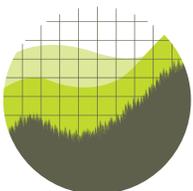


Navigating Net Neutrality:

Promoting Effective and Adaptive
Broadband Policy Through Structural Design



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Introduction

Recent months have seen a renewed debate over the appropriate role of the government in broadband Internet management. This debate has been especially heated over the issue of “network neutrality” (or “net neutrality”)—whether broadband network providers should be allowed to differentially treat different content providers whose sites the broadband network’s users access, for example by blocking traffic to high-bandwidth sites or charging users more to access these sites.¹ In 2010, the Federal Communications Commission (FCC) promulgated the Open Internet Rules, which, in brief, mandated that broadband providers could not block traffic to sites, could not unreasonably discriminate against particular sites, and had to abide by a transparency requirement to disclose certain information about their network management practices.²

In a January 2014 decision, the D.C. Circuit left intact the transparency provision, but struck down the anti-blocking and anti-discrimination provisions, with some leeway for the FCC to propose modified net neutrality rules.³ In April 2014, the FCC disclosed that it plans to propose a new Open Internet Rule that would strengthen the transparency requirement but weaken the anti-discrimination and anti-blocking requirements by allowing broadband providers to employ “commercially reasonable” discrimination against content providers.⁴ This announcement provoked outcry from some Internet advocates, who would have preferred for the FCC to reclassify broadband as a telecommunications service in order to allow the agency to impose stricter anti-discrimination and anti-blocking provisions following the D.C. Circuit decision.⁵

One of the challenges that a government agency like the FCC faces in trying to regulate the broadband industry is the relatively fast pace of technological change and the relatively slow pace of government regulation. The broadband industry has expanded rapidly. The majority of Americans now have access to the Internet over a broadband connection (although the Internet existed well before broadband was widely available to bring it into people’s homes). The graphically-oriented World Wide Web was first introduced in 1993—at that time, the only way to access it was through a dial-up connection.⁶ Access to broadband,⁷ and a much faster Internet, began in 1996.⁸ In 2001, about half of adults were online, although only four percent of American households had broadband access.⁹ In 2011, 62 percent of American adults had a high-speed broadband connection at home (and almost eighty percent used the Internet).¹⁰ A Columbia University study projects that residential broadband adoption, which includes wireless, will reach roughly 66 percent by 2016.¹¹ Perhaps more importantly for regulatory purposes, technological innovations like “deep-packet inspection”—which makes it possible for Internet Service Providers (ISPs) to determine the nature of the content traveling across their networks and therefore charge differential prices or block cer-

tain content altogether¹²—and mobile broadband capacity—which presents different regulatory challenges than fixed broadband—can develop rapidly and unexpectedly. In contrast, the notice and comment rulemaking process can take years.¹³

Traditionally, stakeholders in the Internet industry approached this dichotomy by distancing themselves from government and relying on the Internet’s capacity for self-regulation.¹⁴ In recent years, however, it has become apparent that government may have a role to play in at least some aspects of Internet regulation. Scholars have argued that a government policy of “‘non regulation’ toward the Internet . . . is no longer appropriate for an era in which the Internet delivers information and communications critical to our social and economic well-being” and that “some form of government oversight” is now necessary.¹⁵ And, indeed, many advocates who otherwise argue for limited government intervention in the Internet support government oversight of net neutrality.¹⁶

However, the question remains as to how the government can most effectively regulate an industry that is changing as rapidly as broadband technology. This policy report explores that question. It begins by chronicling in Part I the history of the FCC’s efforts and setbacks on broadband regulation. It continues in Part II to examine the social values that scholars, advocates, and the FCC hope to achieve through broadband regulation. Only by understanding the underlying social values can the regulators assess whether regulation makes sense, what types of policies might best satisfy those values, and if those policies are achieving their goals or should be updated over time. Part III analyzes the structural changes that the FCC might be able to implement to more effectively and adaptively regulate the rapidly changing broadband sector.

This report makes the following recommendations to the FCC:

- The FCC should explore using *ex post*, case-by-case decisionmaking and public-private collaboration, which could help the agency to respond relatively quickly to changes in the industry.
- If the FCC adopts a case-by-case approach to regulation, it should carefully consider the default rule. If the broadband industry has the burden to show that discrimination is reasonable, net neutrality protections are likely to be stronger than if the FCC must prove that discrimination is unreasonable.
- The FCC should consider employing adaptive management, most often applied to natural resources,¹⁷ in the broadband context. The core idea of adaptive management is “learning while doing,” through an iterative regulation process that frequently adjusts regulations as new information becomes available.¹⁸ The FCC could use adaptive management as an active regulatory strategy, or a framework for re-examining existing policies over time.
- The FCC should define metrics to evaluate the effectiveness of its broadband policies and establish a procedure for updating its policies as conditions change.

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PART ONE

A Brief History of Federal Efforts and Setbacks on Broadband Regulation

The federal government played an instrumental role in creating the Internet, but in intervening decades, the government had allowed the Internet infrastructure and content to develop, with relatively limited government intervention.¹⁹ Recent concerns over the potential for broadband network providers to discriminate against content providers using their networks has led to a multi-year effort by federal agencies²⁰—primarily the FCC—to determine whether limitations should be placed on broadband providers’ ability to discriminate between different types of content traveling through their networks. Many consumer advocates and policy organizations have called for “network neutrality,” which refers to treating equally all the information that flows across the wires (or radio spectrum, as the case may be)—no matter the source, destination or type of content. Traditionally, content and application providers, or “edge providers,” such as the New York Times, Turbo Tax, or Google, did not pay for the traffic that was generated when Internet end-users downloaded content, and they had no control over how that content reached end-users. New technologies have allowed Internet Service Providers (ISPs), such as Verizon and Comcast, to control edge providers’ access to their networks, a prospect that has raised concerns that ISPs will use that power in ways that, while profitable for those firms, reduce the overall social value that is created by the Internet. Some advocates are concerned that broadband providers will prioritize certain forms of content over others, favoring their own content and that of richer edge providers over that of smaller, newer rivals. Other advocates have argued that the market should be permitted to function without unnecessary government meddling and that allowing for network discrimination provides appropriate investment incentives to allow the broadband industry to maintain necessary infrastructure.

After hearing much evidence on both sides of this issue, the FCC has undertaken several policy measures in an effort to promote net neutrality, achieving various degrees of regulatory and judicial success in the face of opposition from ISPs and a substantial public debate. After nearly a decade of regulatory efforts, the FCC still lacks a net neutrality policy that has stood up both to court scrutiny and changes in broadband technology. Most of the FCC’s regulatory efforts on net neutrality have taken place under the Communications Act of 1934, which established the FCC and set out its authority. Title I, which is particularly important to the Commission’s broadband and Internet-related jurisdiction, permits it to “perform any and all acts, make such rules and regulations, and issue such orders, not inconsistent with this Act, as may be necessary in the execution of its functions.”²¹ Title II regulates telephone and telegraph common carriers.²² Title III regulates radio communications.²³ Title V-A regulates cable communications.²⁴ Congress passed the Telecommunications Act of 1996 in an effort to update the 1934 Act. The goal of the Act was to “let anyone enter any communications business—to let any communications business compete in any market against any other”²⁵—essentially to increase competition in the various telecommunications industries. The 1996 Act eliminated the cross-ownership rules between telephone and cable providers and between cable providers and

broadcasters.²⁶ It reduced regulatory barriers to entry and competition and outlawed artificial barriers to entry in local exchange markets.²⁷ It also mandated principles of universal service.²⁸

The Telecommunications Act was not designed to regulate a dynamically evolving resource like the Internet, however, and the 1996 revisions to the Act did not attempt to change this. In fact, at first, the FCC appeared reluctant to make any attempt to “regulate the Internet.” In 2002, it defined Internet services as an “information service,” and therefore not subject to common carrier restrictions within the framework of the Communications Act of 1934 and the Telecommunications Act of 1996.²⁹

In 2003, the struggle over how to define Internet services reached the Supreme Court. In *Brand X*,³⁰ the Court considered whether the FCC had jurisdiction to classify broadband cable Internet service as an “information service,” rather than as a “telecommunications service.” Petitioners sought review of the FCC declaratory ruling that cable companies providing broadband Internet access were telecommunications carriers exempt from mandatory regulation under Title II of the Communications Act. The petitioners argued that the FCC did not go far enough—claiming instead that the FCC should have classified cable companies providing broadband Internet access as common carriers subject to mandatory regulation under Title II.³¹ Reversing the decision of the Ninth Circuit, the Supreme Court found that the FCC had jurisdiction to classify broadband cable Internet service as an “information service,” and that exempting these carriers from mandatory regulation under Title II was a lawful construction of the Communications Act.³²

As the broadband industry grew, however, the FCC began to adopt some guidelines over it without fully attempting to regulate it. In 2005, in the wake of the *Brand X* decision, the FCC published a Policy Statement, which laid out four principles for maintaining an open Internet. The Commission provided guidelines in an attempt to (1) enable consumers to access the lawful Internet content of their choice; (2) enable consumers to run applications and use services of their choice, subject to the needs of law enforcement; (3) enable consumers to connect their choice of legal devices that do not harm the network; and (4) assure that consumers can expect competition among network providers, application and service providers, and content providers.³³ These principles are sometimes summarized as “any lawful content, any lawful application, any lawful device, and any provider.” The Commission proposed these principles of network neutrality—in a non-binding way—by circulating them alongside its order deregulating broadband Internet service over phone lines (DSL).³⁴ The Commission determined that this guidance was “necessary to ensure that providers of telecommunications for Internet access or Internet Protocol-enabled (IP-enabled) services are operated in a neutral manner.”³⁵ The 2005 rules were never published in the Federal Register, and remained uncodified guidelines.

The first jurisdictional obstacle to the FCC’s broadband regulation came from the D.C. Circuit when Comcast challenged the FCC’s authority to regulate its network management practices. In October of 2007, several Comcast subscribers reported to the FCC that Comcast was blocking or severely delaying BitTorrent uploads on its network.³⁶ Free Press and Public Knowledge, two organizations concerned with Internet freedom, filed a complaint to

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that effect with the FCC. In response, the FCC issued an Order, entitled *In re Formal Compl. of Free Press & Public Knowledge Against Comcast Corp. for Secretly Degrading Peer-to-Peer Applications* (the “Free Press Order”), in which the Commission concluded that it had jurisdiction over Comcast’s network management practices, and that it could resolve the dispute through adjudication instead of through rulemaking.³⁷

Comcast challenged the Free Press Order, and the D.C. Circuit faced the question of whether the FCC had jurisdiction to regulate Internet service providers’ network management practices.³⁸ Instead of claiming that it had direct jurisdiction over Comcast’s network management practices under Title II of the Act, the Commission argued that it had “ancillary” authority based upon a variety of statutory provisions—some describing policy goals and some delegating regulatory authority—related to network management.³⁹ The Court ultimately concluded that the Commission had “failed to tie its assertion of ancillary authority over Comcast’s Internet service to any ‘statutorily mandated responsibility,’”⁴⁰ and vacated the order as beyond the Commission’s jurisdiction. Title I does not permit the Commission to develop a general framework for broadband regulation, and, as the Court determined in previous cases, the Commission cannot claim authority under Title I to enforce general statements of congressional policy divorced from any statutorily granted regulatory power. The Court removed any chance of that the Commission could regulate broadband under Title I when it reminded the parties that granting the Commission general authority under Title I to regulate broadband networks would “virtually free the Commission from its congressional tether.”⁴¹

Following the D.C. Circuit’s decision, the FCC adopted the Open Internet Order⁴² to combat what it saw as a threat to innovation, competition, and Internet openness from broadband providers. The Commission invoked a variety of statutory provisions as authority for the order, focusing in particular on section 706 of the 1996 Telecommunications Act, which instructs it to encourage the deployment of broadband networks.⁴³ The Open Internet Rules applied slightly differently to wireline broadband providers and wireless broadband service providers. In brief, the wireline rules prohibited broadband providers from blocking lawful Internet uses (the “anti-blocking” requirement),⁴⁴ barred broadband providers from unreasonably discriminating when transmitting lawful network traffic over a consumer’s broadband Internet access service (the “anti-discrimination” requirement),⁴⁵ and required that broadband providers disclose accurate information regarding their network management practices and their services (the “transparency” requirement).⁴⁶ In contrast, the rules for wireless broadband providers differed in that the anti-discrimination rule did not apply to wireless networks.⁴⁷

After much debate, the Open Internet Order took effect on November 28, 2011. When the final rule was published in the Federal Register, the FCC confirmed that the network neutrality framework aimed “to ensure the Internet remains an open platform—one characterized by free markets and free speech—that enables consumer choice, end-user control, competition through low barriers to entry, and the freedom to innovate without permission.”⁴⁸

As soon as the Open Internet Order was published in the Federal Register, Verizon and several other entities challenged the FCC’s authority to promulgate the Open Internet Order and to try to maintain an open network in the wake of the FCC’s adoption of the Open Internet rules. On December 8, 2011, after several cases were filed against the FCC seeking judicial review of its Open Internet Order, the D.C. Circuit consolidated the cases and ordered briefing.⁴⁹

On January 14, 2014, the D.C. Circuit struck down the anti-discrimination and anti-blocking provisions of the Open Internet Order.⁵⁰ The court held that section 706 of the Telecommunications Act of 1996 gave the FCC authority to enact regulations encouraging the development of broadband infrastructure.⁵¹ The court further held that the FCC had reasonably interpreted that authority to cover its right to “promulgate rules governing broadband providers’ treatment of Internet traffic.”⁵² It also found that the agency’s primary rationale for promulgating the Open Internet Order—that it would help facilitate further Internet innovation—was reasonable and supported by substantial evidence.⁵³ But because the FCC classified broadband providers as information services (which are exempt from treatment as common carriers) rather than telecommunications services (which are not), the agency could not treat them as *de facto* common carriers.⁵⁴ The court then invalidated the anti-discrimination and anti-blocking provisions of the Open Internet Order because the FCC had failed to establish that these provisions did not impose common carrier obligations on the broadband industry.⁵⁵ The court left the transparency provision intact, finding that it did not impose common carrier obligations.⁵⁶ The Court declined to reach Verizon et al.’s constitutional arguments.

The FCC . . . plans to propose a new version of the Open Internet Rule [that allows] broadband providers to employ “commercially reasonable” discrimination and blocking against content providers.

