Consumer Federation of America

PRAGMATIC, PROGRESSIVE CAPITALISM AT ITS BEST: NETWORK NEUTRALITY

How an Entrepreneurial State Used Public Policy to Foster Experimental Entrepreneurialism and Create the Internet

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EXECUTIVE SUMMARY

This paper analyzes one of the, if not the single most, important developments of the digital age – the creation and deployment of the Internet. It shows that U.S. dominance in the Internet was an example of a uniquely American approach to political economy, a combination of experimental entrepreneurialism in markets governed by aggressive policies of an entrepreneurial state.

Aggressive public policy to constrain the abuse of market power by dominant, incumbent communications network owners (e.g. AT&T) and other large technology firms (IBM and later Microsoft), described generally, but perhaps too simplistically, as network neutrality, created an environment for an explosion of experimental entrepreneurialism. While public policy created and maintained the innovation-friendly environment by ensuring nondiscriminatory access to the communications network, experimental entrepreneurs built a vast body of new institutions and economic relationships that thrived in a competitive, market environment.

Although the recent FCC "Flip-Flop" order that essentially repealed the Communications Act of 1934, was upheld by the D.C. Appeals Court, that decision was based entirely on agency "discretion." In fact, two of the three judges hearing the case felt that the FCC had gotten the legal and historical analysis completely wrong, but they felt bound by the grant of agency discretion to allow the order to stand. Even the third judge said the agency had the discretionary authority to define broadband as a Title I or Title II service.

This paper argues that the FCC went even farther, developing a theory of "sufficient" competition that essentially invented a Title "0" approach. The extreme deference given the agency, the history of abuse of market power by dominant communications network companies, the overwhelming evidence in the record, and the clear evidence that the FCC action violates the intent of the law, guarantees that this decision will be revisited and reversed in the future.

Part I (Chapter 2) describes the key features of the Internet at the heart of the digital economy. The key concept at the micro-level is the development of experimental entrepreneurialism made possible by the end-to-end principle of the Internet. Unshackled from the chains of the dominant, centralized communications networks and computer developers, the powerful process of "innovation at the edges without permission" was unleashed. Innovation at the edges became the driving force behind the virtuous cycle of economic development.

Development of applications, devices, and content stimulates demand for communications, which drives innovation and investment in the supply of communications network capacity and functionality. In turn, improving network functionalities and expanding capacity make new applications possible, which stimulates new demand and allows the cycle to repeat.

Chapter 3 describes the key role of policy across several federal agencies that created the environment in which "innovation at the edges without permission" could flourish. The Federal Communications Commission (FCC) played a key role by adopting rules that prevented the

dominant communications owners (AT&T) from discriminating against data flows (the Computer Inquiries) and allowing all innovators to attach devices of their own design (Carterphone) to the network. Antitrust authorities at the Department of Justice (DOJ) fully supported this pro-competitive thrust of policy.

Other FCC decisions ensured that the connection of devices and development of applications were free from the "approval" of network owners. This extended to the sharing of spectrum according to simple rules, independent of the network owners. In the hands of innovators at the edges, this spectrum, which had previously been considered "garbage" or "junk," came to carry the vast majority of wireless traffic.

Part II describes the importance of the combination of the entrepreneurial state and entrepreneurial experimentation by identifying the harm that would be done by abandoning the pillars on which innovation at the edge without permission is based. It does so from two perspectives.

Chapter 4 discusses the very clear and strong principles of nondiscriminatory access identified by the two most important, independent providers of services that flowed over the communications network. These two firms, one a long-distance company, one an Internet service provider, knew exactly what they needed and how the dominant communications networks had to be controlled in order for competition to survive and thrive. They articulated these principles in proceedings at the federal and state level in the U.S. and Canada. The fact that these two firms, the great hope for competition, would later be acquired by dominant communications network owners and change their tune is a stunning historical irony that highlights the importance of their "independent" observations.

Chapter 5 discusses the historical opposition of the owners of dominant, centralized communications networks to the birth of the decentralized approach to communications. It shows that the owners have the incentive and ability to undermine the guarantee of access, on fair, reasonable and nondiscriminatory terms— a guarantee that is essential to the ability to preserve innovation at the edges without permission. Over the course of the three decades of the invention and deployment of the Internet, the network owners argued and tried relentlessly to undermine the decentralized approach, but they were checked by regulation and antitrust policy.

Part III puts the debate over network neutrality into contemporary perspective. As **Chapter 6** shows, the Telecommunications Act of 1996 adopted and enshrined the approach of the FCC and the DOJ in law. Network owners used this as an excuse to launch another round of attacks on the principles of nondiscriminatory access. Twenty years later, the FCC ended up asserting authority over network neutrality, which the courts upheld.

The only question is, why did it take the FCC so long to arrive at this compelling line of reasoning that leads to a Title II classification? The answer is, for the first three decades of the birth and growth of the Internet, the FCC did not need this authority. The courts had accepted a legal theory in which the FCC claimed broad jurisdiction under Title I of the Act to take actions that emulated (invoked) Title II authority. However, when the court changed its view, adopting a much dimmer view of the exercise of this ancillary authority, the FCC was forced to make a choice. Either abandon the principle of nondiscriminatory access on which the innovation at the

edges without permission had been built, or assert Title II authority. As this paper shows, it correctly chose the latter.

Chapter 7 shows that the FCC "Flip-Flop" will not preserve the principle of network neutrality. The lack of competition means innovation will be chilled. The complexity and high transaction costs of complaining about abuse, after the fact, means that "transparency" is will not discipline the stream of discrimination that the network owners will impose on users. The suggestion that the FTC rule-making authority can replace the FCC's clear authority under Title II does not stand close scrutiny. The report shows the FTC has a remarkable record of failure in the digital age, starting with the Microsoft case in the early 1990s and ending with a complete failure to adopt effective protection for consumer privacy from the mid-1990s until today.

1. INTRODUCTION

PURPOSE

Network Neutrality Innovation at the Edges without Permission through Nondiscriminatory Access

This paper analyzes one of the, if not the single most, important developments of the digital age – the creation and deployment of the Internet. It shows that U.S. dominance in the Internet was an example of a uniquely American approach to political economy, a combination of experimental entrepreneurialism in markets governed by aggressive policies of an entrepreneurial state. The state's goal was to create and ensure conditions that support private entrepreneurial activity.

Aggressive public policy to constrain the abuse of market power by dominant, incumbent communications network owners (e.g. ATT) and other large technology firms (IBM and later Microsoft), described generally, but perhaps too simplistically, as network neutrality, created an environment for an explosion of experimental entrepreneurialism. While public policy created and maintained the innovation-friendly environment by ensuring nondiscriminatory access to the communications network, experimental entrepreneurs built a vast body of new institutions and economic relationships that thrived in a competitive, market environment.

The communications network owners always resisted the dynamic, innovative space created by the combination of the entrepreneurial orientation of market entrants and the state. Not surprisingly, the policies the network owners sought to advance would have maintained their dominance and control and destroyed the central dynamic process at the edge of the centralized network.

With a full understanding of the origin and development of the Internet, it is simply impossible to believe the success of experimental entrepreneurialism could have been achieved without the entrepreneurial state. It would be a mistake to think that policy can abandon the latter (strong policy protection of the edge) and keep the former (dynamic innovation in the sector).

Network neutrality, which was first called open access and always stood for the principle of nondiscriminatory access to the network, has two characteristics that are the focal point this paper.

First, from the point of view of economics, network neutrality is not a casual feature of the sector's progress. Rather, its architecture is a fundamental pillar of the success of the Internet and the digital economy more broadly. It is and has been the core economic principle that has driven not only the development of the communications space, but much of the development in the sectors touched by it.[1]

Second, network neutrality was created by active policy. It will not "evolve" in a centralized framework of dominant, frequently, monopolistic communications networks.[2] Because policy played such an important role, there is no avoiding law and history in a debate

about how this core feature of the digital economy should be overseen. Law determines not only how the sector will be governed, but also how rules can be changed. History provides the context for understanding what has and can work in a sector that has been remarkably successful under the law – the framework to decide why rules should or should not be changed.

The Authority for Public Policy (the Federal Communications Commission) to Enforce Nondiscriminatory Access

Ironically, given the importance of this combination of public policy and market activity in the birth and growth of the Internet, or perhaps because of it, the policy of non-discriminatory access to the communications network has been up in the air for a quarter of a century. The passage of the single largest amendment to the Communications Act of 1934 (hereafter the '34 Act), the Telecommunications Act of 1996 (hereafter the '96 Act) opened the door to five major reformulations of FCC authority over network neutrality in just two decades.

There were three primary reasons for this upheaval. First, a new law always invites efforts to articulate what Congress meant. Second, no matter how clear the language in the statute, those who disagree with it will insist that it is not entirely clear. Third, broadband communications could be seen as a: "new" service. However, with the passage of the '96 Act and the arrival of broadband communications, the dominant communications network owners were given an opportunity to press for treatment they had long desired but been denied.

In this paper I argue that none of these reasons justifies abandoning the policy of strong, before-the-fact (*ex ante*) rules to ensure nondiscriminatory access. For three decades the FCC had imposed the obligation of nondiscrimination under its broad (ancillary) authority granted in Title I.

> For the purpose of regulating interstate and foreign commerce in communications by wire and radio so as to make available, so far as possible, to all people of the United States a rapid, efficient nationwide and world-wide wire and radio communications service with adequate facilities at reasonable charges, for the purposes of national defense, for the purpose of promoting safety of life and property through the use of wire and radio communications.[3]

In pursuit of this broad Title I goal, the FCC claimed authority to use rules that appeared similar to the rules it used to implement the obligations of Title II on telephone companies. Notwithstanding the fact that the '96 Act clearly enshrined the approach the FCC had taken toward network neutrality for three decades; the network owners launched an all-out war against network neutrality, ignoring the fact that Congress was clearly adopting the FCC approach to network oversight that had worked so well.

The battle started during the Bush administration. Under Bush I, FCC chairman Powell classified cable modem service as an information service, but claimed weaker ancillary authority to guarantee a restricted form of network neutrality. Under Bush II, FCC Chairman Martin classified broadband wireline as an information service (thereby expanding on Powell), and also vacated the Computer Inquiries, the foundation on which nondiscrimination had been built.

The Obama administration moved back to the origin of the Internet and the clear language of the '96 Act. Obama I (under FCC Chair Genachowski) attempted to return to full

Title I authority with some specific practices targeted as discriminatory. Obama II (under chairman Wheeler) dropped the "ancillary authority" pretext and defined broadband as a Title II service, making the regulatory authority to write rules directly available to the FCC.

The Trump administration despised regulation and the FCC chair, Ajit Pai, took a Title "0" approach. I call this the FCC "flip-flop" order and a Title "0" approach since the ink was barely dry on the court ruling that upheld the Title II classification, when the Trump/Pai administration decided to head off in exactly the opposite direction. As discussed below, the FCC essentially abandoned oversight for an approach that relied on self-regulation and punted the general authority to oversee the communications sector to the antitrust laws. Weak transparency and antitrust could correct any problems, hence the Communications Act was no longer necessary.

In ruling on the Title "0 flip-flop" the majority members of the Court stated strongly that the FCC had gotten its analysis completely wrong. Never the less, they felt they were bound by the expert agency deference that had been given to the FCC under the Chevron doctrine. In fact, all three sitting judges believed that the FCC had the discretion to define broadband Internet access service (BIAS) as a Title I or Title II service. This paper shows, supporting the majority of the court, that it should have asserted its authority to create an enforceable obligation of nondiscriminatory access to preserve the open, competitive environment in which innovation at the edges without permission had thrived and created the virtuous cycle.

Each of these cases' court rulings triggered the effort to define and redefine network neutrality, and each rested on a determination that the expert agency had to be given discretion in how it implemented the underlying statute (Chevron deference). The dramatic difference in regulatory treatment, the deference repeatedly given to the FCC rules, and the importance of the principle of nondiscriminatory access to communication, all but guarantee another round after a presidential election. Thus, the implementation of network neutrality policy will be deeply affected by the outcome of the 2020 election.

OUTLINE

The remainder of the paper is divided into three parts that proceed in chronological order.

Part I explains the key conditions for the development and deployment of the Internet. It shows how and why the unique combination of the market and the state worked well in America to create the Internet and the digital economy on which it was built.

Chapter 2 begins by describing the historical context in which the effort to build an open, decentralized communications network was located, a history that stretches back to the origin of the Republic. It then examines the three decades (roughly the mid-1960 to the mid-1990s) in which the Internet was born and grew. It emphasizes the role of the market – experimental entrepreneurialism – and the virtuous cycle in the development and growth of the Internet.

Chapter 3 examines the key role played by policy – embodied in the entrepreneurial state – in the birth and growth of the Internet. It does so from two points of view. First, it discusses the positive policies necessary to create the open communications network that rode upon the existing telecommunications network. Second, it examines the negative characteristics of the

underlying, centralized monopoly network, from which the decentralized network had to be insulated to create the Internet.

Part II explains why all the policy was necessary at the outset by examining the behaviors and abuses of dominant network owners and the damage their actions could do to innovation at the edges.

Chapter 4 describes the concerns of two of the largest service providers who were independent of, but dependent on, the giant communications firms that owned the communications networks for access to consumers. These two firms, one an Internet service provider (AOL), the other a long-distance telecommunications provider (AT&T), were seen as a great hope for creating competition in communications. They made detailed recommendations to regulatory authorities in Canada and the U.S. about the policies necessary to preserve the open competitive environment of the Internet. Ironically, the arguments of independence were made just before they were acquired by dominant communications network owners. Needless to say, once they were acquired, they changed their tune to reflect the interests of their new parents.

Chapter 5 describes the pattern of abuse of the dominant communications firms. It rebuts the claim frequently made by dominant communications network owners that policy makers need not worry about their behavior because their private interests are synonymous with the public good.

Although specific policies are discussed throughout Parts I and II, Part III focuses on the two most recent big policy frameworks governing nondiscriminatory access to the communications network. They are diametric opposites, very close in time when they were upheld by the courts, and rest on the claim that the agency has a great deal of discretion in deciding policy under the Communications Act. These characteristics make it very likely that this policy will be an early, if not immediate, target of another round of policy after the election.

Chapter 6 highlights the importance of the regulatory regime that guarantees nondiscriminatory access to communications before the fact (*ex ante* in economic terms) is described. This brings us back to the discussion in Chapter 2 in which the three decades of remarkably pro-competitive policies adopted by the FCC were enshrined in the'96 Act.

Chapter 7 briefly shows that the alternative approach offered by the FCC is inadequate to provide the guarantee of nondiscrimination that gave rise to innovation at the edges and the virtuous cycle of investment. Given the lack of competition between dominant communications network owners and the history of behavior of dominant network owners, a reliance on self-regulation is very likely to fail. The backstop of—at most—an antitrust, not FCC, regime of after-the-fact (*ex post*) oversight, where injured parties have to prove they were harmed will not provide the guarantee of access that experimental entrepreneurship at the edges demands. Preventing the mere threat of the exercise of that market power was the essence of public policy in the first three decades of the Internet's success.

2. INNOVATION AT THE EDGES AND VIRTUOUS CYCLES
THE ROLE OF EXPERIMENTAL ENTREPRENEURS AND THE ENTREPRENEURIAL STATE IN THE SUCCESS OF THE INTERNET

Since the passage of the 1996 Telecommunications Act, no issue has attracted more attention from the dominant communications network operators, who have formed what I show is a "tight oligopoly on steroids,"[4] than network neutrality. There is a simple reason. As long as public policy actively ensures decentralized communications, network neutrality constrains their market power.

The story of network neutrality in the fifty years since the FCC established a framework for the growth of the Internet is a story of the good, the bad and the ugly. The good part of network neutrality is the policy's remarkable success in ensuring nondiscriminatory access to the digital communications network. The bad part is the network owners' repeated effort to roll back policies preventing nondiscrimination, as well as the anticompetitive, anti-consumer behaviors in which the owners engage when they think they can get away with them. The ugly part is the dramatic flip-flop of policy positions the independent companies went through when they were acquired by network owners and the FCC's recent flip-flop orders to accept that shift in position.

THE DEVELOPMENT OF THE UNIQUELY AMERICAN POLICY TOWARD TELECOMMUNICATIONS

Because history and law matter so much, the discussion begins with a brief sketch of the policy terrain in which the Trump Administration proposed the radical repeal of the long-standing principles that have guided communications policy in the U.S. From the earliest days of the American Republic, access to the primary means of commerce and communications – roads, ports, canals, the telegraph – was ensured and guided by a strong presumption that service would be provided in a nondiscriminatory manner. These principles were deeply embedded in British common law from the very beginning of the capitalist revolution. The law would typically find in favor of a traveler or merchant who could show that he or she was the victim of undue discrimination. Economists describe this is an after-the-fact (*ex post*) approach, where the offense takes place and must be proven after the abuse.[5]

The Communications Act of 1934: Fundamental Principles Governing Access to Users

As the second industrial revolution took hold and giant corporations—first among them the railroads—became dominant, the United States adopted a new approach to implement this principle of non-discrimination. The Interstate Commerce Act, one of the first pieces of legislation adopted at the federal level during the Progressive era, shifted to a before-the-fact (*ex ante*) approach. The large providers of these essential infrastructure services had become so large and powerful that small producers, like farmers, were no match for them in court. The burden of proof was placed on the provider of services to show that the rates, terms, and conditions were just, reasonable, and nondiscriminatory before they went into effect. *Ex ante* regulation of rates was adopted, based on the recognition that severe harm could be and had been imposed on the public.

This regime of oversight was extended to the telecommunications network in 1910, in recognition of the growing and unique importance of this new infrastructural industry. The increasing oversight over the telephone network reflects a common pattern in American history, one in which policy evolves, frequently at the state level, and then is adapted on a broad, national level. A quote from an 1886 Indiana court case links the past to the present:

> [The telephone] has become as much a matter of public convenience and of public necessity as were the stagecoach and sailing vessel a hundred years ago, or as the steam-boat, the railroad, and the telegraph have become in later years. It has already become an important instrument of commerce. No other known device can supply the extraordinary facilities which it affords. It may therefore be regarded, when relatively considered, as an indispensable instrument of commerce. The relations which it has assumed towards the public make it a common carrier of news – a common carrier in the sense in which the telegraph is a common carrier – and impose upon its certain well-defined obligations of a public character. All the instruments and appliances used by a telephone company in the prosecution of its business are consequently, in legal contemplation, devoted to a public use. [67]

The early date of this observation, 1886, is notable, since the telephone had just begun to penetrate, but so too is the comprehensive sweep of history. The telephone network was in its infancy, but its vital nature brought the obligation of public use upon it. Telephones would soon become a dominant means of business communication. Traditional practice did not excuse it from public interest obligations because it was new. Moreover, this citation also suggests the dual nature of communications networks as both a means of commerce and a means of democratic expression.

In 1934, the Communications Act created a separate agency to oversee a much more detailed statement of similar principles. Table 2.1 outlines the key provision in the two laws – the Communications Act of 1934 and the Telecommunications Act of 1996 – on each of the issues discussed in this paper that play a central role in the network neutrality debate

Title I expressed the broad principles and goals of the Act, which were directly affirmed, even expanded, in the 1996 Act. Title II of the 1934 Act defined the (reasonable) rates, terms and conditions under which service (interconnection and carriage) was to be made available to all people in a nondiscriminatory manner.

The Birth of the Internet

This paper shows that the flowering of the Internet and the growth of digital communications reflected the fundamental value of nondiscrimination in the extreme. In the 1960s, the Department of Defense nurtured the idea of decentralized communications protocols and in the 1970s and 1980s the National Academy of Sciences administered the network in an open access manner until it was commercialized. The Federal Communications Commission (FCC) adopted rules in 1968 to prevent the dominant communications network owners from discriminating against users, independent service providers, and application developers and to allow anyone to develop devices to connect to the network. It did so with an approach that maximized the freedom of entities and individuals at the edge of the network to experiment without getting permission from the network owners or the regulator. It defended and expanded this approach that held the market power of the dominant communications networks in check through the 1980s and extended it to an important wireless service. The Department of Justice supported this approach with antitrust actions, most notably the breakup of AT&T.

TABLE 2.1: THE GOALS AND TOOLS OF U.S. COMMUNICATIONS LAW

COMMUNICATIONS ACT OF 1934

OVERALL GOAL: Title I: For the purpose of regulating interstate and foreign commerce in communications by wire and radio so as to make available, so far as possible, to all people of the United States a rapid, efficient nationwide and world-wide wire and radio communications service with adequate facilities at reasonable charges, for the purposes of national defense, for the purpose of promoting safety of life and property through the use of wire and radio communications…

INTERCONNECTION AND CARRIAGE: § 201: It shall be the duty of every common carrier… to establish physical connections with other carriers… All charges, practices, classifications, and regulations for and in connection with such communications service shall be just and reasonable… 202: It shall be unlawful for any common carrier to make nay unjust or unreasonable discrimination in charges, practices, classifications, regulations, facilities or services for or in connection with like communications service, directly or indirectly.

PRIVACY: § 222: Every telecommunication carrier has a duty to protect the confidentiality of proprietary information of, and relating to other telecommunications carriers... and customers

TELECOMMUNICATIONS ACT OF 1996 (amendments only)

UNIVERSAL SERVICE: Overall Goal: to make available, so far as possible, to all people of the United States

§ 254 (b) Universal Service Principles – The Joint board and the Commission shall base policies for the preservation and advancement of universal service on the following principles:(1) Quality and Rates –Quality services should be available at just reasonable, and affordable rates. (2) Access to Advanced Services – Access to advanced telecommunications and information services should be provided in all regions of the nation.

(c) (1) Universal service is an evolving level of telecommunications service that the Commission shall establish periodically under this section, taking into account advances in telecommunications and information technologies and services. The Joint Board in recommending, and the Commission in establishing definitions of the services that are supported by Federal Universal service support mechanisms shall consider the extent to which such telecommunications services

(a) are essential to education, public health or public safety; (b) have, through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers; (c) are being deployed to public telecommunications networks by telecommunications carriers; and (d) are consistent with the public interest, convenience and necessity.

(k) Subsidy of Competitive Services Prohibited- A telecommunications carrier may not use services that are not competitive to subsidize services that are subject to competition. The Commission, with respect to interstate services, and the States, with respect to intrastate services, shall establish any necessary cost allocation rules, accounting safeguards, and guidelines to ensure that services included in the definition of universal service bear no more than a reasonable share of the joint t and common costs of facilities used to provide those services.

§706. ADVANCED TELECOMMUNICATIONS INCENTIVES. (a) IN GENERAL- The Commission and each State commission with regulatory jurisdiction over telecommunications services shall encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans (including, in particular, elementary and secondary schools and classrooms) by utilizing, in a manner consistent with the public interest, convenience, and necessity, price cap regulation, regulatory forbearance, measures that promote competition in the local telecommunications market, or other regulating methods that remove barriers to infrastructure investment

COMPETITION: OVERALL GOAL: To promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies.

§10 (160) (a) REGULATORY FLEXIBILITY.--Notwithstanding section 332(c)(1)(A) of this Act, the Commission shall forbear from applying any regulation or any provision of this Act to a telecommunications carrier or telecommunications service, or class of telecommunications carriers or telecommunications services, in any or some of its or their geographic markets, if the Commission determines that- (1) enforcement of such regulation or provision is not necessary to ensure that the charges, practices, classifications, or regulations by, for, or in connection with that telecommunications carrier or telecommunications service are just and reasonable and are not unjustly or unreasonably discriminatory; (2) enforcement of such regulation or provision is not necessary for the protection of consumers; and (3) forbearance from applying such provision or regulation is consistent with the public interest.

§230: (b) POLICY- It is the policy of the United States-- (1) to promote the continued development of the Internet and other interactive computer services and other interactive media; (2) to preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services, unfettered by Federal or State regulation;
§251: **INTERCONNECTING:** (a) General Duty of Telecommunications Carriers – Each telecommunications carrier has the duty— (1) to interconnect directly or indirectly with the facilities and equipment of other telecommunications carriers; and (2) not to install network features, functions or capabilities that do not comply with the guidelines and standards established…

Source: U.S. Code, 47 U.S.C.

The Telecommunications Act of 1996

The ’96 Act did not disturb the underlying approach to regulation of telecommunications. It embraced the framework that the FCC had used to oversee how data services, which were the

lifeblood of the Internet, were treated under the '34 Act. The '96 Act enshrined in law the FCC's existing approach to the relationship between Internet the communications network. Congress clearly stated that the classification of services for regulatory purposes was not dependent on technology. It enshrined the results of the breakup of American Telephone and Telegraph in communications law, rather than in antitrust law. The '96 Act also doubled down on the core commitment of communications policy to universal service.[8]

The big change in the Act came with an emphasis on competition, which was goal of the preamble (Title I) of the Telecommunication Act of '34. This was implemented through a series of policies designed to encourage the opening of local exchange service to competition Specifically, the '96 Act sought to end franchise monopoly the Regional Bell Operating Companies (RBOCs) had in local service. It recognized, however, that a century of monopoly had endowed the RBOCs with a huge advantage in network infrastructure that posed a barrier to entry that new communications firms could not overcome. Therefore, it required the RBOCs to not only make it "easy" for competitors to interconnect with their network, but also to make the elements of the network available for use so they could get into the local phone business.

The aspiration to promote more competition was cabined by strong concerns about the public interest and consumer protection. Before it could deregulate, the FCC had to find that competition would ensure these key attributes of the communications space. Note that § 10 of the '96 Act, introduced the conditions under which competition could be relied upon to deliver the goals of the Act, rendering regulation unnecessary. This became a source of considerable controversy in the decades after enactment of the 1996 amendments.

The Act also sought to increase long distance competition, which had been, at most a weak duopoly (AT&T and MCI). It invited the local companies into long distance, but only after they had opened their networks and local competition had proven to be viable.

Finally, the '96 Act also sought to increase competition in multi-channel video (MVPD, cable) by lifting the ban on local telephone companies competing against cable.

The failure of head-to-head competition to develop is one of the greatest disappoints of the 1996 Act. The Act envisioned vigorous competition in all markets, but the stronger form of competition never developed. Telephone companies chose not to compete against other telephone companies. Cable companies chose not to compete against other cable companies. Head-to-head, intramodal competition did not develop because the companies chose to buy one another out. The underlying communications networks may have been a little more competitive than they were in the 20th century, but they were nowhere near sufficiently competitive to counteract the market power of the incumbents. Thus, the geographic separation, technological specialization and service segmentation between sectors dating back to the monopoly history of the industry was brought forward into what was supposed to be the competitive era. The justification for a vigorous policy of network neutrality remained in place.

The embrace of competition was cautious in two respects.

First, it sought to preserve the competition that had grown up on the Internet, under the FCC's strong constraints, which prohibited the telecommunications network owners from

discriminating against the flow of data over or the attachment of devices to the communications networks. The competition protected in § 230 was the competition that existed at the time, which was not competition in telecommunications.

The only time the Internet is mentioned in the '96 Act is in § 230 entitled "Protection for private blocking and screening of offensive material." After making findings on the importance and spread of the Internet, the first two policy goals are

> b) Policy
>
> It is the policy of the United States—
>
> (1) to promote the continued development of the Internet and other interactive computer services and other interactive media;
>
> (2) to preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services, unfettered by Federal or State regulation;[9]

Second, this statement of policy was consistent with the overall Act, which accepted the regulatory framework the FCC and the courts had established over the course of thirty years before the passage of the'96 Act. There was no intention to alter the close regulatory and antitrust principles that had promoted innovation and competition at the edges, without permission.

Thus, for virtually the entirety of the 20th century, a period that came to be known as the American Century in recognition of the U.S. economy's remarkable economic progress and emerging dominance, communications were governed by these principles that reached back half a millennium to the earliest days of capitalist development. Users large and small, as well as interconnecting networks – be they national, regional or local – were ensured access to the communications infrastructure on rates, terms and conditions that the law attempted to ensure were just, reasonable, and non-discriminatory.[10]

For two decades after the passage of the '96 Telecommunications Act there was an intense legal and policy debate about how the amendments to the Act affected its underlying goals and structure. Network neutrality, which involved the relationship between Title I and §s 201 and 202 of Title II, has attracted the greatest attention. Whenever congress enacts a new law, it invites disputes and court cases. In spite of the clear intent to legislate the structure that was in place in '96 for the Internet, the implications of these specific words in the statute, as interpreted by the courts have been the source of great controversy and will be explored throughout this paper. At the outset, for background, I want to emphasize several broad observations.

First, there is a sharp dividing point in the analysis, which is reflected in the paper. The three decades before the '96 Act, in which the Internet was born and grew to become a central actor in the communications space, were defined by the FCC's remarkably successful implementation of the powers and flexibility of the Communications Act. It is frequently argued that because the 1996 Act only mentions the Internet once, it did not understand or reflect how important it was, but that is incorrect. The FCC had already considered the importance of the

Internet and by enshrining the FCC's approach in legislation; the 1996 Act elevated the pragmatic, typically American approach to progressive capitalism, particularly in communications.

Second, from the beginning of the Internet's development and throughout its deployment, the dominant telecommunications firms opposed the idea that a decentralized communications protocol should be developed and implemented. They also opposed the idea that individuals should be allowed to attach their own equipment (which the dominant firms dysphemize as "foreign exchange equipment") to the network. Like the railroads a century before them, the handful of firms that dominated the communication infrastructure of the digital age bristled at the principles that constrained their ability to exercise their market power.

Third, although the '96 Telecom Act had preserved the principles of the regulatory/antitrust approach to oversight of communications that had been successful for three decades, the communications giants pushed for interpretations that shifted services into the least regulated categories. Alternatively, the dominant firms claimed competition was already pervasive in order to justify deregulation. Nevertheless, after two decades of legal turmoil, by the end of the Obama administration, the FCC ultimately embraced all of the key principles that had been preserved in the Telecom Act. The courts upheld several of the rules the FCC had issued to implement these principles:

- Access to and for end users: Network Neutrality order, upheld by the DC Circuit
- Interconnection of service providers: Wireless roaming order, upheld by the DC Circuit
- Universal service: Order upheld by a series of courts including the 10th and DC Circuits
- Just, reasonable, and non-discriminatory rate, term and conditions: Business Data Services – banning anticompetitive terms and conditions (embodied in contracts), proposing further proceedings to correct over a decade of unreasonable rates and define a process for setting rates.

Antitrust authorities also took action to control the abuse of market power by the firms that dominated the physical communications networks, beyond the breakup of AT&T:

- in a series of merger reviews, rejecting some and imposing on others conditions intended to preserve competition on the dominant platforms, and
- intervening in regulatory proceedings to support competition (e.g. the spectrum auctions)

The Trump Administration not only sought to eliminate the active policy ensuring network neutrality, but it also sought to abandon the authority on which it rested.

