freedom allowed by the Internet to all of its users. Furthermore, they believe this freedom is crucial to maintaining a politically open society.

Quelling this dilemma also requires a new societal conceptualization and terminology of "neutrality." The debate needs language more reflective of its current configuration of politics and control, and through wider public education and discourse about these configurations, more compatible legislation and regulation may proceed, even if through continued federal jurisdiction. The debate's current frustrated disarray is a result of the confused interplay of Internet history, technical expertise, business authority, status quo government power, and everyday citizens transformed by this technology. Despite this, one can find assurance in the fact that the technology will constantly be undergoing change through its reliance on the user feedback loop driving technological and subsequently, social change, at a rate faster than regulation can follow.

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