Because it left open the option for the FCC to regulate broadband providers as common carriers to facilitate net neutrality regulations, the D.C. Circuit opinion ignited a firestorm of controversy over how the FCC should proceed.⁵⁷ Many free-Internet advocates argued that the FCC should promptly act to classify broadband providers as common carriers and promulgate new net neutrality regulation.⁵⁸

In April 2014, the FCC announced that it plans to propose a new version of the Open Internet Rule, but that instead of classifying broadband providers as common carriers and prohibiting all discrimination, it plans to allow broadband providers to employ “com-

mercially reasonable” discrimination and blocking against content providers.⁵⁹ The agency is expected, however, to strengthen the Transparency Rule by further developing its requirements.⁶⁰ The FCC is currently revising these new Open Internet Rules in response to criticism from Internet advocates about the potential for creating a “fast lane” for content providers willing to pay. The agency plans to release the Notice of Proposed Rulemaking for formal comment on May 15, 2014.⁶¹

PART TWO

Social Values and Broadband Industry Governance

In enacting the new Open Internet Order, it will be vital for the FCC to assess the market failures or other social priorities that it is trying to address. Understanding these social values is critical for assessing whether regulation makes sense, determining what form that regulation should take, and evaluating the regulation's effectiveness.

Regulators, advocates, and scholars have focused on four major social values that Internet policy generally—and broadband policy specifically—might help to promote. These four values, which are described more fully below, include: (1) network effects; (2) democratized expression; (3) innovation; and (4) competition. The FCC has specifically noted the importance of pursuing these goals, both in its 2011 Open Internet Order and in its 2014 policy statements regarding new regulations in the wake of the *Verizon* D.C. Circuit decision.⁶²

A. Network Effects

An important feature of the Internet is its “network effects,” which emanate from the Internet's commons-like characteristics. How to protect the Internet's network effects has become a key feature of the regulatory debate. A “commons” is a resource to which members of the relevant community have open access.⁶³ No single person has exclusive control over the use and disposition of the particular resource.⁶⁴ There are two types of resources that can be commons: rivalrous and nonrivalrous resources. The rivalrous commons is the traditional commons—a resource like a town square where farmers bring their cows to graze. Rivalrous commons are vulnerable to the “tragedy of the commons”—that is, where each user has incentives to overuse the commons and the resource becomes depleted. The town square is a “rivalrous” resource because one farmer cannot graze his cows without impinging on another farmer's ability to graze her cows.

But there are also nonrivalrous resources that are not depleted when used, and can even increase in value as the number of users of the resource increases. Information, for example, can be a nonrivalrous resource.⁶⁵ When one uses information, the information itself is not depleted and the use of it can lead to new ideas and innovations.⁶⁶ The Internet, at least in theory and without the constraints of limited infrastructure, is a nonrivalrous resource because its use by other people does not diminish an individual's own use.⁶⁷

In fact, the value of the Internet actually increases as more people use the resource, because its primary value lies in its connectivity—allowing users to communicate and share information with one another. These benefits from connectivity are network effects, which increase as the numbers of users on the network increases. Restricting access to

the Internet may eliminate some of its network effects, creating the risk that certain benefits will never be realized.⁶⁸ For example, the benefits of receiving perspectives from a variety of different viewpoints may be diminished if certain groups are unable to afford Internet access. When individuals and companies use resources on the Internet, this can help generate value both for the direct users and society at large.⁶⁹ Often the value that is generated for society can include positive externalities that are not fully captured by the market.⁷⁰ For example, the increasingly popular Massively Open Online Courses create direct educational benefits for the users but also positive externalities for society as citizens acquire more knowledge and skills. It may be socially desirable to manage network resources like the Internet, which can create positive externalities, in an openly accessible manner.⁷¹

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Many scholars and advocates argue that requiring network neutrality will promote these network effects by promoting additional investment in network infrastructure, content development, and broadband adoption by end users.⁷² Others argue that requiring network neutrality might discourage infrastructure investment and therefore diminish network effects by hindering broadband companies from recovering the full value of their investments or charging differential prices based upon bandwidth needed to transmit the content.⁷³ As the FCC gathers data on broadband deployment in response to its changing Open Internet policy, it will be in a better position to assess whether this policy affects broadband availability and quality. Assessing the extent of the positive externalities that the policy creates would be empirically trickier but theoretically possible.⁷⁴

B. Democratized Expression

One of the most popular arguments in support of network neutrality has been that government regulation can and should protect democratized expression. Internet users and content providers alike enjoy having unfettered access to this expressive medium, and many argue that this should not change as the amount of available content increases. This debate is often confused with the debate about free speech on the Internet, and whether the government has a role in protecting that. Because ISPs are not government actors, the case for protecting free speech on the Internet is not obvious from a Constitutional perspective. It remains unclear what the government's role should be with regard to freedom of expression on the Internet, as well as what "freedom of expression on the Internet" even means.⁷⁵

The democratized expression debate approaches free speech from another angle. This is not free speech in the First Amendment sense, but rather a level playing field where everyone has the same access to content and to providing content (if they already have access to the Internet). Scholars have debated the relative economic merits of network neutrality rules, arguing that economic forces affect democratized expression on the Internet.⁷⁶ Analysis reveals that, because information is a public good, it is likely to be undervalued by the market and therefore underproduced.⁷⁷ The dissemination of information often produces positive externalities, but because the producer does not consider these benefits in producing the information, she produces less information than is socially optimal.⁷⁸ According to this analysis, the government should subsidize democratized expression rather than limit it, because any restrictions will further contract a naturally inadequate supply of information.⁷⁹

Proponents of network neutrality remain concerned that network owners will discriminate against particular content, which will impinge on democratized expression, and believe that government should regulate network owners' ability to discriminate. Yochai Benkler argues that information belongs in the public domain, and that without regulation there is a risk that a few nongovernmental organizations will exercise too much control over our information environment, and reduce the robustness and diversity of exchange in our marketplace of ideas.⁸⁰ He notes that this kind of risk is one that the Supreme Court "has at times found weighty enough to justify government action intended to alleviate the censorial effects of media concentration."⁸¹ In 1997, the Supreme Court noted that "[p]ublishers⁸² may either make their material available to the entire pool of Internet users, or confine access to a selected group, such as those willing to pay for the privilege," but that "[n]o single organization controls any membership in the Web, nor is there any single centralized point from which individual Web sites or services can be blocked from the Web."⁸³ While it is still true that no single organization controls what can and cannot be found on the Internet, it is now possible for broadband providers to stop or slow down access to particular websites through deep-packet inspection. While some argue that the practical impacts of this ability to limit access are likely to be insubstantial,⁸⁴ others believe net neutrality is necessary to help promote this freedom of expression, especially for the development of content that might be undervalued by the market.⁸⁵ As with network effects, data from monitoring under the Transparency Rule—for example, evidence regarding broadband providers' slowing of traffic from sites that rival their own content—might help the FCC to shed light on this debate.

C. Innovation

Because the Internet is such an important driver of the economy, scholars and lawmakers alike are particularly concerned with how discriminatory behavior might affect the rate of innovation attributable to the Internet. Some argue that the ability for broadband providers to discriminate against content providers will hinder innovation, while others argue that discrimination may be neutral or even help innovation.

Proponents of network neutrality claim that the Internet's ability to create economic growth comes from its specific architecture,⁸⁶ and that to change the fundamental architecture of the Internet by allowing it to become "network diverse"⁸⁷ will have dire consequences for network providers and Internet users alike because it will hamper innovation. Until relatively recently, one of the basic features of the Internet's design was that network providers could not discover the content of the data moving across their networks. But now, with deep-packet inspection, network providers have the technical ability to sort data for content as it passes over their networks, blocking or slowing it as they see fit.

This may be problematic for innovation for several reasons. Blocking individual applications could reduce the ability of application developers to innovate by making it more difficult to obtain venture capital and other investment funding, because investors will not want to fund an application that may be unable to reach its users.⁸⁸ It may also reduce innovation because a potential innovator bases her decision to innovate on the expected costs and benefits of whatever innovation she has in mind. In the face of possible discrimination, the innovator will expect lower profits, and thus will have less of an incentive to innovate.⁸⁹ In addition, because a potential innovator will not know whether her product will be blocked once she invents it, the uncertainty will decrease her incentive to innovate.⁹⁰ Finally, because network providers can and often do make competing application products, there is nothing to stop them from imitating a product that someone else has invented, and then blocking the innovator from the market.⁹¹ Discrimina-

tion may also cause transaction costs and other wasteful costs to rise. For example, discriminating network providers could set individual compatibility standards for their networks, forcing content providers to choose whether to invest in complying with multiple network standards or simply throwing their lot in with a single network provider's standard. As Christopher Yoo has noted,

[I]f multiple standards were to exist, end users and providers of applications and content would have to expend significant resources to verify compatibility with respect to different networks. It is theoretically possible that the resulting friction might be so severe that it more than offsets the benefits of shifting to another standard. When that is the case, society would be better off if network diversity were not permitted.⁹²

Relying on empirical studies, Barbara van Schewick argues that there is already too little innovation because “private firms are typically unable to appropriate all social gains from the innovation.”⁹³ Because ISPs and content providers are not compensated for all the information they disseminate, there is a systematic underinvestment in Internet content, applications, and the infrastructure itself. If that lost compensation could be accessed, it would encourage investment in infrastructure and content. But allowing private firms to attempt to access it creates the innovation-hampering environment described above. This is why government policy is in a unique position to increase investment in both Internet content and infrastructure to overcome this market failure.⁹⁴ Without network neutrality, the Internet's ability to support innovative, as-yet unimagined applications could be in jeopardy.⁹⁵

Others argue that network neutrality rules are bad for innovation. Becker et al. maintain that imposing net neutrality rules that limit experimentation with new business models and network management practices may reduce the incentive of network operators to enhance the functionality of their networks and thereby undermine the business case for investing in higher capacity broadband networks.⁹⁶ A variety of new Internet-based services, such as new medical and gaming services, may result in significant consumer benefits, but it may be impossible for content providers to provide them efficiently under the principles of net neutrality.⁹⁷ Becker et al. contend that the adoption of restrictions on network operations and business models can inhibit the development of innovative services that otherwise might be developed in the future.⁹⁸ Such restrictions, they argue, may adversely affect consumer welfare

Because ISPs and content providers are not compensated for all the information they disseminate, there is a systematic underinvestment in Internet content, applications, and the infrastructure itself.

by reducing the geographic scope of broadband access networks, reducing the capacity of the backbone networks that carry traffic between content providers and ISPs, increasing congestion, reducing service quality, reducing the number of service providers in a given geographic area, and raising prices.⁹⁹ The FCC should consider the evidence underlying each of these positions, including data gathered from disclosures under the Transparency Rule, in deciding whether and how it should incentivize innovation through broadband policy.

D. Competition

Although both sides of the net neutrality debate agree that competition is important, how best to protect competition on the Internet

is another matter. Proponents of net neutrality argue that the government should preserve competition among content providers by regulating how ISPs manage their networks.¹⁰⁰ They argue that without equal access to the Internet, content providers may not bother to compete at all.¹⁰¹ Open Internet proponents believe that the most important purpose of a communications infrastructure is that it is public,¹⁰² and that it is maintained in such a way that maximizes the nation's economic and creative potential.¹⁰³ Non-discrimination will ensure that what survives is “truly the fittest and not merely the favored.”¹⁰⁴ Unregulated companies favored by deregulation can (and do) block new entrants to the market.¹⁰⁵

Opponents of network neutrality argue that mandating that the Internet operate in a non-discriminatory fashion will cause more market failures than it will alleviate. According to opponents, regulation is not necessary and, at worst, might become a tool in the hands of application developers used to block competition from broadband operators.¹⁰⁶ Detractors argue that self-regulation and discrimination by ISPs will not adversely affect competition among content providers and may more effectively preserve incentives to innovate.¹⁰⁷ Becker et al. argue that because the FCC's network neutrality rules will prohibit broadband access providers from prioritizing traffic, charging differential prices based on priority status, imposing congestion-related charges, and adopting business models that offer exclusive content or that establish exclusive relationships with particular content providers, the rules will harm investment, innovation, and consumer welfare.¹⁰⁸ They suggest that traditional antitrust channels provide an effective approach to meeting network neutrality proponent's competition concerns.¹⁰⁹

Becker et al. also argue that prohibiting differential pricing could result in higher prices to broadband subscribers.¹¹⁰ Entry by new broadband networks tends to require large sunk-cost investments, and Christopher Yoo argues that where the sunk-cost investments needed to establish the network are large, this can cause average costs to decline. Thus, the market for Internet service providers is generally expected to exhibit a tendency toward concentration. Allowing broadband providers to differentiate their product offerings can help prevent declining-cost industries from devolving into natural monopolies, which exist in the absence of competition.¹¹¹ Yoo also argues that allowing broadband providers to discriminate may increase economic welfare because they will be able to prevent high-volume users from imposing uncompensated costs on low-volume users.¹¹²

Although it would appear that the goals of the industry players and the government align—promoting innovation, competition, network effects, and democratized expression—how to achieve these goals has become a contentious and lengthy dispute. Sincere disagreement between ISPs, edge providers, and end users has placed government regulators at odds with industry. Additional analysis of each of the effects of net neutrality policies on each of these social values may shed light on how best to promote them, but for now, the FCC appears to be moving forward with a policy short of full non-discrimination. The immediate question becomes how the agency can best structure both the substantive aspects of the policy, as well as its internal decisionmaking process, to deal with the complex and rapidly evolving world of broadband technology.

PART THREE

Policy Considerations: A Framework for Regulating the Changing Broadband Industry

The FCC is currently at a crossroads, deciding how best to promote the social values associated with Internet access, in the face of a D.C. Circuit decision striking down its last attempt to institute net neutrality. The bulk of the debate has focused on the substance of the regulations themselves: Should Internet Service Providers be classified as common carriers? How strong should the protections against discrimination be? Equally important, however, are the structural questions regarding how the FCC should administer the policy and respond to changes over time.

Administrative law often makes a distinction between substantive decisions and structural decisions. These categories can be broken down further, with substantive decisions including both instrument choice and policy choice, and with structural decisions including both institutional design and procedure. Instrument choice refers to the method of regulation—in the broadband context, an example would be a restriction against discrimination. Policy choice refers to the level of stringency of the regulation—in the broadband context, an example would be the “commercially reasonable” standard for discrimination. Other scholars and advocates have written extensively about the appropriate substantive decisions for the FCC to make with respect to net neutrality.¹¹³ The remainder of this report will therefore focus on exploring the fact-dependent structural decisions—institutional design and procedure—which have received comparatively short shrift.