The '34 Act generally displayed a set of characteristics typical of American approach to regulation. Over eight decades, it afforded the FCC the ability to adapt to new technologies, from

mechanical switches and live operators making physical connections to digital electronic systems. This approach was uniquely American. Other capitalist nations had generally chosen to build these sectors with national monopolies, rather than regulated, private franchises.[11] Elements of this model can be found in other capitalist societies, but none as broadly or pragmatically applied, especially in the communications sector, as in the U.S. Some societies were unable to grant regulatory flexibility, others were unable to free capitalists from the straight jacket of those regulatory rules.[12]

The approach was grounded in a basic American value: the deep distrust of monopolies and concentration of power against which the colonies rebelled in the American Revolution. Indeed, when the regulation of the dominant communication firm, American Telephone and Telegraph, failed to prevent the abuse of market power, the Department of Justice entered into a consent decree (one of the first after the adoption of the Sherman Act, 1913) to ensure non-discriminatory access to the dominant firm's network. Seventy years later, U.S. antitrust authorities sought to separate the necessary monopoly part of the company from the potentially competitive parts. U.S. dominance in the 20th century economy and leadership in the core sectors of the 21st century were a direct result of this communications sector partnership of entrepreneurial experimentation alongside policy guidance and protection from the entrepreneurial state.

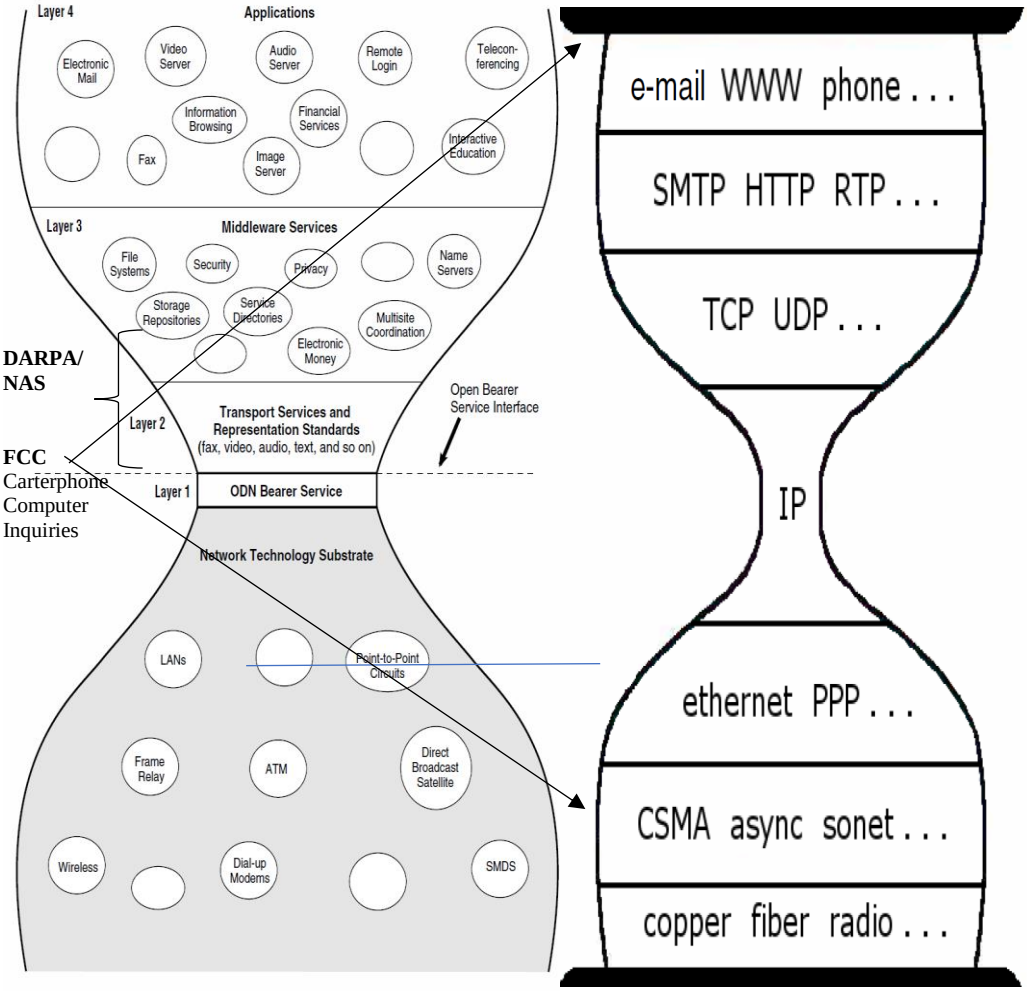
ARCHITECTURE AND EFFICIENCY: THE HOURGLASS AND INNOVATION AT THE EDGES

The dramatic economic success of the Internet is driven by two broad economic processes. At the microlevel we observe a process that has come to be called "innovation at the edges without permission." At the macro level we observe a process referred to as a virtuous cycle. The opportunity (ability) to innovate and deploy hardware and applications at the edge of the network without securing the consent (overcoming the opposition) of the communications network owners, was widely distributed (available) to all users of the network. This unleashed a tidal wave of entrepreneurial experimentation. The trigger for the revolution and the glue that held it together was aggressive action by an entrepreneurial state.

The macroeconomic virtuous cycle framework posits that innovation and investment at the edge of the network are inextricably linked to innovation and investment in the communications network itself in a recursive, reinforcing feedback loop. Development of applications, devices, and content stimulates demand for communications, which drives innovation and investment in the supply of communications network capacity and functionality. In turn, improving network functionalities and expanding capacity make new applications possible, which stimulates new demand and allows the cycle to repeat.

Throughout this analysis, I will use the architecture of the Internet, known as the "Internet Hourglass" shown in Figure 2.1, to describe why this decentralized communications protocol had such a profound effect.

FIGURE 2.1: HOURGLASS ARCHITECTURE 1:
POLICY CREATES OPEN STANDARDS AND LAYERS THAT
LEADS TO INNOVATION AT THE EDGES WITHOUT PERMISSION



Sources: CTSB, NRC, *The Internet Coming of Age (2001)*, pp. 127-128

The Internet became the dominant means of communications because of its vastly superior efficiency and ability to unleash innovation at the edges. This outcome was made possible by the end-to-end principles which allowed communications to flow from any endpoint to any other endpoint without the permission of the network operators. The architecture that supported this principle was based on a modular, standardized layered approach, which was described by the National Academy of Sciences in hourglass. The number of layers used by different analysts varies from three to seven, but these analysts agree that the key is the modular, standardized, open nature of the layers.

Figure 2.1 draws attention to the fact that the open data network (ODN) and protocols at the neck of the hourglass provide the link between diverse networks and a broad range of applications. The principles of openness the hourglass identified bear repeating:

> *Open to users.* The network does not force users into closed groups or deny access to any sectors of society, but permits universal connectivity, as does the telephone network.
>
> *Open to providers.* The network provides an open and accessible environment for competing commercial and intellectual interests. It does not preclude competitive access for information providers.
>
> *Open to network providers.* The network makes it possible for any network provider to meet the necessary requirements to attach and become a part of the aggregate of interconnected networks.
>
> *Open to change.* The network permits the introduction of new applications and services over time. It is not limited to only one application, such as TV distribution. It also permits new transmission, switching, and control technologies to become available in the future.[13]

Not surprisingly, the NRC chose the then current example (1994) to make its point: "The telephone system is an example of an open network, and it is clear to most people that this kind of system is vastly more useful than a system in which the users are partitioned into closed groups based, for example, on the service provider or the user's employer."[53] The network to which they were referring was a common carrier network and it was exactly that arrangement that Congress had in mind when it wrote the 1996 Act. Keeping the waist open and separate was a key architectural feature that took on immense legal significance in the 20-year battle over network neutrality.

> In particular, the concept of a distinct bearer service contributes to meeting the key objective of separating the information service provider from the network service provider in order to allow all potential service providers the opportunity to flourish in an ODN environment…
>
> Its existence as a separate layer… provides a critical separation between the actual network technology and the higher-level services that actually serve the user.[14]

The concept of a bearer service in *telecommunications*, to which the NRC referred is defined in Wikipedia in exactly the way I define network neutrality, as follows

> Bearer Service or data service is a service that allows transmission of information signals between network interfaces. These services give the subscriber the capacity required to transmit appropriate signals between certain access points, i.e. user network interfaces.[15]

Scott Jordan, the FCC's Chief Technologist during the successful effort to classify broadband as a Title II service described the power of the architecture as follows:

> Modularity and standardization of interfaces is exactly what makes the Internet possible. One result of modularity and standardization of interfaces is that edge providers can design applications without the need for coordination with or permission from broadband Internet access service providers who offer the lower

> layer IP packet transfer service. Another result of modularity and standardization of interfaces is that device manufacturers can design Internet-connected devices without the need for coordination with or permission from broadband Internet access service providers. (26)

Nicolas Economides, a leading network economist and defender of nondiscriminatory access, provides a formal economic analysis in which layers play a key role. "The Internet is based on three basic separate levels or functions of the network: the hardware/electronics level of the physical network; the (logical) network level where basic communication and interoperability is established; and the applications/services level."[16] Interestingly, Economides frequently emphasizes not only that the centralization that characterizes the physical layer is anathema to the dynamic nature of digital communications, but also that the distinction between the logical and applications layers is critically important to understanding the success of the Internet.

> Thus, the Internet separates the network interoperability level from the applications/services level. Unlike earlier centralized digital electronic communications networks, such as CompuServe, AT&T Mail, Prodigy, and early America Online (AOL), the Internet allows a large variety of applications and services to be run 'at the edge' of the network and not centrally. [17]

Innovation without permission on the supply-side is linked to the fact that the "Internet's tremendous success has also been based on harnessing and benefiting from networks effects."[18] Removing the network operator as an intermediary who can impose conditions and require negotiations is crucial to dynamic efficiency.[19] There are two sides to the effect – demand and supply – that interact to create the virtuous cycle. The value of a user's experience depends on and increases with the amount of content and applications available on the Internet. The value of content and applications on the Internet, in turn, increases with the number of users connected. This creates a virtuous cycle that dramatically expands the value of the network as its size grows.

Greenstein argues that "The key lessons are learned if the question is: how and why did the operation of economic archetypes, the adoption of government policies, and the influence of institutions encourage or discourage innovation from the edges?"[20] The architecture allowed highly distributed and therefore unconcentrated decision-making power.

THE ROLE OF ACCESS IN THE VIRTUOUS CYCLE OF DIGITAL COMMUNICATIONS

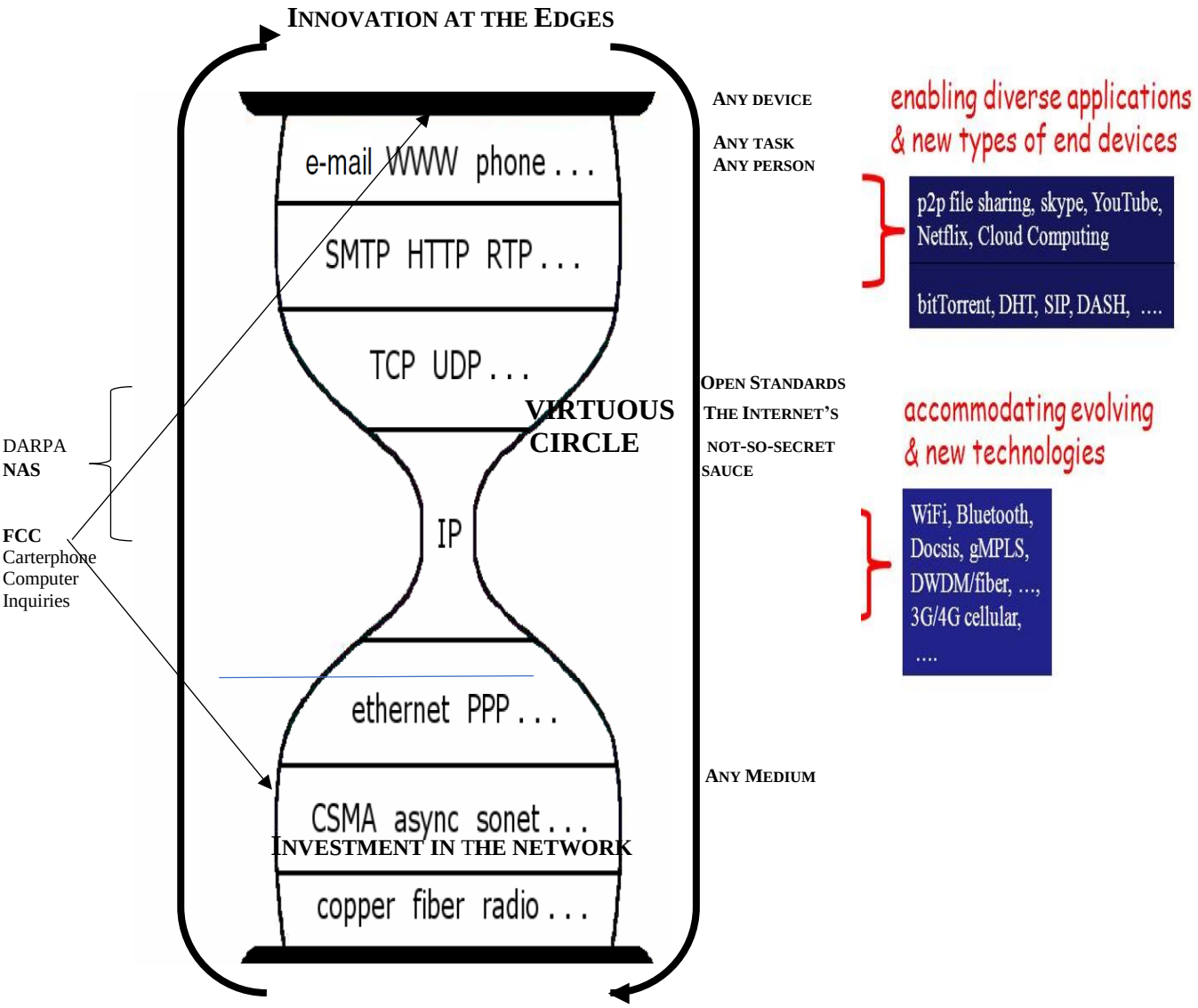
Individual firms are motivated and take action at the micro level. At this level, we can identify a number of conditions that created a space that was extremely friendly to entrepreneurial experimentation, which Greenstein puts at the center of the success of the digital technical-economic paradigm.[21]The "intentional" activities that constitute the core of the "virtuous cycles" typical of the digital technical-economic paradigm include the following:

1. Neutrality of the communications protocols and network devices (interconnection)
2. Interoperability
3. Avoiding costly bilateral negotiations over the cost and quality of access

4. Freedom to experiment
5. User-driven to an unprecedented degree
6. Open standards
7. Importance of platforms
8. New relationship to capital markets

Figure 2.2 again uses the Internet hourglass to highlight the effects of the architecture.

FIGURE 2.2: HOURGLASS ARCHITECTURE 2:
OPEN ACCESS POLICIES LEAD TO EXPERIMENTAL ENTREPRENEURIALISM THAT DRIVES THE VIRTUOUS CYCLE



Sources: Internet architecture, (CTSB, NRC, *The Internet Coming of Age (2001)*, pp. 127-128), leads to innovation by everyone" (Mark Slocum radar.oreilly.com) that drives the virtuous cycle (Federal Communications Commission, 2010, *Connecting America: The National Broadband Plan*, March 17.)

First, on the right I show a framework that identifies the effects of the architectural design choices from a more popular source (Slocum). The key observation here is that by holding itself open to any device, any task, any person, person, it means that everyone is invited to use and innovate over the network. Second, I encase the Internet hourglass in a process that was identified as a virtuous cycle. Innovation at the edges has the effect of driving investment in the network (the center). The expanded capability of the center supports another round of innovation at the edges, which triggers another round of investment in the center.[22] The recursive process, the loop, repeats itself continuously.

The impact of the micro-level intended or directed activities described above were reinforced by undirected processes. There were strong positive external economies associated with the emerging technical-economic paradigm.[23]

The system-level characteristics that emerge as positive externalities to reinforce the "virtuous cycle" of the Internet innovation system include the following:

9. Expanded division of labor
10. Divided and diverse technical platform leadership
11. Specialization of supply firms
12. Network effects
13. Knowledge flows
14. Learning externalities

In responding to the Congressional Request to draw up a National Broadband Plan in 2009-2010, the FCC concluded that the success of the digital revolution in communications rested on a unique system that created virtuous cycles of innovation and investment.[24] The Commission took on the challenge of developing a regulatory framework that protects and advances the "virtuous cycle" so that broadband deployment and adoption is stimulated. This framework is widely accepted under a variety of names – positive externalities, spillovers, network effects, positive feedback loops, and dynamic increasing returns.

The virtuous cycle is a persistent theme throughout the analysis of the Internet and the digital revolution. Greenstein argues that as it had been deployed, "the Internet possessed technical features and governance processes well-suited for sustaining a virtuous cycle."[25] The virtuous cycle rests on modular design[26] and the end-to-end principle[27] unimpeded by the slow and rigid functioning of the central networks. The result is to create flexibility[28] and diversity,[29] which unleashes impatient entrepreneurial experimentation and specialized innovation at the edges. The Internet was considered to be… "the antithesis of what the [communications network operators] aspired to achieve."[30] Value and opportunity resided in the fact that "Openness nurtured radical exploration around unanticipated and under anticipated value… existing firms had been reluctant to pursue the unanticipated value, and many entrepreneurs perceived the opportunity."[31] Virtuous cycles driven by innovation at the edges occur continuously within the digital communications sector,[32] throughout all aspects of the economy touched by the digital revolution sectors,[33] geographic areas,[34] platforms[35] and individual products.[36]

Decentralized impatient entrepreneurialism is a central feature of the Internet ecology, since "much of this innovation would not have occurred in the absence of innovation from the edges… [which] created value much faster and with greater success than any single organization ever could have."[37] In this ecology, "The combination of inventive specialization and informal technical meritocracy also fostered competition among designs."[38] The output of the decentralized approach is superior since "monopolies typically prefer a quieter life of controlled experimentation."[39]

Impatient entrepreneurs "anticipated a big growing market in the near term," while other key market participants hesitated since "many Internet insiders did not care to start businesses, nor did many established firms, such as telephone companies."[40] "The process of innovation was sustained by divided technical leadership… no one firm controlled the direction of technical change, nor could any single firm block a new initiative."[41] The dominant incumbent's DNA was deficient in the traits that would foster experimental entrepreneurialism.

The desire for decentralization was a driving force and this established the lines of battle between the new and old communications networks. The dominant incumbents in the old network were the primary antagonists, who had to be blunted if the new approach to the network was to succeed.

The central conflict was between innovation at the edges and monopoly in the center. Public policy strongly favored the former. "[U]sers had to adopt applications in the PCs and workstations that were compatible with one another but did not have to worry about any of the devices or protocols inside the network."[42] Therefore, the edges of the network were empowered, but in order to exercise that power to the greatest effect, two conditions had to be met. They had to be interoperable with other users at the edge of the network. They also had to be interconnected, but the interconnection was different than the "old" interconnection offered by the telephone network. Once end-to-end interconnection was widely available (Greenstein uses 1997 as a date), "a remarkable set of new possibilities emerged: The Internet made it possible for users and vendors to move data across vast geographic distances without much cost, either in operational costs and/or in advanced set-up costs of making arrangements for transport of data."[43]

The combination of interoperability and interconnection was revolutionary because it opened up opportunities by eliminating barriers and reducing transaction costs. It "enabled enormous combinations of users and suppliers of data that previously would have required bilateral—and, therefore, prohibitively costly—agreements to arrange…"[44] The result was "a network effect where none had previously existed, involving participants who could not have previously considered it viable to participate in such a network."[45]

The fact that users and companies at the edge did not have to "worry about the devices and protocols inside the network" and could use the ubiquitous telecommunications network without bilateral – and prohibitively costly – arrangements was an essential and necessary feature of a communications environment that fostered innovation at the edge.[46] The arrangement involved dramatically reducing transaction costs, which encouraged business activity and created a network effect. "Network neutrality" is a perfect description for a situation in which you do not have to "worry about" the insides of the network or negotiate to make

agreements for transport of data through the network. This dramatically expands the communications space.

The new paradigm provides the opportunity for the most edgy of all actors – consumers and users – to play a much larger role in driving innovation. Of all of "the sources of ideas for new R&D projects outside the R&D lab itself, including suppliers, rivals, university and government labs or even a firm's own manufacturing operations, customers are far and away the most important."[47]

3. THE KEY ROLE OF THE ENTREPRENEURIAL STATE IN CREATING AN INNOVATION-FRIENDLY ENVIRONMENT

While the Internet protocol was very much the direct result of entrepreneurial action by the state, below I show that a host of other policy actions helped the end-to-end principle become a vehicle for innovation at the edges. In the Internet architecture, any user, any device, and any network mean everyone has the opportunity.[48] In Figure 3.1, I note the early actions in the important role of the state in the creation and management of the protocols at the waist of the hourglass. I note the early actions of DARPA in promoting the protocol and the two-decade long role of the National Academy of Science in operating the decentralized communications network to which the protocol gave rise.

The focal point of the first part of the chapter is the FCC policy that laid the foundation for innovation at the edges in wireline and wireless communications. The second part of the chapter examines economic analyses of harms that policy avoided.

WIRELINE: OPENING THE NETWORK, THE COMPUTER INQUIRIES, CARTERPHONE, AND MORE

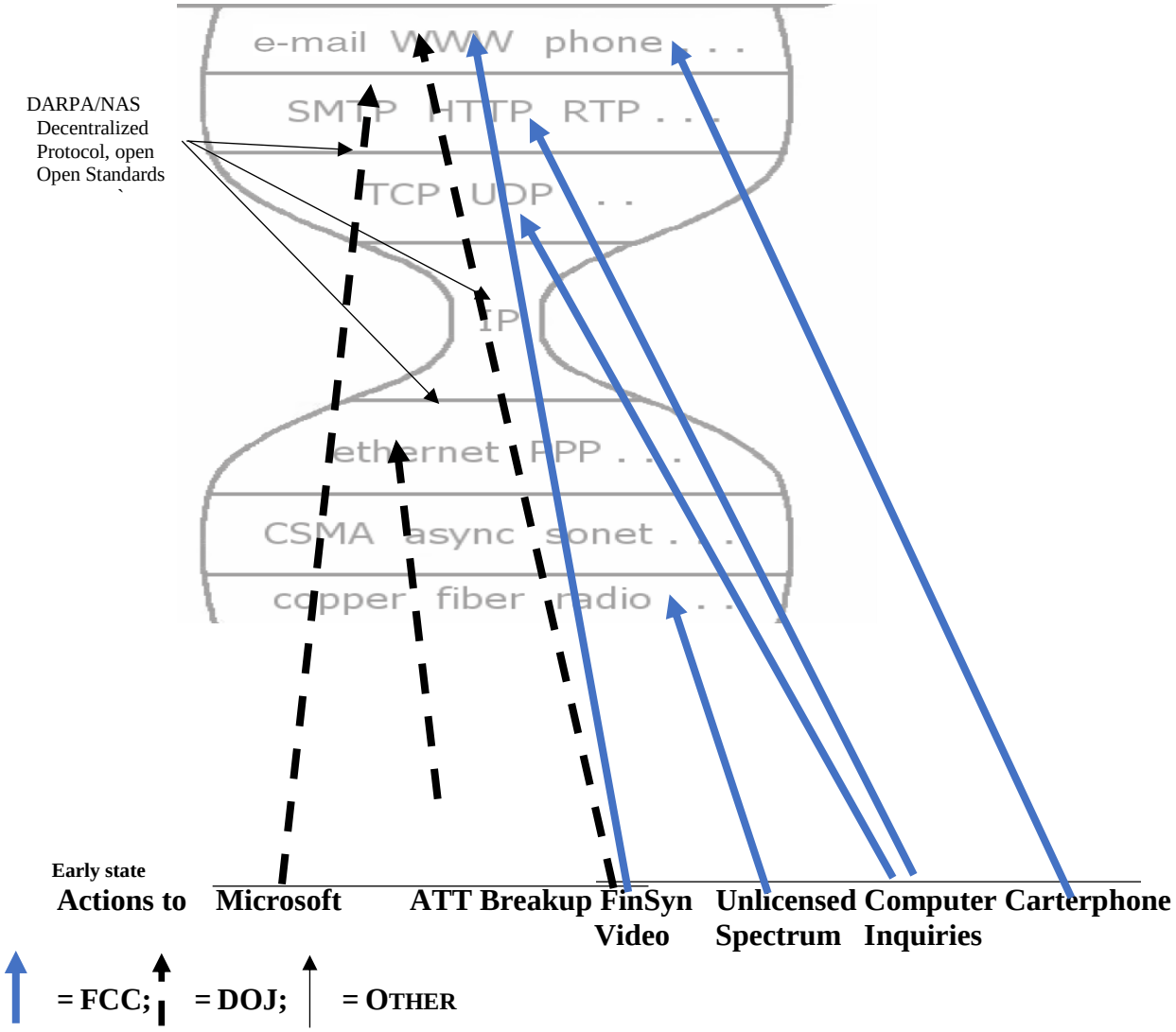
There were many policies that contributed to the development of the Internet beyond the actions of DARPA and NAS, particularly in expanding its impact. These actions, which predate the commercialization of the Internet, are identified in Figure 3.1. As we shall see, the state continued to adopt policies that made the adoption and spread of the Internet possible.

Tim Wu (among many others) has identified a series of regulatory decisions that paved the way for decentralized communications on the wireline telephone network. Most directly relevant for this paper, I note the FCC rules adopted in 1968 that allowed any device to be connected to the network (Carterphone) and prevented the network operators from discriminating against data traffic (Computer Inquiries).

> [T]he FCC ordered Bell to allow the connection of the "Carterphone," a device designed to connect a mobile radio to a Bell Telephone… the FCC went further and specified something simple but absolutely essential: the familiar RJ-45 telephone jack… The modular jack made it unnecessary for a Bell technician to come and attached one's phone to the phone line. More crucial, with the phone change in place, any innovator – any person at all – was suddenly free to invent things that could be usefully attached to the phone lines…
>
> They also made possible the career of Dennis Hayes, a computer hobbyist ("geek" is the term of art) who, in 1977 built the first modulator/demodulator (modem) designed and priced for consumers, the so-called Hayes Modem…
>
> [T]he FCC issued a rule banning AT&T from directly entering the market of "data processing" or "online services." These were the earliest precursors of what I now call Internet service…
>
> In short, with strange and unprecedented foresight, the FCC watered, fertilized, and cultivated online computer services as a special, protected industry, and, over the years, ordained a set of rules called the *Computer Inquiries*, a complex regime

designed both to prevent AT&T from destroying any budding firms and also to ensure that online computer service flourished unregulated.[49]

FIGURE 3.1: HOURGLASS ARCHITECTURE 3:
KEY EARLY PUBLIC POLICIES AS CONDITIONS FOR INNOVATION AT THE EDGES



Francois Bar notes that the FCC made a number of additional decisions that magnified the importance of the commitment to access to the core communications network and the decision not to regulate behavior in the data transmission area.

The FCC allowed specialized providers of data services, including Internet Service Providers (ISPs) and their customers, access to raw network transmission capacity through leased lines on cost-effective terms. Regulatory policy forced

> open access to networks whose monopoly owners tried to keep them from using the full capabilities of the network in the most open and free manner.
>
> Open network policy assured the widest possible user choice and the greatest opportunities for users to interact with the myriad of emerging new entrants in all segments of the network... Indeed, the Commission consistently backed cost-based access to the network (initially through leased lines and later through unbundled network elements). The de facto result of this policy, and of more conscious choices symbolized by the *Computer III* policies, was to prevent phone company monopolies from dictating the architecture of new data-related services.[50]

The clash over standards was one of the key fronts in the battle to decentralize decision-making in the communications network and preserve its openness. The standards as developed prevented incumbent telecommunications companies from hijacking the standard-setting process. Greenstein points out that the Internet protocol itself was managed as an open standard subject to a multi-stakeholder governance process.[51] This prevented the incumbent telecommunications companies from hijacking the standard setting process. Standards committees had always played some role in the computer market. "Never before had such a large industry had so much of its innovative activity shaped by collective firm decisions."[52] Their role in the Internet was more notable for what it was not: These institutions were not beholden to the managerial auspices of AT&T or IBM. For that matter, these committees also did not simply ratify the design decisions of Intel, Microsoft, or Cisco, though all those firms sent representatives who had a voice in shaping outcomes.[53]

> Standards committees participated in this cycle and helped shape the Internet by affecting, for example, pricing, the quality of services, and the identity of leading firms.[54]
>
> Many of these decisions went into use quickly, ensured that all complying components would interoperate, and had enormous consequences for the proprietary interests of firms.
>
> Never before had such a large industry had so much of its innovative activity shaped by collective firm decisions.[55]

The key condition was a collaborative, open process built on "the emergence of a new form of leadership for designing standards, one that involved collections of market participants."[56] The committees that were responsible for designing key standards for the Internet comprised representatives from many firms, as well as interested researchers from universities and other nonprofit organizations. Because undirected economic experiments are undertaken by multiple firms working together, the committees participated in these types of experiments by definition. This raised the profile of activities inside standards committees and it directed attention toward different forms of consensus-oriented processes for designing standards accommodating a variety of complementary goods and services.

> Standards committees had always played some role in the computer market. Their role in the Internet was more notable for what it was not: These institutions were

> not beholden to the managerial auspices of AT&T or IBM. For that matter, these committees also did not simply ratify the design decisions of Intel, Microsoft, or Cisco, though all those firms sent representatives who had a voice in shaping outcomes. [57]

For Greenstein, the bottom line could be simply stated: "Openness… permitted radical change to reach the market when it otherwise might have encountered roadblocks at private firms…. The commercial Internet would have encountered many more challenges without such an open structure to enable the growth of innovation from the edges." (207… 214)

> The range of such important decisions shaped by standards committee was without precedent. The IEEE, for example, made designs that shaped the LAN market, modem, and wireless data communications markets, while the IETF made designs that shaped the operations of every piece of equipment using TCP/IP standards. Many of these decisions went into use quickly, ensured that all complying components would interoperate, and had enormous consequences for the proprietary interests of firms.
>
> Never before had such a large industry had so much of its innovative activity shaped by collective firm decisions.[58]

The National Science Foundation Network, the precursor to the Internet, differed from the phone network in that there was no dominant decision maker in the Internet. "This organization adopted a range of institutional processes that made it very unlike AT&T… [I]t aspired to avoid bottlenecks. If there had been only one place for backbone to interconnect, then it would have been easier for a single entity to erect a bottleneck to new entrants and thereby control a monopoly.[59]

The Internet Engineering Task Force (IETF) which was responsible for maintaining the Internet protocol, relied on nonproprietary standards. Like efforts in other industry-wide standard setting organizations, the IETF asked workshop leaders to develop protocols and standards that did not use patent or other forms of proprietary technology…. Open-ended process also was thought to accommodate the realities of developing a communications technology whose user base was geographically diverse… accumulated incremental advances in publicly documented ways… could accommodate a *swarm of standards,"* gave public credit for individual effort. (199… 201). This organization adopted a range of institutional processes that made it very unlike AT&T.[60]

UNLICENSED SPECTRUM AND THE WIFI REVOLUTION

The FCC repeated its commitment to open networks when it helped to create another key pillar in the structural foundation of the digital revolution. It established the conditions for the explosive growth of another communications protocol, Wi-Fi. Here, Greenstein acknowledges the role of the FCC.

> More surprising, a wireless fidelity technology now popularly known as Wi-Fi became dominant. Wi-Fi did not arise from a single firm's innovative experiment. Rather, Wi-Fi began as something different that evolved through economic

> experiments at many firms. The evolution arose from the interplay of strategic behavior, coordinated action among designers, deliberate investment strategies, learning externalities across firms, and a measure of simple and plain good fortune.[61]

The mobile communications revolution was built upon two very different and successful approaches to the management of spectrum. These approaches were made possible by a remarkable, U.S.-led, real-world experiment.[62] In the early days of radio communications, policymakers chose to manage interference in radio transmission by granting an exclusive license to one user to transmit signals on specific frequencies, called bands, in a specific geographic area for a specific purpose. For three quarters of a century this approach led to the dominance of broadcasting in the commercial use of the airwaves. In the mid-1980s the FCC altered the regulatory regime for access to spectrum and created the opportunity for dramatic improvements and changes in the use of spectrum for communications purposes. [63]

The FCC established the basis for two different approaches. Exclusive licenses were made available that allowed new, two-way communications. Later, licenses were auctioned to the highest bidder.[64] The licenses were still exclusive, but the bidding and flexibility were intended to improve the utilization of spectrum by assigning the rights to those who were willing to pay the highest price. At the same time, and more importantly, the FCC identified some bands where there would be no licensee and interference would be avoided by the use of new technologies (spread spectrum) as well as restrictions on the amount of power devices could use. Anyone and everyone could transmit in these unlicensed bands as long as the devices obeyed the rules. The rules were simple and remarkably efficient.

From the point of view of traditional economic analysis, compared to exclusive licenses, the unlicensed model is extremely, even radically, deregulatory.[65] It captures the benefits of what would otherwise be externalities with respect to licensed approaches.[66]

(1) The unlicensed model removes the spectrum barrier to entry, which is the primary obstacle by allowing anyone to transmit signals for any purpose, as long as the devices used abide by the rules.[67]

(2) Removing this barrier to entry removes the threat of hold up, in which the firm that controls the bottleneck throttles innovation by either refusing to allow uses that are not in its interest, or appropriating the rents associated with successful innovation.[68]

(3) It lowers the hurdle of raising capital by eliminating the need for a network and focusing on devices.[69]

(4) It fosters an end-user focus that makes innovation more responsive to consumer demand; indeed, it allows direct end-user innovation.[70]

(5) It de-concentrates the supply of services compared to the exclusive licensed model, especially for high bandwidth services which tend to result in a very small number of suppliers, particularly in lower density markets.[71]

Unlicensed spectrum lowers transaction costs. If the rules are written leniently, many people will be able to transmit for many purposes. If the rules are written well, interference will

be avoided. The FCC's approach to setting aside spectrum for shared use exhibits several characteristics that accomplish the task of managing the common pool resources in a light-handed manner. [72]

(6) The use rules were simple and established an easy set of conditions with which devices must comply.

(7) They did not require intensive, continuous monitoring and coordination.

(8) There are no membership rules. Anyone could enter and use the shared resource.

Beyond these traditional economic factors, the unlicensed model creates a much more diverse sector. Diversity has come to be recognized as a uniquely important characteristic of economies and economic systems because it reinforces desirable economic traits of the system.[73] Diversity creates value, enhances innovativeness and builds resilience, as well as promoting other social values like pluralism. Diversity is created by three systemic characteristics – variety (the number of firms), balance (market shares of firms) and disparity (the differences between the firms). Adding an additional cellular service provider may increase variety and may improve balance if the new provider gains market share, but it does not increase disparity. The diversity that a different ownership model introduces into the communications ecology provides the uniquely significant benefit of introducing a different perspective, which is ideal for enhancing diversity.[74]

The contribution of the unlicensed use model to the wireless ecology is driven by spectral efficiency,[75] deepening complementarity between licensed and unlicensed uses,[76] and the continual development of new arrangements that integrate the technologies and ownership models.[77] In the case of the cellular embrace of Wi-Fi, necessity is the mother of acceptance.[78] The key to the efficiency of offloading traffic onto unlicensed-use spectrum as implemented by the FCC is the fact that all unlicensed-use spectrum is available to all users all the time. This has the effect of making more capacity and communications available to every user, as long as interference is effectively controlled by the rules of sharing. Cellular's reliance on Wi-Fi is much more than just a convenience; it represents a fundamentally different approach to provisioning initial connectivity that some analysts believe is the inevitable long-term solution for wireless broadband communications.

> Operators are already using Wi-Fi for effective data offload on their 3G networks. This is an excellent application of Wi-Fi because the technology can deliver much higher throughput in small coverage areas to more people than is possible with cellular technologies. Not only is there more unlicensed Wi-Fi spectrum available than the amount of spectrum licensed to any individual cellular operator, but since coverage areas are much smaller, frequency reuse is much higher, and thus there is more bandwidth available to each subscriber.[79]

By 2015, more than half of all wireless traffic was being offloaded onto unlicensed spectrum to deliver voice and data to consumers. A recent Nielsen survey found that 80% of respondents had used WiFi to obtain content.[80] Unlicensed spectrum was also playing a significant part in the delivery of landline broadband, both in distributing signals to devices around the premises once they arrived over wireline and in the form of millions of hotspots. One

can argue that WiFi had become the single most important distribution medium in the digital communications sector. WiFi held its own by every measure of performance – standard development, innovation in devices, uses and users. A great deal of technology had to be developed and deployed in a short period of time in order to support the array of digital services and carry the immense amount of traffic that had been offloaded onto unlicensed use bands. This goes to a fundamental focus of economic policy – the ability of a model to stimulate innovation.

INCUMBENT OPPOSITION TO THE BIRTH OF A DECENTRALIZED COMMUNICATIONS PROTOCOL

To achieve the positive conditions that supported innovation at the edges without permission, which are embodied in experimental entrepreneurialism, public policy not only had to help with access to the network, it had to resist and deter the abuse market power of the dominant communications network owners.

The incumbent communications companies were adamantly opposed to changes in policy that might threaten their dominance. They possess massive economic resources, occupy critical strategic locations in the network, and wield a great deal of political influence and power. It took great effort to overcome the opposition imposed by the incumbents. As incumbents, the dominant firms have a conservative, myopic bias and are certain to be far less innovative and dynamic than the edge. This is based on a preference for preserving the old structure, [81] pursuit of incremental process innovation rather than radical product innovation, [82] and proprietary culture that prefers restrictions on the flow of knowledge.[83] Domineering attitudes and actions in marketing, regulation and network design typified the attitude of the leading firms, who tried to extend their leads by blocking and resisting the new communications space.[84] The incumbents steadfastly refused to participate, to interconnect to or use non-proprietary components,[85] even where it meant foregoing important gains in efficiency.[86]

Greenstein concludes that the independent participants and competitors knew one thing for certain; "they did not want the next communications network to resemble Ma Bell or be dominated by IBM."[87] He asks "Why did so many firms such as IBM and AT&T ignore investing heavily in the Internet just prior to the boom?" He gives three answers, "the expectation that Internet service would cannibalize too many revenue streams at existing business… a commitment to an alternative technological vision or forecast; a situation in which the Internet benefited many users at once… no single firm has incentive to nurture adoption... that did not directly contribute to their bottom line."[88]

Noting that a leader in the desktop space, Microsoft, was also slow, he adds two other dimensions that also apply to some extent to the dominant network and computing firms: a preference for proprietary approaches and a belief that competitive issues had been or could be controlled. "[A]nticipating that the mass-market opportunity for MSN would emerge slowly, giving the company enough time to learn from its experience offering a proprietary dial-up services… confident that the main competitive issues affiliated with the Internet *had* been addressed, and the biggest concerns were far in the future." [89]

Grounded in the centralized network and cautious about product development for fear of cannibalization of their revenue streams, the dominant firms missed the fact that "[t]he

infrastructure for supporting the market already existed in the early 1990s due to the spread of the PC." [90] While experimental entrepreneurs squeeze the most out of the existing assets and infrastructure, dominant monopolists, assuming they can control access and use, make strategic investments that overhang and gold plate the market, making entry more daunting. The strategy of overbuilding, which worked for the dominant incumbents for decades, worked against them when the FCC decided to ring fence their market power and facilitate new applications at the edges of the network that could not be undermined by the central authorities. Strategic investments created opportunities at the edges, when obligations of nondiscrimination checked the ability of the centralized networks to block utilization by edge companies.

Open spaces like the Internet protocols are the meat and potatoes of new entrants and entrepreneurs, but they are anathema to entrenched network incumbents. Given their location and importance in the digital communications platform, if those incumbents are left unregulated to pursue their interests, they are likely to do significant harm to freedom of entrepreneurial experimentation at the edge of the network. Their actions can dampen the willingness and ability of the edge to experiment by imposing counterproductive "worry" about the network and its devices, increasing costs substantially by forcing edge entrepreneurs to engage in bilateral negotiation, undermining interoperability, and chilling innovation through the threat of "holding up" successful edge activities.

Greenstein identifies the key differences that typified the new structure, compared to the old. These differences were part of the radically new DNA of decentralized communications. Light touch licensing and open sources "opened the potential for an enormous number of possible futures."[91] Incumbents were not terribly interested in killer apps.[92] Because the dominant incumbents were more concerned about preventing cannibalization of their revenues and had limited vision, the edge was uniquely supportive of the search for killer apps.[93]

Moreover, with entrepreneurs at the edge seeking to develop and deploy new applications, they often had to cooperate with other new entrants. "[O]ften necessary was *coinvention.* The post-adoption invention of complementary business processes and adaptations aimed at making adoptions useful."[94] Co-invention was both voluntary and involuntary, as single firms could not be efficient in doing everything. As investment in decentralized facilities became denser, co-invention became easier.

Greenstein concludes that "[h]ad commercialization in the United States occurred in a setting resembling the market structure several decades earlier, the new communications technology would have been handed to the largest communications company in the country, AT&T."[95] While the companies have an interest in the largest network possible—the most users doing the most things—there are two problems. First, the companies lie all the time, saying one thing in public and doing something else in private.[96] More importantly, they have an incentive problem and vision problems – cannibalization, competition, control and cataracts. The companies will slow and distort the rollout of products to prevent cannibalization of their revenues, frustrate competition, control technology development, and block technologies whose long-term impact is unclear to them. They talk about Schumpeterian innovation rents a lot, but they ultimately love Rockefeller rents more. They prefer rents to risk and can further their interests by using deep packet inspection to select and control messages.

Ironically, although IBM had played a key role in the second or third generation of the PC by creating an open platform in an effort to "catch up," it did not quickly transform its internal structure. As Greenstein notes, "IBM ultimately resurrected itself by getting out of the network business, abandoning proprietary standards, and focused on a new, large niche that had formed for which it had experience and expertise." [97]

The edge of the network is multidimensional and diverse – reflecting aspects of place, power and perception. Widely dispersed in location, i.e. not at the center, less powerful and peripheral in the incumbent structure, and "outside of forecasts and predictions and, therefore, unanticipated by established firms in computing and communications." The dual spheres mentioned by Greenstein in defining the edge – computers and computing – provide an interesting insight into the themes of his explanation and the initial battle was against domination by AT&T and IBM. AT&T was handled at the FCC by the Computer Inquiries along with Carterphone, unlicensed spectrum and a series of similar decisions. It disappeared as a combatant until the post 2003 period when it returned to the fray as a dominant telephone company, fighting to escape the obligation to provide nondiscriminatory access, and failing until the flip-flop order. IBM, as the great centralizer in the computer and Internet space, appears repeatedly, precisely because it has not been permanently dealt with by a regulatory authority.

THE HARM OF UNCHECKED MARKET POWER OF THE DOMINANT COMMUNICATIONS NETWORK OWNERS

Economides provides a discussion of why abandoning network neutrality would undermine the engine of economic progress, thereby offering analysis of why network neutrality worked so well.

Concentration: Lack of Competition

Economides's argument launches from the observation that competition for local network services is weak.[98] The ocean of data being transported by international and interstate networks hits a chokepoint when it reaches the local network. The contemporary standard for "effective competition" lies somewhere between six and ten vigorous competitors, although anticompetitive and abusive collusive behavior is frequently found at the upper end of this range (ten or more firms).

Table 3.1 identifies the points made by Economides in a series of articles that dealt directly with the harm that eliminating the strong, *ex ante,* prohibition on network discrimination would do to the logic of the Internet model and the dynamically efficient innovation process it had created. I organize Table 3.1 according to the traditional model of structure-conduct and performance, explaining how the market structure creates the conditions for market power abuse that negatively impacts market performance.

The assault on network neutrality is a frontal assault on the characteristic that was essential to the success of the Internet.[99] Network operators can impose fees that raise prices and also adopt policies to increase switching costs.[100] The problem remains the "terminating monopoly," which can now be determined at two choke points: the consumer's network interface or the point at which the seller of complementary service interconnects with the local network,

i.e. business data services.[101] The harm that the telephone companies can do from the dominant position in the wireline market is compounded by the fact that they also dominate the local wireless market. The lack of competition for local service is not only the result of small numbers, but also the result of the dominant providers' conduct and market conditions.

TABLE 3.1: FACTORS THAT SUPPORT THE NEED FOR REGULATION TO ENFORCE NONDISCRIMINATION

Structure
- Lack of competition
  - Raises Prices
  - Holds up successful providers of content
  - High profits do not equate to more investment
- Vertical Integration
  - Inherent advantage of transfer payments
  - Incentive to exclude, degrade, Price squeeze
- Two-Sided Markets do not eliminate concerns
  - Welfare effects are unclear
  - Incentive to congest and discriminate
  - Hold-up of successful producers of services

Conduct
- Discrimination
  - Raises monitoring and transaction costs
  - Restricts choice by picking winners (deep pockets win)
  - Foreclose innovators
- Termination fees and paid prioritization
  - undermine current efficient markets for network transport
  - introduce new transaction costs.
  - tilt the competitive playing field, raising barriers for new entrants
- Distort investment
  - Incentive to congest and discriminate
  - Avoid Cannibalization
  - Loss of network effects

Sources: Nicolas Economides, "Tying, bundling , and loyalty/requirement rebates," in Einer Elhauge (Ed.), *Research Handbook of the Economics of Antitrust Law* (Edward Elgar); 2011a, "Why Imposing New Tolls on Third-Party Content and Applications Threatens Innovation and Will Not Improve Broadband Providers' Investment," Net Neutrality: Contributions to the Debate; 2011b, "Broadband Openness Rules Are Fully Justified by Economic Research," Communications Strategies; 2008, "Public Policy in Network Industries," Handbook of Antitrust Economics. 2008, "Net Neutrality, Non-Discrimination, and Digital Distribution of Content Through the Internet," I/S: A Journal of Law and Policy for the Information Society; Nicolas Economides, 2007, "The Economics of the Internet," The New Palgrave Dictionary of Economics; 2006, "The Internet and Network Economics," Internet and Digital Economics; 2006, "Competition Policy in Network Industries: An Introduction," The New Economy and Beyond: Past, Present and Future; Nicolas Economides and Benjamin Hermalin, 2015, The Strategic Use of Download Limits by a Monopoly Platform," *Rand Journal of Economics*; and Benjamin Hermalin, 2012, "The Economics of Network Neutrality," RAND Journal of Economics; and Joacim Tag, 2012, "Network Neutrality on the Internet: A Two-sided Market Analysis," Information Economics and Policy; and Joacim Tag, 2012, "Net Neutrality and Net Management Regulation: Quality of Service, Price Discrimination, and Exclusive Contracts," Research Handbook on Governance of the Internet; and Katja Seim and V. Brian Viard, 2008, "Quantifying the Benefits of Entry into Local Phone Service," RAND Journal of Economics; and Evangelos Katsamakas, 2006, "Two-sided Competition of Proprietary vs. Open Source Technology Platforms and the Implications for the Software Industry," Management Science; 2005, "The Economics of the Internet Backbone," Handbook of Telecommunications; 2005, "Telecommunications Regulation: An Introduction," The Limits and Complexity of Organizations

Market power of last mile access broadband networks arises not only from the small number of available choices at a consumer's location but also because of significant switching costs, competition-lowering effects of bundling Internet service with other services, and new uncertainty and information costs to consumers should discrimination be introduced. The fact that the quality of the network services is opaque to consumers under discrimination, confers additional market power to access networks.

Economides offers two important observations on the failure of competition to develop under the Telecommunications Act of 1996.

First, the incumbents launched a war against competition in local services immediately after the '96 Act, which was ultimately successful in preventing new entrants from competing against the incumbent local exchange carriers in the delivery of middle and first/last mile communications services. As noted above, deregulation was contemplated by the '96 Act only where there was sufficient competition to make regulation no longer necessary in the public interest. When competition failed, the deregulatory dream of the '96 Act also failed.

Second, while the incumbent network operators had always opposed network neutrality, their efforts were redoubled once they had eliminated the biggest potential competitive threat, the independent long-distance companies. This provides an important insight into the political economy of the failure of competition under the '96 Act. Once its fate was sealed, the incumbents set out to get rid of the principle of nondiscrimination that reached back through the 1996 amendments of the Communications Act to the Computer Inquiries. Economides offers an explicit conclusion about the change in behavior after the dominant local networks had cleared the greatest threat of competition.

> After the acquisition of AT&T by SBC and of MCI by Verizon, taking advantage of a change in regulatory rules by the Federal Communications Commission, AT&T and Verizon now advocate price discrimination based on which application and on which provider the bits they transport came from. AT&T and Verizon would like to abolish the regime of net neutrality and substitute for it a complex pricing schedule where, besides the basic service for transmission of bits, there will be additional charges by the Internet access operator applied to the originating party (e.g., Google, Yahoo, or MSN) even when the application provider is not directly connected to AT&T or Verizon, that is, even when Google's Internet service provider (ISP) is not AT&T or Verizon.[102]

Two broad categories of effects flow from the lack of competition and the resulting market power at the key choke point in the layered model. First there are traditional concerns, like the ability to raise prices and facilitation of collusion. Second, in network industries market power also provides the ability and incentive to create artificial congestion and favor some content, even excluding disfavored content.[103] The dangers of service providers erecting new toll both on the Internet are pervasive and profound. "It is crucial to take into consideration at least four benefits to society from changes in pricing on the Internet direct consumer surplus, network profits, content supplier profits, benefits of innovation at the edges. Pricing will not take into account network effects and the full benefits of innovation, creating inefficiency."[104]

CONCLUSION: THE THREE PILLARS OF INNOVATION AT THE EDGES WITHOUT PERMISSION

Greenstein offers a comprehensive overview of the political economy of innovation at the edges without permission (see Table 3.2).

First Greenstein argues that the technological revolution embodied in the growth of the internet is extremely rare.

> The combination – economic boom, change in leadership, alteration of the common forecast, and rapid change – is rarer still in the history of modern capitalism. These are typically associated with the most transformative technologies, such as the steam engine, the railroad, electricity, indoor plumbing, and the automobile. Such a combination of events merits an explanation in its own right, because the history of capitalism suggests this should not happen often, if at all. (4)

TABLE 3.2: GREENSTEIN, ENABLING INNOVATION AT THE EDGES WITHOUT PERMISSION

Government Policies (State)
Common carrier encouraged competition in communications networks
Selectively intervened in network design
Mediated tension when university technology moved into commercial markets
Antitrust and regulatory policy protected and enabled entrepreneurs
Many policies encouraged innovation from the edges

Economic Archetypes (Market)
Competitive core encouraged competitive complementary market
"Killer App" could be a catalyst for adoption & Investment
Network effects accelerated investment in all parts of the value train
Creative destruction had many commercial determinants
No established firms willingly encouraged creative destruction
Economic experiments in the marketplace generated valuable lessons about co-invention,
Platform governance shaped the character of contributions from the periphery
Presence of monopoly and the exercise of market power discouraged innovation from the edges
Unrestricted markets supported technological competition between distinct perceptions

Influential Institutions
Multiple perspectives,
Multiple places
Lack of concentrated decision-making
Overcoming the "prevailing view"

Source: Shane Greenstein, 2015, *How the Internet Became Commercial: Innovation, Privatization and the Birth of a New Network* (Princeton).

While technological revolutions are infrequent, they are not nearly as rare as he suggests and certainly not a surprise. One can argue that they are part of a continuous process of change that stretches back a quarter of a millennium to the onset of the first industrial revolution.[105] In fact, Greenstein argues "that Internet exceptionalism is just plain wrong, that it can be replaced with a coherent and sound economic explanation, and, crucially that this explanation must serve as the foundation for understanding the broader lessons about the Internet's evolution." (8) The lesson I emphasize in the development of innovation at the edges without permission is the key role of the state. In Table 3.2, I identify the "three categories of causes" that combined to create the unique characteristic of the Internet, "innovation from the edges."

Greenstein "identifies the economic archetypes, government policy and influential institutions that shapes the growth and evolution of the Internet." The bottom line for Greenstein is clear. Decentralized decision making was superior because centralized entities would not only have been slower and less successful, but they would have failed to deliver a great deal of innovation.

> Decentralized decision was far better at enabling exploratory actions than a central decision-making process, often because it enabled actions by entrepreneurial actors with a distinct point of view…. [M]uch of the innovation would not have occurred in the absence of innovation from the edges… innovation from the edges created value much faster and with greater success than any single organization ever could (12)

Because Greenstein ends his history in 2003, which is the beginning of the most intense phase of the legal battle over network neutrality, he does not examine the policy implications of his findings for the contemporary debate. His conclusions are directly relevant to the current debate in the sense that he shows the complementary and critical role that **both** regulation and antitrust played in creating the environment for, fostering and bringing the digital revolution to fruition.

Competition between firms at the edges is a constant theme. When it appears in the battle to prevent domination of core Internet functionalities by firms who want to exert centralized authority, it takes on the unique form of divided platform leadership. Effort to seize control of a choke point of a platform are blunted by partners in the platform who have key roles in other components of the platform. They have the ability swiftly rebuff the threat to centralize or close a critical function (or threaten to). Divided platform leadership does not exist in the data transmission layer of the Internet hourglass, where each network is dominated by a single entity and competition between platforms is weak. Only the state can control the abuse of market power and the danger posed by this layer to the virtuous cycle in the absence of regulation is much greater.

PART II:

THE HARM OF ABANDONING THE PRINCIPLES OF GUARANTEED NONDISCRIMINATORY ACCESS TO THE COMMUNICATIONS NETWORK

4. COMMERCIAL INTERESTS AND PUBLIC POLICY FLIP-FLOPS CHANGING POLICY POSITIONS

THE GOVERNMENT ROLE IN ENSURING OPEN ACCESS

The battle against dominant communications networks to ensure nondiscriminatory access to the network, which was evident over the course of the three decades prior, heated up after the '96 Act became law. A new law always invites efforts to define things differently and the '96 Act was no different, in spite of the clear indication that Congress intended to adopt and extend the FCC approach that had worked so well. This part examines the threat that discrimination posed to innovation at the edges without permission from two points of view. The first is based on the specific arguments and recommendations of the potential new entrants. The second looks at broader patterns of behavior.

What Did Nondiscriminatory Access Mean to Independent Sellers of Complementary Services

AT&T long distance made a lengthy filing before the Canadian Radio-Television and Telecommunications Commission from the perspective of an unaffiliated content provider owning no wires in Canada.[106] It argued strongly that an open access requirement is necessary to promote competition and ensure that unaffiliated content providers would not be discriminated against by the owners of broadband access facilities. In the process, it provided a detailed and point-by-point refutation of every one of the arguments that AT&T, as a dominant cable operator in the United States, made against open access.

AT&T's policy recommendations in Canada were oriented toward a federal agency. They argued that federal regulatory authorities should not forbear regulation, which is exactly the opposite of what it argued in the U.S. AT&T argued that vertically integrated cable and telephone facility owners possess market power and have to be prevented from engaging in anticompetitive practices. These are the very same arguments AOL made in the U.S. over two years later.

> The dominant and vertically integrated position of cable broadcast carriers requires a number of safeguards to protect against anticompetitive behavior. These carriers have considerable advantages in the market, particularly with respect to their ability to make use of their underlying network facilities for the delivery of new services. To grant these carriers unconditional forbearance would provide them with the opportunity to leverage their existing networks to the detriment of other potential service providers. In particular, unconditional forbearance of the broadband access services provided by cable broadcast carriers would create both the incentive and opportunity for these carriers to lessen competition and choice in the provision of broadband service that could be made available to the end customer. Safeguards such as rate regulation for broadband access services will be necessary to prevent instances of below cost and/or excessive pricing, at least in the near-term.[107]

> Telephone companies also have sources of market power that warrant maintaining safeguards against anticompetitive behavior. For example, telephone companies are still overwhelmingly dominant in the local telephony market, and until this dominance is diminished, it would not be appropriate to forebear unconditionally from rate regulation of broadband access services.[108]
>
> In the opinion of AT&T Canada LDS, both the cable companies and the telephone companies have the incentive and opportunity to engage in these types of anticompetitive activities as a result of their vertically integrated structures. For example, cable companies, as the dominant provider of broadband distribution services, would be in a position to engage in above cost pricing in uncontested markets, unless effective constraints are put in place. On the other hand, the telephone company will likely be the new entrant in broadband access services in most areas, and therefore expected to price at or below the level of cable companies. While this provides some assurances that telephone companies are unlikely to engage in excessive pricing, it does not address the incentive and opportunity to price below cost. Accordingly, floor-pricing tests would be appropriate for services of both cable and telephone companies.[109]
>
> Furthermore, in the case of both cable and telephone broadcast carriers, safeguards would also need to be established to prevent other forms of discriminatory behavior and to ensure that broadband access services are unbundled.[110]

AOL as a Stand-Alone Internet Service Provider

AOL's advocacy of a public policy requiring open access was well known and its overnight reversal of position attracted a great deal of attention. It argued vigorously for open access at the federal level.[111] What is less well known is the detailed description of open access that AOL offered a couple of months before it acquired Time Warner.[112] The City of San Francisco witnessed one of the most prolonged fights over open access, supporting the concept but requiring technical, legal and economic analysis to flesh it out before it imposed a requirement. AOL, which had fought bitterly for open access in the City, answered the challenge by outlining not only the justification for open access, but a road map to the light-handed requirements that would keep the broadband Internet open.

Did these companies really advocate a role for government policy to ensure open access? There is no doubt about it.

AOL urged governments to make an unequivocal commitment to a comprehensive and meaningful policy of open access that clearly signaled that closed access is not acceptable. It urged San Francisco to back up that commitment by providing a private right of action and a threat of government enforcement.[113] AOL gave the city a pat on the back for endorsing open access.[114] AOL also offered its arguments for open access in the FCC's proceeding overseeing the AT&T/MediaOne merger.

> What this merger does offer, however, is the means for a newly "RBOC-icized" cable industry reinforced by interlocking ownership relationships to (1) prevent

> Internet-based challenge to cable's core video offerings; (2) leverage its control over essential video facilities into broadband Internet access services; (3) extends it control over cable Internet access services into broadband cable Internet content; (4) seek to establish itself as the "electronic national gateway" for the full and growing range of cable communications services.
>
> To avoid such detrimental results for consumers, the Commission can act to ensure that broadband develops into a communications path that is as accessible and diverse as narrowband. Just as the Commission has often acted to maintain the openness of other late-mile infrastructure, here too it should adopt open cable Internet access as a competitive safeguard – a check against cable's extension of market power over facilities that were first secured through government protection and now, in their broadband from, are being leveraged into cable Internet markets. Affording high-speed Internet subscribers with an effective means to obtain the full range of data, voice and video services available in the marketplace, regardless of the transmission facility used, is a sound and vital policy – both because of the immediate benefit for consumers and because of its longer-range spur to broadband investment and deployment. Here, the Commission need do no more than establish an obligation on the merged entity to provide non-affiliated ISPs connectivity to the cable platform on rates, terms and conditions equal to those accorded to affiliated service providers.[115]

THE NEED FOR OPEN ACCESS POLICY: ANALYSIS OF SUPPLY AND DEMAND FACTORS

The recommendation that government requirements for open access are necessary to promote and protect competition rests on extensive analysis of market structure. A comprehensive case was laid out by AT&T in Canada and AOL in the U.S, which rejected each of the major arguments against open access. AT&T/AOL cited at least five fundamental supply-side characteristics that support the recommendation for open access and three demand-side characteristics that do the same.

Supply-Side: Vertical Integration

AT&T viewed one fundamental problem as leveraging market power from the core business of vertically integrated facilities owners who have a dominant position in an adjacent market. Thus, it advocated regulation of access not only because there was a lack of competition in the new market (broadband access), but also because there was a lack of competition in the core markets that the facilities owner dominates (cable TV service for cable operators and local exchange service for telephone companies).

> In the case of cable companies, there would need to be evidence that vigorous and effective competition had evolved in a substantial portion of the market for broadband access services and in their core businesses (i.e., the distribution of broadcast programming services). Moreover, in order to protect against abuse of any residual market power, safeguards should be in place, including the implementation of an effective price mechanism for basic and extended basic cable services in order to prevent instances of cross-subsidization, and provision

> of non- discriminatory and unbundled access to the broadband service of cable broadcast carriers.[116]

AOL argued that the presence of alternative facilities does not eliminate the need for open access. AOL described the threat of vertically integrated cable companies in the U.S. in precisely these terms.[117]

> AT&T maintained that the presence of a number of vertically integrated facilities owners does not solve the fundamental problem that nonintegrated content providers will inevitably be at a severe disadvantage. Since non-integrated content providers will always outnumber integrated providers, vertical integration can undermine competition. In order to avoid this outcome, even multiple facilities owners must be required to provide non-discriminatory access.
>
> Furthermore, as noted above, every carrier that provides local access services will control bottleneck access to its end customer. This means that any connecting carriers, such as IXCs, have no alternatives available to obtain access to the end customers or the access provider, other than persuade their customers to switch to another access provider or to become vertically integrated themselves. In AT&T Canada LDS' view, because there are and will be many more providers of content in the broadband market than there are providers of carriage, there always will be more service providers than access providers in the market. Indeed, even if all of the access providers in the market integrated themselves vertically with as many service providers as practically feasible, there would still be a number of service providers remaining which will require access to the underlying broadband facilities of broadcast carriers.[118]

Essential Access Functions

AT&T also made a much more profound argument about the nature of the integration of facilities and programming. AT&T defined access to the customer as an essential input to the delivery of information services for both cable and telephone facilities.

> AT&T Canada LDS is of the view that broadband access services are a bottleneck service. These facilities are a necessary input required by information service providers seeking to deliver their services to their end-user customers. In fact, many of these access facilities share the same bottleneck characteristics as those exhibited by narrowband access facilities, such as those which are used in the provision of local and long-distance telephony services.[119]

Because of the essential nature of access, AT&T attacked the claim made by cable companies that their lack of market share indicates that they lack market power. AT&T argued that small market share does not preclude the existence of market power because of the essential function of the access input to the production of service.