A. Crafting an Adaptive Approach Through Institutional Design

One of the key questions that agencies regulating broadband policy will have to confront will be how best to structure the entities that are addressing the rapidly evolving technologies. As Richard Whitt notes, “[t]he superior recipe for confronting novel change is the maintenance of institutions that permit trial and error experiments to occur.”¹¹⁴ Scholars have articulated a number of different proposals for how Internet-regulatory agencies might be designed to be most effective and adaptive.

The FCC itself is also in the process of reexamining and modernizing its structure. In February 2014, it requested public comment on a report it released on FCC process reform.¹¹⁵ It considered ways to increase the speed and transparency of agency decisionmaking, facilitate communications with interested parties, modify the rulemaking process, and improve the use of human and technological resources within the agency.¹¹⁶

The FCC is currently structured as an independent agency.¹¹⁷ Five commissioners run the agency. They are appointed by the President and are confirmed by the U.S. Senate.¹¹⁸ One of these is selected by the President to serve as

Chairman.¹¹⁹ The commissioners and the Chairman each serve five-year terms.¹²⁰ Only three commissioners may be of the same political party at one time, and none of them may have a financial stake in any Commission-related business.¹²¹ The agency typically regulates through notice-and-comment rulemaking, where a proposed rule is drafted in response to statutory requirements, petitions from interested parties, or internal agency priorities.¹²² The public is invited to comment, and the agency enacts a final rule after responding to public comments.¹²³ After a rule is enacted, individual telecommunications providers can apply for exemptions from a rule's requirements under the FCC's forbearance authority.¹²⁴

Out of the many proposals for how to restructure the FCC's decisionmaking authority to be more effective and adaptive at regulating broadband service, two main categories of proposals have received the most traction. One set of proposals involves placing more authority with administrative law judges (ALJs) and other *post hoc* decisionmakers, instead of relying on the commissioners to enact comprehensive *ex ante* regulations that anticipate all possible scenarios. Another set of proposals involves public-private collaboration through multistakeholder processes or other hybrid approaches, which would allow regulators to work with members of the regulated industry—as well as with the technology itself—to optimize the Internet's potential to continue facilitating positive network effects, democratic expression, innovation, and competition.

1. *Ex Post* Adjudicative Decisionmaking¹²⁵

One possible approach to facilitating agency adaptability in the broadband regulatory context could be placing more emphasis on the agency's *ex post* adjudicatory functions over its *ex ante* rulemaking.¹²⁶ Several scholars have suggested an *ex post* approach to broadband and Internet regulation, in order to facilitate the ability of a regulatory agency to respond to issues on a case-by-case basis. For example, Pierre de Vries has proposed that “Congress, in enacting laws, and the FCC, in creating broad rules, should create principles that provide general guidance about the values to be protected. Decisions should then be delegated to adjudicators who apply those rules in a common law fashion, creating a body of precedent.”¹²⁷ Howard Shelanski has also advocated for a general shift toward *ex post* approaches in the telecommunications realm, arguing that in the net neutrality context, Congress should “articulate a standard of network competition and conduct that the FCC and U.S. antitrust agencies can enforce without being blocked by contrary precedent from general antitrust law.”¹²⁸ Phil Weiser suggests making more extensive use of the FCC's administrative law judges.¹²⁹ Richard Whitt recommends adding an Office of Innovation Advocate to ensure “that the FCC's regulatory process includes explicit attention to the effects of any decision on the course of technological innovation,” and an Office of Ombudsman to challenge “fundamental empirical and analytical assumptions underlying draft decisions, and/or proposed institutional approaches.”¹³⁰ He argues that these institutional features will make the process more transparent and counter the “natural organizational bias toward incumbent players.”¹³¹ Other scholars have taken more extreme approaches, arguing that the FCC's policy-making functions should move to “the executive branch, leaving the Commission jurisdiction to serve an

If the “commercially reasonable” standard turns out not to effectively promote the desired social values, the FCC should . . . place the burden on broadband providers to establish the propriety of their discrimination.

adjudicatory role—overseeing interconnection disputes and spectrum interference,¹³² or arguing that the Federal Trade Commission (FTC) should assume responsibility for broadband regulation because of its experience with *ex post* enforcement and its lower potential for agency capture due to its broad subject matter.¹³³

It appears as though the FCC is already contemplating a move to a more *ex post* management approach with its revised Open Internet rules. According to Chairman Wheeler, the FCC plans to implement a “commercially reasonable” standard for permissible discrimination by broadband providers,¹³⁴ which necessarily calls for *ex post* evaluation of particular providers’ conduct. Of course, the agency has more than one choice for how to implement an *ex post* approach. In particular, the default rule is highly important in an *ex post* management world. The FCC’s current default plan is to allow broadband providers to discriminate unless such discrimination is not commercially reasonable.

Another alternative default rule could be for the FCC to define all broadband providers as common carriers and prohibit all discrimination, but allow broadband providers to apply for exemptions under the FCC’s forbearance authority.¹³⁵ With perfect markets, perfect information, and perfectly rational actors, these two default rules with different starting places and burdens of proof could end up with identical results. However, market imperfections and behavioral tendencies suggest that these approaches could result in different outcomes.¹³⁶ The FCC should carefully consider how to set its default approach and how to allocate the burden of proof in order to best promote the social values it wishes to encourage. If the “commercially reasonable” standard turns out not to effectively promote the desired social values, the FCC should be prepared to shift the default toward non-discrimination and place the burden on broadband providers to establish the propriety of their discrimination.¹³⁷

All of these proposals have the potential to make Internet decisionmaking more adaptive to particular circumstances. However, they come with the potential for increased uncertainty, and, depending on how enforcement actions are undertaken, possibly less transparency and public engagement as well. Moreover, it is unclear whether *ex post* approaches will necessarily be faster than *ex ante* approaches. A forbearance proceeding can take at least a year and applies to only a single provider.¹³⁸ However, the agency may decide that the ability to craft regulations that apply to particular providers as circumstances evolve is preferable to locking in a uniform policy in advance.

2. Public-Private Collaboration

Another potential approach to promoting adaptability in Internet regulation is to work with the industry and other stakeholders to help facilitate regulation going forward.¹³⁹ The default approach to Internet regulation has for some time been self-regulation by the players involved.¹⁴⁰ Many scholars still argue that self-regulation is the best way to structure Internet regulation into the future.¹⁴¹ However, regulation—or at least some degree of government oversight—may be necessary to promote the social values discussed in Part II. If self-regulation alone becomes infeasible, the solution is not necessarily comprehensive government control. There are a range of institutional models between *laissez faire* self-regulation and prescriptive federal mandates.

Numerous scholars have written about the potential to create hybrid public-private oversight models for Internet regulation, with involvement by both government agencies and stakeholders. These proposals fall along a spectrum from limited to substantial government oversight and have taken a number of forms, including multi-stakehold-

erism,¹⁴² participatory governance,¹⁴³ and co-regulation.¹⁴⁴ Multi-stakeholderism generally refers to vesting decision-making authority to an organization that includes representation from a variety of economic and social interests, including civil society stakeholders other than government and industry.¹⁴⁵ An example of this type of organization is the Internet Corporation for Assigned Names and Numbers (ICANN), which assigns Internet domain names.¹⁴⁶ Traditionally, multi-stakeholder organizations operate independently of government,¹⁴⁷ but they could be set up to operate in conjunction with a government entity. Participatory governance closely resembles multi-stakeholder approaches and refers to processes that “involve[] industry, civil society, and technologists in both the writing and enforcement of rules,” with an eye toward “foster[ing] compliance, rather than enforcement.”¹⁴⁸ Co-regulation refers to the process where a “public regulatory body oversees a self-regulatory organization.”¹⁴⁹

Several of these hybrid public-private oversight models have even considered the potential for using the nature of the Internet system as a model for its regulation. In particular, Richard Whitt discusses the importance of designing co-regulatory structures based upon the structure of the Internet, so that the regulatory solutions will be targeted toward the right rules and players.¹⁵⁰

With a collaborative approach between stakeholders and government, regulators can take advantage of the ability of broadband and content providers to collect and analyze data on their system operations in order to monitor the status of access to the Internet.

These hybrid public-private models hold tremendous potential for facilitating effective Internet regulation. With a collaborative approach between stakeholders and government, regulators can take advantage of the ability of broadband and content providers to collect and analyze data on their system operations in order to monitor the status of access to the Internet. Regulators can then conduct frequent analyses on these data, working with stakeholders to implement policy changes, as warranted.

As part of its efforts at process reform, the FCC has begun considering the possibility of using of hybrid public-private regulatory models.¹⁵¹ If it plans to adopt hybrid governance systems, it will need to address possible concerns regarding legitimacy, public en-

gagement, and accountability by populating the governing body with diverse interests and retaining sufficient independent oversight. Public availability of data on regulatory results can also help allay these concerns, as discussed below. The agency should continue exploring the potential of using these hybrid governance mechanisms, determining how best to strike the balance between stakeholder involvement and government oversight and revising that balance over time, as needed.

B. Crafting an Adaptive Approach to Agency Procedure

In addition to selecting an appropriate institutional design to allow for effective and adaptive regulation, the FCC will also need to implement regulatory procedures that help to promote its goals. In particular, it will need to create procedures that allow for re-evaluation and revision of policies as conditions change. Monitoring and adjusting the regulatory system to respond to the accumulated data will be key to this process.

A useful framework for designing a regulatory process that can adjust policy to changing circumstances is the adaptive management framework that has primarily been applied in natural resources management.¹⁵² In fact, because of the data-driven nature of the Internet, adaptive management be even better suited for managing the Internet than for managing natural systems because monitoring and assessment may be easier.

Adaptive management proposes learning while doing, and the framework of adaptive management dictates thinking of the regulatory process as an “iterative, incremental decisionmaking . . . built around a continuous process of monitoring the effects of decisions and adjusting decisions accordingly.”¹⁵³ Adaptive management allows an agency “the flexibility to continually adapt in response to new information.”¹⁵⁴ It “provides a framework within which measures can be evaluated systematically as they are carried out.”¹⁵⁵ This process allows the implementing agency to test “management hypotheses, new simulations, and proposals for adjustments in management experiments or development of wholly new experiments or management strategies.”¹⁵⁶ This type of decisionmaking enables agencies to learn about and respond to changing conditions as information becomes available. As J.B. Ruhl noted,

Adaptive management requires institutionalization of monitoring-adjustment frameworks that allow incremental policy and decision adjustments at the “back-end,” where performance results can be evaluated and the new information can be fed back into the ongoing regulatory process. Deliberate monitoring and a framework for altering course, rapidly and frequently if conditions warrant, thus are essential ingredients of adaptive management.¹⁵⁷

Adaptive management is not trial-and-error, but rather “involves exploring alternative ways to meet management objectives, predicting the outcomes of alternatives based on the current state of knowledge, implementing one or more of these alternatives, monitoring to learn about the impacts of management actions, and then using the results to update knowledge and adjust management actions.”¹⁵⁸

Certain principles are critical to adaptive management policymaking. At its core, adaptive management requires iterative decisionmaking and consistent monitoring and collecting of information over time.¹⁵⁹ Richard Whitt proposes that adaptive management policies should be cautious, macroscopic, incremental, experimental, contextual, flexible, provisional, accountable, and sustainable.¹⁶⁰ Ruhl and Fischman summarize the principles of adaptive management theory as employing a “complicated, multistep approach, which values the honing of predictive models and outcomes more than the fairness of the process. Adaptive management theory regards decisionmaking as more of a series of fine-tuning steps that are continually and perpetually reevaluated.”¹⁶¹ Craig and Ruhl describe the steps in adaptive management as follows: “(1) definition of the problem, (2) determination of goals and objectives for management, (3) determination of the baseline, (4) development of conceptual models, (5) selection of future actions, (6) implementation and management actions, (7) monitoring, and (8) evaluation and return to step (1).”¹⁶²

Several scholars have advocated the use of adaptive management specifically in the telecommunications sector. Richard Whitt has argued that “market sectors featuring rapid and dynamic technological change, such as telecommunications, challenge the policymaker’s ability to predict, control, and manage the system’s behavior.”¹⁶³ Although Whitt has posited that industries and their attendant regulatory institutions and regulations “coevolve” together, he acknowledges that an industry changing as rapidly as the telecommunications industry “poses a particularly troubling challenge to traditional policy making” because our ability to manage the industry may lag behind techno-

logical advances.¹⁶⁴ As a result, he proposes “tinkering” with the telecommunications sector through small, iterative policies rather than “tampering” on a larger scale.¹⁶⁵ Barbara Cherry advocates for viewing telecommunications policy through a lens of complexity theory, which necessitates an adaptive approach to managing those systems.¹⁶⁶ Hantover argues for the use of adaptive management specifically in the context of net neutrality “in order for regulations to be sufficiently flexible to withstand a rapidly changing environment.”¹⁶⁷

Agencies can view adaptive management as either a prescriptive set of procedures for enacting and revising regulation, or as a framework of analysis that encourages regulators to craft policies that are more capable of evolution, all else being equal. In the broadband context, the FCC could theoretically go so far as to use data disclosed by providers under the Transparency Rule to create partially or fully automated monitoring systems that could revise requirements over time as the analysis warrants.¹⁶⁸ Alternatively, the agency could simply keep the principles of adaptive management in mind as it pursues regulation using its traditional rulemaking procedures,¹⁶⁹ perhaps revising prior decisions when monitoring suggests that such revisions should be made.

Whether management strategy adjustments are necessary will almost certainly depend upon advances in technology—as yet unknown—that will change the way that industry players interact with the Internet (such as deep-packet inspection). It stands to reason that some changes in technology may affect the FCC’s calculus in how to manage the industry. Social objectives and preferences may also shift over time—just as the industry has witnessed an increasing emphasis on competition and innovation. Adaptive management will not dictate whether the FCC should allow discrimination for certain content and not others, but rather will allow the FCC to make adjustments to policy as close to simultaneously with changes in technology and social priorities as possible.