AOL also identifies the critical importance of access.

> The key, after all, is the ability to use "first mile" pipeline control to deny consumers direct access to, and thus a real choice among, the content and services offered by independent providers. Open access would provide a targeted and narrow fix to this problem. AT&T simply would not be allowed to control consumer's ability to choose service providers other than those AT&T itself has chosen for them. This would create an environment where independent, competitive service providers will have access to the broadband "first mile" controlled by AT&T – the pipe into consumers' homes – in order to provide a full, expanding range of voice, video, and data services requested by consumers. The ability to stifle Internet-based video competition and to restrict access to providers of broadband content, commerce and other new applications thus would be directly diminished.[120]

AT&T explicitly rejects the claim that non-dominant firms in the access market should be excused from open access regulation.[121]

Switching Costs and Bundling

AT&T also made an argument in Canada on the demand-side that undercuts its claims in the U.S. that the current advantage of cable over DSL should not be a source of concern. AT&T argued that the presence of switching costs can impede the ability of consumers to change technologies, thereby impeding competition.[122] The equipment (modems) and other front-end costs are still substantial and unique to each technology. There is very little competition between cable companies (i.e. overbuilding). Thus, switching costs remain a substantial barrier to competition.

Another demand-side problem identified by AT&T in Canada is the leverage that vertically integrated firms possessing market power in an adjacent market can bring to bear on a new market. By packaging together broadband services, particularly those over which integrated firms exercise market power, non-integrated competitors can be placed at an unfair advantage.

> This dominant position in the core market for BDU (cable TV programming] services can, in turn, be used by the cable companies to leverage their position in the delivery of non-programming services, the vast majority of which will be carried over their cable network facilities.
>
> As broadcasting and telecommunications technologies converge, subscribers will seek to simplify their access arrangements by obtaining all of their information, entertainment and telecommunications services over a single broadband access facility. This in turn will make it more difficult for service providers to use alternate access technologies as a means of delivering service to their customers.[123]

Bundling remains one of the focal points of antitrust and competitive concerns. AOL raised the bundling issue in its comments at the FCC as well.[124]

The concept of essential functions in network industries that provide market power over end user customers, even where several access providers are available, is extremely important.

These are the new choke points in the Internet economy. Because of switching costs, convergence of access, and bundling of products this is a fundamental observation about the nature of these industries. These demand side structural problems interact with the observation that facilities providers will always be far fewer in number than content providers with the inevitable result that—absent an open access obligation—many content providers will be at a severe disadvantage.

AT&T and AOL were fundamentally correct in concluding that even without vertical integration and dominance, access is an essential function that presents a significant problem for public policymakers who are concerned about preserving the remarkably dynamic innovation and competition of today's Internet. In the information economy where the smooth flow of information is so critical, these choke points may call for even greater commitment to ensure open access than has historically been the case, because their importance imbues them with even greater potential for the abuse of market power. It was quite clear in the formulation of these two "unaffiliated" companies that broadband access services should be available on non-discriminatory terms, even in the absence of vertical integration and dominance.[125]

THE POLICY OF NONDISCRIMINATION AS SEEN BY AOL AND AT&T

AOL's proposed rule for San Francisco typifies its approach to light-handed open access requirements in which the local franchising authority creates the obligation and then allows private parties to work out the details with city enforcement as a backstop.

> § 1: Non-discrimination requirements: Franchisee shall immediately, with respect to this franchise, provide any requesting Internet Service Provider access to its broadband Internet transport services (unbundled from the provision of content) on rates, terms and conditions that are at least as favorable as those on which it provides such access to itself, to its affiliates, or to any other person. Such access shall be provided at any point where the Franchisee offers access to its affiliate. Franchisee shall not restrict the content of information that a consumer may receive over the Internet…
>
> § 2: Private Right of Action: Any Internet Service Provider who has been denied access to a Franchisee's Broadband Internet Access Transport Services in violation of this Ordinance has a private cause of action to enforce its rights to such access.
>
> § 3 Enforcement Rights of City and County: In addition to any other penalties, remedies or other enforcement measures provided by Ordinances or state or federal laws, the City and County may bring suit to enforce the requirements of this Ordinance and to seek all appropriate relief including, without limitation, injunctive relief.[126]

AOL made essentially the same recommendation to the FCC.

Commenting before a federal body with much broader regulatory powers, AT&T proposed a much more vigorous regime of regulation.

> Given the incentives and opportunities available to broadcast carriers to abuse their market power and control over bottleneck facilities, AT&T Canada LDS has recommended the adoption of a number of safeguards in order to prevent instances of anti-competitive behaviour… implementation of a cost based price floor to protect against below cost pricing of broadband access services;
>
> implementation of a cost-based price ceiling with a limited mark-up to prevent excessive pricing of access services in uncontested markets;
>
> implementation of a third-party access tariff, allowing for non-discriminatory and unbundled access to broadband bottleneck facilities, as well as comparably efficient interconnection and associated non-price safeguards;
>
> implementation of price caps, accounting separations and other safeguards against anti-competitive cross-subsidization; and
>
> imputation of appropriate third-party access tariffs to value added information services providers by broadcast carriers.[127]

It is interesting to note that the provisions of the Telecommunications Act of 1996 to which AT&T points when it demands open access to xDSL in the U.S. are almost identical to the provisions that AOL proposed in the San Francisco proceeding. This makes it quite clear what entities that do not own essential access wires need to enter markets.

While AT&T Canada LDS considers that forbearance is not warranted it identified a series of safeguards, which should be treated as preconditions to any relaxation of the rules applicable to these carriers:

> local competition issues are resolved and the terms and conditions for local entry have been successfully implements such that practical alternatives to the supply of local services exist in the local market;
>
> a demonstration that vigorous and effective competition has evolved in a substantial portion of the market for broadband access services and in the market for BDU services:
>
> the broadband tracking requirements have been implemented and reports from the telephone companies satisfy the Commission that treatment of broadband investment and expenses are appropriate;
>
> price cap regulation has been implemented in such a manner as to preclude telephone companies from recouping broadband investment costs from utility services, the implementation of an effective price cap mechanism for basic and extended basic services in order to prevent instances of cross-subsidization; and
>
> and
>
> the establishment of safeguards to ensure that broadband access services continue to remain available from the telephone companies on a non- discriminatory and unbundled basis.

In addition to pricing safeguards, AT&T advocated a number of non-price safeguards to accomplish three general goals of open access.

> Such safeguards are necessary to ensure that competing service providers:
>
> (1) are able to gain comparable access to network bottlenecks; (2) are protected against abuse of confidential information which is provided to the bottleneck access provider; and (3) are not otherwise disadvantaged in the market by the bottleneck access provider through, for example, the negotiation of exclusive or preferential agreements with other service providers.[128]

Thus, it is also interesting to note that AT&T embeds the obligation to provide nondiscriminatory access and unbundling into the permanent conditions in the industry structure. That is, it recommends the relaxation of detailed regulation only after vigorous competition develops in both the access market and the adjacent core markets where facilities owners have market power. However, even after this deregulation, AT&T recommends the continuance of "safeguards to ensure that broadband access services continue to remain available from the telephone [and] cable companies on a non-discriminatory and unbundled basis."[129]

Interconnection

Interconnection involves allowing ISPs to establish a connection between networks. These connections must be compatible with network protocols if they are to be meaningful. The cable industry's existing exclusive contracts do not allow independent ISPs to connect directly to the consumer. AT&T Canada was very concerned about exclusive and preferential deals.

> A prohibition on preferred agency or exclusive arrangements between vertically-integrated broadband access providers and integrated or affiliated information service providers which contain discriminatory access provision, either in terms of price or quality of access.[130]

It is important to recognize that mere physical interconnection and protocol support are only very minimum conditions that must be met to ensure access to customers. They are necessary, but not sufficient, conditions. AOL described interconnection in some detail.

> Access: The term "access" means the ability to make a physical connection to cable company facilities, at any place where a cable company exchanges consumer data with any Internet service provider, or at any other technically feasible point selected by the requesting Internet service provider, so as to enable consumers to exchange data over such facilities with their chosen Internet service provider.[131]

AT&T uses the term Comparably Efficient Interconnection (CEI) to describe interconnection in the broadband market.[132] AOL argued for similar conditions, while not using the classic telephone network terminology.

> Of course, it is implicit in the open access resolution that non-discriminatory access for multiple ISPs extends to all relevant aspects of the technical and

> operational infrastructure, so that all business system interfaces will be open to all ISPs and performance levels will not favor the affiliated ISP… It is important to confirm that the cable operator must provide equal treatment for local content serving (caching or replication) that the affiliated and nonaffiliated ISPs can provide, specifically, no firewalls, protocol masking, extra routing delays or bandwidth restrictions may be imposed in a discriminatory manner.[133]
>
> AT&T also expressed a concern about standards and their management, which is ironic given the long history of opposition to AT&T as a telephone company open standard.
>
> To the extent that standards are developed for interfacing with broadband access services, the carriers who provide these services should not be permitted to implement any non-standard, proprietary interfaces, as this would be contrary to the development of an open network of networks. In addition, any new network or operational interface that is implemented by a broadband access provider should be made available on a non-discriminatory basis.[134]

Behavior, Norms and Conduct

In order to manage the network and effectuate the service prohibitions discussed above, the network owner must engage in intensive monitoring of individual activity and gathering of information. The proprietary network owner must identify flows of data. Needless to say, this raises business and competition concerns. The gathering of all that information places the network owner in a powerful position vis-à-vis competitors and consumers. The detailed control of the network confers an immense information advantage on the system operator. Because of the conflict of interest created by the vertical integration of facilities and content, the potential for competitive abuse of information is substantial. It is an advantage that is evident to those in the industry:

> Confidential treatment of information provided by service providers to broadband access carriers that are vertically-integrated… Broadband access providers that are affiliated with or have joint marketing arrangements with broadband service providers should also be required to enter into non-disclosure agreements affording these latter parties the same level of confidential treatment… (AT&T, p. 23)

Pricing

The most critical business issue is a potential price squeeze that can be placed on independent programmers and service providers by the closed business model. By controlling a bottleneck, network owners can place price conditions on independent content providers that undermine their ability to compete. Both AOL and AT&T appear to want a separate, wholesale transport service to be made available.

> Broadband Internet Transport Services- The term ‘broadband Internet access transport services” means broadband transmission of data between a user and his

> Internet service provider's point of interconnection with the broadband Internet access transport provider's facilities. (AOL, p. 3)

In Canada, AT&T insisted that tariffs be set subject to clear conditions and filed. The central goal was to avoid the problem of cross-subsidization because the network operators were now allowed to go into many competitive businesses, which they could support with their profits and cash flow from their monopoly services. Accordingly, the cable companies and telephone companies should be required to file tariffs for approval of their broadband access services and to include in such applications evidence that the rate is compensatory.

> Cross-subsidization is an issue for vertically integrated carriers particularly where the broadband service (including access) is not provided on an arm's length basis. The Commission has required telephone companies to maintain an accounting separation for their broadband activities and to provide adequate tracking reports. (AT&T, pp. 19, 22)

In the context of the more regulatory model advocated by AT&T in Canada, AT&T was able to specify what would constitute reasonable rates.

> cost-based rates to prevent vertically integrated access providers from engaging in predatory pricing;
>
> limits on the level of mark-up over cost with respect to cable companies' broadband access services;
>
> unbundling and non-discriminatory access in the price of information services of all broadcast carriers.
>
> imputation of the tariffed rates for broadband access in the price of information services provided by vertically integrated broadcast carriers;
>
> price caps in core markets where vertically integrated carriers are dominant; and
>
> investment and expense tracking as a further check against cross subsidization. (AT&T, p. 21)
>
> to insulate basic cable subscribers from cross-subsidizing cable companies' other broadband activities as common carriers, it could implement accounting separation and tracking requirements for cable companies. (AT&T, p. 22)

Bundling

As noted above, in Canada, AT&T expressed concerns about an incumbent monopolist selling video "broadcast" services or local telephone services and planning to sell bundles of "broadband services." In this regard a fundamental issue arises over what independent ISPs will be allowed to sell and how consumers will be allowed to buy services. Cable TV's bundling of programming has long been a source of concern. If cable owners leverage bundles with Internet and cable service, independent ISPs will be at a severe disadvantage.

AT&T's proposed principles to govern bundling raise concerns in two regards. On the one hand, the principles recommended unbundling of service elements. On the other hand, they

recommended that the unaffiliated content provider be allowed to resell (and therefore bundle) the cable programming – i.e., to create a complete bundle.

> Because broadcast carriers exercise control over bottleneck facilities, they have both the incentive and the opportunity to bundle these facilities with their other services and offer the entire package to their customers for a single price… [T]he Commission concluded that the bundling of monopoly service elements with competitive service elements is generally appropriate subject to three conditions:
>
> the bundled service must cover its cost, where the cost for the bundled service includes:
>
> the bottleneck component(s) "costed" at the tariffed rate(s) (including, as applicable, start-up cost recovery and contribution charges);
>
> competitors are able to offer their own bundled service through the use of stand-alone tariffed bottleneck components in combination with their own competitive elements;
>
> resale of the bundled service permitted…
>
> In the absence of such a requirement, broadcast carriers will be able to engage in strategic and anti-competitive pricing behaviour arising directly out of their dominant position in the access market. (AT&T, pp. 27-28)

What AT&T had identified as a powerful lever in the marketplace, control over the core product, it sought to neutralize by requiring unbundling and resale.

> AT&T Canada LDS submits that broadcast carriers should not be permitted to bundle their broadcast and telecommunications service until the Commission has established rules which permit the unbundling and resale of BDU services. Furthermore, to the extent that the unbundling and resale of BDU services is tied to entry of the telephone companies into the BDU market, no telephone company should be permitted to bundle BDU service with its local telephone service until all of the issues relating to unbundling and resale of these service have been resolved by the Commission. (AT&T, p. 28)

The "unaffiliated" AT&T/AOL indictment of a vertically integrated, highly concentrated market clearly applies to the current situation in the U.S. and will likely continue to for the foreseeable future. The discussion of demand-side problems points to issues that are long term in nature. The insightful discussion of network access as an essential function for communications technologies establishes the need for open access on an enduring footing. AT&T's recommendation that the federal government in Canada does not forbear from regulation was correct in 1997, as it was in 1999, when AOL made a similar recommendation in the U.S. That conclusion applies to the U.S. today as a matter of public policy.

What AT&T and AOL said as "unaffiliated" companies has even greater importance for other "unaffiliated entities." Even as non-facilities owners, AT&T and AOL were still very large and powerful corporations. Their analysis makes a strong case that the problems facing unaffiliated ISPs are large and real. Their frank discussion of the potential problems and the

specificity with which they offered solutions should be a wakeup call to policy makers. All but the most powerful ISP are likely to fare very badly in a commercial setting where discriminatory access is not firmly rejected.

5. OPPOSITION BY THE NETWORK OWNERS AND THE SOURCES OF ANTICOMPETITIVE LEVERAGE

In order to evaluate the threat posed by abandoning the nondiscriminatory access on which the success of the Internet was based in favor of weak market forces and feeble (at best) regulatory/antitrust oversight, we must begin by understanding the nature and extent of dominant firms' opposition to the notion of a decentralized approach to communications and computing. Their historic hostility translates directly into their contemporary attitudes and actions and signal what they would do in the future if not effectively restrained. The two great examples are AT&T on the telecommunications side and IBM on the computing side.

One of the clearest indicators of this concern, which we will examine in the next section, is the fact that two of the most vigorous supporters of network neutrality – AOL, when it was an independent Internet service provider, and AT&T, when it was a stand-alone long-distance company – flipped their position the moment they were acquired by dominant local network communications giants (Verizon and SBC, respectively).

Indeed, much of the early arguments we made in support of network neutrality were derived directly from the lengthy analyses and official comments of those two entities concerning how market power over network chokepoints could be abused to undermine competition in the delivery of services over the digital communications network.[135] Interestingly, the issue exploded on the policy scene in 1998 at the same time as the Microsoft case,[136] and the two have been intertwined ever since.

POST 1996 TELECOMMUNICATIONS ACT BEHAVIOR

Competition is much weaker in the network segment of the digital platform than it is in the edge segments, which means network owners face less pressure to innovate, have the ability to influence industrial structure to favor their interests at the expense of the public interest, [137] can use vertical leverage (where they are integrated) to gain competitive advantage over independent edge entrepreneurs,[138] and have the ability to extract rents where they possess market power or where switching costs are high. At the same time, the network operators have given strong indication that they have the incentive and ability to engage in these antisocial kinds of conduct.[139] Table 5.1 summarizes this clear pattern of behavior and the harms that would result. Table 5.2 identifies the FCC responses to control the harm.

Advocates of abandoning the obligation of nondiscrimination and policing it with weak, *ex post* oversight frequently claim that there have been few examples of harmful abuse. This view is wrong because it fails to note the frequency of harmful behaviors and the problems that *ex ante* requiring permission, or the threat of *ex post* hold up pose to the dynamic process of innovation at the edges. Tables 5.1 and 5.2 present this broader view in terms of the major harms that the FCC sought to eliminate in its Open Internet orders. Even a few of these examples would have harmed the incentive to experiment and innovate, but there were many.

Harmful conduct occurred under different titles of the law across the two decades after the passage of the 1996 Act. All of these issues had been addressed and resolved by the time the

Trump administration launched its assault. After two decades of attack on the principles of the Communications Act, order had finally been restored.

TABLE 5.1: INCUMBENT CONDUCT VIOLATING NETWORK NEUTRALITY: 1996-2014

Date	Technology/Conduct Wireline	Nature of Harm	Technology/Conduct Wireless	Nature of Harm
1996			Handset Control	
1998	Open access merger conditions requested			Blocking, Discrimination
2000	TW, ATT Term sheet			
2005	Madison River blocking VoIP ports	Blocking	Carrier function control	Blocking
2005			Blocking Bluetooth, Photo sharing	Blocking
2006			Usage Restriction Cingular blocking of PayPal	Degradation, Discrimination
2007	Comcast degrading Bittorrent Traffic	Degradation		
2010	AT&T blocking of Slingbox iPhone application		Roaming	Blocking
2010	RCN		Skype blocking on mobile networks	Blocking
2011			Data Roaming	Discrimination, Raising Rival's Cost
2012	Comcast exemption of Xfinity online video app on Xbox and TiVo from data caps	Discrimination:	FaceTime blocking over mobile devices unless using Mobile Share plan	Blocking
2012			Verizon blocking access to tethering apps	Degradation, Discrimination
2013	Netflix degradation on Comcast, Charter		Degradation:	
2013	Comcast refusal to connect Netflix CDN	Raising Rival's Cost		
2014	Comcast/Verizon interconnection agreements with Netflix	Raising Rival's Cost Raising Rival's Cost	T-Mobile "Music Freedom" exemption from data caps	
2014			AT&T sponsored data plan on wireless network	Discrimination:
2014			T-Mobile Petition Continuing problems with data roaming	Raising Rival's Cost

Source: Compiled by author

TABLE 5.2: POLICY RESPONSES TO NETWORK OPERATOR ABUSES

Date	Technology/Conduct	Nature of Harm	Technology/Conduct	Nature of Harm	FCC Policy Actions
	Wireline		Wireless		
Pre-'96					Computer Inquiries/Carterphone
1996			Handset Control		Computer Inquirieis
1998	Open acess meger condiions requiested			Blocking, Discriination	AOL/Time Warner access conditions
2000	TW, ATT Termsheet				Computer Inquiries
2002					Cable Modem, Ancilary, Title I
2004					Four Freedoms
2005	Madison River blocking VoIP ports	Blocking	Carrier function control	Blocking	Ancillary, Title I, Internet Policy
2005			Blocking Bluetooth, Photo sharing	Blocking	Wireline Broadband, Ancillary Title I
2006			Usage Restriction Cingular blocking of PayPal	Degradation, Discrimination	
2007	Comcast degrading Bittorrent Traffic	Degradtion			Complaint Ancillary, Title I
2010	AT&T blocking of Slingbox iPhone application		Roaming	Blocking	Open Internet, Ancillary, Title I
2010	RCN		Skype blocking on mobile networks	Blocking	Roaming order
2011			Data Roaming	Discrimination, Raising Rival's Cost	Data Roaming, , Home Area Exclusion eliminated
2012	Comcast exemption of Xfinity online video app on Xbox and TiVo from data caps	Discrimination:	FaceTime blocking over mobile devices unless using Mobile Share plan	Blocking	
2012			Verizon blocking access to tethering apps	Degradation, Discrimination	
2013	Netflix degradation on Comcast, Charter	Degradation:			
2013	Comcast refusal to connect Netflix CDN	Raising Rival's Cost			
2014	Comcast/Verizon interconnection agreements with Netflix	Raising Rival's Cost	T-Mobile "Music Freedom" exemption from data caps	Raising Rival's Cost	Open Internet Rulemaking
2014			AT&T sponsored data plan on wireless network	Discrimination:	
2014			T-Mobile Petition Continuing problems with data roaming	Raising Rival's Cost	T-Mobile granted
2015					Open Internet, Title II, 706

Source: Compiled by author

The parent local communications companies that later acquired the independent service providers took vigorous actions to defend and exercise their market power. AT&T, reconstituted by the merger of Four Regional Bell Operating companies, one major independent, and the leading long-distance service provider, sued or threatened to sue every local jurisdiction that required open access, and they have withheld investment in those areas. Time Warner pulled the plug on Disney and threatened to extract full subscriber value from Disney for every customer it lost when Disney offered to give satellite dishes to the public. AOL threatened to sue Prodigy for the economic harm it caused AOL when Prodigy hacked into AOL's instant messaging service.[140]

An Example of Discriminatory Abuse of Market Power

Services that compete with the franchise offerings of network owners, voice and video have been singled out for attack. In the earliest debate over non-discrimination, they made it clear that they intended to exercise control over the flow of data on their Internet communications network.[141]

A term sheet offered by Time Warner to unaffiliated ISPs who had requested access to its network during the summer of 2000 gives a new and troubling specificity to the threat facing innovation. There in black and white are all the levers of market power and network control that stand to stifle innovation on the Internet. Time Warner demanded the following:

- Pre-qualification of ISPs to ensure a fit with the gatekeeper business model
- Requirement that applying ISP must reveal sensitive commercial information as a precondition to negotiation
- Restriction of interconnecting companies to Internet access sales only, precluding a range of other intermediary services and function provided by ISP to the public (e.g., no ITV [interactive TV] functionality)
- Restriction of service to specified appliances (retarding competition for video services)
- Control of quality by the network owner for potentially competing video services
- Right to approve new functionalities for video services
- A large, nonrefundable deposit that would keep small ISPs off the network
- A minimum size requirement that would screen out niche ISPs
- Approval by the network owner of the unaffiliated ISPs home page
- Preferential location of network owner advertising on all home pages
- Claim by the network owner to all information generated by the ISP
- Demand for a huge share of both subscription and ancillary revenues
- Preferential bundling of services and control of cross market of services
- Applying ISP must adhere to the network operator's privacy policy

Under these conditions, the commercial space left for the unaffiliated and small ISPs (where much innovation takes place) is sparse and ever shrinking.[142] AT&T's negotiations with Mindspring exhibited similar problems.[143]As concerning as these early actions were, the FCC under Chairman Powell moved forward with the information service classification. Notwithstanding even more scrutiny, the incumbents continued to engage in behaviors that

clearly violated the principle of non-discriminatory access. The broader behavior of the network owners replicated these anticompetitive practices in a variety of ways. The evidence from this period is directly relevant to current policy, as the variety and subtlety of the abuse will frustrate the weak oversight proposed by the FCC.

In comments at the FCC, the High-Tech Broadband Coalition noted "troubling evidence of restrictions on broadband consumers' access to content, applications and devices."[144] Given the technical design features of the Internet that unleashed the dynamic forces of innovation, the fact that these negotiations must take place at all is the truly chilling proposition.

The largest ISP, AOL, capitulated to the cable monopolists as part of the effort to untangle its holdings with AT&T, which was being acquired by Comcast. After a five-year struggle for carriage, AOL signed a three-year contract for access to less than one-half of Comcast's[145] lines under remarkably onerous conditions. AOL agreed to pay $38 at wholesale for a service that sells for $40 in the cable bundle. AOL allowed Comcast to keep control of the customer and to determine the functionality available. AOL apparently agreed to a no–compete clause for video. As AOL put it, the deal turned the high-speed Internet into the equivalent of a premium cable channel, like HBO. Nothing could be farther from the Internet as it was.

Why did AOL agree? It was desperate for carriage. They could not be a narrowband company in a broadband world, and DSL just did not cut it. The AOL-Comcast agreement punctuated a seven-year policy of exclusion. The deal with Comcast only allowed AOL to negotiate with the individual cable franchises for carriage, but AOL never reached the specific agreements that are necessary to actually deliver the service to consumers. Ultimately AOL gave up on the approach.[146] Although telephone companies ostensibly have been required to provide access to their advanced telecommunications networks, they have made life miserable for the independent ISPs.[147] A major source of potential discrimination lies in the architecture of the network. The technical capabilities of the network controlled by the proprietor can be configured and operated to disadvantage competitors.

ISPs have identified a range of ways the dominant telephone companies impede their ability to interconnect in an efficient manner. The proprietary network owner can seriously impair competitors' ability to deliver service by restricting their ability to interconnect efficiently and deploy or utilize key technologies that dictate the quality of service. Forcing independent ISPs to connect to the proprietary network or operate in inefficient or ineffective ways or giving affiliated ISPs preferential location and interconnection can result in substantial discrimination. Similarly, forcing competitive local exchange carriers (CLECs) to make digital to analog to digital conversions to implement cross-connects raises costs. The result is a sharp increase in the cost of doing business or degradation of the quality of service.

Refusing to peer with other ISPs and causing congestion by "deliberately overloading their DSL connections by providing them with insufficient bandwidth from the phone company's central offices to the Internet"[148] creates a roadblock that forces ISPs to enter into expensive transport arrangements for traffic.[149] Refusing to guarantee quality of service to unaffiliated ISPs and imposition of speed limits[150] has the effect of restricting the products they can offer.[151] The network owners then add insult to injury by forcing ISPs to buy bundles of redundant services,[152] preventing competitors from cross-connecting to one another,[153] restricting calling scopes for

connection to ISPs,[154] and refusing to offer a basic service arrangement or direct connection to the network.[155] The effect is to undermine competition and restrict service offerings. [156]

The most critical architectural decisions are to impose network configurations that prevent competition for the core monopoly service, voice.[157] This bundling of competitive and noncompetitive services places competitors at a disadvantage.[158] Ironically, Cox complains that it was being discriminated against when incumbent telephone monopolists bundled voice and data, while it pursued a similar exclusionary tactic with respect to the bundling of video and data.[159] Independent ISPs have pointed out that their ability to offer voice was being frustrated by architectural decisions that denied them the ability to offer the voice/data bundle.[160] Moreover, incumbents were reserving the right to offer additional services, like video, over lines for which independent ISPs are the Internet access service provider.[161]

The price squeeze that AOL was subject to in its agreement with Comcast was similar to that imposed by both the cable modem and DSL network owners. The price for access to the network is far above costs and leaves little margin for the unaffiliated ISP.[162] The margins between the wholesale price ISPs are forced to pay and the retail price affiliated ISPs charge are as small as $1 on the telephone network.[163] For cable networks, the margins are as low as $5. In other words, independent ISPs are forced to look at margins often in the single digits and never much above 20 percent. Cable and telephone company margins for these services are well in excess of 40 percent.[164] Consumers pay a price too. With costs falling[165] and demand lagging in the midst of a recession, both cable operators and telephone companies raised prices. The resulting price is too high and dampens adoption.

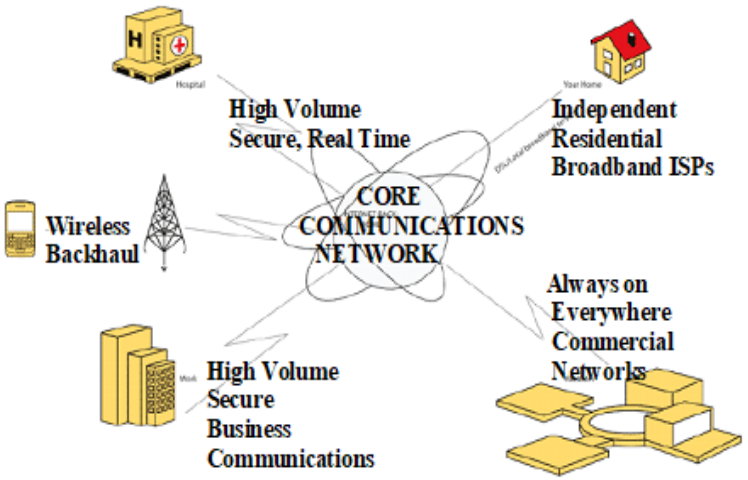
THE CHOKEPOINTS IN THE DIGITAL COMMUNICATIONS ECOLOGY

History shows the willingness of dominant incumbent network owners to abuse their market power and the ongoing structural changes in the sector heightened the potential for negative, anticompetitive actions. These behaviors were highlighted by antitrust authorities reviewing mergers or evaluating complaints of anticompetitive conduct. They were also highlighted by Communications Act authorities who were considering obligations of interconnection because dominant firms in the critical layers of the platform may have the incentive and ability to protect and promote their interests at the expense of competition and the public.

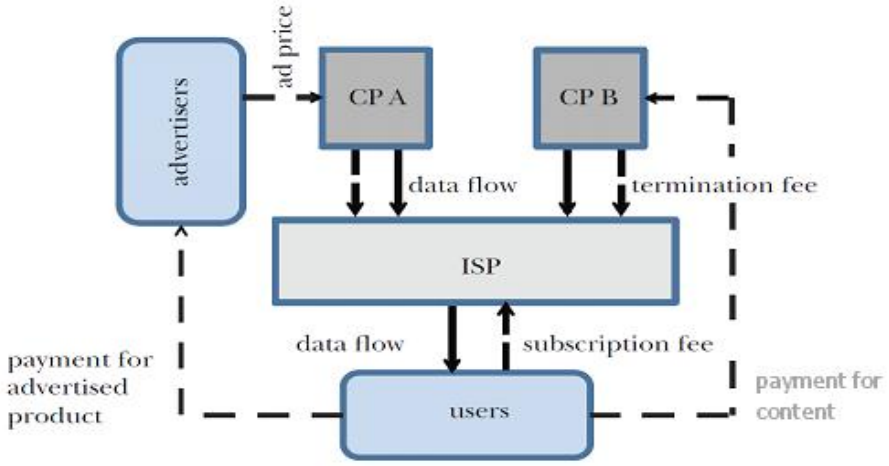
The dominant incumbent landline companies remain in a particularly strong position because of their control over two legs of the communications network: the connection to the consumer, called the "last (or first) mile" and control over access to the local network, called the "middle mile" or "special access" As shown in Figure 5.1, AT&T occupies a particularly strong position in the tight oligopoly that dominates the 21st century communications sector, although Verizon is similarly situated in its service territories (acquired in the merger of two regional bell operating companies—the largest independent company, and the second largest long-distance company).

FIGURE 5.1: CHOKEPOINTS AND VERTICAL INTEGRATION IN COMMUNICATIONS AND DIGITAL NETWORKS

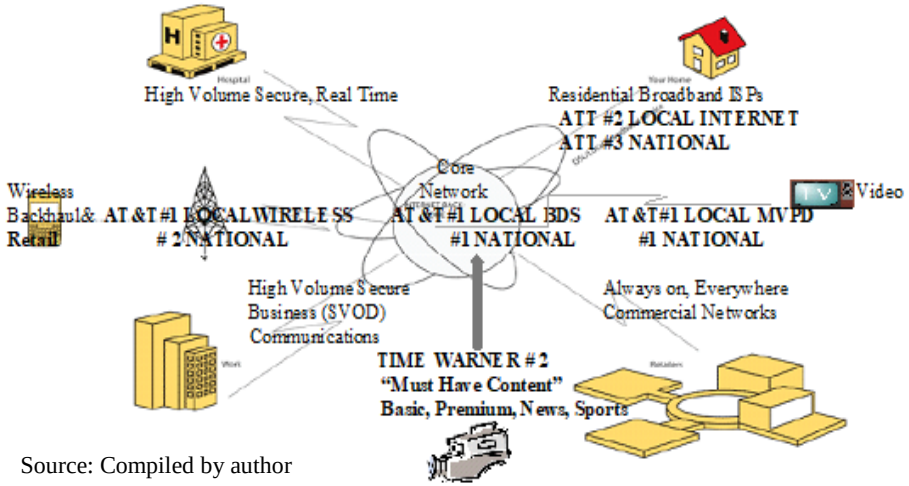
Business Data Service: Chokepoint to Core Network Functionality



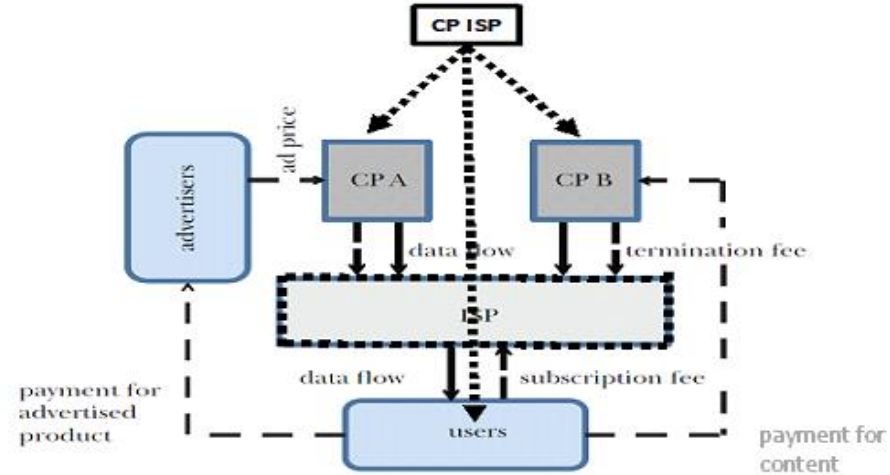
Internet Access: Chokepoint for Applications and Content Delivery



Vertical Integration Magnifies the Concerns about Abuse of Market Power



Vertical Integration Magnifies the Concerns about Abuse of Market Power



Source: Compiled by author

As the former franchise monopolist with a legacy of a ubiquitous monopoly network, AT&T controls the core communications network. The most important element of this network position is AT&T's dominance of Business Data Services (BDS). BDS have become the crucial chokepoint at the core of the digital communications sector. Here, the ocean of data surging through the global network is transformed into the stream of data reaching individuals. Abuse here could distort a wide range of products that rely on BDS.

As shown in top left graph of Figure 5.1, a wide range of businesses and public agencies, including hospitals, schools, libraries, and public safety offices, also need secure, dedicated, high-speed, high-capacity connections to the wireline communications network to function well. Plain old telephone service does not meet the service and quality needs of an increasing array of users and uses. There are hundreds of millions of end-users spread all over the map that must rely on BDS, and with the expansion of the Internet of Things, there will be billions. This Figure is from an analysis of BDS filed at the FCC, which coincided with the development of the FCC network neutrality order. The record shows that, using realistically defined markets for these services, BDS continued to be a near monopoly in a key link to the broadband communications network. Later, when the FCC sought to prematurely deregulate these services, it used the same erroneous theory used in the abandonment of network neutrality oversight.

To put this another way, all of these services involve a connection to a business. In addition to the three applications that involve the sale of communication services to residential end users, this chokepoint affects broadband Internet Access Service, mobile broadband, and phone service.

Other service uses involve connections to businesses that do not sell communications to consumers, but need BDS to conduct their daily business. These businesses include small, medium, and large businesses that need much more capacity than a single telephone line, branch networks (like ATM's or gasoline stations) with many nodes that need to be online all the time, and businesses like health care providers, who need to move large quantities of data between their offices frequently and in real time

I underscore the business-to-business relationships on which BDS service is based because these increasingly important core network communications services are not free. They have significant costs as intermediate goods that are recovered from consumers in the prices they pay for the goods and services that embody them.

A good example of this is mobile wireless service, which has become the largest component of the household communications budget. In order for a consumer to place or receive a mobile wireless transmission, the consumer uses all the facilities that connect the transmission from end-to-end. When the consumer originates the transmission, it is carried from the handset to a cell tower. Once it gets to the tower, it must be hauled back to a point where it can connect to the nationwide communications network. The provision of this "middle-mile" link in the communications network is just as necessary to a successful transmission as the "first mile" link and at least as highly concentrated.

Since the backhaul is to a connection point with the telephone network, a high volume of traffic is aggregated at the cell tower and the backhaul generally takes place over high-volume

wireline facilities. These facilities, which are essential to communications, are needed on both ends of the transmission. Mobile wireless carriers usually purchase these services, called "special access" from wireline incumbent telephone carriers. As such, when the consumer pays her mobile wireless bill, she pays the cost of the middle-mile/special access/backhaul for both the originating and terminating areas. Ultimately, all of the costs of BDS are just a cost of doing business, which is passed through to consumers in the bills they pay for goods and services that use BDS as an input.

The Danger of Vertical Integration

The bottom left graph in Figure 5.1 introduces the problem of vertical integration, which magnifies concern. In old economy industries, vertical leverage is exploited by business practices. Companies vertically integrate to internalize transactions. Where concerns about vertical integration have traditionally been raised, they focus on integration for critical inputs across markets. Vertically integrated companies may withdraw business from the open market, driving up the cost of inputs for competitors, or deny supply to the market. Here we use AT&T presenting concerns for both traditional and new industries.

If vertical mergers constitute a large share of the market or refuse to buy or sell intermediate inputs (or raise the costs to rivals) the impact can be anticompetitive. By integrating across stages of production, incumbents can create barriers to entry by forcing potential competitors to enter at more than one stage, making competition much less likely due to increased capital requirements. Exclusive and preferential deals for the use of facilities and products compound the problem. They "reduce the number of alternative sources for other firms at either stage, [which] can increase the costs of market or contractual exchange."[141] Integrated firms can impose higher costs on their rivals or degrade their quality of service to gain an advantage. "[F]or example, the conduct of vertically integrated firms increase[s] risks for nonintegrated firms by exposing downstream specialists to regular or occasional price squeezes." Vertical integration facilitates price squeezes and enhances price discrimination.

As the top right graph in Figure 5.1 shows, the same chokepoint problem afflicts the delivery of Internet services. The upper graph shows the network operator at a choke point between content providers and the consumer. It identifies two flows of revenue to the content providers, advertising and direct subscriptions fees, and two sources of revenue flowing to the ISP, termination fees charged to content providers and subscription fees charged to consumers. The lower graph adds in vertical relationships where network ISPs also sell content. The central concern in the network neutrality debate is abuse of market power at the chokepoint by vertically integrated network operators.

The vertical nature of the digital communications platform raises new concerns about these anticompetitive behaviors. Competition within a given layer, the equivalent of traditional horizontal competition, can take place without competition across layers.[138] The type of behavior across layers is very important, both because it can promote dynamic change and because it can involve powerful anticompetitive leverage. The platform nature of digital communications creates unique new sources of vertical leverage. The physical and code layers that lie at the

bottleneck of the platform makes threats to the openness of the network very potent. The platforms have great leverage because of their critical location.

In a platform industry, vertical leverage can take a more insidious form, technological integration/manipulation. Introduction of incompatibilities can impair or undermine the function of disfavored complements. The ability to undermine interoperability or the refusal to interoperate is an extremely powerful tool for excluding or undermining rivals and thereby short-circuiting competition. Withholding of functionality is a similarly powerful anti-competitive tool. The mere threat of incompatibility or foreclosure through the refusal to interoperate can drive competitors away.

The dominant players in the physical and code layers have the power to readily distort the architecture of the platform to protect their market interests. They have a variety of tools to create economic and entry barriers, such as exclusive deals, retaliation manipulation of standards, and strategies that freeze customers. Firms can leverage their access to customers to reinforce their market dominance by creating ever-larger bundles of complementary assets. As the elasticity of demand declines over the course of the product life cycle, market power lodged in the physical layer results in excessive bundling and overpricing of products under a variety of market conditions. Control over the product cycle can impose immense costs by creating incompatibilities, forcing upgrades, and by spreading the cost increases across layers of the platform to extract consumer surplus. Firms seek to accomplish technological "lock-in." These processes create what has been called an 'applications barrier to entry.' After capturing the first generation of customers and building a customer base, it becomes difficult, if not impossible, for later technologies to overcome this advantage. Customers hesitate to abandon their investments in the dominant technology and customer acquisition costs rise for latecomers.

This creates an immense base of monopsony power for dominant players in the critical layers. I use the term monopsony broadly to refer to the ability to control demand. If a firm is a huge buyer of content or applications or can dictate which content reaches the public through control of a physical or code interface (a cable operator that buys programming or an operating system vendor that bundles applications), the firm can determine the fate of content and applications developers. To the extent that a large buyer or network owner controls sufficient demand to create such effects, particularly in negotiating with sellers of products, it has monopsony power.

These anti-competitive behaviors are attractive to a dominant firm for static and dynamic reasons. Preserving market power in the core market by erecting cross-platform incompatibilities that raise rivals' costs is a critical motivation. Preventing rivals from achieving economies of scale can preserve market power in the core product and allow monopoly rents to persist. Enhanced abilities to price discriminate can also increase profits in the core product market. Conquering neighboring markets has several advantages. Driving competitors out of neighboring markets creates market power in new products. Diminishing the pool of potential competitors enhances the ability to preserve market power across generations of a product.

The growing concern about digital information platform industries derives from the fact that the physical and code layers do not appear to be very competitive. There are not now nor are there likely to be a sufficient number of networks deployed in any given area to sustain vigorous

competition. Vigorous and balanced competition between operating systems has not been sustained for long periods of time. Most communications markets have a small number of competitors. In the high-speed Internet market, there are now two main competitors and the one with the dominant market share has a substantially superior technology. When or whether there will be a third, and how well it will be able to compete, is unclear. This situation is simply not sufficient to sustain a competitive outcome.

Confronted with the fact that the physical and code layers have very few competitors, defenders of closed, proprietary platforms argue that monopoly may be preferable. The theory supporting the claim for rents to be "properly" earned by network operators appears to be particularly ill-suited to several layers of the digital communications platform. It breaks down if the monopoly is not transitory, a likely outcome in the physical layer. In the physical layer, with its high capital costs and other barriers to entry, monopoly is more likely to quickly lead to anticompetitive practices that leverage the monopoly power over bottleneck facilities into other layers of the platform.

Monopoly advocates have also been challenged for circumstances that seem to typify the code and applications layers of the Internet platform. The monopoly rent argument appears to be least applicable to industries in which rapid and raucous technological progress is taking place within the framework of an open platform, as has typified the Internet through its first two decades. The "winner take all" argument was firmly rejected in the Microsoft case. The Internet seems to fit the mode of atomistic competition much better than the creative monopolist rent-seeking model, as did the development and progress of its most important device, the PC.

One of the most important factors in creating a positive feedback process is openness in the early stages of development of the platform. In order to stimulate the complementary assets and supporting services, and to attract the necessary critical mass of customers, the technology must be open to adoption and development by both consumers and suppliers. This openness captures the critical fact that demand and consumers are interrelated. If firms' activities begin to promote closed technologies, this is a clear sign that motivations may have shifted. While it is clear in the literature that a company's installed base is important, it is not clear that an installed base must be so large that a single firm can dominate the market. Schumpeter's observation that large firms innovate more deals with the issue of the size of the firm, so that it achieves economies of scale, not the market share of the firm. As long as platforms are open, the installed base can be fragmented and still be large. In other words, a large market share is not synonymous with a large market. A standard is not synonymous with a proprietary standard. Open platforms and compatible products provide a basis for network effects that are at least as dynamic as closed, proprietary platforms and much less prone to anticompetitive conduct.

The traditional concerns about market power abuse by large incumbents have received a great deal of attention – too much, in the sense that the other sources of market failure that would undermine or weaken the "virtuous cycle" deserve at least as much attention. Nevertheless, the fundamental point is that "[l]eading incumbent firms and new entrants face different incentives to innovate when innovation reinforces or alters market structure." The incumbents will invest in innovation that supports the platform and their leading role in it. In particular, they will prefer proprietary standards.[166]

Half a century of remarkable success of the principle of non-discrimination applied to the layered Internet architecture, as well as network owners' consistent and vigorous hostility toward this decentralized approach to communications, make the case for preserving nondiscrimination clear. Given the history, there is no reason to believe the claim that an after-the-fact regime of transparency implemented by the Federal Trade Commission and backed up by the companies' committing to eschew practices will prevent practices that have been banned and/or regulated by

PART III.
HISTORY, ECONOMICS, TECHNOLOGY AND LAW IN THE NETWORK NEUTRALITY DEBATE

6. TITLE II CLASSIFICATION IS NOW ESSENTIAL TO PRESERVING INNOVATION AT THE EDGES

This part of the analysis examines the two most recent public policy approaches that claim to ensure nondiscriminatory access to the communications network as the underpinning for innovation at the edges without permission. They are perfect examples of the two theories of political economy that are competing for dominance in the 2020 election.

The approach described in this chapter is the Title II approach which imposed conditions on network owner behavior, while allowing competition on the communications platforms. The Title II approach is a good example of regulated competition embodied in the '34 Act. Policy set strong guardrails to prevent abusive behavior and adopted rules to provide guidance to achieve other goals, like universal service, protection of privacy, etc. Although the rule explicitly adopted a very small number of Title II powers, the companies claimed that the threat of broader market intervention loomed. Ironically, this was exactly the effect intended, since network owners had the flexibility to implement the rules, without explicit intervention.

The next chapter describes an approach that depended on the market and the private interest of companies to achieve the desired outcome (generally called market fundamentalism). It declared the market to be effectively competitive, withdrew FCC regulatory oversight almost entirely, and pointed to antitrust as the necessary backstop, should communications network owners misbehave. To the extent there was oversight over abuse, it relied largely on *ex post* enforcement, with the one potential avenue of *ex ante* regulation relying on the very weak, § 5 powers of the FTC. As noted in Chapter 5, a similar approach and theory was applied to business data services, which was the key chokepoint of network access for potential competitors and developers of applications and services that were dependent on network access.

THE NEW NEED FOR TITLE II CLASSIFICATION OF BROADBAND

To describe the Title II approach, I rely on an analysis by Scott Jordan, the FCC's Chief Technologist during the proceeding that classified broadband as a Title II service. While there can be differences of opinions about the facts, the facts themselves are undeniable. Facts and reality are important, but they alone are not dispositive. The next question is whether the law and its interpretation by the courts allow or require actions that are consistent with the facts and reality. Sometimes they do not, or the law allows multiple actions.

If, however, the law allows actions consistent with the facts and the agency has consistently taken actions to implement the nexus between reality and law through rules, the precedent becomes compelling. At that point, Jordan argues, the agency cannot invent an alternative reality to support contrary actions. As the next chapter shows, Jordan was right on his description of the technology, the law and actions the FCC had taken over decades to implement the law in a way that comported with the facts and reality. The FCC flip-flop order repealing Title II and replacing it with Title "0" was wrong on the technology and the FCC implementation.

Even the court that upheld the flip-flop order found the FCC had lost touch with reality. However, it also found that the Supreme Court's interpretation of the law allowed the erroneous conclusion and it called on Congress or the Supreme Court to set things right. Needless to say,

this remarkable ruling sets the stage for a huge fight over the classification of broadband under the '34 Act, as amended.

In defense of the Title II classification of broadband, Jordan highlights the strong continuity of the 1996 Act and the regulatory framework that had developed over the quarter century before the amendments to the 1934 Act were adopted. There was a clear fit between the technology of the Internet and the law.[167] The only question is, why did it take the FCC so long to arrive at this compelling line of reasoning that leads to a Title II classification?

The answer is, for the first three decades of the birth and growth of the Internet, the FCC did not need this authority. The courts had accepted a legal theory in which the FCC claimed broad jurisdiction under Title I of the Act to take actions that emulated (invoked) Title II authority. The FCC had long claimed that the broad goals expressed in Title I of the Act enabled them to use authorities in other Titles in the Act – "ancillary authority" – even though they applied to specific services defined in those Titles. The 1996 Act did not change that. However, the court changed its view, adopting a much dimmer view of the exercise of this ancillary authority. The FCC struggled with this shift. Nevertheless, Republicans (Powell and Martin) and Democrats (Genachowski and Wheeler) always believed and acted on the belief that the FCC had the authority to regulate high-speed data transmission to prevent discrimination. Between 2000 and 2016 two Republicans (Powell and Martin) and two Democrats (Genachowski and Wheeler) not only claimed this authority but used it for specific enforcement actions or final rules.

Notwithstanding the vigorous efforts of the network owners, the tortuous path from the 1996 Act to the 2016 court ruling upholding the Title II classification should not, and cannot, obscure the fact that non-discriminatory access was the policy throughout the history of the Internet. Reviewing the route to the misclassification of high-speed data transmission and its later correction ultimately reinforces the important nexus between technology and law. When technology, economics and law go-hand-in-glove, they create a sturdy pillar on which the digital revolution was built.

When the first Open Internet Order was overturned, the FCC was at a turning point. The FCC had to choose between abandoning the principle of nondiscrimination that had been in force for 40 years or building that principle on a firmer basis within the law. Ultimately, the FCC chose the latter and the court upheld its Title II decision. The Appeals court refused an *en banc* hearing and the decision remained pending Supreme Court review.

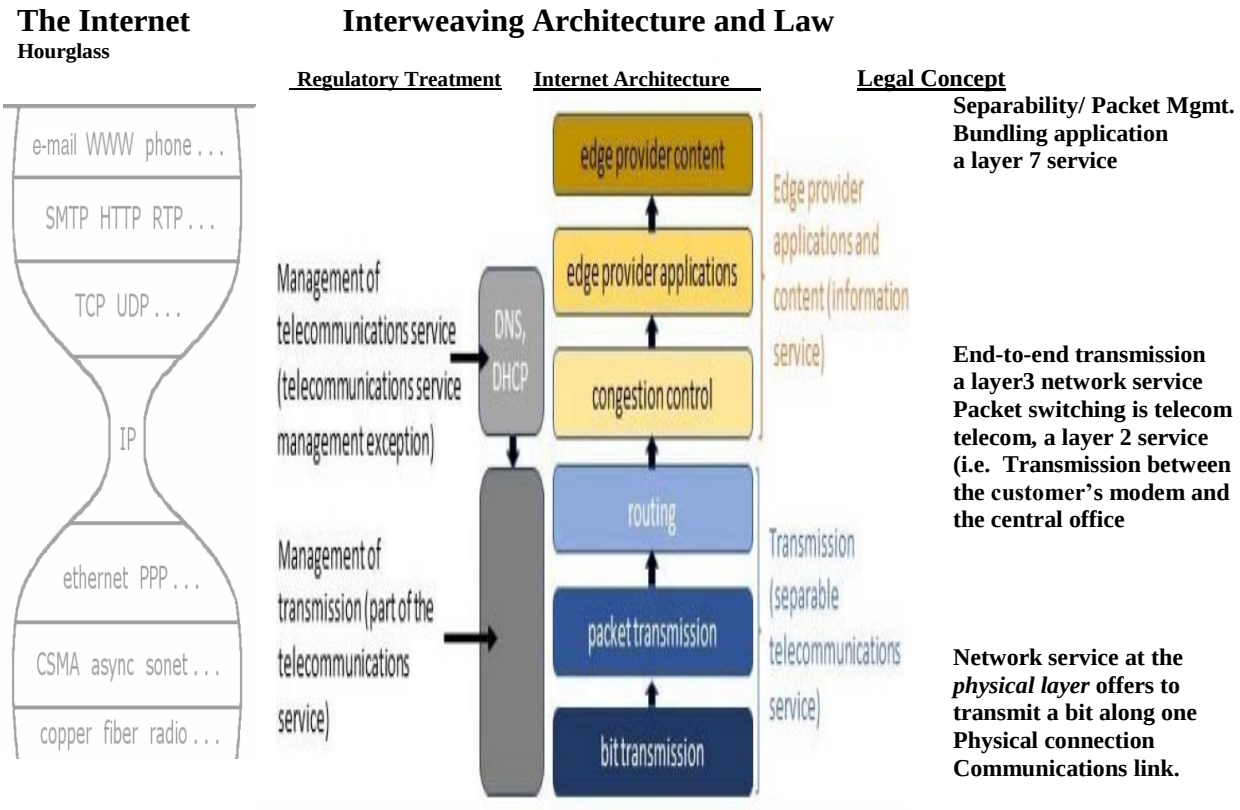
Internet Architecture, Network Management, and Law: Erroneous Assumption Underlying the Title "0" Order

In the face of a very recent agency decision upheld by the courts that interprets that record as justifying vigorous policy to ensure non-discrimination in network access and consumer protection from abuse of network owners, the FCC attempted in its Title "0" approach to sidestep that record. The order claims to take us back to the halcyon days of Internet's development and growth when government did not meddle in network management. Since, according to the FCC's revisionist history, government rules had no role in the success of the Internet, the recent decision to impose regulation is worse than useless, since it imposes

unnecessary costs and retards innovation. We have shown that this revision, like most of the flip-flop order, is wrong.

Returning to the hourglass framework in Figure 6.1, Jordan argues that the practice developed by the FCC and embraced by Congress in the '96 Act gave it legal grounding that linked law, technology and economics in a constellation. Jordan argues that over a thirty-year period, the FCC adopted practices for management of the Internet that had the positive effects I have described in Chapters 2 and 3. These practices had the force of administrative actions upheld by the courts under the 1934 Act and even more legal footing under the 1996 Act.

FIGURE 6.1: HOURGLASS ARCHITECTURE 4: LEGAL FRAMING LINKING EXPERIMENTAL ENTREPRENEURIALISM AND THE ENTREPRENEURIAL STATE



Sources: CTSB, NRC, *The Internet Coming of Age (2001)*, pp. 127-128; Jordan, Scott, 2018, "Broadband Internet Access Service is a Telecommunications Service," *Federal Communications Law Journal*, Forthcoming.

On the left side of Figure 6.1, I show the Internet hourglass. In the other three columns I show how the FCC implemented policies to support the hourglass. The second column from the left shows the network's management definitions and practices. The third column from the left shows the specific intended architectural outcomes. The last column shows the legal concepts on which the FCC action rested.

The earlier analysis in this paper, and Jordan's discussion make it clear that the FCC's flip-flop argument rests on seven claims (see Table 6.1) about broadband Internet access service

and the development of the Internet that are incorrect – inconsistent with the actual history, at odds with the market reality, refuted by economic theory and evidence, and contradicted by clear court rulings. Every one of the FCC's points in the flip-flop argument is contradicted by the empirical evidence and the conclusions reached by the Commission.

TABLE 6.1: FACTUAL, LOGICAL, AND LEGAL FLAW IN THE FCC FLIP-FLOP ORDERS

Issue	FCC Erroneous Claim	General Historical Conditions	Specific, Contemporary Evidence
1) Pre-1996			
Regulation	No regultion	Computer Inquiries & Crarterphone = nondiscriminatory access; open connection for devices	National Broadband Plan Report and virtuous cycle
Virtuous cycles in success of the Internet	Both the cnter and the edge play equal roles	Unique virtuous cycles are to drive innovationand adoption	Market power of the networks, undermines virtuous cycles
2) Post-1996 Regulation	Telecomm Act precludes regulation	Ancilary authority asserted, Title II, S.706 Upheld	Verizon, Roaming orders upheld, with support for
3) Market Structure	Sufficient competition from potnetial entrants and duopoly, not analyzed in detail in network neutrality	Market power in network neutrality, Highly concentrated in BDS proceeding,	Economic literature on contestability, competition and cartels
Oversight			
4) Transparency & Case-by-case	Potent with expansion	Only pat of any oversight regime, Unable to prevent	Misinterpretation of costs and benefis and effectiveness
5) Company behavioral commitments	Trust Companies	Term sheets demanding control over access	Flip-flop on network, neutrality, BDS, competition in mergers
6) Enforcement			
Antitrust in general	Antitrust can deal with all problems	Does not address key conditions to sustain progress and promote competition in a timely manner	
FTC in particular	FTC Section 5, sufficient	Institual structure makes it particlarly Slow and ineffective	FTC disaster in Privacy, failure in Microsoft
7) Suspect Conduct	Rare and Insignifcant by definition	Continuous and important by impact in both network neutraity and BDS	Misrepresents results of Chicago v. Harvard shool debate over welfare and liaiblity standards

Source: Compiled by author

The broad flaws in the FCC's misreading and misinterpretation of the evidence led to specific errors in factual statement, logic and legal reasoning, as briefly outlined in Table 6.1 and discussed at great length throughout this analysis.

- The pre-1996 Act Internet environment thrived because it was not regulated.
- The post-1996 Act prohibited government regulation of any kind going forward.
- Market forces are adequate to discipline the worst behavior in a timely manner. To the extent that network operators dare to engage in seriously abuse practices, the vigorously competitive market will blunt them.
- If consumers are informed about what is going on, their reaction will swiftly force abusers to change their behavior.

- The companies have promised to behave, and we should trust them.
- FTC oversight under the Clayton Act can effectively deal with any seriously anticompetitive or anti-consumer behaviors, as can other antitrust oversight.
- The abuses that advocates claim to be concerned about are infrequent and inconsequential; therefore, there is little to worry about.

For at least 45 of the first 50 years of FCC policy dealing with the Internet, there was a clear rule that banned undue discrimination in rates, terms and conditions in the handling of data transmission. There is nothing in the intense legal maneuvering around network neutrality that suggests the FCC does not have regulatory authority. No appeals court, nor the Supreme Court has rejected Title II authority over network neutrality.

THE TORTUOUS ROUTE TO MISCLASSIFICATION OF HIGH-SPEED DATA TRANSMISSION

The issue turns on whether the law recognizes the two types of services that flow over the network, basic and enhanced. This means that there could be both Title I and Title II services flowing. Opponents of Title II argued that the two were inseparable and there could, or should, be only one classification applied to this inseparable bundle.

As shown in Table 6.2, Jordan argues, first and foremost, that the two are separable. This meant that basic service should be regulated as Title II, which preserves the end-to-end principle.[168] Jordan shows that the legal framework that played a key role in the success of the Internet was wrapped around its key technological characteristic, the layered model, that created the possibility for unfettered entrepreneurial experimentation responsible for the explosion of innovation at the edges.[169]

TABLE 6.2: THE LEGAL & REGULATORY PEDIGREE OF TILE II

Design Principles	Computer I, II 1968	MFJ Court 1982	'96 Act Law 1996	Univ. Svc. 1998	1998	Stevens Report 1998	Dial-up Order 2002-05	Cable/ Wireline 2010-2015	Open Internet 2017	Flip-Flop
Status	Defined	Adopted	Adopted	Erroneous		Affirmed	Erroneous	Affirmed	Erroneous	
Technology										
Separability	7 - 8	12	16			30	7, 36, 39, 40, 44-45	45-48	48	51-52 67-68
End-to-End	8-9	14	16			31	31, 40	47	47	54
Network Management	8-10			16		37	6, 37, 43	46, 48	46, 50	56-61
Bundling	50	15		18		38	38, 43, 44	47	48	53, 66
Market										
Competition/	11	14		15, 17		5, 29	5, 15		49	
Forbearance	17					32	32, 39, 40			66
Universal Service		27	27							

Sources: Compiled by author; Citations to Scott Jordan,

> The Internet's architecture guarantees that the IP packet transfer service, which provides end-to-end transmission of information of the user's choosing, is separable from the applications (such as webpage hosting, caching of newsgroup articles, and email) riding over it. Protocols at the physical, data link, and network layers are designed separately from Internet applications. The Internet Protocol

> that transmits packets from one end of the Internet to another end is standardized and is independent of all of the Internet applications that are offered via it. Protocols at the physical, data link, and network layers are implemented in the operating systems of end user devices and are not in any way integrated in those operating systems with Internet applications. The result is that Internet applications may be offered by entities other than broadband Internet access service providers.[170]

Jordan charts this intertwining of law and technology through the fabric of FCC oversight of the digital Communications space (e.g. the Computer Inquiries) noting the regulatory orders) and court cases that upheld them along the way (e.g. NARUC I & II).[171] In addition he cites other court cases (e.g. MFJ breakup of AT&T, Brand X, the D.C. Circuit decision upholding the Open Internet Order and its Title II classification of Broadband Internet Access Service). Ultimately, the 1996 Telecommunications Act is dispositive.

Second, even where basic and enhanced services are closely intertwined, the Commission had properly identified those circumstances as necessary for network management and concluded that the Title II classification should apply to the circumstances in which the bundle was made up of strong complements. The commission properly and consistently concluded that Title II should take precedence, given the goals, intent and authorities of the overall act. Here the flexibility of the Act, with its broad goals and generically defined instruments come into play. To the extent that the FCC had developed and defended approaches that served the purposes of the Act and are upheld, they take on significant weight.

Third, these situations, which had been dealt with, must be distinguished from simple bundling, where the components were not strong complements but separable components of service (to use the phrase from the Microsoft case the products were "bolted" together).[172] Here service providers were creating "discretionary bundles," which were not necessary for the management of the network.[173] Even here, the FCC was careful to protect the obligation of nondiscrimination for basic communications services.[174] Since there was no technological reason to tie the services together (except for the interest of the of the bundler), the public interest could govern that treatment of the basic service.