1. Evaluating Progress Through Metrics

Monitoring is particularly important for adaptive management.¹⁷⁰ Because adaptive management is “learning while doing,” “[t]he key is to ensure that the learning process is not set back by data gaps or missed opportunities due to infrequent or sporadic monitoring. Ongoing monitoring efforts, the collection of relevant data, and timely data analysis aimed at evaluating management assumptions should form the basis of an adaptive management requirement.”¹⁷¹ Indeed, adaptive management plans in the natural resources context that have not included sufficiently described monitoring schemes have been criticized in court.¹⁷² In cases where the impacts of a particular policy are uncertain, adaptive management counsels that it may be useful for the agency to lay out possible impacts and its response depending on which effect occurs.¹⁷³

This hedging technique is the essence of adaptive management, but cannot work unless accurate data exists regarding the unfolding impacts of the newly instituted policy. In the environmental context, systematic monitoring of environmental indicators¹⁷⁴ informs the subsequent rounds of decisionmaking with data collected in real time. This allows implementation measures to be adjusted in light of the data.¹⁷⁵ Adaptive management dictates that it is advan-

Adaptive management will . . . allow the FCC to make adjustments to policy as close to simultaneously with changes in technology and social priorities as possible.

tageous to collect data through collaborations with other agencies, researchers, and academics to obtain “a continuous stream of high quality, policy relevant [data] that at each successive stage refines and challenges the scientific hypotheses, theories, assumptions, and models upon which previous rounds of policymaking had been based.”¹⁷⁶

Though monitoring is vital, adaptive management does not make action dependent on extensive advanced studies.¹⁷⁷ In the adaptive management framework, measures can be evaluated systematically as they are carried out.¹⁷⁸ Adaptive management seeks to assure that managers will be able to draw upon a stronger body of knowledge—learning is an objective of design from the outset.¹⁷⁹ Projects should be designed and implemented as experiments aimed at producing better information.¹⁸⁰ In theory, “[a] program that ‘learns poorly’ will be defeated by uncertainty; one that ‘learns well’ can prevail despite the initially poor state of knowledge.”¹⁸¹ Redefining success is an important part of adaptive management, and failure should be anticipated even though planning for failure is politically hazardous.¹⁸² Learning from failure improves the chances of long-term success, although this may not make sense in a politically volatile setting.¹⁸³

Before implementing monitoring metrics, an agency must, of course, decide which metrics to use. The metrics employed in regulation should reflect the regulatory goals.¹⁸⁴ Scholars have suggested a variety of metrics that might be appropriate to measure the effectiveness of various aspects of Internet policy, including broadband regulation.¹⁸⁵ When the FTC is examining proposed mergers for antitrust concerns, including mergers in the broadband industry, it uses the Herfindahl-Hirschman Index, which measures industry concentration.¹⁸⁶ The FCC¹⁸⁷ has worked since 2011 to develop metrics that can measure broadband penetration in the United States through its Measuring Broadband America program.¹⁸⁸ Rather than focusing on developing a single aggregated value that could serve as a yardstick for maximizing broadband deployment, the Measuring Broadband Reports include data across a range of measures including advertised network speed, actual network speed, sustained upload and download speeds, latency, and more.¹⁸⁹ While a range of measures are useful for interpretation and analysis purposes, in order to facilitate adaptive management, the agency would need to develop a combined metric that would provide weights to each of the various measurements.¹⁹⁰

Monitoring is particularly important for adaptive management. . . . The [monitoring] metrics employed in regulation should reflect the regulatory goals.

Moreover, a question remains as to whether these metrics reflect all of the social values from Internet availability discussed in Part II—network effects, innovation, democratic expression, and competition. The FTC’s measures address only the value of competition. The FCC’s metrics treat broadband deployment as an end in itself, without explicitly considering any of the social values from Part I. Without explicitly considering the other social values, the agency might be missing valuable data and failing to design regulations that appropriately optimize the achievement of the desired benefits.¹⁹¹ The agency should consider whether it might be sensible to develop indices that reflect all of these social values explicitly

(for example, by modeling the innovation effects resulting from broadband deployment). The agency could then assign weights, or even monetary values, to these social benefits, which would allow for more direct optimization of the values to be achieved.

2. Revising Policies Over Time

Another essential aspect of adaptive management is creating a regulatory framework that can evolve over time. This challenge consists of both setting appropriate targets of the regulation and enabling those targets to adjust as appropriate over time. Integral to this process will be the Transparency Rule—the only aspect of the Open Internet Order that the D.C. Circuit upheld. Regulators will need to have access to data on key metrics from providers, in order to determine which practices work and which do not.

As a first step to setting targets that promote both accountability and flexibility, the agency will have to assess whether to set rules¹⁹² or standards.¹⁹³ Rules dictate how to behave in a given set of circumstances while standards dictate what results must be achieved. Neither rules nor standards may be particularly adaptive once they have been set, but it might be possible to maintain a level of adaptability with either rules or standards through additional efforts beyond the period when the rule or standard is established. As Ruhl notes, “[a]daptive management plans are not self-implementing. . . adaptive management carries with it a substantial demand on agency resources in connection with monitoring, assessment, and adjustment steps. A salient question for advocates of adaptive management is whether agencies really will be able to follow through diligently and competently, given these demands.”¹⁹⁴ Thus, there is a triple tension: rules will be more specific, but less flexible; standards may be more flexible, but provide less practical guidance; and these two regulatory frameworks will be limited by the resources available to the agency itself at any given time.

Whatever goals the agency chooses to set, according to the principles of adaptive management, these targets should evolve as the system continues to change. Adaptive management dictates that agencies update rules and standards frequently in light of the results of close monitoring and experimentation. A “rolling rule regime”¹⁹⁵ is one example of an adaptive management-based system. In a rolling rule regime, central regulators assign management and regulatory powers to local entities.¹⁹⁶ Those local entities provide reports and proposals based on their management methods, and those reports are used to update minimum performance standards and desirable targets in an effort “to achieve continuous improvements in both regulatory rules and environmental performance.”¹⁹⁷ “Whereas ‘front end’ regulatory instruments lock in positions through fixed rules and standards, an adaptive management framework is more experimentalist, relying on monitoring-adjustment ‘loops’ of goal determination, performance standard setting, outcome monitoring, and standard recalibration.”¹⁹⁸ The key in using adaptive management is to “set default rules and performance thresholds at the levels justified by our best current knowledge, but to treat default rules and performance standards and metrics themselves, like other elements of the environmental policy puzzle, as provisional and experimental, to be revised in light of subsequent learning.”¹⁹⁹

Consistent with a larger executive branch push for retrospective review,²⁰⁰ the FCC has acknowledged the importance of periodic review of rules, and staff has suggested that it might be appropriate to specify review periods in the original rule.²⁰¹ This is an important first step in the direction of adaptive management, but regulators might be able to make the system even more adaptive by using programmable data analysis, and possibly even machine learning, to facilitate the development of evolving standards. Through programmable analysis and machine learning, regulators could create a system that would be able to alert them when a broadband provider’s actions appear to violate existing standards, as well as adjust the standards as circumstances change. For example, as broadband technology improves across the industry, the system could notice a trend of increasing broadband speeds and adjust the traffic-

speed levels at which a potential offender’s discrimination would invoke scrutiny.

If standards are adjusted over time depending on existing data, especially if this adjustment occurs automatically through machine learning, there is concern that the regulated industry could try to manipulate the data and achieve more favorable regulatory outcomes over time. Of course, the regulated industry could try to manipulate data under a traditional command-and-control style of regulation, as well, but an adaptive approach could magnify the effects of such manipulation. Therefore, regulators

should maintain oversight over the process in order to try to counteract such actions and preserve accountability. If the data are made public, as discussed in Section III.B.3, consumer advocacy groups could also assist the agency in monitoring for potential manipulation. The agency should impose heightened penalties for anyone caught trying to manipulate the outcomes of the analysis.

Although “[a]daptive management can help reduce decision-making gridlock by making it clear that decisions are provisional, that there is often no ‘right’ or ‘wrong’ management decision, and that modifications are expected,”²⁰² there are certain risks with adaptive management of which any agency hoping to employ it should be aware. If the process of trying to adjust the agency’s action triggers a review process, that could stymie the projected benefits of an adaptive management process. Or if it appears that the agency is attempting to avoid triggering a review process, this could invite litigation. Small adjustments must be authorized by statute to give the agency the space and authority to adapt to new information quickly as it becomes available without allowing the process to become bogged down in time-wasting reviews or litigation.

Adaptive management may not be perfect for every situation. It may not be appropriate where the problem is curable rather than chronic; the remedy is unique to the problem; experiments are too risky (where the experiment would have to be done on a human population); or the failure of the project is reasonable grounds for holding management accountable (where uncertainty is low, management should be held accountable for the project’s failure).²⁰³ How exactly to “do” adaptive management is not always clear,²⁰⁴ which can lead to a series of practical problems. Because there are no widely accepted standards for adaptive management practices, courts may review agency behavior without having anything with which to compare it or rules to apply.²⁰⁵ Adaptive management can present accountability problems by “providing cover that allows resource management agencies to put off imposing politically controversial limits on economic activity.”²⁰⁶ Finally, because adaptive management necessarily includes a high level of engaged monitoring on the part of the agency, the regulating agency will need funds and political will—either of which may be in short supply at any given time.²⁰⁷

But the benefits of adaptive management when embarked upon by a dedicated agency are better knowledge of system response to management actions²⁰⁸ and, of paramount importance in fast-moving systems like the Internet, an ability to respond to changes more quickly than with notice-and-comment rulemaking. The improved knowledge reduces uncertainty about how to respond to changing circumstances and should improve and expedite management decisions.²⁰⁹

[A]daptive management [requires] both setting appropriate targets of the regulation and enabling those targets to adjust as appropriate over time.

3. Engaging the Public in the Ongoing Regulatory Process

If the FCC takes steps to make broadband regulation more adaptive to changes in the industry, this may raise concerns about a lack of transparency and public involvement in the regulatory process. However, the ability of the agency to share its monitoring results and analysis in real time with the public can help allay these fears.

The Internet offers tremendous opportunities for increased public involvement in the rulemaking process. Organizations like NYU's GovLab²¹⁰ and Cornell's e-Rulemaking Initiative²¹¹ are working to increase government openness and public involvement in the regulatory process. As the FCC reaches out to engage stakeholders in a more adaptive regulatory process, it can also reach out to involve the public more broadly.

The agency can make its monitoring data publicly available, and interested parties can perform their own analyses with the data, which can then aid them in commenting meaningfully on potential rule revisions. Moreover, the agency can create online opportunities for the public to comment, potentially even in real-time, on the state of affairs and recommendations for the future.

In developing its Measuring Broadband America program, the FCC has already been conscious of “principles of openness and transparency” and has “made available to stakeholders and the general public the open source software used on both its fixed and mobile applications, the data collected, and detailed information regarding the FCC’s technical methodology for analyzing the collected data.”²¹² The FCC should continue engaging the public as it further develops and potentially extends the use of these metrics.

Conclusion

The broadband industry and the Internet more generally are rapidly changing, and if the FCC wants to remain involved in broadband regulation, it will have to be able to keep up with these changes. As a first step toward regulation, the FCC will need to examine the social goals it hopes to achieve: most likely a combination of network effects, democratized expression, innovation, and competition. In order to create a policy that the agency is able to effectively adapt over time, the focus cannot be solely on the substance of the Open Internet Order.

The FCC also needs to consider structural aspects of how it approaches regulation. It should focus both on how to make both its institutional design and its procedures more adaptive. On the institutional design side, the agency should consider whether it may want to shift away from *ex ante* rulemaking toward *ex post* decisionmaking, as well as whether it may want to create new governance structures that involve collaborative public-private regulatory approaches.

With respect to procedure, the FCC should consider using adaptive management, a concept from natural resources policy, as a model for how to create regulations that can evolve over time. Adaptive management is an iterative decisionmaking process that involves constant monitoring, learning over time, and changing the regulations to fit evolving circumstances. An adaptive management approach to broadband management will require frequent monitoring of metrics designed to reflect the targets of the regulation, which the FCC could require under the Transparency Rule. An adaptive management approach will also require a process for updating the regulatory standards over time as conditions change.

The FCC will need to strike a balance between transparency to the public and regulatory speed in deciding how often to update the regulations. The agency should consider using the Internet to create a speedier way to disclose proposed changes to the public and receive comments, which could allow for faster revisions of the regulations. By adjusting the FCC's structural approach to broadband regulation to be better equipped to address changing circumstances, the agency will increase the efficacy of its policymaking now and into our future of as-yet unknown technological breakthroughs.

Endnotes

- ¹ See, e.g., Gautham Nagesh & Amol Sharma, *Court Tosses Rules of Road for Internet*, WALL ST. J., Jan. 14, 2014; Brian Fung, *Federal Appeals Court Strikes Down Net Neutrality Rules*, WASH. POST: THE SWITCH BLOG (Jan. 14, 2014, 11:34 AM), <http://www.washingtonpost.com/blogs/the-switch/wp/2014/01/14/d-c-circuit-court-strikes-down-net-neutrality-rules/>; Edward Wyatt, *F.C.C., in a Shift, Backs Fast Lanes for Web Traffic*, N.Y. TIMES, Apr. 23, 2014.
- ² Preserving the Open Internet, 76 Fed. Reg. 59,192 (Sept. 23, 2011) [hereinafter Open Internet Order].
- ³ Verizon v. FCC, 740 F.3d 623, 628 (D.C. Cir. 2014).
- ⁴ Tom Wheeler, *Finding the Best Path Forward to Protect the Open Internet*, OFFICIAL FCC BLOG (Apr. 29, 2014), <http://www.fcc.gov/blog/finding-best-path-forward-protect-open-internet>.
- ⁵ Mary Alice Crim, *Will Calling the FCC Help Save the Internet?*, FREE PRESS (May 1, 2014), <http://www.freepress.net/blog/2014/05/01/will-calling-fcc-help-us-save-internet>.
- ⁶ *Making the Connections*, FED. COMMC'NS COMM'N (last updated Nov. 21, 2005), <http://transition.fcc.gov/omd/history/internet/making-connections.html>.
- ⁷ Richard Witt's *Evolving Broadband Policy: Taking Adaptive Stances to Foster Optimal Internet Platforms* contains this description of broadband: "broadband is . . . a means of connecting people, transporting information, and a means of enabling highly desired emergent properties. It provides both a means of commerce and personal, social, and democratic expression. It is infrastructure for both transportation of bits and communications (of people), of conveying content (information), and establishing relationships (interactivity). In this way, broadband resembles the Internet as a potential platform for human activity." Richard S. Whitt, *Evolving Broadband Policy: Taking Adaptive Stances to Foster Optimal Internet Platforms*, 17 COMMLAW CONSPECTUS 417, 427-29 (2009) (internal citations omitted).
- ⁸ *Making the Connections*, FED. COMMC'NS COMM'N (last updated Nov. 21, 2005), <http://transition.fcc.gov/omd/history/internet/making-connections.html> (it began in Canada when Rogers Communications introduced the first cable modem service).
- ⁹ KATHRYN ZICKUHR & AARON SMITH, PEW RESEARCH CENTER'S INTERNET & AMERICAN LIFE PROJECT, DIGITAL DIFFERENCES 4 (2012), available at http://www.pewinternet.org/files/old-media//Files/Reports/2012/PIP_Digital_differences_041312.pdf.
- ¹⁰ *Id.*
- ¹¹ ROBERT C. ATKINSON ET AL., BROADBAND IN AMERICA—2ND EDITION: WHERE IT IS AND WHERE IT IS GOING 72 (2011), available at http://www4.gsb.columbia.edu/filemgr?file_id=738763.
- ¹² J. SCOTT HOLLADAY, A.J. GLUSMAN & STEVEN SOLOWAY, INST. FOR POLICY INTEGRITY, INTERNET BENEFITS: CONSUMER SURPLUS AND NET NEUTRALITY 5 (2011), available at http://policyintegrity.org/files/publications/Internet_Benefits.pdf.
- ¹³ The average total time from initial rulemaking steps through promulgation of a final rule is estimated to be between six and eight years, though the formal process from the notice of proposed rulemaking through the final rulemaking averages around two years. Richard J. Pierce, Jr., *Rulemaking Ossification Is Real: A Response to Testing the Ossification Thesis*, 80 GEO. WASH. L. REV. 1493, 1496 (2012). In the broadband context specifically, the FCC has been working on the issue of promoting an open Internet for nearly a decade, without a final rule that has been upheld in court.
- ¹⁴ See, e.g., LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE (1999) (discussing the Internet's capacity to self-regulate).

through using its own “code as law”).

- ¹⁵ Philip J. Weiser, *The Future of Internet Regulation*, 43 U.C. DAVIS L. REV. 529, 531 (2009).
- ¹⁶ For example, the Electronic Frontier Foundation, which strongly advocates against government seizures of websites and monitoring of Internet activity, supports government involvement in net neutrality enforcement. April Glaser & Corynne McSherry, *FCC’s New Rules Could Threaten Net Neutrality*, ELEC. FRONTIER FOUND. (Apr. 24, 2014), <https://www.eff.org/deeplinks/2014/04/fccs-new-rules-could-threaten-net-neutrality>. It remains concerned, however, about the particular ways in which the FCC might implement a net neutrality regulation. April Glaser, *Why the FCC Can’t Actually Save Net Neutrality*, ELEC. FRONTIER FOUND. (Jan. 27, 2014), <https://www.eff.org/deeplinks/2014/01/why-the-fcc-cant-save-net-neutrality>.
- ¹⁷ J.B. Ruhl, *Adaptive Management for Natural Resources—Inevitable, Impossible, or Both?*, 54 ROCKY MTN. MIN. L. INST. 11-1, 3 (2008).
- ¹⁸ J.B. Ruhl, *Adaptive Management in the Courts*, 95 MINN. L. REV. 424, 424 (2010).
- ¹⁹ Exceptions have included antitrust merger review by the FCC, Federal Trade Commission (FTC) and Department of Justice, as well as involvement in international oversight of the Domain Name System. See FEDERAL TRADE COMMISSION, BROADBAND CONNECTIVITY COMPETITION POLICY 2-3 (2007), available at <http://www.ftc.gov/sites/default/files/documents/reports/broadband-connectivity-competition-policy/v070000report.pdf>; Craig Timberg, *U.S. to Relinquish Remaining Control over the Internet*, WASH. POST, Mar. 14, 2014.
- ²⁰ The FTC has also ventured into the world of network neutrality, but in a more limited capacity. Its regulatory mandate is to prevent “unfair methods of competition” and “unfair or deceptive acts or practices in or affecting commerce” under the Federal Trade Commission Act, 15 U.S.C. §§ 41 *et seq.*, and to regulate mergers and other potentially anticompetitive behavior under other antitrust laws. See, e.g., the Clayton Act, 15 U.S.C. §§ 12-27; the Hart-Scott-Rodino Antitrust Improvements Act of 1976, 15 U.S.C. §18a; and the International Antitrust Enforcement Assistance Act of 1994, 15 U.S.C. §§ 46, 57b-1, 1311, 1312, 6201, 6201 note, 6202-6212. The FTC has imposed network access requirements as part of settlement orders in a number of mergers, including the AOL-TimeWarner merger in 2000 and others. See, e.g., Am. Online, Inc. & Time Warner, Inc., FTC Dkt. No. C-3989 (Apr. 17, 2001) (consent order), available at <http://www.ftc.gov/os/2001/04/aoltwdo.pdf>; Cablevision Sys. Corp., 125 F.T.C. 813 (1998) (consent order); Summit Commun. Group, 120 F.T.C. 846 (1995) (consent order). In 2006, the FTC convened an Internet Access Task Force to examine issues related to technology development, including network neutrality. It discussed potential proposals for action and recommended that regulators “proceed[] with caution before enacting broad, *ex ante* restrictions in an unsettled, dynamic environment.” FEDERAL TRADE COMMISSION, BROADBAND CONNECTIVITY COMPETITION POLICY 9 (2007), available at <http://www.ftc.gov/sites/default/files/documents/reports/broadband-connectivity-competition-policy/v070000report.pdf>. The report committed the FTC to continuing to “devote substantial resources to maintaining competition and protecting consumers in the area of broadband Internet access,” through tools including antitrust laws, consumer protection laws, consumer education, industry guidance, and competition advocacy. *Id.* at 12.
- ²¹ Communications Act of 1934, 47 U.S.C. §§ 101 *et seq.*; 154(i) (2010).
- ²² 47 U.S.C. §§ 201 *et seq.* (2010).
- ²³ 47 U.S.C. §§ 301 *et seq.* (2010).
- ²⁴ 47 U.S.C. §§ 521 *et seq.* (2010).
- ²⁵ Telecommunications Act of 1996, FED. COMM’NS COMM’N (last updated May 31, 2011), <http://transition.fcc.gov/telecom.html>.
- ²⁶ Kevin Ryan, *Communications Regulation—Ripe for Reform*, 17 COMMLAW CONSPECTUS 771, 789 (2009).
- ²⁷ Nicholas Economides, *The Telecommunications Act of 1996 and Its Impact* 3 (N.Y.U. Ctr. for L. & Bus., Working Paper No. CLB-99-003, 1998), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=81289.
- ²⁸ *Id.* at 33. The act did not, however, attempt to regulate Internet telephony, often referred to as Voice Over Internet Protocol. Economides presciently noted that “Internet telephony presently poses one of the most important challenges to the telecommunications sector and its regulation.” *Id.* at 43.

- ²⁹ *In re Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities*, 17 F.C.C. Rcd. 4798, 4802 (2002).
- ³⁰ Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs., 545 U.S. 967 (2005), *rev'g & remanding* Brand X Internet Servs. v. FCC, 345 F.3d 1120 (9th Cir. 2003).
- ³¹ Brand X Internet Servs. v. FCC, 345 F.3d 1120, 1127 (9th Cir. 2003), *rev'd & remanded*, Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs., 545 U.S. 967 (2005) (“Seven different petitions for review of the Commission’s ruling were filed in the Third, Ninth, and District of Columbia Circuits. None of the petitioners challenge the FCC’s conclusion that cable modem service is an information service. Rather, each contends that the Commission should not have stopped there—that is, that the Commission should have made an *additional* determination. The first group of petitioners argues that cable modem service is both an information service and a telecommunications service, and is therefore subject to regulation on a common-carriage basis. The second group of petitioners asserts that cable modem service is both an information service and a cable service, and therefore is subject to regulation by local authorities as provided in the Act. The final petitioner, Verizon, advances a third variation on the ‘the FCC did not go far enough’ theme, arguing that the Commission was correct to classify cable modem service as solely an information service, but should have taken the additional step of conferring the same designation on the DSL service provided by telephone companies.”).
- ³² Nat'l Cable & Telecomms. Ass'n, 545 U.S. at 974 (2005).
- ³³ Policy Statement No. 05-151 at ¶ 4, CC Docket No. 02-33 & consolidated cases (F.C.C. Sept. 23, 2005), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-05-151A1.pdf.
- ³⁴ Daniel A. Lyons, *Tethering the Administrative State: The Case Against Chevron Deference for FCC Jurisdictional Claims*, 36 J. CORP. L. 823, 828 (2011). *See* Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities, Policy Statement, 20 F.C.C. Rcd. 14,986 (2005); *see generally* Daniel A. Lyons, *Virtual Takings: The Coming Fifth Amendment Challenge to Net Neutrality Regulation*, 86 NOTRE DAME L. REV. 65 (2011) (discussing the net neutrality debate).
- ³⁵ Appropriate Framework for Broadband Access to the Internet Over Wireline Facilities, Policy Statement, 20 F.C.C. Rcd. 14,986, 14,988 (2005). The FCC defined the four non-binding principles in the following way. First, “[t]o encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to access the lawful Internet content of their choice.” Second, “[t]o encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to run applications and use services of their choice, subject to the needs of law enforcement.” Third, “[t]o encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to connect their choice of legal devices that do not harm the network.” And finally, “[t]o encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to competition among network providers, application and service providers, and content providers.”
- ³⁶ Jacqui Cheng, *Evidence Mounts that Comcast Is Targeting BitTorrent Traffic*, ARSTECHNIA (Oct. 19, 2007), <http://arstechnica.com/old/content/2007/10/evidence-mounts-that-comcast-is-targeting-bittorrent-traffic.ars>.
- ³⁷ 23 F.C.C. Rcd. 13,028 (2008); *Comcast v. FCC*, 600 F.3d 642, 645 (D.C. Cir. 2010).
- ³⁸ *Comcast v. FCC*, 600 F.3d 644 (D.C. Cir. 2010).
- ³⁹ The FCC based its argument upon an earlier Supreme Court case, *American Library Ass'n v. FCC*, which set forth a test for determining whether ancillary FCC jurisdiction exists. 406 F.3d 689, 691-91 (2005). That test was “(1) [whether] the Commission’s general jurisdictional grant under Title I covers the regulated subject and (2) [whether] the regulations are reasonably ancillary to the Commission’s effective performance of its statutorily mandated responsibilities.” *Id.* Comcast conceded that the FCC’s action satisfied the first prong of the test, so whether the FCC had satisfied the second prong of the test became the central issue of the case. *Comcast v. FCC*, 600 F.3d 642, 648 (D.C. Cir. 2010).
- ⁴⁰ *Comcast v. FCC*, 600 F.3d 642, 661 (D.C. Cir. 2010).
- ⁴¹ *Comcast v. FCC*, 600 F.3d 642, 655 (D.C. Cir. 2010).
- ⁴² Open Internet Order, 76 Fed. Reg. 59,192 (Sept. 23, 2011).

⁴³ See *id.* at 59,214-20; 47 U.S.C. § 1302(a), (b).

⁴⁴ Open Internet Order at 59,232, § 8.5 (“No Blocking. (a) A person engaged in the provision of fixed broadband Internet access service, insofar as such person is so engaged, shall not block lawful content, applications, services, or non-harmful devices, subject to reasonable network management. (b) A person engaged in the provision of mobile broadband Internet access service, insofar as such person is so engaged, shall not block consumers from accessing lawful Web sites, subject to reasonable network management; nor shall such person block applications that compete with the provider’s voice or video telephony services, subject to reasonable network management.”).

⁴⁵ Open Internet Order at 59,232, § 8.7 (“No Unreasonable Discrimination. A person engaged in the provision of fixed broadband Internet access service, insofar as such person is so engaged, shall not unreasonably discriminate in transmitting lawful network traffic over a consumer’s broadband Internet access service. Reasonable network management shall not constitute unreasonable discrimination.”).

⁴⁶ Open Internet Order at 59,232, § 8.3 (“Transparency. A person engaged in the provision of broadband Internet access service shall publicly disclose accurate information regarding the network management practices, performance, and commercial terms of its broadband Internet access services sufficient for consumers to make informed choices regarding use of such services and for content, application, service, and device providers to develop, market, and maintain Internet offerings.”).

⁴⁷ *Id.* at 59,232, § 8.7.

⁴⁸ *Id.* at 59,193.

⁴⁹ While the *Verizon* case was pending, the D.C. Circuit issued an order in *Cellco Partnership v. FCC*, 700 F.3d 534 (D.C. Cir. 2012), which challenged the FCC’s “data roaming rule,” which applies when wireless telephone subscribers travel outside of the range of their carrier’s network and use another carrier’s network to make a call or access data. *Id.* at 538-39. The rule requires mobile providers to offer roaming agreements to other providers that allow their subscribers to access data on “commercially reasonable” terms.” *Id.* Verizon’s arguments in that case were similar to its arguments in the Open Internet Order case: it argued that the rule treats mobile-Internet providers as common carriers unlawfully and that the Commission lacked statutory authority to issue the rule. *Id.* at 539-40. The court held that although the data roaming rule “bears some marks of common carriage,” it would defer to the FCC’s determination that the rule does not impose common carrier obligations on mobile-internet providers. *Id.* at 545, 548. Instead, the court found that Title III empowers the Commission to regulate radio transmissions, including mobile services other than wireless voice-telephone service, which is where mobile-internet services fall statutorily. *Id.* at 538. By way of explanation, the court acknowledged the changing technological landscape and noted, “The cases relied on by the parties here implicate the evolving meaning of common carriage and courts’ efforts to pin down the essence of common carriage in the midst of changing technology and the evolving regulatory landscape.” *Id.* at 546. The court found that the FCC’s determination of when a regulation does or does not confer common carrier status warrants deference in the gray area between common carriage *per se* and *per se* private carriage, and that the data roaming rule falls into this category. *Id.* at 547. This case engendered optimism in the FCC that the court might defer to its interpretation that the Open Internet Order did not confer common carrier status and might uphold the order. See, e.g., Juliana Gruenwals, *Could Data-Roaming Decision Offer Clue on Net-Neutrality Case?*, NAT’L J. (Dec. 4, 2012), <http://www.nationaljournal.com/blogs/techdailydose/2012/12/could-data-roaming-decision-offer-clue-on-net-neutrality-case-04> (quoting FCC Chairman Genachowski that the “unanimous decision confirms the FCC’s authority to promote broadband competition and protect broadband consumers”). But, as discussed below, the Court declined to do so. Nonetheless, the FCC appears to be modeling its revised Open Internet rules on the holding in this case, utilizing its “commercially reasonable” language. See Tom Wheeler, *Finding the Best Path Forward to Protect the Open Internet*, OFFICIAL FCC BLOG (Apr. 29, 2014) <http://www.fcc.gov/blog/finding-best-path-forward-protect-open-internet>.