The law of the land was Title II network neutrality that neither Congress nor the courts had reversed. Indeed, the Tittle II classification was more consistent with the assertion that the FCC has less authority over network neutrality and has had it for fifty years. In place of almost 50 years of FCC policy to proactively ensure network neutrality, the FCC flip-flop abandoned the decades-old position, offering three extremely weak measures that have never been deemed sufficient to ensure nondiscrimination – transparency, promises by communications giants to behave, and the antitrust authority of the FTC, as discussed in Chapter 7.

This reading of the 1996 Act was clear to the only appeals court that ruled on network neutrality decisions. Jordan argues that this legal/regulatory finding was binding because the deregulatory decisions had failed to demonstrate inseparability or misconstrued the network management exception. To escape from this powerful nexus, when the FCC is inclined to abandon the obligation of non-discrimination, it must make arguments about the inseparability of the information from network management functions. The tension between the underlying legal-

technical framework and efforts to escape from it are quite evident in the schizophrenic record of the post 1996 treatment of non-discriminatory access.

This is not to suggest that there was not great controversy along the way, but that controversy only arose at points where analysts or participants tried to escape from the well-defined legal-technical framework that had been adopted and proven so successful. Jordan identifies the factual errors underlying each instance where the FCC expressed uncertainty about or acted in violation of the nexus between the technology and the law.

The issue was first litigated before the Ninth Circuit Court of Appeals in 1999, in *Portland v. AT&T,* when Portland attempted to impose conditions of nondiscrimination on cable modem service. The court concluded that the underlying service was a telecommunications service, which should be subject to the nondiscrimination provisions of the Act. As the Appeals court for the Ninth Circuit ruled in *Portland v. AT&T* (as a cable company at the moment) and reaffirmed in its ruling on the Cable Modem Order.

> Among its broad reforms, the Telecommunications Act of 1996 enacted a competitive principle embodied by the dual duties of nondiscrimination and interconnection. See 47 U.S.C. s. 201 (a) …s. 251 (A) (1) … Together, these provisions mandate a network architecture that prioritizes consumer choice, demonstrated by vigorous competition among telecommunications carriers. As applied to the Internet, Portland calls it "open access," while AT&T dysphemizes it as "forced access." Under the Communications Act, this principle of telecommunications common carriage governs cable broadband as it does other means of Internet transmission such as telephone service and DSL, "regardless of the facilities used." The Internet's protocols themselves manifest a related principle called "end-to-end": (not a huge issue, but this seems like a weird time to introduce the concept of end-to-end… you've already been referring to it) control lies at the ends of the network where the users are, leaving a simple network that is neutral with respect to the data it transmits, like any common carrier. On this role of the Internet, the codes of the legislator and the programmer agree.

Later that year, the Federal Trade Commission imposed open access requirements on Time Warner as a condition of approving the AOL-Time Warner merger. The merger condition was anything but nondiscriminatory access; rather it was a feeble attempt to maintain a little competition, in the form of an additional competitor. In 2002, the FCC issued its Cable Modem declaratory ruling, which declared it an information service, in contradiction to the Ninth Circuit decision. Brand X, a small, non-facilities-based Internet Service Provider (ISP), appealed the decision to the Ninth Circuit, which affirmed its earlier conclusion, that high-speed data transmission is a telecommunications component of the service.

The definition of high-speed data transmission service as an information service rested on a theory of "contamination," *i.e.*, that the combination of telecommunications and information services in a "bundle" turns the whole bundle into an information service. This was a reversal of long-standing Commission policy and the regulatory structure that provided the model for the

1996 Act.[175] Previously, the presence of telecommunications in the bundle created a telecommunications service.

While the Supreme Court review of *Brand X v. AT&T* was pending, the FCC engaged in two acts that seemed intended to quiet fears that classifying high-speed data transmission would undermine the principle of nondiscrimination in telecommunications. First, Chairman Michael Powell, a vigorous defender of the information service classification, declared that there were four Internet freedoms that should be preserved. They cover several of the public service principles, including integration (ability to connect devices, access content and use applications) and consumer protection (obtaining service plan information).[176] These were later turned into a policy statement of the Commission[177] and were proposed as part of a new Open Internet rule.

Second, the FCC brought an enforcement action against a small telephone company for blocking VOIP, an Internet application that competed with its voice service. In the consent decree, Title II authority was invoked twice -- § 201 (a) in the introduction and § 208 in the body of the consent decree. In other words, three weeks before the oral argument in the Brand X case and less than four months before the ruling, the FCC was using its Title II authority to prevent undue discrimination in access to the telecommunications network. Two years later, the FCC found that a cable operator had violated the nondiscrimination policy of the Commission. These *ex post* actions by the FCC may have been intended to elicit *ex ante* behaviors but the repeated need to intervene made they clear that it had failed to do so. Chevron deference would become the sole support for FCC policy.

A split (6-3) Supreme Court reversed the Ninth Circuit and upheld the FCC's definition of high-speed data transmission as an information service, based on purely procedural grounds. It concluded that the agency should be afforded Chevron deference in an ambiguous situation. The reversal of the Ninth Circuit ruling was even a closer call than the math indicates. In his concurrence Justice Breyer emphasized the closeness of the decision saying, "I join the Court's opinion because I believe that the FCC's decision falls within the scope of its statutorily delegated authority –– though perhaps just barely."[178]

At every key point in the regulatory and judicial process, the FCC asserted that it needed and had the authority to implement policies to promote the Communications Act goals under both Title I and Title II. The assumption repeatedly made by the Commission, that it would be able to exercise substantial "ancillary" authority under Title I to accomplish the goals provided for in Titles II and III, has also now been called into question.

THE BROADER IMPLICATIONS OF THE CLASSIFICATION OF BROADBAND

The FCC never wavered in its commitment to nondiscrimination under the '34 Act over four decades. It took a decade to get from the formal repeal of the Computer Inquiries in the 2005 Wireline Broadband Order to Title II reclassification. Over that period the FCC tried several approaches to asserting its authority – ancillary authority, § 706 authority, ultimately Title II. I earlier argued that the all of the above approach made perfect sense, given the importance of the goal and the uncertainty about both authority and power. The fact that the courts upheld Title II before the Trump/Pai flip-flop which would like to repeal it, makes the legal classification all the more important and open to a "policy-based" outcome.

There are other factors that underscore the importance of preserving the Title II classification at this point. As noted earlier, Title II is the primary location of all of the goals of the '34 Act, not just non-discrimination. Extension of service and support for universal service, consumer protection, privacy and security are centered there. The administrative repeal of Title II in the flip-flop orders seeks to abandon or reduce FCC authority in all of these matters. Jordan mentioned these "policy" issues but did not analyze them.

However, following from the above observation, the Obama administration did not only restore order in the treatment of network neutrality. It also asserted and reinvigorated Title II authority across the board, as shown in Figure 6.2. Although Jordan eschews the policy level,[179] claiming to focus on the intersection of law and technology, he does locate that discussion within the broader policy context.[180] The architectural feature of separation is not simply technical, it is the foundation on which the economic structure of the digital communications sector rests.

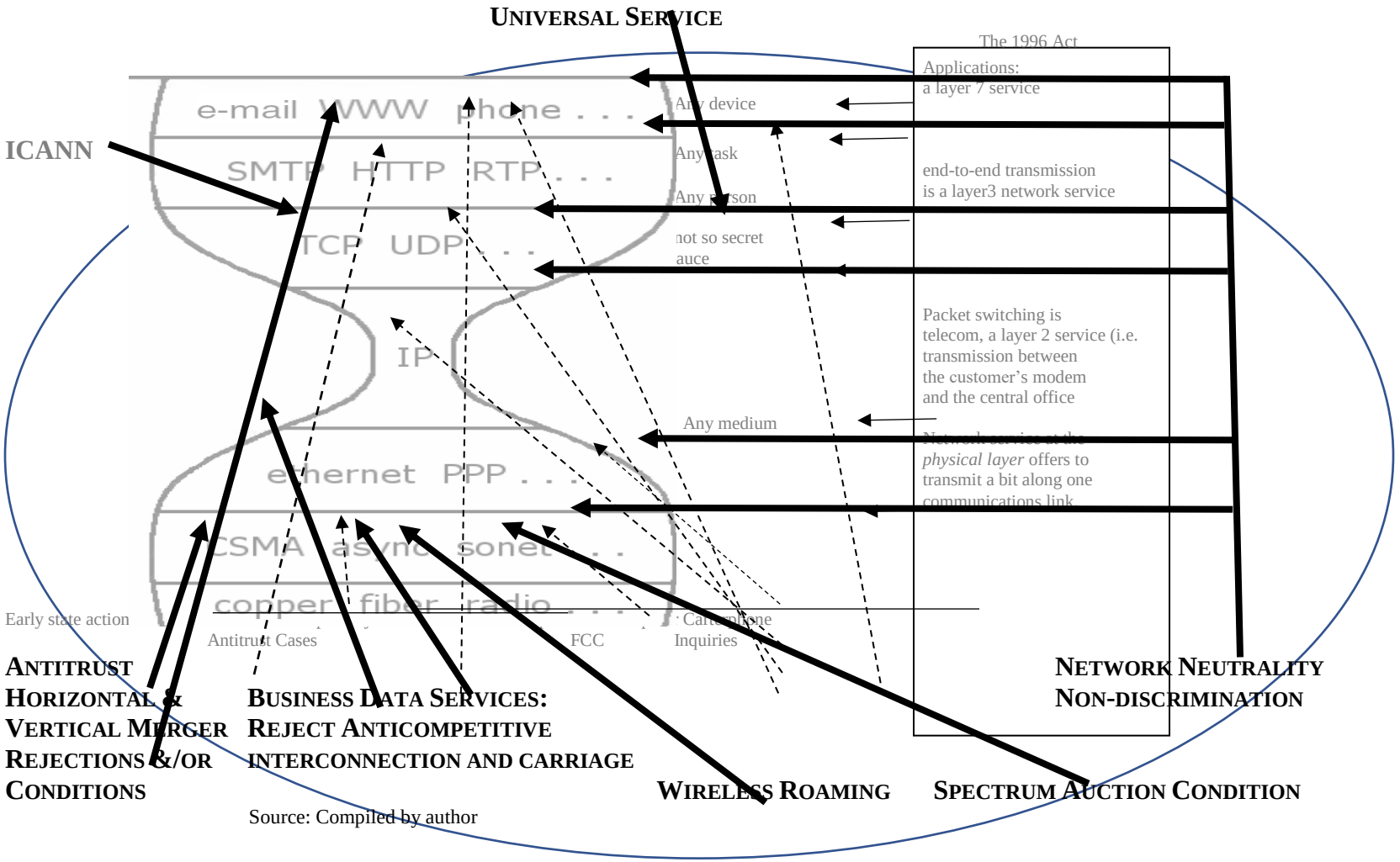
Because those proceedings involved only one of the many important public obligations in Title II, many of the other issues should have been vetted, but the Commission never thoroughly vetted the full range of implications of the definitional exercise for universal service, public safety, and consumer protection. The FCC recognized that there could be important implications of its actions and launched proceedings to consider them, but it implemented the definitions without ever completing those inquiries.

Jordan shows not only that the communications companies challenging the open access order were flawed in their treatment of the architectural principle of the Internet, he also argues that they were incomplete. A quick look at the Wireline Broadband Order, which replaced the Computer Inquiries and extended FCC oversight over all wireline broadband by treating cable modem and telephone company broadband symmetrically, underscores the importance of affirmative FCC authority and action to ensure nondiscrimination and promote other goals of the Communications Act. The order cites its ancillary authority 35 times to preserve the FCC's power to prevent discrimination, promote universal service, and protect consumers and the nation. The order opened proceedings to assess whether it could achieve several of these objectives by relying on market forces, rather than its ancillary authority, but never made such a determination. The inquiry into the full implications of abandoning Title II authority never took place.

The 1934 Act recognized that technology would evolve and adopted a pragmatic approach that intended for the principles (social goals) to remain in force as the communications network progressed. Similarly, the 1996 Act explicitly gave the FCC some flexibility and defined telecommunications as an evolving concept that preserved the principles of nondiscriminatory access.[181] This commitment to preserving social goals in the face of rapid technological change was written into the Act at three key points, all of which would play an important part in the next quarter century.

First, definitions were independent of the "technology used."[182] Technological evolution was anticipated,[183]but not expected to alter the basic policy goals.

FIGURE 6.2: HOURGLASS ARCHITECTURE 5:
THE TITLE II CLASSIFICATION RESTORES THE ABILITY TO ACHIEVE INNOVATION AT THE EDGES AND THE BROAD GOALS OF COMMUNICATIONS POLICY



Source: Compiled by author

Second, in §254, universal service was defined and as an "evolving" concept that explicitly included advanced telecommunications and information services.

Third, in §706, a finding that progress toward universal service was insufficient allowed the FCC and state regulators to take vigorous action to increase progress toward the goal.

The technological changes that were used in an attempt to escape from the obligations of nondiscrimination and support for universal service were contrary to the Act. They also, as Jordan notes, misconstrued the fundamental nature of the technology. Simply put, the universal service goals of the Act expressed in Title I and Title II are at least as compelling as the nondiscrimination goals in Title II. The D.C. circuit denied an *en banc* hearing and the Supreme Court denied *cert.* Ultimately, the court upheld the Title II classification.

THE IMPORTANCE OF DUAL JURISDICTION

Having done a deep dive into the details of the regulatory oversight of the nondiscrimination that played a key role in the development and deployment of the Internet, and before I move on to the discussion of the FCC's Title "0" approach and show why antitrust is not enough, it is important to highlight the fact that regulation alone is also not enough. The dual jurisdiction of regulation and antitrust, which is over a century old (at least since the passage of the Mann Elkins Act of 1910 and the DOJ consent decree in 1913) is the key. The "Title "0" order essentially views antitrust as a substitute for regulation. That has not been the historical relationship between the two. They are complements, not substitutes.

As I noted at the outset of Chapter 2, economic regulation and antitrust were focal points of policy activity in the late 19th century as large corporate entities—above all the railroads—became more important and ultimately dominant in the economy. Dual jurisdiction was applied very early in the development of telecommunications, as shown in Table 6.3. In 1897, the first federal regulatory agency created in the progressive era when the Interstate Commerce Commission[184] was given the authority to prevent railroad corporations from charging rates that were "unjust," "unreasonable," "unjustly prejudicial" or "discriminatory." The Mann Elkins Act of 1910 quickly extended the Interstate Commerce Act to the telephone networks.[185]The telephone industry became the target of one of the first antitrust consent decrees under the Sherman Act,[186] a continuing series of complaints and consent decrees that culminated in the largest divestiture of private property ever required in an antitrust case.[187] The ongoing antitrust oversight over the industry was one of the factors behind the Telecommunications Act of 1996.

This dual jurisdiction frequently interacts, with antitrust-driven development later being incorporated into economic regulation. Congress codified the frameworks developed by the FCC and the modification of the consent decree in the antitrust case against AT&T. This important role of balanced, dual oversight has continued into the digital era. FCC policy decisions over the course of a decade (Carterphone,[188] the Computer Inquiries[189] and Spread spectrum[190]) that ensured open access to and nondiscriminatory treatment of traffic on the communications network were critical to create an environment in which the Internet grew to dominate communications. Antitrust cases have continued to protect competition on the platforms that make up the digital communications sector, with the most spectacular being the AT&T breakup.

It is not an exaggeration to say that the success of the modern communications sector rested on this dual oversight of the industry, which strove to keep it as competitive as possible and pressed it toward progressive goals, given the available technologies.

TABLE 6.3: THE LONG HISTORY OF DUAL OVERSIGHT IN THE COMMUNICATIONS SECTOR

Year	Regulation	Antitrust
1887	Interstate Commerce Act	
1890		Sherman Act
1910	Mann-Elkins Act	
1913		AT&T/DOJ Consent Decree
1914		FTC Act
1927	Radio Act	
1934	FCC Act	
1945		Associated Press
1949		Final Judgment
1956		Modification of Final Judgment
1968	Carter Phone and Computer Inquiries	
1969	Red Lion	
1984	Spread spectrum decision leading to Cable deregulation	Break-up of AT&T
1987		Triennial reviews begin in the Antitrust court
1992	Cable Re-regulation (Consumer Protection Act)	
1996	Telecom Act of 1996	
2003	Cable Modem Order	
2005	Madison River	
2005	Wireline Broadband Order	
2010	Open Internet Neutrality Order	Ticket Master
	Comcast/NBC Merger Conditions	Comcast-NBC Consent Decree
2011	AT&T/T-Mobile merger blocked	
2013	Data Roaming Order	e-Book Price Fixing
2014	Open Internet Order remanded	
	Universal Service Reform Upheld	

Source: Compiled by author

7. SELF-REGULATION AND WEAK FTC OVERSIGHT ARE UNABLE TO ENSURE NONDISCRIMINATION AND INNOVATION AT THE EDGES

Having shown that the strong regulatory language of Title II is consistent with the history, economics and law that governed the Internet through its first half century, the FCC flip-flop approach was a stretch, but the court felt that the immense discretion that the Supreme Court had allowed the agency made it very likely that if it ruled against the agency, the court ruling was likely to be overturned on the basis of agency discretion. The central issue remains, what should the agency do and how can that decision be rendered more permanent.

This paper shows that history, law and economics favors strong, *ex ante* nondiscrimination supported by both the FCC and the antitrust authorities. The FCC claimed that a complaint process at the FCC combined with an FTC oversight process should be adequate to discipline market power because it incorrectly argued that the broadband Internet access market was sufficiently competitive. I have argued elsewhere that the tight oligopoly on steroids that dominates communications markets is far from (workably) competitive, because of high levels of concentration and lack of alternatives available to consumers.[191]

This chapter begins with a brief description of the court ruling, which characterizes the public policy (and its weakness) established by the FCC order. I then discuss why antitrust is not an adequate basis to prevent abuse and accomplish the positive outcome that vigorous *ex ante* policies had accomplished. Next, I describe why the FTC is particularly ill-suited to the task of ensuring nondiscrimination.

THE FCC'S TITLE "0 "APPROACH

The court ruling described clearly what the FCC had done, "resting heavily on the combination of the transparency requirements imposed by the Commission under § 257 with enforcement of existing antitrust and consumer protection laws.[192] The fact that § 257 was parked in the back of Title II was not a concern to the court, which accepted the proposition that it was broadly defined to apply to other Titles and similar provisions could be found elsewhere. The focal point of the order was transparency, complaint and antitrust.

However, the FCC claimed two additional reasons that regulation was unnecessary, both of which were independent of FCC action and neither of which is compelling.

The FCC invoked a theory of "sufficient" competition in which the market discipline of competition could be achieved without any actual competitors present in a specific local market. The DOJ/FTC Merger Guidelines, which asserted that market power could be presumed to be exercised in highly concentrated markets – i.e. those with less than the equivalent of four equal sized firms selling substitutes directly to consumers. The Merger Guidelines set the moderately concentrated threshold at the equivalent of six equal sized firms. Empirical evidence showed that market power was generally exercised in highly concentrated markets.[193] In order to conclude that there is no threat of abuse of market power, the market would have to be served by at least four equal-sized firms and perhaps six.

The FCC offered a theory of sufficient competition. The theory was needed because the FCC's own data showed a pervasive lack of competition. Its data showed that between 30 and 50 percent of all consumers had either zero or one broadband Internet access service (BIAS) providers offering service at speed that constituted real broadband (10 Mbps down and 1 Mbps up or 25 Mbps down and 3 Mbps up). Between 90 and 95 percent had two or fewer BIAS providers. If the threshold was four firms, per the Merger Guidelines, almost no one in the U.S. lived in a workably competitive market.

The FCC's solution was to invent a theory of "sufficient" competition, in which two is enough competition and even a complete lack of competition within an area may be enough to discipline market power abuses.

> First, even two competing wireline ISPs place competitive constraints on each other. ISPs' substantial sunk costs imply that competition between even two ISPs is likely to be relatively strong. Thus, to the extent market power exists, it is unlikely to significantly distort what would otherwise be efficient choices… Second, competitive pressures often have spillover effects across a given corporation, meaning an ISP facing competition broadly, if not universally, will tend to treat customers that do not have a competitive choice as if they do.
>
> A code of conduct would ensure the open Internet principles are followed, while at the same time enabling ISPs to offer their customers the opportunity to choose the type of BIAS experience that they would like to receive. ISPs already have made such commitments publicly in a variety of settings. These commitments then would become enforceable by the FTC under § 5 of the FTC Act.");[194]
>
> We also note that under the revised regulatory approach adopted today, consumers and other entities potentially impacted by ISPs' conduct will have other remedies available to them outside of the Commission under other consumer protection laws to enforce the promises made under the transparency rule.[195]

Second, in a similar vein of a lack of need for regulation, the FCC placed a lot of faith in the commitments of the companies to behave because good behavior was in their best interests. The fifty years of history of dominant firm behavior reviewed above contradicts this simplistic claim.

> Our existing informal complaint procedures combined with transparency and competition, as well as antitrust and consumer protection laws, will ensure that ISPs continue to be held accountable for their actions… we determine that the existing consumer complaint process administered by the Commission's Consumer and Governmental Affairs Bureau is best suited to and will process all informal transparency complaints… We emphasize that we are not making any changes to our informal complaint processes.[196]

To the extent that these processes were both *ex post*, they contradict the core *ex ante* principle that sustained innovation at the edges without permission. The only hope for a strong *ex ante* obligation for nondiscrimination was in the "best practices" regulatory power (§ 5) of the

FTC. As discussed below, that authority was weak and had failed miserably time after time. The FTC was essentially an *ex post* antitrust agency, and not a very good one at that.

In the flip-flop order the FCC preserved §201, §202, and §208 authority for some practices (blocking, slowing and paid prioritization) but it did so primarily in an *ex post c*omplaint process,[197] in which it intended to clean up after negotiations between large firms with no obligation to serve any customer.

Figure 7.1 identifies the obstacles to effective, *ex ante*, nondiscrimination in the FCC flip-flop proposal. Commitments to nondiscrimination are meaningless without enforcement because competition is too weak to make nondiscrimination a compelling course of action for dominant incumbent who still possess substantial market power. Whether there is a little more competition than before the 1996 Act is not the point. The question, as the statute framed it, was: is there enough competition to render regulation no longer necessary "in the public interest." The answer is emphatically negative, with 90^{+}% of consumers having fewer than three service providers.

FIGURE 7.1: OBSTACLES TO NONDISCRIMINATION IN THE FCC TITLE "0" ORDER

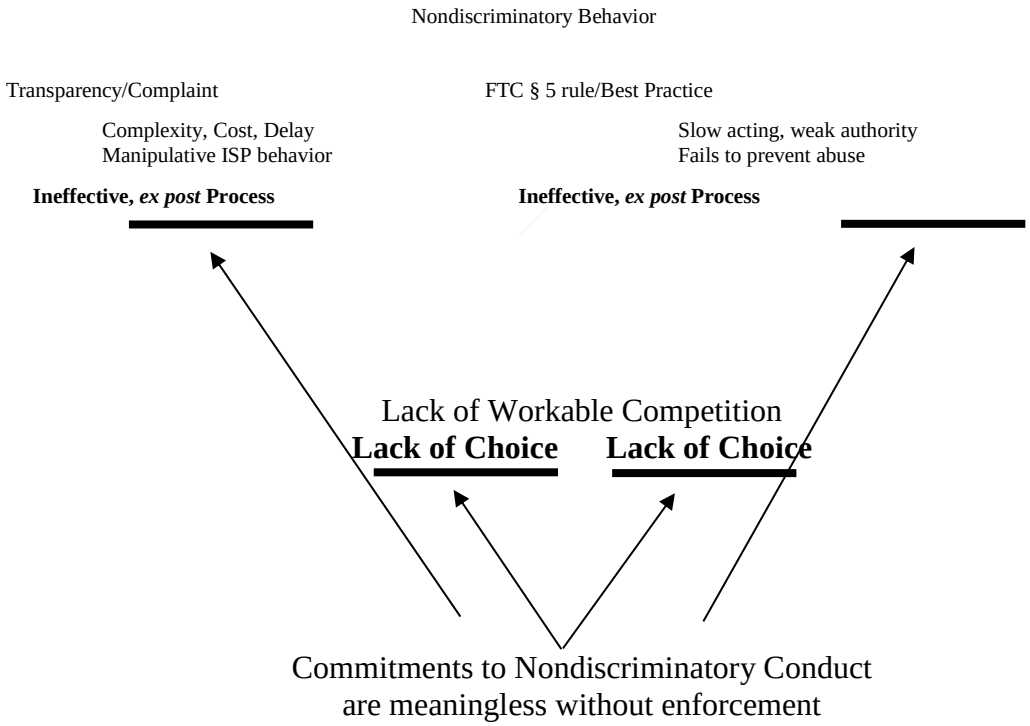


Table 7.1 identifies 17 reasons why the process will not work (most from Economides). Since the market cannot provide a "self-regulatory" solution to the problem, the regulatory regime must provide effective oversight to prevent abuse. Here, too, the FCC scheme fails. Not only is it unlikely to achieve nondiscrimination, but even if it could, the best it can do is *ex post* nondiscrimination. At best, this nondiscrimination will be for the big firms with deep pockets and significant bargaining power. New entrants will be strangled and innovation at the edges without permission will be stifled.

TABLE 7.1: A HOST OF REASONS WHY *EX POST* ANTITRUST AND TRANSPARENCY WILL NOT PROTECT CONSUMERS, COMPETITION OR INNOVATION AT THE EDGES WITHOUT PERMISSION

A. The "self-interest" in good behavior is weak where there is a lack of competition.

1. Dominant incumbents profit from pricing/marketing abuse and controlling the flow of technology.
2. These have been the least popular companies in America for decades and it has not changed their behavior. If caught, they move on to another abusive practice.
3. Communications giants have a long history of saying one thing for political ends and doing another for economic ends.

B. Transparency won't work for complex bundles of products.

4. Behavioral economics demonstrates the ability to "manipulate" and "exploit" the consumer
5. Lack of competition (choice) renders complaint useless
6.. Consumer monitoring costs and barriers are very high and responsibility is uncertain in a coproduced service.
7. The communications network companies have been among the worst for consumer satisfaction and that has not changed their behavior.

B. Antitrust agencies struggle to address this type of abuse.

8. Structural remedies work much better for horizontal mergers than behavioral
9. Vertical market power is particularly challenging
10. Monitoring behavioral remedies is challenging for antitrust authorities, so transparency and simplicity for "third party" oversight are necessary.
11. *Ex post* antitrust is ineffective to create the environment needed for innovation without permission at the edges.
12. Litigation is slow and case-specific. The communications network companies have been targets of legal challenges for decades and that has not changed their behavior.
13. Network effects are large and vulnerable.
14 Discrimination, with its threat of holdup and need for permission, can chill innovation at the edges without abuse.

C. The FTC has repeatedly demonstrated it inability to deal with complex behavioral issues in the digital age.

15. Microsoft took half a decade and failed to produce a meaningful consent decree
16. Facebook took the FTC a decade to enjoin their behavior and the solution may not be effective.
17. The FTC's record on privacy and Do Not Call is abysmal.

Source: Compiled by author

In concluding the discussion of the Title "0" approach, it is important to note that court ruling expressed strong disapproval of the FCC flip-flop order. The unanimous ruling had nothing to do with the analysis of the technology or whether the proposed regulatory regime would work. It was based entirely on Chevron deference. The following Text Box highlights the court language in this regard.

Title II Classification is Legally Supportable and Technically Correct

I join the Court's opinion in full, but not without substantial reservation. The Supreme Court's decision… compels us to affirm as a reasonable option the agency's reclassification of broadband as an information service based on its provision of Domain Name System ("DNS") and caching. But I am deeply concerned that the result is unhinged from the realities of modern broadband service…. In a nutshell, a speedy pathway to content is what consumers value. It is what broadband providers advertise and compete over. And so, under any natural reading of the statute, the technological mechanism for accessing third-party content is what broadband providers "offer." (1)

From our limited institutional perch as a lower court, that conclusion controls our decision. "[W]e must follow the binding Supreme Court precedent…. The Supreme Court, however, is not so constrained. It is freer than we are to conclude that the "factual particulars of how Internet technology works,.. have changed so materially as to undermine the reasonableness of the agency's judgments and in particular its "determinative" reliance on DNS and caching,.. Or Congress could bring its own judgment to bear by updating the statute's governance of telecommunications and information services to match the rapid and sweeping developments in those areas. Either intervention would avoid trapping Internet regulation in technological anachronism. (6)

With the Commission now having abandoned its reliance on any additional technologies provided by broadband… the question is whether the combination of transmission with DNS and caching *alone* can justify the information service classification. If we were writing on a clean slate, that question would seem to have only one answer given the current state of technology: No… Not only does the walled garden lay in ruin, but the roles of DNS and caching themselves have changed dramatically since *Brand X* was decided. And they have done so in ways that strongly favor classifying broadband as a telecommunications service, as Justice Scalia had originally advocated. (7-8)

These new factual developments call for serious technological reconsideration and engagement through expert judgment. Instead, the Commission's exclusive reliance on DNS and caching blinkered itself off from modern broadband reality, and untethered the service "offer[ed]" from both the real-world marketplace and the most ordinary of linguistic conventions. (9)

The structure of the Communications Act fortifies this conclusion. The Act announces a clear intention to regulate market dynamics and to correct for the problems of monopoly power in the telecommunications industry. These structural considerations ought to weigh heavily in classifying what it is that broadband providers truly "offer" in the marketplace. The Commission's analysis should key to the *value* added to the consumer—and any monopoly rents it might enable—rather than to any tagalong item that happens to promote its policy preferences. In this case, the central and valued "offer" is transmission—technologically taking the user to and from third-party information providers. To construe and apply the term as the Commission has, divorced from basic market realities, is tantamount to "perform[ing] *Hamlet* without the Prince"— understanding and applying the key statutory term without regard for the statute's internal logic and purposes, (9-10)

As numerous commenters warned, the Commission's capacious view of "information service" would imperil the one proposition on which everyone has so far been able to agree: traditional telephony belongs within Title II. That worrisome implication suggests the Commission has drifted far beyond the statutory design and exceeded its interpretive discretion. (13)

By putting singular and dispositive regulatory weight on broadband's incidental offering of DNS and caching, the Commission misses the technological forest for a twig. Yet, as a lower court, we are bound to "the [Supreme Court] case which directly controls," and so we must follow *Brand X*, as the court's opinion does… It is the Supreme Court's sole "prerogative" to read *Brand X* in light of the facts of its day… and to require the Commission to bring the law into harmony with the realities of the modern broadband marketplace. Until it does—or until Congress steps up to the legislative plate—I am bound to concur in sustaining the Commission's action. (16)

Source : United States Court of Appeals for the District Of Columbia Circuit Argued February 1, 2019 Decided October 1, 2019, No. 18-1051, Mozilla Corporation, Petitioner v. Federal Communications Commission and United States of America, Respondents

The majority writing the order was emphatic about what it did and did not mean.