⁵⁰ *Verizon v. FCC*, 740 F.3d 623, 628 (D.C. Cir. 2014).

⁵¹ *Id.*

⁵² *Id.*

⁵³ *Id.*

⁵⁴ *Id.* at 650.

⁵⁵ *Id.* at 655-56, 657-58.

⁵⁶ *Id.* at 659.

⁵⁷ Meanwhile, the industry began taking matters into its own hands. Just shy of a month after the D.C. Circuit’s decision, the nation’s two largest cable Internet companies—Comcast and Time Warner Cable—announced a merger, which could exacerbate concerns about a lack of competition in the broadband industry. See David Gelles, *Comcast Deal Seeks to Unite 2 Cable Giants*, N.Y. TIMES, Feb. 13, 2014, at A0; Cecilia Kang, *Comcast, Time Warner Cable Merger Faces a Grilling in Washington This Week*, THE WASHINGTON POST SWITCH BLOG (Apr. 8, 2014, 10:23 AM), <http://www.washingtonpost.com/blogs/the-switch/wp/2014/04/08/comcast-time-warner-cable-merger-faces-a-grilling-in-washington-this-week/>. At the same time, Netflix—which had long been one of the strongest proponents of net neutrality—struck a deal with Comcast to pay for a direct connection to its network, with the goal of improving streaming video quality for Comcast users. <http://arstechnica.com/business/2014/02/netflix-is-paying-comcast-for-direct-connection-to-network-wsj-reports/>. Though this so-called “peering agreement” would not have been prohibited under the Open Internet Order, since it involves a direct connection, not preferential network treatment, the outcome of the *Verizon* decision likely shifted the balance of power between content providers and broadband providers and may have made such a deal more vital to Netflix.

⁵⁸ See Mary Alice Crim, *Will Calling the FCC Help Save the Internet?*, FREE PRESS (May 1, 2014), <http://www.freepress.net/blog/2014/05/01/will-calling-fcc-help-us-save-internet>.

⁵⁹ Tom Wheeler, *Finding the Best Path Forward to Protect the Open Internet*, OFFICIAL FCC BLOG (Apr. 29, 2014), <http://www.fcc.gov/blog/finding-best-path-forward-protect-open-internet>.

⁶⁰ See Tom Wheeler, *Finding the Best Path Forward to Protect the Open Internet*, OFFICIAL FCC BLOG (Apr. 29, 2014), <http://www.fcc.gov/blog/finding-best-path-forward-protect-open-internet>.

⁶¹ See Press Release, Fed. Commc’ns Comm’n, FCC Announces Tentative Agenda for May Open Meeting (Apr. 24, 2014), available at <http://www.fcc.gov/document/fcc-announces-tentative-agenda-may-open-meeting-1>.

⁶² Open Internet Order, 76 Fed. Reg. 59,192, 59,192, 59,196 (2011). The most recent proposal phrases the FCC’s goals similarly, but not identically. Tom Wheeler, *Finding the Best Path Forward to Protect the Open Internet*, OFFICIAL FCC BLOG (Apr. 29, 2014), <http://www.fcc.gov/blog/finding-best-path-forward-protect-open-internet>. (“The focus of this proposal is on maintaining a broadly available, fast and robust Internet as a platform for economic growth, innovation, competition, free expression, and broadband investment and deployment.”).

⁶³ Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 MINN. L. REV. 917, 933 (2005).

⁶⁴ Yochai Benkler, *The Political Economy of Commons*, UPGRADE, June 2003, at 6, 6-7.

⁶⁵ LAWRENCE LESSIG, THE FUTURE OF IDEAS 58 (2001).

⁶⁶ This point about information is related to the concept of democratized speech on the Internet, discussed at greater length below.

⁶⁷ Of course, in practice, congestion can cause the Internet to be a rivalrous resource at times.

⁶⁸ LAWRENCE LESSIG, THE FUTURE OF IDEAS 88 (2001) (“Where we have little understanding about how a resource will be used, we have more reason to keep that resource in the commons.”).

⁶⁹ See Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 MINN. L. REV. 917, 959 (2005).

⁷⁰ See *id.*

⁷¹ Internet resources may give rise to a “comedy of the commons,” which is when open access to a resource leads to scale returns—greater social value with greater use of the resource. Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 MINN. L. REV. 917, 928 (2005) (citing Carol Rose, *The Comedy of the Commons: Custom, Commerce, and Inherently Public Property*, 53 U. CHI. L. REV. 711, 768-70 (1986)).

⁷² See, e.g., Yochai Benkler, *The Political Economy of Commons*, UPGRADE, June 2003, at 6, 6-7; Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 MINN. L. REV. 917, 933 (2005); Barbara van Schewick, *Towards an Economic Framework*

for Network Neutrality Regulation, 5 J. TELECOMM. & HIGH TECH. L. 329, 378-80 (2007).

⁷³ See, e.g., Gary Becker et al., *Net Neutrality and Consumer Welfare*, 6 J. COMPETITION L. & ECON. 497, 499 (2010); Christopher S. Yoo, *Would Mandating Broadband Network Neutrality Help or Hurt Competition? A Comment on the End-to-End Debate*, 3 J. TELECOMM. & HIGH TECH. L. 23, 61 (2004).

⁷⁴ See Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 MINN. L. REV. 917, 933 (2005); Barbara van Schewick, *Towards an Economic Framework for Network Neutrality Regulation*, 5 J. TELECOMM. & HIGH TECH. L. 329, 384 (2007).

⁷⁵ Briefly, the First Amendment arguments are the following: those who oppose network neutrality for free speech reasons usually cite the First Amendment as forbidding the government from regulating speech at all. In making the case against network neutrality, several broadband providers have claimed that network neutrality is inconsistent with the free speech guarantee of the First Amendment because telephone and cable companies transmit speech. They argue that the government should not be involved in regulating speech and that network neutrality is impermissible government regulation because it threatens First Amendment rights. Open Internet Order, 76 Fed. Reg. at 59,220-22 (citing comments from AT&T, Verizon, and Time Warner Cable); Laurence H. Tribe & Thomas C. Goldstein, Proposed “Net Neutrality” Mandates Could be Counterproductive and Violate the First Amendment 2-4, Exhibit A to Comments of Time Warner Cable, Inc., GN Docket No. 09-191, WC Docket No. 07-52 (F.C.C. Oct. 19, 2009), available at http://freestatefoundation.org/images/TWC_Net_Neutrality_Violates_the_First_Amendment_-Tribe_Goldstein.pdf. The ISPs generally contend that because they distribute their own and third-party content to customers, they themselves are speakers entitled to First Amendment protections similar to newspapers or cable companies. Open Internet Order, 76 Fed. Reg. at 59,220. They argue that rules that prevent broadband providers from favoring the transmission of some content over other content violate their free speech rights. *Id.* Some providers argue that open Internet rules interfere with the speech rights of content and application providers to the extent they are prevented from paying broadband providers for higher quality service. *Id.* at 59,221.

Proponents of network neutrality regulations have argued that First Amendment doctrine embodies principles that require government to ensure that Americans have access free speech spaces—including digital fora on the Internet. Marvin Ammori, *First Amendment Architecture*, 2012 WISC. L. REV. 1, 80 (2012) (arguing that newspapers are migrating to digital platforms like the Internet, and if the First Amendment forbade network neutrality, newspapers would have to “cut deals for either exclusive or preferred access to the Internet to reach audiences.”) According to proponents who make this argument, network neutrality would preserve open access to these digital free speech spaces, and would therefore “preserve history’s greatest engine of free expression and political deliberation,” in keeping with the ideological directives of the First Amendment. Marvin Ammori, *The Year in “First Amendment Architecture,”* 2012 STANFORD TECH. L. REV. 6, 11 (2012).

⁷⁶ Public choice theory is the application of economics methodology to political institutions. Daniel A. Farber, *Free Speech Without Romance: Public Choice and the First Amendment*, 105 HARV. L. REV. 554, 555 (1991).

⁷⁷ *Id.* at 579.

⁷⁸ *Id.* at 558-59.

⁷⁹ *Id.* at 559.

⁸⁰ Yochai Benkler, *Free as the Air to Common Use: First Amendment Constraints on Enclosure of the Public Domain*, 74 N.Y.U. L. REV. 354, 359 (1999).

⁸¹ *Id.*

⁸² The Court defined publishers as “government agencies, educational institutions, commercial entities, advocacy groups, and individuals.” It added that “Web publishing is simple enough that thousands of individual users and small community organizations are using the Web to publish their own personal ‘home pages,’ the equivalent of individualized newsletters about that person or organization, which are available to everyone on the Web.” *Reno v. ACLU*, 521 U.S. 844, 853 n.9 (1997) (quotation marks omitted) (citing 929 F. Supp. 824, 837 (E.D. Pa. 1996)).

⁸³ *Reno v. ACLU*, 521 U.S. at 853.

⁸⁴ See, e.g., Laurence H. Tribe & Thomas C. Goldstein, Proposed “Net Neutrality” Mandates Could be Counterproductive and Violate

the First Amendment 2-4, Exhibit A to Comments of Time Warner Cable, Inc., GN Docket No. 09-191, WC Docket No. 07-52 (F.C.C. Oct. 19, 2009), *available at* http://freestatefoundation.org/images/TWC_Net_Neutrality_Violates_the_First_Amendment_-_Tribe_Goldstein.pdf.

⁸⁵ See, e.g., Marvin Ammori, *First Amendment Architecture*, 2012 WISC. L. REV. 1, 80 (2012); Yochai Benkler, *Free as the Air to Common Use: First Amendment Constraints on Enclosure of the Public Domain*, 74 N.Y.U. L. REV. 354, 359 (1999).

⁸⁶ The Internet's specific architecture is its "end-to-end" design. The "end-to-end design" enables innovation at the edge of the network without the innovators concerning themselves about complexity at the core. Letter from Lawrence Lessig to FCC (Aug. 20, 2008), *available at* <http://lessig.org/blog/2FCC.pdf>. "End-to-end design" refers to the fact that the technology needed by an application and the technology that makes up the application itself are concentrated within the end users' computers rather than within the network. The network itself has only general functionality, such as moving packets of information from one place to another. The network is thus "application-blind," a feature that has traditionally made it impossible for the network provider to distort competition by discriminating among applications and content. The Internet is based upon standards (protocols) to which all Internet entities conform. These standardized protocols help create an open platform that facilitates innovation. As long as a new application complies with the protocols, the application will be able to run over any network attached to the Internet, on any device, and through any type of transmission medium. Brief of Professors Jack M. Balkin et al. as Amicus Curiae Supporting Respondent at 8-9, *Comcast Corp. v. FCC*, 600 F.3d 642 (D.C. Cir. Nov. 23, 2009) (No. 08-1291).

⁸⁷ *I.e.*, allowing ISPs to charge discriminatory pricing or to discriminate against certain content.

⁸⁸ See Barbara van Schewick, *Towards an Economic Framework for Network Neutrality Regulation*, 5 J. TELECOMM. & HIGH TECH. L. 329, 378-80 (2007).

⁸⁹ See *id.* at 378-79.

⁹⁰ See *id.* at 379.

⁹¹ See *id.*

⁹² Christopher S. Yoo, *Beyond Network Neutrality*, 19 HARV. J.L. & TECH. 1, 64 (2005).

⁹³ Barbara van Schewick, *Towards an Economic Framework for Network Neutrality Regulation*, 5 J. TELECOMM. & HIGH TECH. L. 329, 384 (2007).

⁹⁴ INIMAI M. CHETTIAR & J. SCOTT HOLLADAY, INST. FOR POLICY INTEGRITY, *FREE TO INVEST: THE ECONOMIC BENEFITS OF PRESERVING NET NEUTRALITY* (2010), *available at* http://policyintegrity.org/documents/Free_to_Invest.pdf.

⁹⁵ Brett Frischmann, *Privatization and Commercialization of the Internet Infrastructure: Rethinking Market Intervention into Government and Government Intervention into the Market*, 2 COLUM. SCI. & TECH. L. REV. 1, 68-69 (2001).

⁹⁶ Gary Becker et al., *Net Neutrality and Consumer Welfare*, 6 J. COMPETITION L. & ECON. 497, 513 (2010).

⁹⁷ *Id.* at 511-12. Becker et al. argue that certain medical diagnostic and imaging services, for example, require high bandwidth and low latency and cannot be reliably offered without the availability of priority Internet routing.

⁹⁸ *Id.* at 512.

⁹⁹ *Id.* at 513.

¹⁰⁰ Philip F. Weiss, *Protecting a Right to Access Internet Content*, 77 BROOKLYN L. REV. 383, 394 (2011).

¹⁰¹ Brian Stelter, *Sweeping Effects as Broadband Moves to Meters*, N.Y. TIMES, June 26, 2012 ("Concerns about both caps and usage-based billing have already caused one would-be online video competitor, Sony, to rethink its plan to sell a bundle of cable channels over the Internet.").

¹⁰² Tim Wu, *The Broadband Debate, A User's Guide*, 3 J. ON TELECOMM. & HIGH TECH. L. 69, 72-74 (2004). Wu offers several principles regarding communications infrastructure. First, it must be like a public railroad—anyone may make a train and use the tracks for

free. Second, to “reach its highest potential, a communications infrastructure must not discriminate between uses, users, or content.” Third—the innovation, or e2e (end to end), principle—that the greatest rate of innovation will be driven by delegating decisional authority to the decentralized “ends” of any network—“puts as many players in the contest as possible to ensure the true champion emerges.”