> Our review is governed by the familiar *Chevron* framework in which we defer to an agency's construction of an ambiguous provision in a statute that it administers if that construction is reasonable…we do not 'inquire as to whether the agency's decision is wise as a policy matter; indeed, we are forbidden from substituting our judgment for that of the agency,'"
>
> "[I]f the implementing agency's construction is reasonable, *Chevron* requires a federal court to accept the agency's construction of the statute, even if the agency's reading differs from what the court believes is the best statutory interpretation."[198]

Judge Millett's concurrence made it quite clear that he did not agree with the FCC's (lack) of analysis of the current technology, but felt bound by the prior deference rulings. Judge Millett concurred with "substantial reservation" because the FCC had failed to analyze the current reality of the Internet. If the FCC had done so, it would have concluded that broadband is a telecommunications service, but he felt it was not the role of the court to compel it to do so. Judge Willett fully embraced this view.[199] These two constituted a majority of the sitting judges. Judge Williams, the third judge on the panel, agreed that the FCC could adopt a Title I or a Title II classification.[200]

In short, the entire decision was about deference to the agency, not about good policy. Actually, it was about more than that, as Judge Millett argued, and Judge Willet agreed. The FCC had actually gotten the analysis wrong, given the technology of the day, but the lower court could not get past the Supreme Court's Chevron Deference ruling. The concurrent suggested that either Congress or the Supreme Court should fix the problem.

ANTITRUST IS ILL-SUITED TO ENSURE THE CORE PRINCIPLES OF INTERNET ECONOMICS

The particular circumstances of the Internet and the unique value of innovation at the edges without permission magnifies the weakness of antitrust. Economides has pointed out why the *ex post,* antitrust approach will not work.

> I believe that the sectoral regulator should enact the open broadband rules now rather than wait for resolution of antitrust suits later for a number of reasons. First, litigation takes time and irreversible damage may be done before it is resolved. Second, each suit would typically deal with only a single issue, between only two litigants and based only on the particular facts of that case. Delays may be compounded by the need for multiple suits to be fully adjudicated and for a coherent body of case law to be developed. Third, the Internet is a key essential network for growth of the economy with very significant network effects and positive spillovers. Waiting years for the outcome of one or more lawsuits would create investment uncertainty for all participants and be highly detrimental to economic growth. Fourth, introduction of last mile discrimination likely will have significant negative consequences on innovation on the Internet, whether or not antitrust violations occur in connection with the loss of openness. Therefore, it is

in the public interest to enact rules to prevent discrimination. [201]

The issues Economides identifies as arguing against an antitrust approach are a subset of the broader problems this paper argues are associated with the enforcement mechanism offered by the FCC.

In general, antitrust authorities take action after a harm has occurred and seek to stop the abuse and/or restore competitive conditions. One way to appreciate why antitrust alone is not enough to promote the conditions necessary for innovation at the edges without permission is to consider the only circumstance where antitrust is routinely called on to take action before the fact to prevent harm, i.e. take *ex ante* action – merger review. In merger review, the antitrust authorities project the likely impact of a merger and can take action to block or modify the merger in order to prevent the harm from occurring.

Kwoka's analysis of antitrust oversight of mergers provides a useful starting point for the conclusion to this chapter which explains why the FCC's proposed reliance in the flip-flop order on the FTC to enforce nondiscrimination will fail. While Kwoka's analysis can be criticized on a number of grounds, some of the clearest conclusions are informative for the purpose of this analysis. The fact that behavioral remedies are not as effective in response to mergers is longstanding and not very controversial. The advice on when and how to use conduct remedies points directly to the complementarity of antitrust and regulation.

Antitrust agencies must resort to conduct remedies when divestitures will not work, efficiencies are large and/or vertical integration is the question. This situation typifies the network platform industries, in general, and digital platform communications networks, in particular. Given the overwhelming role of such platforms, antitrust is ill-suited to deal with the underlying market power. Historically, as we have pointed out, U.S. policy explicitly subjected key communications infrastructure industries to the dual jurisdiction of antitrust and regulation for precisely this reason.

Kwoka's advice for how *ex ante* remedies should be structured points to regulation – transparency, simplicity and third-party oversight – especially in dynamic industries. The key is that the "intended beneficiaries of access provisions [must not] find it difficult to fully or quickly obtain the necessary access."[202] In our view, bans on specific actions are likely to be the most effective because "important characteristics of effective remedies would seem to be simplicity and transparency." Third party (e.g. regulatory commission) oversight is important in creating "[f]irewalls to constrain the exchange of competitively sensitive information… Recording explicit communications may help enforce the necessary discipline." More than that, third party oversight is necessary. "Without an outside monitor, target firms may be reluctant to complain since they will continue to have to deal with offending firm." In other words, clearly defined bright lines to ensure access, backed up with readily available complaint processes, the essence of the FCC's rules adopted before the flip-flop, are exactly what the doctor ordered.

Doubts about antitrust's ability to effectively implement such an approach continue to rage. The history of communication policy was not to push antitrust to or beyond its limits. Instead, we can rely on the well-defined, century-old complementarity between antitrust and regulation in the communication space, adapting it to the dynamic digital environment.

One further observation is in order. Kwoka's critique of behavioral remedies adopted by antitrust authorities, not only suggests that relying on the FTC to oversee nondiscrimination will be ineffective, it also suggests to us that the FTC will be particularly ineffective. Kwoka's analysis shows that the FTC is the "maven" of behavioral remedies in the antitrust space, over eight times less likely to oppose mergers and over twice as likely to rely on conduct remedies, which he found seriously deficient in solving the problem. To the extent Kwoka's findings are sound, they apply above all to the FTC.

Less than a month apart, in June 2019, two Trump appointees to the federal antitrust agencies, both of whom has served in the Bush administration a decade earlier, laid out the case that antitrust, as it stood, was more than adequate to deal with the problems that were increasingly obvious in the digital communications sector.

The Department of Justice

Makan Delrahim, head of the antitrust division of the Department of Justice, pointed back to Orrin Hatch, who Chaired the Senate Judiciary Committee, for his inspiration. He stated that that "[v]igilant and effective antitrust enforcement today is preferable to the *heavy hand* of regulation of the Internet tomorrow."

In a piece entitled "Sorry, Mr. Delrahim: Big Tech's Worst Abuses Can't Be Cured Without Stiffer Regulation," Hal Singer, a prominent Washington economist with a long list of corporate and trade association clients, flatly rejected Delrahim's claim (see Table 7.2). He noted that "Delrahim's condemnation of regulation stands in contrast to a growing number of influential voices, including prominent antitrust practitioners, who not only want to steer antitrust in a very different direction but also want a supplementary or reinforcing role for regulation." He proceeded to identify a long list of behaviors that challenged the simple, antitrust-can-do-everything view.

While Singer's target was the DOJ, the issues he raised apply with even greater force to the FTC.

THE FEDERAL TRADE COMMISSION

The FTC has an abysmal rack record on preventing abuse. It dithered for five years in the Microsoft case and arrived at a consent decree that was so totally inadequate the Department of quickly brought a new case and won a landmark ruling. The FTC spent a decade studying privacy but failed to take any effective action. It's "Do Not Call" program (handed off to the FCC) is a disaster. Its consent decrees with Facebook have been repeatedly violated over the course of a decade.

The FTC's Institutional Weaknesses

The FTC became concerned about Microsoft's behavior in late 1989. Almost four years later, the FTC had failed to take action and, in a rare and damning move, transferred the file to the DOJ. The failure of the FTC to act reflected both its internal structure and the difficulty of the issues confronted in policing the abuse of market power in digital technologies. Three years

after the DOJ entered a consent decree with Microsoft, the DOJ filed another case, essentially admitting that the decree had not dealt with the problem. It took six years for the final resolution of the case. Speed is not the hallmark of antitrust. From beginning to end, the antitrust case against Microsoft spans 15 years, two agencies, two District Court rulings—both of which were reversed in part, for reconsideration of remedies, although the finding of liability stood.

TABLE 7.2: HAL SINGERS CRITIQUE OF THE DOJ CLAIM OF "JUSTICE FOR ALL: ANTITRUST ENFORCEMENT AND DIGITAL GATEKEEPERS

Bogus technological integration: "a technological tie-in that bolts a web browser with an operating system"
Inability to prevent abuse of bundling: "The Microsoft court was unwilling to unwind… bundling… on the flimsiest of efficiency defenses
Discrimination: "a platform's search algorithm that affords extra weight for affiliated properties of merchandise… which "under the antitrust laws…would be 'very difficult'"
Building barriers to entry: "appropriating content at the edge of their platforms and then using their platform power to steer users to the affiliated clones."
"Facebook has forced other sites to copy Facebook's privacy terms, but that just presents another entry barrier.
Treatment of exclusionary conduct: "the Supreme Court has… dramatically narrowed the reach of the Sherman Act
Difficulty of measuring harms: "Because the primary form of anticompetitive injury in *Microsoft* and any potential case against a modern tech platform would take the form of hard-to-measure innovation harms, securing a structural remedy via antitrust under current law would be challenging. It is not clear how to estimate a future loss in consumer choice due to exit by independents with any "measure of confidence."
Competition does not protect privacy: "[T]he very essence of Facebook's business model is the exploitation (and monetization) of user data. Adding a horizontal rival won't change how money is made in social media."
Perverse incentives: "It may not be in the second Facebook's interest to hold itself out as the privacy savior…Why would an entrant want to lure away Facebook's most privacy-sensitive customers, who are by selection the least attractive to advertisers?"
Inability to affect dominant firm behavior: "And even if the social media entrant did hold itself out as a privacy savior, it is not clear why Facebook would change is exploitative ways."
"[I]n the presence of switching costs and imperfect information, discrimination against similarly-situated edge rivals likely would still be profit maximizing, even in the face of modest platform competition."

Source: Hal Singer, "Sorry, Mr. Delrahim: Big Tech's Worst Abuses Can't Be Cured Without Stiffer Regulation," *Promarket*, June 17, 2019

The FTC was tied up both by ambiguities in its authority and its five-member structure which required a majority of commissioners to vote for an action. As an independent agency, "the FTC is subject to congressional oversight…. This relationship… invited those seeking to influence the FTC to pursue a two-front lobbying strategy focused on the five commissioners and also the engaged members of the oversight committee." Of course, as an independent entity, the FCC has the same institutional relationships, so it is certainly the case that the FTC is not better situated. Moreover, depending on what one believes about the expertise of the committees that exercise oversight, one can argue that a committee with subject area expertise is a better fit.

With one commissioner recused, the FTC first attempted to act on the staff recommendation for a finding of liability in the Microsoft case, but failed to act on a 2-2 vote. The Chair, who had voted for action, brought the issue back up in the form of "an *administrative complaint* against Microsoft under § 5(b) of the FTC Act. Gavil and First are highly critical of the ability of the FTC to deal with the issues and the need for institutional reform.[203]

To overcome the serious inertia, one could probably hypothesize a series of declarations and actions by the FTC that would try to patch many of the holes in its regulatory authority to move it toward the clear authority that the FCC has to take action under the Communications Act. The FTC's process for action will never be as clear and swift and there is no reason to shift authority.

Broader Challenges for Antitrust

While the FTC suffered from institutional and process challenges, once the DOJ got the case it faced substantive hurdles that raise fundamental problems – network effects, incremental abuse of market power, and integration.

The challenge of network effects loomed large in the debate over the proposed consent decree.[204]

With strong economic forces pushing toward markets with large dominant firms and very small numbers of competitors, if not monopolies, *ex post* enforcement of antitrust violations encounters a problem that plagued the Microsoft remedy in both antitrust cases brought by the DOJ. The finding of liability could easily address the practice intended to preserve or extend the monopoly, but it had difficulty reaching the underlying market power.

> [R]emedies in monopoly maintenance cases tend to focus on enjoining conduct that helps to maintain the monopoly and undoing the *incremental* degree of power (or incremental insulation from erosion of power) that can be attributed to wrongful conduct. Correctly isolating an removing the increment can be difficult, however (33)

Gavil and First conclude that the U.S. antitrust system is very complex.

> [T]he story of the FTC's investigation and the transfer of the case to the Justice Department does more that provide the prologue to the Window 98 case. It also offers insights into the institutional and political characteristics of the federal antitrust enforcement system. Shared public regulatory power is an essential institutional feature of the U.S. Competition policy system and the early history of Microsoft's encounter with the system illustrates its complexity. (18)

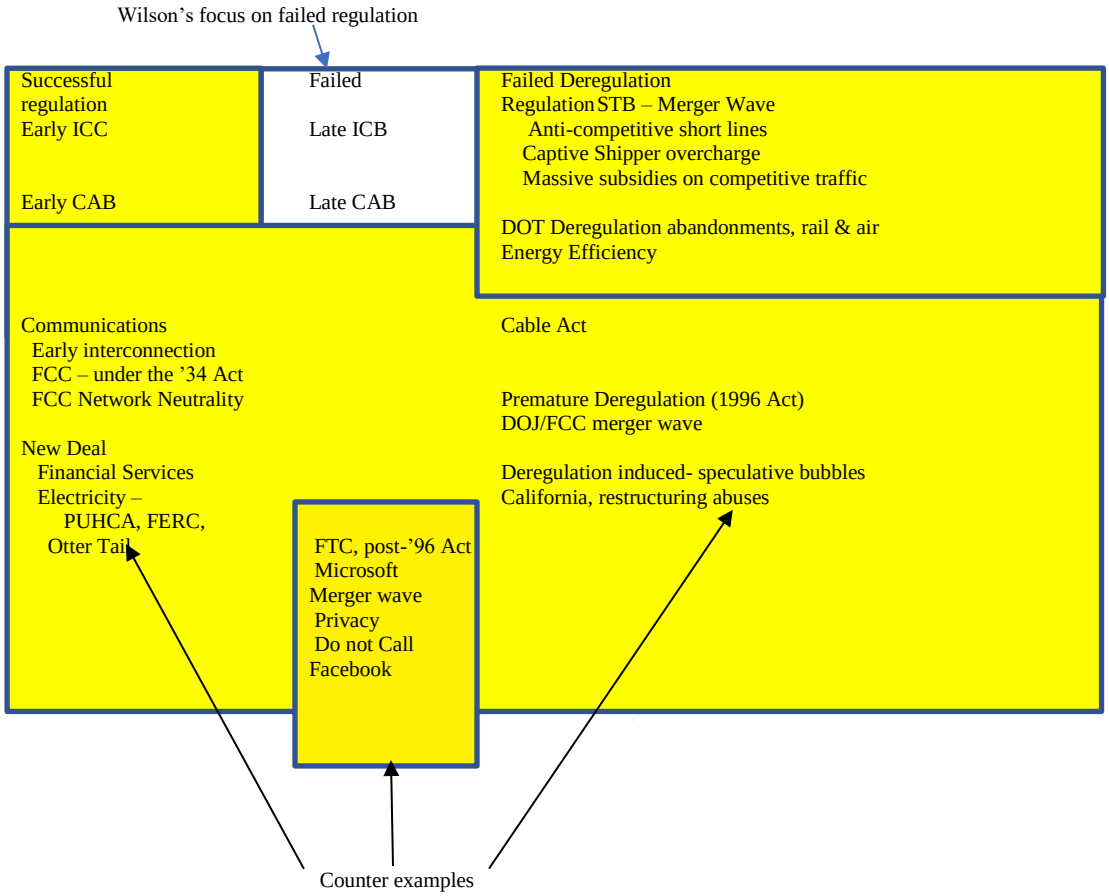
In our view, the difficulty that the antitrust authorities had in dealing with Microsoft's abuse of market power points to the need for regulatory oversight of critical issues that exceed the grasp of antitrust in general. The FTC's inability to deal with this problem makes it a very unlikely place to lodge the authority,

The FTC's Myopic View of Regulation

It may be possible for some of the giant applications companies, with deep pockets, to survive in this *ex post* regime, but the essence of experimental entrepreneurialism and the target of public policy, has been on the principles of "any," "any," "any," which means the small entities at the edges an able to innovate. FTC Commissioner Wilson's analysis reaches even farther back than Delrahim for inspiration – to Edmund Burke and George Santayana – "[t]hose

who cannot remember the past are condemned to repeat it." It is only Wilson's myopically distorted view of history that makes Santayana work, as shown in Figure 7.2.

FIGURE 7.2: THE FTC'S TUNNEL VISION DISTORTS ITS EVALUATION OF REGULATION



Source: Compiled by author, responding to Wilson, Christine S., 2019, Remembering Regulatory Misadventures: Taking a Page from Edmund Burke to Inform Our Approach to Big Tech, Address at the British Institute of International and Comparative Law, London, UK, June 28, 2019.

Wilson's cautionary tales of regulation are a highly selective and misleading subset of experiences with regulation and deregulation. Complex reality includes many successful regulatory regimes, unsuccessful deregulations and the abysmal failure of the FTC to oversee digital services. She ignores the long-standing and strong consensus in the U.S. and Europe that vertical integration and leverage require much closer scrutiny—particularly in communications networks and platforms—than they have been given.

Wilson notes that "Starting in the 1970s, scholars increasingly recognized that the regulations distorted competition in the marketplace, reduced economic efficiency, and harmed the very consumers they ostensibly protected." She cites half a dozen studies of transportation written before 2000, but ignores analyses of ongoing problems in the deregulated industries.[205]

She also ignores the vast literature on the other side. In the one area where she cites more recent literature, vertical integration, she repeats the highly contested claim that "vertical integration typically enhances economic efficiency, making force vertical deintegration economically inefficient and reducing consumer surplus in the long run." This is one of the key tenets of the "minimalist" school of antitrust that been effectively criticized and rejected in the forty years since it was articulated.[206]

Similarly, a speech Maureen Ohlhausen, the First Chair of the FTC under President Trump, claimed that the abandonment of the Title II classification was tantamount to "Putting the FTC Cop Back on the Beat." It attacked the concept of network neutrality as implemented by the FCC, citing a decade old FTC report that claimed there was no problem that needed a regulatory solution. The speech made no reference to the history of the Internet and the regulatory decision (Carterphone, the Computer Inquiries, Unlicensed Spectrum), that made it possible.

A SOCIAL VALUE, PRIVACY

The FCC flip-flop order claims that by eliminating Title II, it restores the authority of the FTC to deal with privacy. The claim is wrong on two counts. First, dual jurisdiction always applied. Second, to the extent that the FTC had jurisdiction under Title I, it failed miserably to exercise that jurisdiction.

Much of the debate is influenced by a difference in the framing of the fundamental nature of privacy. Some public interest advocates view consumer privacy as a right to be protected, not a harm to be avoided. The notion that privacy is a human right goes back centuries. In modern times, it is found in the 1948 United Nations Declaration of Human Rights [207] and in many international conventions and treaties.

However, whether or not one believes privacy is a human right, an independent social goal, is irrelevant. Even if it is not an inherent value, but "just" a market commodity as some argue, there is overwhelming evidence of market failure that should have been, but was not, addressed by the FTC. Therefore, it can be argued that the marketplace is ill-equipped to deliver privacy, much like it is ill-equipped to deliver universal service or seamless interconnection. A regulatory agency has an important role to play to address these market failures, above and beyond the market power network operators pose.

Concerns about online privacy were expressed from the earliest days of the Internet's commercialization. Privacy merits analysis as an important aspect of communications policy in the digital age for three reasons.

- It is a deeply felt qualitative issue that raises concerns about the fundamental definition and treatment of communications, heightened by the firestorm over surveillance.
- The analysis of digital markets shows many imperfections in the treatment of privacy that reflect the changes in technology and how they affect the relationship between consumers and producers.

- The FCC's decision to propose rules governing privacy, as it is affected by the operation of the communications network, shows the importance of the legal classification of services and the special power of communications network.
- The opposition to regulation from the *laissez-faire* advocates reflects a primary theme in their reaction to change in the telecommunications sector – the claim that antitrust oversight is all that is needed

The intense concern about privacy is reflected in a dozen reports by the FTC commencing at the very beginning of the official launch of the Internet as a commercial undertaking, [208] as shown in Table 7.3.

A Federal Trade Commission report in 1999 led to the creation of a voluntary self-regulatory regime. In November of 2007, the Federal Trade Commission held a Town Hall meeting on behavioral advertising to promote discussion about how to address concerns about behavioral advertising and the broader problem of online privacy. Soon thereafter it issued Online Behavioral Advertising Self-Regulatory Principles issued by the FTC on December 20, 2007. The Department of Commerce issued analyses of the concerns. While the FTC generally denied any need for regulation, the final report in this sequence acknowledged a significant problem, and fashioned a new category of action. After a decade and a half of denial, the FTC declared that:

> Given these limitations, Commission staff supports a more uniform and comprehensive consumer choice mechanism for online behavioral advertising, sometimes referred to as "Do Not Track." Such a universal mechanism could be accomplished by legislation or potentially through robust, enforceable self-regulation.[209]

My analysis of the government reports shows that, even if one approaches the issue for the point of view market performance and market imperfections as outlined early in this paper, there is more than enough evidence of the threat to public welfare to justify dramatic changes in public policy designed to improve consumer privacy protection. Given the focus of this analysis, I examine the economic aspects of the privacy issue. Table 7.3 uses the FTC and DOC paper to illustrate that the market's imperfections leading to its failure to protect consumer privacy are pervasive. The FCC claimed by that by eliminating its oversight, it was allowing the FTC to reenter the privacy space.

The pervasiveness and nature of the market imperfections led the conclusion that much more than transparency is necessary to correct the market's failure to provide adequate privacy protection. The relationships between the technology of information gathering and exploitation make it highly unlikely that consumers will be able to keep up with and evaluate information on a real-time basis. Even where consumers have the skills and abilities, the transaction costs of doing so on a transaction-by-transaction basis would be very high.

Adding in concerns about values only reinforces the conclusion that voluntary self-regulation is insufficient. Behavioral targeting may be particularly harmful to vulnerable populations, including youth and the elderly. Although the survey data showed that few consumers of any age comprehend the trade-offs involved with behavioral targeting, youth and

the elderly are at special risk of not understanding the consequences of being tracked online. The FTC's Self-Regulatory Principles for Online Behavioral Advertising and voluntary industry self-regulatory programs have proven inadequate to ensure that consumers have effective control if they do not want their online behavior to be tracked for purposes beyond fulfilling the transactions they make. If the current regime is so effective, why does the DOC repeatedly acknowledge that more needs to be done?

TABLE 7.3: MARKET IMPERFECTIONS LEADING TO THE FAILURE OF PRIVACY PROTECTION IN CYBERSPACE

Societal: Situations where important values are not well reflected in market transactions

Externalities: Trust is undermined[1]

Non-economic Values: Concern,[2] Fear of Being Monitored,[3] and Exposed,[4] Reputational Harm,[5] Unwanted Intrusion,[6] Physical Security,[7]

Structural: Conditions that result in inefficient outcomes

Insufficient Competition: Incomprehensible Privacy Policies,[8] Inadequate Choice[9]

Economic Harm: Bad Purchase Decisions,[10] Security Breaches,[11] Identity theft [12]

Endemic: Tendencies of economic relations that undermine key market functions

Perverse Incentives: Incomprehensible Privacy Policies,[13] Slow to React[14]

Asymmetric Information: Speed of Technological Change[15] v. Slowness to React,[16] Difficulty of Detecting Harm,[17]Invisibility of Transactions and 3rd Party Relations[18]

Transaction costs: Frictions that impose costs and constrain exchange

Search and Information Costs: Lack of Simple and Clear Information,[19] Cost of Interrupting Transactions to Find, Evaluate and Act to Protect Privacy,[20] Invisibility of Transactions and 3rd party Relations to Consumers[21]

Bargaining Costs: Lack of Alternatives,[22] Inability to Define[23]

Policing and Enforcement Costs: Difficulty of Detecting Harm,[24] Complexity, Level and Amount of Information Gathered,[25] Rapid Pace of Technological Change,[26] Third Party Relationships[27]

Behavioral: Psychological and other human traits that bound "maximizing" actions

Motivation: Concerns,[28] Fear of Being Monitored[29]

Perception: Reputational Harm [30]

Calculation: Failure to Understand,[31] Failure to Appreciate Risk,[32] Lack of Awareness[33]

Execution: Struggle to Keep Pace,[34] Do Not Read[35]

Sources and Notes: U.S. Department of Commerce, *Commercial Data and Innovation in the Internet Economy: A Dynamic Policy Framework*, December 2010; Federal Trade Commission, *Protecting Consumer Privacy in an Era of Rapid Change: A Proposed Framework for Businesses and Policymakers,* December 2010.

1. DOC, pp. vi, 1, 13, 15.
2. FTC, pp. iii, 28-30, DOC, pp. 3, 16-17.
3. FTC, p. iii.
4. FTC, p. 20.
5. FTC, p. iii.
6. FTC, p. iii.
7. FTC, p. iii.
8. FTC, pp. iii, 26.
9. FTC, p. 19.
10. DOC, p.1.
11. DOC, p. iii.
12. DOC, p. 1,
13. FTC, pp. iii, 26.
14. FTC, p. iii, DOC, p. 1.
15. FTC, p. 36.
16. FTC, p. iii.
17. FTC, p. 33.
18. FTC, pp. I, iii, 26.
19. DOC, p. vii
20. FTC, p. 27
21. FTC, pp. iii, 26.
22. FTC, p. iii.
23. FTC, p. iv, 35,
24. FTC, p. 33.
25. FTC, pp. ii, DOC, p. 18-19.
26. FTC, pp. ii, iii.
27. FTC, pp. ii, DOC, p. 16.
28. FTC, pp. iii, 28-30, DOC, pp. 3, 16-
29. FTC, p. iii.
30. FTC, p. iii.
31. FTC, p. ii, 26, DOC p. 4.
32. FTC, p. ii.
33. FTC, p. ii.
34. FTC, pp. ii, 26.
35. FTC, p. iii.

- Only if consumers are strongly interested, extremely literate, well-informed and highly skilled can they negotiate the opaque, inconsistent morass of opt-out procedures, and even then, there are numerous data collection and tracking mechanisms that go undisclosed.
- Unfortunately, the vast majority of consumers lack one or more of these characteristics and therefore are not protected.
- Less than 5 percent of consumers are effectively able to protect their privacy.

The FTC had not seen fit to regulate any of it although it had been looking at the issue for over a decade. Nothing would change with the elimination of Title II, except the network owners would be in a better position to exploit customer's proprietary information, which they gathered in the course of providing communication services

Do Not Call

Perhaps the most compelling example of why the FCC's transparency/weak FTC enforcement approach will not work is the spectacular failure of the "Do Not Track" list. The public is encouraged to register on the list (and well over 200 million have) and to complain if they receive calls (millions do every year). The FTC enforces the programs with fines for companies found to violate the rules. Yet, the problem persists and has grown continually worse.

The total of registered phone numbers is closing in on saturation, so the increase in registered numbers has slowed. In spite of a very large settlement in 2017, the 134 enforcement actions amounted to less than half a billion dollars. Unfortunately, the data only allow us to calculate average rates of enforcement over three periods (2003-2010, 2010-2013, 2013-2014). However, it seems clear that recent enforcement actions have declined sharply, while complaints have skyrocketed. Given these patterns, simple trend lines overpredict registration and underpredict complaints. Complaints per registered number are underpredicted slightly.

CONCLUSION

In the introduction I argued that the development of the Internet based on aggressive policies by an entrepreneurial state was the key to the remarkably successful American effort to create this important part of the digital economy. The analysis of public policy, both the specifics discussed in Chapters 2-5, and the contrasting frameworks of Title II (Obama) v. Title 0 (Trump) set the stage for the next round of policy making that is likely to follow the 2020 election.

There is a third implication that is addressed in other papers. The observation that aggressive, *ex ante,* policy is an essential component in the creation of a market that thrives on

experimental entrepreneurialism is part of a much broader, uniquely successful, American model of political economy I have called "pragmatic, progressive capitalism."[210]

Grand theory is important to frame questions and answers, but micro-level studies are important too. The purpose of building up from case studies of major policy areas, including, in addition to Internet policy discussed above, energy efficiency,[211] electricity,[212] climate change,[213] pandemic response,[214] telecommunications,[215] the finance sector,[216] and economic outcomes[217] is to demonstrate the practical reality underlying the broad theoretical analyses. These micro, sectoral studies cover what is generally known as infrastructure (termed focal core resource systems by Ostrom)[218] of any society, particularly advanced industrial societies – the economy, communications, finance and public health.

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ENDNOTES

[1] Cooper, 2006b, 2011a.
[2] Cooper, 2014a,
[3] U.S. Code, 47 U.S.C. § 1/
[4] Cooper, 2015,
[5] Cooper, 2014a, discusses the evolution from *ex post* to *ex ante* in response to the 2nd industrial revolution.
[6] *See, e.g.*, Hockett v. State, 5 N.E. 178 (Ind. 1886), *cited in* Speta, **.**, at 262 n. 187.
[7] *Id.* at 182.
[8] U.S. Code, 47 U.S.C. §§1, 254, 706. It did so in three ways. It added specific groups that were to be covered in the phrase "all people." It expanded the services covered to include advanced telecommunications and information services under specific conditions. It granted broad authority to federal and state regulators to take action, should it be found that progress toward universal service was inadequate.
[9] 47 U.S. Code § 230.
[10] 47 U.S. Code § 201, 202.
[11] Chandler,
[12] In general works, I call the U.S. combination of experimental entrepreneurialism and an entrepreneurial state that nurtures, supports and guides it "pragmatic progressive capitalism." In other sector specific analyses, I call it "command-but-not-control" regulation, where public policy sets clear guardrails and guidelines, but lets markets and entrepreneurs chose how to meet the goals in the lest cost manner possible.
[13] CTSB, National Research Council, 1994, p. 44.
[14] Id., pp. 5…51.
[15] Wikipedia.
[16] Economides, 2008a, p. 505.
[17] Id.
[18] Economides, 2011, p. 87: The Internet's amazing and immediate benefits have been based on its openness, ubiquity, and non-discrimination. This non-discrimination – dubbed "network neutrality" – means that content from anyone and of any type is treated equally by broadband providers. Its open and public standards and the fact that no one has had to ask permission from network operators to innovate have resulted in rapid innovation that contributed to one of the greatest periods of economic growth in history, unprecedented access to information, and fostered amazing creative interactions.
[19] Id., pp. 87-88Dynamic efficiency requires creating conditions to promote the appropriate level of innovation leading to economic growth. The Internet's design allows businesses and consumers connecting to it ("at the edge" of the network) to innovate without obtaining approval from network operators. As a result, all innovation that is expected to yield benefits greater than its costs can occur; this is different than in a centrally controlled network where innovation at the edge would be restricted by the network operator based solely on whether the innovation brought profits to the network operator rather than whether the benefits of the innovation to the whole society exceeded its costs. This unleashes a huge potential for innovation.
[20] Greenstein. 2010.
[21] Greenstein, 2010.
[22] As Economides, 2011, p. 87, put it, "The Internet's amazing and immediate benefits have been based on its openness, ubiquity, and non-discrimination. This non-discrimination – dubbed "network neutrality" – means that content from anyone and of any type is treated equally by broadband providers. Its open and public standards and the fact that no one has had to ask permission from network operators to innovate have resulted in rapid innovation that contributed to one of the greatest periods of economic growth in history, unprecedented access to information, and fostered amazing creative interactions."
[23] These economies have been a constant theme of our economic analysis, see, Cooper, 1990, 2000, 2001, 2009, 2011a, 2013a, 2014a, 2015.
[24] Virtuous cycles (or circles) are widely noted, for example, central to the National Broadband Plan, noted by Greenstein, 2015, four times.
[25] Greenstein, 2010, p. 64
[26] Greenstein, 2015, p.40, TCP/IP. It had demonstrated that it was modular and possessed many functional merits and many administrators, programmers, and users were satisfied with its design and cold envision a path toward improving it with additional functionality.
[27] Id., pp. 40-41, end-to-end principles... [T]he applications in one location might work in another because in the middle of the network altered the data on it… End-to-end increased the chances that administrators at the edge could add a new application. Deploying applications did not require coordinating with the carriers of the data – usually a telephone company – each time there was a transaction or an addition of a new application.
[28] Id., p. 63, "Technical and operational flexibility had a strong appeal. In the commercial market after privatization… would be crucial for fostering greater participation from households"
[29] Id., p. 84, "The ability of multiple actors to take action on the technical frontier was sometimes called divided technical leadership. Although familiar to computing, it was a structural feature novel to the communications carrier sector – one the trustbusters had artificially nurtured. Industries with divided technical leadership innovate more quickly than monopolies."
[30] Id., pp. 190-191.
[31] Id., p. 191.
[32] Id., Although it may not be apparent at first glance, the economic experiments that let to Wifi contained many of the features that led to the commercial internet (392) East coast West coast, (394) a new standard available without restriction… designed around a set of government rules for the electromagnetic spectrum…Flexible rules allowed spectrum to move from low-value to higher-value activities… (396……397) Collective invention played its familiar role… WiFi became an industry wide standard. All participants too actions using standards that invited activity from complementary component providers… Because Wi-Fi deployed at an industry-wide level, experimenters could presume (safely) that other complements would make use of the same design, which led each experiment to specialize on narrow issues and specific issues of interest to the experimenter (405)… Events in Wi-Fi can be understood with reference to a traditional economic concept called a "learning externality"… *between firms… across time… positive*, that is, one market participant benefits from the actions of another…. What worked for one firm became known and imitated… what did not work for one firm became known and, therefore, avoided. (411) … Users made their choices, and suppliers followed demand. More to the point, it occurred much more quickly than would have occurred if government managers had retained the right to approve of a change in application… The flexible rules allowed lessons from experience in the market to spread quickly and widely. Accumulated lessons were built on the experience of others mistakes and triumphs. Almost by definition, the knowledge pool contained more lessons than any single firm could learn on its own. (415)

[33] Id., p. 18, Between sectors It also played out over time as "a virtuous cycle," in which investment by one actor encouraged investment by another at a later time, and on and on in a chain across multiple sectors.
[34] Id., p. 89
[35] Id., pp. 40…42.
[36] Id., pp. 387-388.
[37] Id., p. 12.
[38] Id., p. 47.
[39] Id., p. 84.
[40] Id., p. 76.
[41] Id., p. 84.
[42] Greenstein, 2010:489-490.
[43] Greenstein, 2010:489-490.
[44] Greenstein, 2010:489.
[45] Greenstein, 2010:490.
[46] Greenstein, 2010:517. Ultimately, the accumulation of Internet industry knowledge depended on spreading the lessons learned from economic experiments. Further innovations then built on that knowledge, renewing a cycle of accumulated lessons from more experiments. This accumulation was a key driver of the market's evolution because it set the conditions for innovative behavior.
[47] Cohen, 2010.
[48] The characteristics of the decentralized approach that I identified in one of the earliest consumers/pubic interest analyses, Cooper, January 1990, proved to be the essential characteristics of the Internet:

> Pragmatic: Most of these new, innovative services have close substitutes. Why not give individuals maximum flexibility in the choice of equipment and services allowing them to develop applications at the periphery of the network?
>
> Decentralized: Decentralized decisions will select the most cost-effective technologies for specific applications.
>
> Periphery: Intelligence is more concentrated in homes and businesses and on the premises of service providers who connect their services through a local transmission network.
>
> Applications: Specific applications will be required to be cost effective. There will be successes and failures, but the process of trial and error driven by profit will generate lowest cost and minimize public cost risks of network applications.
>
> Individualized: Costs are more highly individualized, borne by those who develop the applications and those who choose to subscribe to them, either through or around the public network.
>
> The consumer analysis argued that fundamental changes in technology had created the basis for a dynamic information environment. In particular, "the fact that a great deal of the necessary intelligence is currently located on the periphery of the information age network has led to a pragmatic, decentralized pattern of development."

[49] Wu, 2010, pp. 190-191.
[50] Bar, et. al., 1999, cited in Cooper, 2002, pp. :68-69.
[51] Greenstein, 2010:517. Some observers attributed the rapid accumulation of experimentation to the emergence of a new form of leadership for designing standards, one that involved collections of market participants. The standards committees that were responsible for designing key standards for the Internet were comprised of representatives from many firms and interested researchers from universities and other nonprofit organizations. Because undirected economic experiments are those undertaken by more than one firm working together, by definition, the committees participated in these types of experiments. This raised the profile of activities inside standards committees and it directed attention at different forms of consensus-oriented standards processes for designing standards accommodating a variety of complementary goods and services
[52] Greenstein, 2010:517.
[53] Greenstein, 2010:517. The range of such important decisions shaped by standards committee was without precedent. The IEEE, for example, made designs that shaped the LAN market, modem, and wireless data communications markets, while the IETF made designs that shaped the operations of every piece of equipment using TCP/IP standards. Many of these decisions went into use quickly, ensured that all complying components would interoperate, and had enormous consequences for the proprietary interests of firms.
[54] Greenstein, 2010:517.
[55] Id.
[56] Greenstein, 2010:517.
[57] Greenstein, 2010:517.
[58] Greenstein, 2010:517.
[59] Id., p. 88.
[60] Id., p. 80-81, PSInet, UUNET… CERFET … established… CIX... CIX solved the interconnection problem all three of them faced… CIX quickly covered the need of the burgeoning private industry in the entire country. Just a little less than a year later, CIX essentially had everyone except ANS…. NSF put forward a plan that imitated CIX's ideas…. It held together long enough to get the industry off to a competitive start, not close to a monopoly in its backbone.
[61] Greenstein, 2007:69… 70…71.
[62] Lemstra and Groenewegen, 2011, p. 4.
[63] Wehrbach, 2002
[64] The first two licenses were given to incumbent wireline telecommunications providers.
[65] Horvitz, 2007, p. 4.
[66] Milgrom, et. al. 2011, p 2, [T]he primary benefits of unlicensed spectrum may very well come from innovations that cannot be yet be foreseen. The reason is… that unlicensed spectrum is an enabling resource. It provides a platform for innovation upon which innovators may face lower barriers to bringing new wireless products to market, because they are freed from the need to negotiate with exclusive license holders.

[67] Horvitz, 2007.
[68] Milgrom, et al., 2011, 13.
[69] Lemstra and Groenwegen, 2011b, p. 373, "Multiple product vendors and, later, service providers have been seen to be willing to invest in the development of products and service to exploit the unlicensed part of the RF spectrum." One could argue that this is the result of the return on investment largely being based on the sale of Wi-Fi equipment, and not on the exploitation of a service requiring complementary and deep investment in the creation of a network infrastructure, as is the case in mobile cellular communications.
[70] Von Hipple, 2005, has emphasized the importance of user innovation. Cooper, 2006, discusses the importance of end-user innovation and local knowledge in collaborative production in digital product spaces, including Wi-Fi and mesh networking.
[71] The intensity of the debate over ownership models is equaled or exceeded by the intensity of the debate over whether the dramatic increase in concentration of the cellular service sector has resulted in the abuse of market power. Cooper, 2011b, shows that economies of scale and scope and industry concentration have both typified the decade of development of wireless broadband, making it difficult, if not impossible, to disentangle the two.
[72] Cooper 2005, applied the framework developed by Ostrom to mesh networks, discussing the eight sets of rules that have been identified. The FCC boiled the management challenge down to primarily one set of rules – position rules that define what users of the resource are allowed to do. Milgrom, et al. (p. 14), describe the FCC approach to shared public use spectrum as a "managed commons. "In fact, it has succeeded because it relies on as little management as possible to get the job done.
[73] Stirling, 2000, Benhamou, et al., 2009.
[74] It is important to note that the benefit of diversity in ownership models in the digital age is not limited to the example of spectrum reserved for or made available to shared use by the public. In fact, we find a similar outcome across a number of areas of the digital economy. Cooper, 2006, analyzes several examples. In software development, proprietary and open source software have both grown side-by-side. Sometimes they reinforce one another, as in the extensive support provided to open source projects by proprietary software firms. Sometimes they compete, as in the rivalry between Microsoft, Apple and Linux in operating systems or Apple and Android in the mobile operating system product space. In the desktop computing product space, the PC open platform and the Apple closed platform have existed side-by-side for decades. When the smaller, closed platform ultimately supported the larger open platform it gained substantial market share, creating more balance. In the production and distribution of content, peer-to-peer networks exist alongside hub-and-spoke networks and are used to alleviate congestion on or efficiently manage the resource of those networks (Cooper, 2011a). occupy very different spaces and the collaborative model has played a much smaller role in industrial society. Digital technology seems to be supporting a broader role for collaborative production. Digital technologies enable the embodiment of knowledge in silicon chips, which facilitates the decentralization of intelligence and promotes distributed innovation. Digital communications dramatically lower the cost of communications, which enhances coordination as a result. The digital revolution has fostered the convergence of areas in which the two models can exist side-by-side and expanded the role of collaborative production.
[75] Rysavy, 2010b, p. 10, Cisco, 2011a, p.1; Higginbotham, 2011,
[76] Cisco, 2011a, p. 1,
[77] Higginbotham, 2011,
[78] Iluna, 2011. Woyke, 2011, Lamberth, 2011.
[79] Rysavy, 2010b, p. 7.
[80] Nielsen, 2016.
[81] Greenstein, 2010: 479.
[82] Cohen, 2010:137-138…139.
[83] Greenstein, 2010: 492-493,
[84] Greenstein, 2015,Most computer scientists had had faced AT&T's infamously bureaucratic billing and marketing practices, or had encountered its stubbornly selfish and legalistic actions in regulatory hearings, or had confronted engineering plans presumed one official design for a service and locked out others.(38)… IBM lawyers wrote a self-serving legal opinion… stated that IBM and its newly established division, ANS, could not interconnect with others… That meant practically everybody would be denied interconnection…. It raised issues about the different conduct appropriate for assets that are both public and private… A second issue arose over the unilateral and non-transparent way in which IBM received these decisions (78-79).
[85] Id., p. 166, In the early 1990s, IBM's enterprise division refused to be involved with equipment using Internet protocol. Its division favored selling proprietary equipment… By the early 1990s many enterprises made a deliberate choice not to, investing in much less expensive nonproprietary configurations of client-server networks.
[86] Id., p. 136 costly and cumbersome. Odd as it may seem in retrospect, many contemporary managers within the telephone companies did not recognize that there was no need to upgrade the speed of data transfer with an expensive technological solution. The existing telephone service was more than adequate for most TCP/IP-based applications. The last mile issues did not need new infrastructure or net technology at this time. Rather, the situation needed new business processes.
[87] Id., p. 38.
[88] Id., p. 169.
[89] Id., pp. 169-171.
[90] Id., p. 146
[91] Id., pp. 116-119.
[92] Id., e.g. Apache, p. 121
[93] Id., p.122.
[94] Id., p. 284.
[95] Id., p. 83.
[96] The most obvious opportunity to see this double talk strategy is in merger reviews, where corporation management must do "due diligence" in justify a merger to the board of directors. With discovery in such cases we frequently see the contrast between the benign public statements justifying the merger and the contradictory (often nefarious) intentions management uses to describe the merger to the board.
[97] Id., pp. 281-283.
[98] Early on, the lack of competition is at the local communications network level Economides, (2005a), but not the Internet backbone level (Economides, 2005b), but a lack of multihoming continued to plague residential end users, (Economides, 2011a, 2011b; Greenstein, 2016).
[99] The fact that broadband providers only charge on one side of the market – to end-users – has helped protect the "innovation without permission" nature of the Internet and kept barriers to entry low.

[100] Limited choice in broadband (1) "allows them to impose fees on content and applications providers to the detriment of social welfare," (2) while "switching costs… confer(s) additional market power on access network providers." (2) "once a customer has subscribed to a broadband access network provider's service, the customer is effectively "captured" and can be used to extract surplus from the other side of the network.

[101] This is akin to the terminating monopoly problem of voice telecommunications networks. Similar concerns about abuse of market power apply within the wireless service broadband duopoly provider's market power. Wireless broadband is not an effective economic substitute for fixed (wired) broadband and does not constrain wireline duopolists' market power.

[102] Economides, 2008a, p. 506.

[103] Economides, 2015.

[104] Id.

[105] Cooper, 2013a.

[106] AT&T 1997.

[107] AOL, 1999b, p. 4

[108] AT&T, 1997, p. 15.

[109] Id., pp. 16-17.

[110] Id., p. 17.

[111] AOL, 1999a, At the federal level, AOL's most explicit analysis of the need for open access can be found in "

[112] AOL, 1999b, pp. America Online Inc., "Open Access Comments of America Online, Inc.," before the Department of Telecommunications and Information Services, San Francisco, October 27, 1999.

[113]Id., pp. 4-5, The City's critical and appropriate role is to establish and firmly embrace a meaningful open access policy, not to manage the marketplace. We believe that once such a policy is fully in place, the industry players will negotiate the details to fairly implement open access. The City thus should not have to play an active role in enforcing non-discriminatory pricing or resolving pricing disputes. Rather, the City should simply adopt and rely on a rule that a broadband provider must offer high speed Internet transport services to unaffiliated ISPs on the same rates as it offers them to itself or its affiliated ISP(s). The City's unequivocal commitment to this policy and the resulting public spotlight should offer enforcement enough, and indeed we expect that cable operators will adjust their ways readily once they understand that a closed model for broadband Internet access will not stand. When necessary, the opportunity to seek injunction or bring a private cause of action would offer a fallback method of obtaining redress…As stated above, the City's role is to establish a comprehensive open access policy with an effective enforcement mechanism. Network management issues are best left to the industry players, and the City need not play a hands-on role in this area. The companies involved are in the best position to work out specific implementation issues. This is not to say, however, that a reluctant provider would not have the ability to interfere with the successful implementation of an open access regime. Accordingly, through its enforcement policy if necessary, the City should ensure that the necessary degree of cooperation is achieved.

[114] Id., p. 1AOL applauds the City for taking this critical step in the implementation of the Board of Supervisors' open access resolution, which wisely supports consumers' freedom to choose their Internet service provider and to access any content they desire – unimpeded by the cable operator.

[115] AOL, 199a, p. 4).

[116] AT&T, 1997, pp. 17… 18)

[117] AOL, 199b, p. 11, At every link in the broadband distribution chain for video/voice/data services, AT&T (as a cable company) would possess the ability and the incentive to limit consumer choice. Whether through its exclusive control of the EPG or browser that serve as consumers' interface; its integration of favored Microsoft operating systems in set-top boxes; its control of the cable broadband pipe itself; its exclusive dealing with its own proprietary cable ISPs; or the required use of its "backbone" long distance facilities; AT&T could block or choke off consumers' ability to choose among the access, Internet services, and integrated services of their choice. Eliminating customer choice will diminish innovation, increase prices, and chill consumer demand, thereby slowing the roll-out of integrates service.

[118] AT&T, 1997, p. 12).

[119] AT&T,1997, p. 10)

[120] AOL, 1999a, p. 13)

[121] AT&T, 1997p. 24, AT&T Canada LDS does not consider it appropriate to relieve the telephone companies of the obligation… on the grounds that they are not dominant in the provision of broadband services. These obligations are not dependent on whether the provider is dominant. Rather they are necessary in order to prevent the abuse of market power that can be exercised over bottleneck functions of the broadband access service. It should be noted that… Stentor [a trade association of local telephone companies in Canada] was of the view that new entrants in the local telephony market should be subject to regulation and imputation test requirements because of their control over local bottleneck facilities. Based on this logic, the telephone companies, even as new entrants in the broadband access market, should be subject to similar regulatory and imputation test requirements (emphasis added).

[122] AT&T, 1997, p. 12, The cost of switching suppliers is another important factor which is used to assess demand conditions in the relevant market. In the case of the broadband access market, the cost of switching suppliers could be significant, particularly if there is a need to adopt different technical interfaces or to purchase new equipment for the home or office. Given the fact that many of the technologies involved in the provision of broadband access services are still in the early stages of development, it is unlikely that we will see customer switching seamlessly form one service provider to another in the near-term.

[123] AT&T, 1997, pp. 8-9).

[124] AOL, 199a, p. 8, Second, the agency should reflect upon how this merger would enable cable to use RBOC-like structure to limit consumer access to the increasingly integrated video/voice/data communications services offered over the broadband pipe controlled by cable. And finally, the agency should recognize how these two "mega- effects" of the merger together reinforce cable's ability to deny consumers the right to choose: (a) between a competitive video-enhanced Internet service rather than a traditional cable service; (b) among competing cable Internet services; and (c) among competing "bundles" of video/data/voice services that contain multichannel video.

[125] AT&T, 1997, p. 29, Where a broadband access provider is neither vertically-integrated nor dominant with respect to telecommunications or broadcasting service, but is offering broadband access services then the requirement for third party access tariff, CEI and other non-price safeguards should apply.

[126] AOL, 1999b, pp. 2-3.)

[127] AT&T, 1997, p. iii.

[128] Id., p. 22.

[129] Id., p. iii.

[130] Id., p. 23.
[131] AOL, 1999b, p. 2.
[132] AT&T,1997, pp. 25-26, More specifically, in order to effectively compete with broadcast carriers in the provision of non-programming services, competitors must be able to provide end users with equivalent services at equal or lower prices. Therefore, in providing non-discriminatory access to their broadband networks, broadcast carriers must allow competitors to access their broadband distribution network in the most efficient manner possible. For example, competitors must have the option to specify the point of interconnection as either the headend, the drop, inside wire, or any combination thereof. This concept is known as Comparably Efficient Interconnection (CEI) and refers to the principle of providing competitors with access to the broadband network on terms that are technically and economically equivalent to those provided by the broadcast carrier to itself. Under CEI, the interconnection provided must be equivalent in terms of scope, quality and price but may vary by type of competitive entity.
[133] AOL, 1999b, pp. 7…9.
[134] AT&T, 1997, p. 23.
[135] Cooper, 2000, 2003, 2004, 2006, 2008
[136] CFA early stance on Microsoft, See Cooper, 2001.
[137] Greenstein, 2010:497
[138] Greenstein, 2010: 93.
[139] Greenstein, 2010: 94.
[140] Cooper, 2006
[141] Northnet, Inc. 2000.
[142] Id.
[143] Cooper, 2000.
[144] High Tech Broadband Coalition, Cable Modem Proceeding,
[145] The agreement was reached with AT&T shortly before the Comcast AT&T merger closed.
[146] Hu, 2004.
[147] The Federal Communications Commission has been presented with a mountain of specific evidence of anticompetitive behavior by wire owners. Notwithstanding the grant of entry into long distance, many of these problems still afflict the provision of DSL service.
[148] Vaughn-Nichols, 1999.
[149] Comments of non-integrated service providers in "Ten Questions to Begin the Committee's Inquiry into State Broadband Policy, Committee on State Affairs, Texas, April 3. 2002 Onramp, pp. 16-17.
[150] ITAA, Id., p. 11; DirecTV, Id., pp. 8-10.
[151] Onramp, Id., pp. 5-6; NMIPA, Id., p.5 5.
[152] TISPA, Id., p. 18.
[153] IURC, Is., p. 14; Utah ISP, Id., pp. 8, 9; ISPC, Id., p. 7; IAC, Id., p. 9; AOL, Id., pp. 6, 8; AdHoc, Id., p. 26; ITAA, Id., pp. 13, 15.
[154] TISPA, id., p. 27.
[155] TISPA, Id., p. 33.
[156] Onramp, Id., p. 14.
[157] ITAA, Id., p. 10-11; CISPA, Id., p. 27-28.
[158] TISPA, Id., p. 17.
[159] Cox, Id., p. 6.
[160]CISPA, Id., p. at 7.
[161] Onramp, p. 3.
[162] TISPA, Id., p. 21, New Edge, Id., p. 6; Brand X, Id., p. 2, DirectTV, Id., p. 8; CIX, Id., p. 8.
[163] Telephone companies achieve the margin difference by offering high volume ISPs massive volume discounts that aggregate business across state lines, without any cost justification for such a discount (see TISPA, Id., p. 37; MPIPA, Id., p. 5; ITAA,Id., p. 21; DirectTV, Id., p. 9, CSIPA, Id., p. 16.
[164] Onramp, Id., p. 3, citing CFO Stephenson.
[165] Spangler, 2002 Braunstein, 2001.
[166] Cohen, 2010:154.
[167] Jordon, 2018, pp. 7-8, Computer II: The policy goals in the proceeding were: (1) to "not directly or indirectly inhibit the offering of [computer processing] services", and (2) to "assur[e] nondiscriminatory access to common carrier telecommunications facilities by all providers of [computer processing] services".25…The delineation between basic and enhanced services was designed as a bright-line test; a service would be deemed either a basic or enhanced service, but not both.29 The boundary between basic and enhanced service is critical. The FCC placed an upper bound on the scope of a basic service, describing it as "limited to the offering of transmission capacity between two or more points suitable for a user's transmission needs and subject only to the technical parameters of fidelity or distortion criteria, or other conditioning."30… This framework for classification would later serve as a model for the *Modification of Final Judgement* (discussed in Section 2.C) and for the *Telecommunications Act of 1996* (hereafter *1996 Act*, discussed in Section 2.D). The definition of *telecommunications service* in the *1996 Act*, and the framework set out by *NARUC I* and *NARUC II* will later set the landscape that determines whether broadband Internet access service is a common carrier service, as we will discuss in Section 8.
[168]Jordon, 2018, p. 67, the central tenet of Internet architecture dictates that telecommunications service is separable from information services. Thus, any claim that these applications are "functionally integrated" with and "inextricably intertwined" with the underlying telecommunications, and hence that the underlying telecommunications are inseparable from these applications, is factually wrong. The separability follows from both the modularity of Internet architecture394 (as discussed in Section 4.C) and the Internet standards for these applications395. Separability is also evidenced by the offerings of these applications from entities unaffiliated with the broadband Internet access service provider396. The end-to-end transmission of IP packets and applications such as email, web browsing, or cloud storage are not "functionally integrated (like the components of a car)". By the Internet standards themselves, the end-to-end transmission of IP packets is mandated to be separable from the applications that ride over it.
[169] A communications network is composed of a set of communications links and devices.107 Each network device (e.g. a router) provides a set of *network services*.108 The central tenet upon which the Internet is designed is that these network services are organized into *network layers*, and that the lower layer network services are *standardized*.109
[170] Jordon, 2018, p. (27)

[171] Jordon, 2018, focuses on Computer II, since it the operative FCC order for most of the issues in the network neutrality debate and the flip-flop order. He notes, however, the legal cases that affect the debate in the 1970s, when the FCC's approach to regulation of data transmission was hashed out in the inevitable legal challenges. He also not the link between Computer I and the MFJ, thereby putting all the key decisions in a single timeline.
[172] Cooper, 2001.
[173] Jordon, 2018, pp. 10-11,In the case in which a facilities-based enhanced service provider does not wish to offer the basic service to the public, the FCC found that it was in the public interest to require that the basic service be offered to all other enhanced service providers on the same terms and conditions as it offered the basic service to itself.46 Thus, even in this case, the basic service is a common carrier service regulated under Title II. Furthermore, the FCC specifically rejected the theory that bundling enhanced capabilities with an underlying common carrier basic service removes the basic service from Title II.47 The result in either case is that basic service is a common carrier service, and thus must be offered without unreasonable discrimination, per Section 202 of the Communications Act. Basic service providers thus "no requirement that a particular service be offered on a common carrier basis, the Commission and the courts have interpreted whether the public interest requires a common carrier service based on a number of factors related to the service at issue."), and *Virgin Islands Telephone Corp. v. FCC*, 198 F.3d 921 (D.C. Cir. 1999) describing *NARUC I* and *NARUC II* ("a carrier has to be regulated as a common carrier if it will make capacity available to the public indifferently or if the public interest requires common carrier operation.").
[174] Jordon, 2018, p. 10, In the case in which a facilities-based enhanced service provider does not wish to offer the basic service to the public, the FCC found that it was in the public interest to require that the basic service be offered to all other enhanced service providers on the same terms and conditions as it offered the basic service to itself.46 Thus, even in this case, the basic service is a common carrier service regulated under Title II.
[175] Comstock and Butler, 2000 at 304.
[176] Powell, 2004.
[177] FCC, 2002.
[178] (Breyer, concurring).
[179] Jordan notes that the FCC uses the erroneous analysis of the technical and legal nature of broadband service "to repeal almost all of the net neutrality rules placed on broadband Internet access service in the 2015 *Open Internet Order*. The public interest analysis that underlies the repeal is interesting; however, it is outside the scope of this paper."
[180] Jordon, 2018, p. 34, The policy outcome of the *Computer II Final* Decision is that the enhanced services market is competitive because the underlying basic service is available to enhanced service providers on a common carrier basis. The importance of the common carrier status of the underlying basic service cannot be overstated. The availability of the underlying basic service on a nondiscriminatory basis is essential to the decision to classify facilities-based enhanced services as noncommon carrier services. Without such access to basic service, basic and enhanced services could not be designed and offered separately, and the development of an enhanced service market would be crippled. However, the existence of an underlying basic service, and the regulatory status of the underlying transmission, would both be questioned in future proceedings. (11)…In *Computer II*, the FCC found that it was in the public interest to require that the basic service be offered to all other enhanced service providers on the same terms and conditions as it offered the basic service to itself, and that hence the basic service is a common carrier service regulated under Title II.
[181] Jordon, 2018, pp.44- 45, The FCC recognized that "enhanced services are dependent upon the … offering of basic services".44 The underlying basic service provides "a 'pure transmission' service which forms the basis upon which all 'enhanced' services are provided."
[182] the *1996 Act* focuses on telecommunications regardless of the facilities used. This approach is consistent with the change in focus from equipment in the FCC's *Computer I* to the focus on functionality in the FCC's *Computer II*. In addition, the *1996 Act* clarifies that "for hire" means "for a fee directly to the public, or to such classes of users as to be effectively available directly to the public", consistent with Title II's application to common carriers.
[183] Jordon, 2018, p. 32, During the late 1990s and the first decade of the 2000s, transmission technologies were developed and deployed that could obtain much higher speeds than data transmission over the PSTN. Digital subscriber line (DSL) is a family of physical (layer 1) and data link (layer 2) protocols that telephone companies often use to transmit data between a customer's modem and a network device in the telephone company's central office. Similarly, Data Over Cable Service Interface Specification (DOCSIS) is a family of physical and data link layer protocols that cable companies often use to transmit data between a customer's modem and a network device in the cable company's headend. Either DSL or DOCSIS can be used to replace the need for local telephone service when accessing the Internet. The IP (layer 3) protocol is used over DSL or DOCSIS to offer packet switching from source to destination. The combination of IP with DSL or DOCSIS is used to provide broadband Internet access service.
[184] http://en.wikipedia.org/wiki/Interstate_Commerce_Act_of_1887
[185] http://en.wikipedia.org/wiki/Mann%E2%80%93Elkins_Act
[186] The first consent decree was entered in 1906 in United States v. Otis Elevator, *available at* http://scholarlycommons.law.wlu.edu/cgi/viewcontent.cgi?article=3452&context=wlulr.
[187] *See* United States v. AT&T, 552 F. Supp. 131 (D.D.C. 1982).
[188] *See* Use of the Carterfone Device (1968).
[189] FCC, Computer Inquiries, 1970, 1981, 1986.
[190] The First Report and Order is dated 1985, http://www.marcus-spectrum.com/resources/RandO_81-413.pdf
[191] Cooper, 216a.
[192] U.S. Court of Appeals, 2018, p. 12.
[193] Cooper, 2017.
[194] FCC Flip-flop order, FCC, 2019.
[195] Id., 142
[196] Id., 297-298, 299.
[197] Id., 29, 193, 205, 295,
[198] Id., 15-16, 23
[199] U.S. Court of Appels, 2018, Wilkins: I too join the Court's opinion in full. As Judge Millett's concurring opinion persuasively explains, we are bound by the Supreme Court's decision… even though critical aspects of broadband Internet technology and marketing underpinning the Court's decision have drastically changed since 2005. But revisiting *Brand X* is a task for the Court – in its wisdom – not us.
[200] Id., Williams: My colleagues and I agree that the 1996 Act affords the Commission authority to apply Title II to broadband, or not.
[201] Economides, 2008b, p. 506.

[202] Id., p. 14
[203] 2014, Chapters 2 and 9.
[204] Id., p. 32, Network effect are an inherent part of some markets, not a 'market failure' for which the law must necessarily correct. The law may need to adapt to network effects, but it should neither ignore them nor attempt to defy them." On the other hand, network effects can render a market more conducive to monopolization. Arrow and the *amici* had agreed that Microsoft had benefitted from network effects and that it had taken actions to further and artificially fortify the barriers to entry.
[205] Cooper, 1986, 1987.
[206] Pitofsy, 2008, lists two dozen citations to Bork and dedicates the book to examine "extreme interpretation and misinterpretations of conservative economic theory (and constant disregard of the facts)" which means "there is reason to believe that the United States is headed in a profoundly wrong direction.
[207] "No one shall be subjected to arbitrary interference with his privacy, family, home or correspondence, nor to attacks upon his honour and reputation. Everyone has the right to the protection of the law against such interference or attacks." http://www.un.org/Overview/rights.html
[208] *https://en.wikipedia.org/wiki/FTC_regulation_of_behavioral_advertising: Beginning with:* FTC Staff Report, *Public Workshop on Consumer Privacy on the Global Information Infrastructure* (December 1996), at, http://www.ftc.gov/reports/privacy/Privacy1.shtm; ending with FTC, *Protecting Consumer Privacy in an Era of Rapid Change: A Proposed Framework for Businesses and Policymakers* (December 1, 2010), http://www.ftc.gov/os/2010/12/101201privacyreport.pdf.
[209] FTC, 2010.
[210] For early formulation see, Cooper 2002, 2005. For recent formulations see Cooper 2017, 2020.
[211] Energy Efficiency,
[212] Cooper, 2017
[213] Cooper, 2026c, 2018., Other examples of collaborative production include Cooper, 2004, 2005, 2006.
[214] Cooper, 2020.
[215] Cooper, 2009. 2014, 2015.
[216] Cooper, 2009.
[217] Cooper 2020.
[218] As noted in Cooper, 2013a, Ostrom's body of work is huge, her Nobel Laureate lecture provides a summary, Elinor Ostrom, 2009.