¹⁰³ *Id.* at 72-75 (2004). Maximizing economic and creative potential depends on actors being free to enter the market to take advantage of an open network. The Openists’ model suggests that the Internet will be most successful if we understand it as an innovation-enhancing network akin to the nation’s electric grid. The electrical grid is successful because it provides a standardized platform for the development of appliances that serve human needs. There is no built-in favoritism between one type of refrigerator or another. Openists see the electrical grid as the greatest model of net neutrality.

¹⁰⁴ *Id.* at 83-84.

¹⁰⁵ *Id.* at 84.

¹⁰⁶ *Id.* at 91 (2004). The Deregulationists, by contrast, believe in principles of convergence, incentive, and deregulation. The convergence principle focuses on a natural technological progression toward a single network for communications services. Convergence means that there will be one owner of the network and that owner will offer services on the converged network. *Id.* at 75. The incentive principle is that networks are expensive and companies cannot be expected to build unless they are given the prospect of a reasonable return on their investments in the network. *Id.* at 76. Finally, Deregulationists believe that the greatest factor in the success of the Internet was that the FCC and Congress mostly stayed uninvolved in the process of its development during the first few decades of its existence. *Id.* at 76. Deregulationists believe that large companies are the most powerful engines of economic progress. *Id.* at 81. This is because in a capitalist system the potentially huge rewards of lucrative innovations propel risky innovative behavior. Those firms that engage in this risky behavior and benefit from it become large and then make efforts to protect their market share.

¹⁰⁷ Philip F. Weiss, *Protecting a Right to Access Internet Content*, 77 BROOKLYN L. REV. 383, 394 (2011).

¹⁰⁸ Gary Becker et al., *Net Neutrality and Consumer Welfare*, 6 J. COMPETITION L. & ECON. 497, 499 (2010).

¹⁰⁹ *Id.* at 508.

¹¹⁰ *Id.* at 517.

¹¹¹ Christopher S. Yoo, *Would Mandating Broadband Network Neutrality Help or Hurt Competition? A Comment on the End-to-End Debate*, 3 J. TELECOMM. & HIGH TECH. L. 23, 61 (2004).

¹¹² Christopher S. Yoo, *Network Neutrality and the Economics of Congestion*, 94 GEO. L.J. 1847, 1875-76 (2006).

¹¹³ See, e.g., Barbara van Schewick, *Towards an Economic Framework for Network Neutrality Regulation*, 5 J. TELECOMM. & HIGH TECH. L. 329, 378-80 (2007); Tim Wu, *The Broadband Debate, A User’s Guide*, 3 J. ON TELECOMM. & HIGH TECH. L. 69, 72-74 (2004); Christopher S. Yoo, *Would Mandating Broadband Network Neutrality Help or Hurt Competition? A Comment on the End-to-End Debate*, 3 J. TELECOMM. & HIGH TECH. L. 23, 61 (2004); J. SCOTT HOLLADAY, A.J. GLUSMAN & STEVEN SOLOWAY, INST. FOR POLICY INTEGRITY, INTERNET BENEFITS: CONSUMER SURPLUS AND NET NEUTRALITY 5 (2011), available at http://policyintegrity.org/files/publications/Internet_Benefits.pdf; Letter from Lawrence Lessig to FCC (Aug. 20, 2008), available at <http://lessig.org/blog/2FCC.pdf>.

¹¹⁴ Richard S. Whitt, *Adaptive Policymaking: Evolving and Applying Emergent Solutions for U.S. Communications Policy*, 61 FED. COMM. L.J. 483, 572 (2009). He goes on to explain: “The point is that the market, like biological evolution, is optimal in context, and thus the best we can hope to have. If the market itself is robust and diverse enough, the decision-making process should effectively reflect the interests of the agents.” *Id.* at 572-3.

¹¹⁵ See Press Release, Fed. Comm’n’s Comm’n, FCC Seeks Public Comment on Report on Process Reform (Feb. 14, 2014), available at <http://www.fcc.gov/document/fcc-seeks-public-comment-report-process-reform>; FCC STAFF WORKING GROUP, REPORT ON FCC PROCESS REFORM (2014), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0214/DA-14-199A2.pdf.

¹¹⁶ FCC STAFF WORKING GROUP, REPORT ON FCC PROCESS REFORM 83-90 (2014), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0214/DA-14-199A2.pdf.

- ¹¹⁷ *What We Do*, FED. COMM'NS COMM'N, <http://www.fcc.gov/what-we-do> (last visited May 7, 2014).
- ¹¹⁸ *Id.*
- ¹¹⁹ *Id.*
- ¹²⁰ *Id.*
- ¹²¹ *Id.*
- ¹²² *FCC Rulemaking*, FED. COMM'NS COMM'N, <http://www.fcc.gov/rulemaking> (last visited May 7, 2014).
- ¹²³ *Id.*
- ¹²⁴ See 47 U.S.C. § 160; see also *Forbearance Timeline*, FCC ENCYCLOPEDIA (last updated June 24, 2013), <http://www.fcc.gov/encyclopedia/forbearance-timeline> (laying out the generally one year timeline for the FCC to review a forbearance petition).
- ¹²⁵ *Ex post* decisionmaking could be viewed as either an institutional structure question (*i.e.*, placing more emphasis on administrative law judges and other parties who act on a case-by-case basis) or a procedural question (*i.e.*, when in the process the decision is made). This framework will treat it primarily as a structural question.
- ¹²⁶ This framework views *ex post* vs. *ex ante* decisionmaking as an issue of institutional design under a structural approach, but it could also be viewed as a debate between detailed rules and flexible/evolving standards on the substantive policy side.
- ¹²⁷ Pierre de Vries, *The Resilience Principles: A Framework for New ICT Governance*, 9 J. TELECOMM. & HIGH TECH. L. 137, 174 (2011). ALJ decisions would be appealable to the Commission under the Administrative Procedure Act.
- ¹²⁸ Howard A. Shelanski, *Adjusting Regulation to Competition: Toward a New Model for U.S. Telecommunications Policy*, 24 YALE J. ON REG. 55, 103 (2007).
- ¹²⁹ Philip Weiser, *Institutional Design, FCC Reform, and the Hidden Side of the Administrative State*, 61 ADMIN. L. REV. 675, 704 (2009).
- ¹³⁰ Richard S. Whitt, *Adaptive Policymaking: Evolving and Applying Emergent Solutions for U.S. Communications Policy*, 61 FED. COMM. L.J. 483, 557-58 (2009).
- ¹³¹ *Id.* at 558.
- ¹³² Kevin Ryan, *Communications Regulation—Ripe For Reform*, 17 COMMLAW CONSPECTUS 771, 775 (2009).
- ¹³³ Jonathan E. Nuechterlein, *Antitrust Oversight of an Antitrust Dispute: An Institutional Perspective on the Net Neutrality Debate*, 7 J. TELECOMM. & HIGH TECH. L. 1, 58-62 (2009).
- ¹³⁴ Tom Wheeler, *Finding the Best Path Forward to Protect the Open Internet*, OFFICIAL FCC BLOG (Apr. 29, 2014), <http://www.fcc.gov/blog/finding-best-path-forward-protect-open-internet>.
- ¹³⁵ See Lixian Hantover, *Creating Sustainable Regulation of the Open Internet*, 20 UCLA ENT. L. REV. 107, 129-36 (2013) (arguing that the FCC should eliminate the distinction between fixed and mobile broadband providers and regulate both equally under the net neutrality rules, allowing individual providers to apply for forbearance; a similar approach could apply to a common carrier classification).
- ¹³⁶ Cf. Louis Kaplow, *Burden of Proof*, 121 YALE L.J. 738 (2012) (exploring how burdens of proof can affect outcomes in adjudications). See also Christopher S. Yoo, *Beyond Network Neutrality*, 19 HARV. J.L. & TECH. 1, 66-67, 75 (2005) (discussing the role of allocation of the burden of proof in the net neutrality context).
- ¹³⁷ Commissioner Wheeler's blog post suggests that the FCC may already be contemplating this approach. Tom Wheeler, *Finding the Best Path Forward to Protect the Open Internet*, OFFICIAL FCC BLOG (Apr. 29, 2014), <http://www.fcc.gov/blog/finding-best-path-forward-protect-open-internet> ("Using every power also includes using Title II if necessary. If we get to a situation where arrival of the 'next Google' or the 'next Amazon' is being delayed or deterred, we will act as necessary using the full panoply of our authority. Just because I believe strongly that following the court's roadmap will enable us to have rules protecting an Open Internet more quickly, does not

mean I will hesitate to use Title II if warranted.”).

- ¹³⁸ See *Forbearance Timeline*, FCC ENCYCLOPEDIA (last updated June 24, 2013), <http://www.fcc.gov/encyclopedia/forbearance-timeline>.
- ¹³⁹ This approach is not necessarily mutually exclusive with an *ex post* regulatory approach. An emphasis on *ex post* evaluation could be combined with cooperative approaches involving interest groups and the agency.
- ¹⁴⁰ Lawrence Lessig famously declared in his 1999 book that “Code is Law,” meaning that the Internet will structure itself around the computer code that builds it, without the need for government interference. LAWRENCE LESSIG, *CODE AND OTHER LAWS OF CYBERSPACE* (1999). This argument for limited government involvement has permeated the conversation around the proper approaches to Internet regulation.
- ¹⁴¹ See Tim Wu, *The Broadband Debate, A User’s Guide*, 3 J. ON TELECOMM. & HIGH TECH. L. 69, 76, 81 (2004).
- ¹⁴² See, e.g., Marc Berejka, *The Dynamics of Disruptive Innovation: A Case for Government Promoted Multi-Stakeholderism*, 10 J. ON TELECOMM. & HIGH TECH L. 1, 4 (2012); Mark Cooper, *The Technology of Privacy: Why Growing Up Is Hard to Do: Institutional Challenges for Internet Governance in the “Quarter-Life Crisis” of the Digital Revolution*, 11 J. ON TELECOMM. & HIGH TECH. L. 45, 125 (2013); Nick Doty & Deirdre K. Mulligan, *The Technology of Privacy: Internet Multistakeholder Processes and Techno-Policy Standards Initial Reflections on Privacy at the World Wide Web Consortium*, 11 J. ON TELECOMM. & HIGH TECH L. 135, 139 (2013); Joe Waz & Phil Weiser, *Internet Governance: The Role of Multistakeholder Organizations*, 10 J. ON TELECOMM. & HIGH TECH L. 331, 336 (2012); but see Laura DeNardis & Mark Raymond, *Thinking Clearly About Multistakeholder Internet Governance* (Nov. 14, 2013) (warning against knee-jerk adoption of multi-stakeholder approaches), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2354377.
- ¹⁴³ See, e.g., Mark Cooper, *The Technology of Privacy: Why Growing Up Is Hard to Do: Institutional Challenges for Internet Governance in the “Quarter-Life Crisis” of the Digital Revolution*, 11 J. ON TELECOMM. & HIGH TECH. L. 45, 53-54 (2013); James M. Solomon, *New Governance, Preemptive Self-Regulation, and the Blurring of Boundaries in Regulatory Theory and Practice*, 2010 Wis. L. Rev. 591, 622-23 (2010); Olivier Sylvain, *Internet Governance and Democratic Legitimacy*, 62 Fed. Commc’ns L.J. 205, 209-10 (2010).
- ¹⁴⁴ See, e.g., Henry H. Perritt, Jr., *Towards a Hybrid Regulatory Scheme for the Internet*, 2001 U. Chi. Legal F. 215, 248-51 (2001); Philip J. Weiser, *The Future of Internet Regulation*, 43 U.C. DAVIS L. REV. 529, 536-37 (2009).
- ¹⁴⁵ Joe Waz & Phil Weiser, *Internet Governance: The Role of Multistakeholder Organizations*, 10 J. ON TELECOMM. & HIGH TECH L. 331, 336 (2012).
- ¹⁴⁶ *Id.* at 335.
- ¹⁴⁷ *Id.*
- ¹⁴⁸ Mark Cooper, *The Technology of Privacy: Why Growing Up Is Hard to Do: Institutional Challenges for Internet Governance in the “Quarter-Life Crisis” of the Digital Revolution*, 11 J. ON TELECOMM. & HIGH TECH. L. 45, 125 (2013).
- ¹⁴⁹ Philip J. Weiser, *The Future of Internet Regulation*, 43 U.C. DAVIS L. REV. 529, 552 (2009).
- ¹⁵⁰ Richard S. Whitt, *A Deference to Protocol: Fashioning a Three-Dimensional Public Policy Framework for the Internet Age*, 31 CARDOZO ARTS & ENTERTAINMENT L.J. 689, 695-96 (2013).
- ¹⁵¹ FCC STAFF WORKING GROUP, *REPORT ON FCC PROCESS REFORM 36-40* (2014) (discussing the potential of using multi-stakeholder mechanisms, negotiated rulemakings, mediation and settlement for enforcement proceedings, and reliance on external experts), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0214/DA-14-199A2.pdf.
- ¹⁵² Jonathan Z. Cannon, *Adaptive Management in Superfund: Thinking Like a Contaminated Site*, 13 N.Y.U. ENV’T L.J. 561, 569 (2005) (citing C.S. HOLLING, *ADAPTIVE ENVIRONMENTAL ASSESSMENT AND MANAGEMENT* (1978); CARL WALTERS, *ADAPTIVE MANAGEMENT OF RENEWABLE RESOURCES* (Wayne M. Getz ed., 1986); KAI N. LEE, *COMPASS AND GYROSCOPE: INTEGRATING SCIENCE AND POLITICS FOR THE ENVIRONMENT* (1993)).
- ¹⁵³ J.B. Ruhl, *Regulation by Adaptive Management—Is It Possible?*, 7 MINN. J.L. SCI. & TECH. 21, 28 (2005).

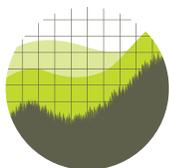
- ¹⁵⁴ Mark Squillace & Alexander Hood, *NEPA, Climate Change, and Public Lands Decision Making*, 42 ENV'T L. 469, 483 (2012); NAT'L RESEARCH COUNCIL, ADAPTIVE MANAGEMENT FOR WATER RESOURCES PROJECT PLANNING 20 (2004), available at http://www.nap.edu/catalog.php?record_id=10972.
- ¹⁵⁵ Kai N. Lee & Jody Lawrence, *Adaptive management: Learning from the Columbia River Basin Fish and Wildlife Program*, 16 ENV'T L. 431, 442 (1986).
- ¹⁵⁶ See COMMITTEE ON ENDANGERED AND THREATENED FISHES IN THE KLAMATH RIVER BASIN, BD. ON ENVTL. STUDIES & TOXICOLOGY, DIV. ON EARTH & LIFE STUDIES, NAT'L RESEARCH COUNCIL, ENDANGERED AND THREATENED FISHES IN THE KLAMATH RIVER BASIN: CAUSES OF DECLINE AND STRATEGIES FOR RECOVERY 335 (2004), available at <http://www.nap.edu/books/0309090970/html>.
- ¹⁵⁷ J.B. Ruhl, *Regulation by Adaptive Management—Is It Possible?*, 7 MINN. J.L. SCI. & TECH. 21, 30 (2005).
- ¹⁵⁸ Courtney Schultz & Martin Nie, *Decision-making Triggers, Adaptive Management, and Natural Resources Law and Planning*, 52 NAT. RESOURCES J. 443, 448 (2012).
- ¹⁵⁹ Holly Doremus, *Adaptive Management as an Information Problem*, 89 N.C. L. REV. 1455, 1464 (2011); Courtney Schultz & Martin Nie, *Decision-making Triggers, Adaptive Management, and Natural Resources Law and Planning*, 52 NAT. RESOURCES J. 443, 447 (2012).
- ¹⁶⁰ Richard S. Whitt, *Adaptive Policymaking: Evolving and Applying Emergent Solutions for U.S. Communications Policy*, 61 FED. COMM. L.J. 483, 500-05 (2009).
- ¹⁶¹ J.B. Ruhl & Robert L. Fischman, *Adaptive Management in the Courts*, 95 MINN. L. REV. 424, 438 (2010).
- ¹⁶² Robin Kundis Craig & J.B. Ruhl, *Designing Administrative Law for Adaptive Management*, 67 VAND. L. REV. 1, 7 (2014).
- ¹⁶³ Richard S. Whitt, *Adaptive Policymaking: Evolving and Applying Emergent Solutions for U.S. Communications Policy*, 61 FED. COMM. L.J. 483, 497-8 (2009). Whitt reiterates his proposal of what he and Stephen Schultze have previously termed “Emergence Economics,” which is the idea “that individual agents, acting through interconnected networks, engage in the evolutionary market processes of differentiating, selecting, and amplifying certain business plans and technologies, which in turn generates a host of emergent economic phenomena,” including ideas, innovation, economic growth and network effects. Richard S. Whitt & Stephen J. Schultze, *The New “Emergence Economics” of Innovation and Growth, and What It Means for Communications Policy*, 7 J. TELECOMM. & HIGH TECH. L. 217, 219 (2009).
- ¹⁶⁴ Richard S. Whitt, *Adaptive Policymaking: Evolving and Applying Emergent Solutions for U.S. Communications Policy*, 61 FED. COMM. L.J. 483, 498 (2009) (“Devising public policy is made much more difficult given the pace of transformations in complex systems like the economy—the faster the pace, the more likely serious gaps will appear between the system’s behavior and our lagging management capabilities.”).
- ¹⁶⁵ Richard S. Whitt, *Adaptive Policymaking: Evolving and Applying Emergent Solutions for U.S. Communications Policy*, 61 FED. COMM. L.J. 483, 568 (2009).
- ¹⁶⁶ Barbara A. Cherry, *The Telecommunications Economy and Regulation as Coevolving Complex Adaptive Systems: Implications for Federalism*, 59 FED. COMM. L.J. 369, 399-400 (2007)
- ¹⁶⁷ Lixian Hantover, *Creating Sustainable Regulation of the Open Internet*, 20 UCLA ENT. L. REV. 107, 129 (2013).
- ¹⁶⁸ An automated approach would likely require specific authorization from Congress. It could also raise concerns regarding transparency and accountability, some of which could be ameliorated through simultaneous public engagement, as discussed in Section III.B.3.
- ¹⁶⁹ See *Rulemaking Process at the FCC*, FCC ENCYCLOPEDIA, <http://www.fcc.gov/encyclopedia/rulemaking-process-fcc> (last visited May 7, 2014).
- ¹⁷⁰ Eric Biber, *The Problem of Environmental Monitoring*, 83 U. COLO. L. REV. 1, 5 (2011) (“[A] system that calls for constant adaptation requires the ongoing collection of information about changing circumstances. We can hardly adapt our policies if we do not know whether we need to adapt, why we need to adapt, or how we need to adapt.”).

- ¹⁷¹ Nell Green Nylen, *To Achieve Biodiversity Goals, the New Forest Service Planning Rule Needs Effective Mandates for Best Available Science and Adaptive Management*, 38 *ECOLOGY L.Q.* 241, 282 (2011).
- ¹⁷² See *W. Watersheds Project v. U.S. Forest Serv.*, No. CV 05 189 E BLW, 2006 WL 292010, at *2 (D. Idaho Feb. 7, 2006) (stating that the adaptive management strategy “did not define the protocols it would use or describe the monitoring that is the heart of the strategy”).
- ¹⁷³ Bradley C. Karkkainen, *Toward a Smarter NEPA: Monitoring and Managing Government’s Environmental Performance*, 102 *COLUM. L. REV.* 903, 939 (2002).
- ¹⁷⁴ This includes “[s]etting specific, quantified biological or physical objectives or targets, based on carefully selected biological and physical ‘indicators’ of (or measurable proxies for) ecosystem health.” Bradley C. Karkkainen, *Toward a Smarter NEPA: Monitoring and Managing Government’s Environmental Performance*, 102 *COLUM. L. REV.* 903, 965-56 (2002) (citing CHESAPEAKE BAY PROGRAM, CHESAPEAKE 2000 AGREEMENT 2-12 (2000) (outlining a range of biological and physical indicators of ecosystem health and setting quantified targets and timetables to measure progress)).
- ¹⁷⁵ Bradley C. Karkkainen, *Toward a Smarter NEPA: Monitoring and Managing Government’s Environmental Performance*, 102 *COLUM. L. REV.* 903, 966 (2002).
- ¹⁷⁶ *Id.*
- ¹⁷⁷ Kai N. Lee & Jody Lawrence, *Adaptive management: Learning from the Columbia River Basin Fish and Wildlife Program*, 16 *ENVT’L L.* 431, 442 (1986).
- ¹⁷⁸ *Id.*
- ¹⁷⁹ *Id.* at 443.
- ¹⁸⁰ *Id.* at 444.
- ¹⁸¹ *Id.* at 445.
- ¹⁸² *Id.* at 456.
- ¹⁸³ *Id.* at 457.
- ¹⁸⁴ See OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, CIRCULAR A-4, at 12 (2003) (“In constructing measures of ‘effectiveness,’ final outcomes, such as lives saved or life-years saved, are preferred to intermediate outputs, such as tons of pollution reduced, crashes avoided, or cases of disease avoided.”), available at <http://www.whitehouse.gov/sites/default/files/omb/assets/omb/circulars/a004/a-4.pdf>.
- ¹⁸⁵ See, e.g., kc claffy & David D. Clark, Platform Models for Sustainable Internet Regulation (Aug. 15, 2013), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2242600; Hanne Kristine Hallingby et al., Regulatory Policies in Relation to Metrics and Data Collection for Measuring the Emergent Internet (Aug. 9, 2013), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2223636; Mathieu Tahon et al., Promoting Next Generation Network Investment Through Adapted Performance Indices (Mar. 30, 2012), available at <http://ssrn.com/abstract=2031570>.
- ¹⁸⁶ U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, HORIZONTAL MERGER GUIDELINES 18-19 (2010), available at <http://www.justice.gov/atr/public/guidelines/hmg-2010.pdf>.
- ¹⁸⁷ The FCC has also spoken generally about the importance of using metrics to “evaluate the effectiveness of major program activities when those activities are being adopted or substantially changed,” which is an important first step. FCC STAFF WORKING GROUP, REPORT ON FCC PROCESS REFORM 42 (2014), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0214/DA-14-199A2.pdf. But the agency also needs to ensure that ongoing monitoring is enacted to assess the continued effectiveness of programs.
- ¹⁸⁸ See *Measuring Broadband America*, FED. COMM’NS COMM’N, <http://www.fcc.gov/measuring-broadband-america> (last visited May 7,

2014).

- ¹⁸⁹ FCC'S OFFICE OF ENG'G & TECH. & CONSUMER & GOV'TAL AFFAIRS BUREAU, 2013 MEASURING BROADBAND AMERICA: FEBRUARY REPORT (2013), available at <http://transition.fcc.gov/cgb/measuringbroadbandreport/2013/Measuring-Broadband-America-feb-2013.pdf>.
- ¹⁹⁰ OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, CIRCULAR A-4, at 12 (2003) ("Where regulation may yield several different beneficial outcomes, a cost-effectiveness comparison becomes more difficult to interpret because there is more than one measure of effectiveness to incorporate in the analysis. To arrive at a single measure, you will need to weight the value of disparate benefit categories . . ."), available at <http://www.whitehouse.gov/sites/default/files/omb/assets/omb/circulars/a004/a-4.pdf>.
- ¹⁹¹ Some might argue that the FCC is limited to examining broadband penetration and competition rather than these other social values, based on its reliance on section 706 of the 1996 Telecommunications Act, which directs the agency to encourage deployment of broadband technology through methods including the promotion of competition. See 47 U.S.C. § 1302 (a) & (b). However, the D.C. Circuit has found other values the agency has desired to promote—such as the “virtuous circle” of innovation that has driven the growth of the Internet—to be “reasonable and supported by substantial evidence.” *Verizon v. FCC*, 740 F.3d 623, 628 (D.C. Cir. 2014).
- ¹⁹² A rule is an “established and authoritative standard or principle; a general norm mandating or guiding conduct or action in a given type of situation.” BLACK'S LAW DICTIONARY 1446 (9th ed. 2011).
- ¹⁹³ A standard is a “model accepted as correct by custom, consent, or authority.” BLACK'S LAW DICTIONARY 1535 (9th ed. 2011).
- ¹⁹⁴ J.B. Ruhl, *Adaptive Management for Natural Resources—Inevitable, Impossible, or Both?*, 54 ROCKY MTN. MIN. L. INST. 11-1, 11 (2008).
- ¹⁹⁵ Eric Biber, *The Problem of Environmental Monitoring*, 83 U. COLO. L. REV. 1, 17 (2011).
- ¹⁹⁶ *Id.*
- ¹⁹⁷ *Id.* (internal quotation marks omitted) (quoting Charles Sabel et al., *Beyond Backyard Environmentalism*, BOSTON REV., Oct.–Nov. 1999, at 4).
- ¹⁹⁸ J.B. Ruhl, *Taking Adaptive Management Seriously: A Case Study of the Endangered Species Act*, 52 U. KAN. L. REV. 1249, 1263 (2004).
- ¹⁹⁹ Bradley C. Karkkainen, *Adaptive Ecosystem Management and Regulatory Penalty Defaults: Toward a Bounded Pragmatism*, 87 MINN. L. REV. 943, 992 (2003).
- ²⁰⁰ Exec. Order No. 13,563, 76 Fed. Reg. 3821 (Jan. 21, 2011) (instructing executive branch agencies to conduct regular retrospective reviews of their regulations and revise them as warranted; not binding on independent agencies like the FCC, but potentially persuasive to them nonetheless); Memorandum from Cass Sunstein, Administrator of the Office of Information and Regulatory Affairs, to the Heads of Executive Departments and Agencies (Oct. 26, 2011) (chronicling agency progress on retrospective review initiatives), available at <http://www.whitehouse.gov/sites/default/files/omb/assets/infocore/implementation-of-retrospective-review-plans.pdf>.
- ²⁰¹ FCC STAFF WORKING GROUP, REPORT ON FCC PROCESS REFORM 44 (2014), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0214/DA-14-199A2.pdf.
- ²⁰² NAT'L RESEARCH COUNCIL, ADAPTIVE MANAGEMENT FOR WATER RESOURCES PROJECT PLANNING 20 (2004).
- ²⁰³ Kai N. Lee & Jody Lawrence, *Adaptive management: Learning from the Columbia River Basin Fish and Wildlife Program*, 16 ENV'T L. 431, 451 (1986).
- ²⁰⁴ J.B. Ruhl & Robert L. Fischman, *Adaptive Management in the Courts*, 95 MINN. L. REV. 424, 431-36 (2010) (explaining that federal resource management agencies have had difficulty translating the theoretical descriptions of adaptive management into policy); *but see* Robin Kundis Craig & J.B. Ruhl, *Designing Administrative Law for Adaptive Management*, 67 VAND. L. REV. 1, 12-16 (2014) (articulating how administrative law might be redesigned to facilitate adaptive management).

- ²⁰⁵ J.B. Ruhl & Robert L. Fischman, *Adaptive Management in the Courts*, 95 MINN. L. REV. 424, 440 (2010) (“There are no statutory standards for oversight, no concrete legal definitions for determining what qualifies as adaptive management, and few binding steps in adopting adaptive management.”)
- ²⁰⁶ Holly Doremus, *Adaptive Management as an Information Problem*, 89 N.C. L. REV. 1455, 1457 (2011).
- ²⁰⁷ J.B. Ruhl & Robert L. Fischman, *Adaptive Management in the Courts*, 95 MINN. L. REV. 424, 442 (2010) (noting that an examination of how adaptive management works in practice reveals the budgetary and political limitations of agencies responsible for implementation); Holly Doremus, *Adaptive Management as an Information Problem*, 89 N.C. L. REV. 1455, 1459 (2011) (“It will typically be costly, requiring added modeling, monitoring, and data evaluation.”).
- ²⁰⁸ NAT’L RESEARCH COUNCIL, ADAPTIVE MANAGEMENT FOR WATER RESOURCES PROJECT PLANNING 35 (2004).
- ²⁰⁹ NAT’L RESEARCH COUNCIL, ADAPTIVE MANAGEMENT FOR WATER RESOURCES PROJECT PLANNING 35 (2004).
- ²¹⁰ GOVLAB: THE GOVERNANCE LAB @ NYU, <http://thegovlab.org/> (last visited May 7, 2014).
- ²¹¹ CERl: CORNELL ERULEMAKING INITIATIVE, <http://www.lawschool.cornell.edu/ceri/> (last visited May 7, 2014).
- ²¹² *Measuring Broadband America: Open Methodology*, FED. COMM’NS COMM’N, <http://www.fcc.gov/page/measuring-broadband-america-open-methodology> (last visited May 7, 2014).



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