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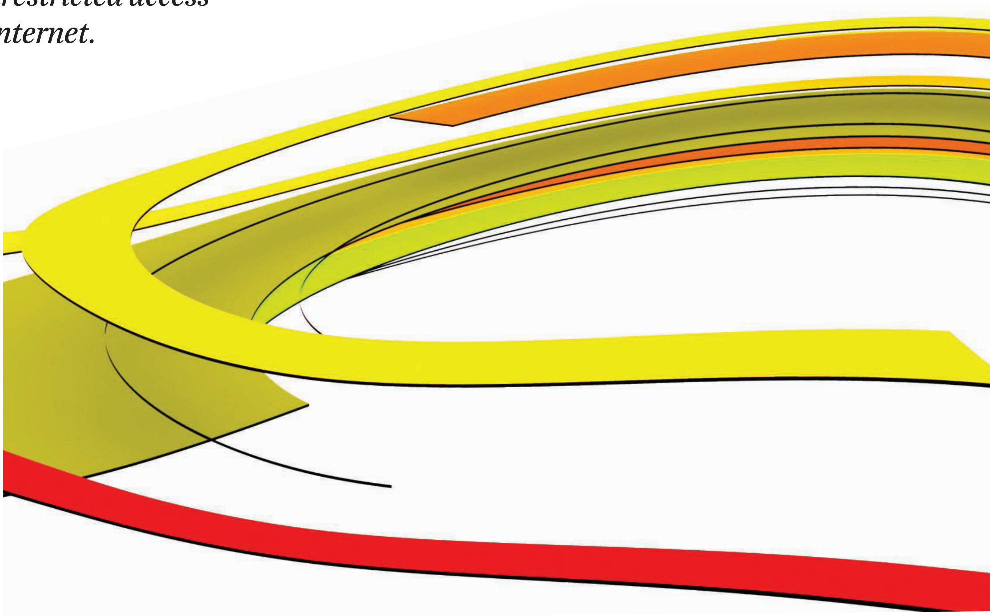
Point/Counterpoint
Network Neutrality Nuances

A discussion of divergent paths to unrestricted access of content and applications via the Internet.

Point: Barbara van Schewick

Imagine switching on your computer to try an exciting new Internet application you heard about. It does not work. You call customer support, but they cannot help you. If you are like most users, you give up. Maybe the application was not so great after all. If you are technically sophisticated, you may run some tests, only to find out your ISP is blocking the application. Welcome to the future without network neutrality rules.

Most of us take the ability to use the applications and content of our choice for granted. To us, "Internet access" means access to everything the Internet has to offer, not access to a selection of Internet applications and content approved by our ISP. This assumption was justified in the past, when the Internet was application-blind, making it impossible for ISPs such as AT&T, EarthLink, or Comcast to interfere with the applications and content running over their network.[a] Today's world is different: ISPs have access to sophisticated technology that enables them to block applications or content they do not like, or degrade their performance by slowing the delivery of the corresponding data packets.



Whether and how the law should react to this changed situation is the subject of the network neutrality debate. Network neutrality proponents argue that ISPs have incentives to use this new technology, and that the existing laws in many countries do not sufficiently constrain the ISPs' ability to do so. Proponents contend that users, not network providers should continue to decide how they want to use the Internet if the Internet is to realize its full potential and that the law should forbid ISPs to block applications and content or to discriminate against them. While the debate does not end here (in particular, whether a nondiscrimination rule should ban Quality of Service or restrict ISPs' ability to charge unaffiliated application or content providers for the right to offer their products to the ISPs' customers is controversial even among network neutrality proponents), a rule against blocking and discrimination is at the core of all network neutrality proposals.[b]

But does a network provider really have an incentive to discriminate against applications? Research shows that while a network provider does not generally have an incentive to exclude applications or content,[c] there are cases

[a] The application-blindness of the Internet was a consequence of its design, which was based on the broad version of the end-to-end arguments.

[b] In some proposals, such a rule takes the form of users' rights to use the (lawful) applications and (legal) content of their choice. There usually is an exception that allows network providers to block malicious applications and content, such as those involved in denial-of-service attacks.

[c] More applications and content make the Internet more attractive, so network providers generally have an incentive to foster, not exclude additional applications.

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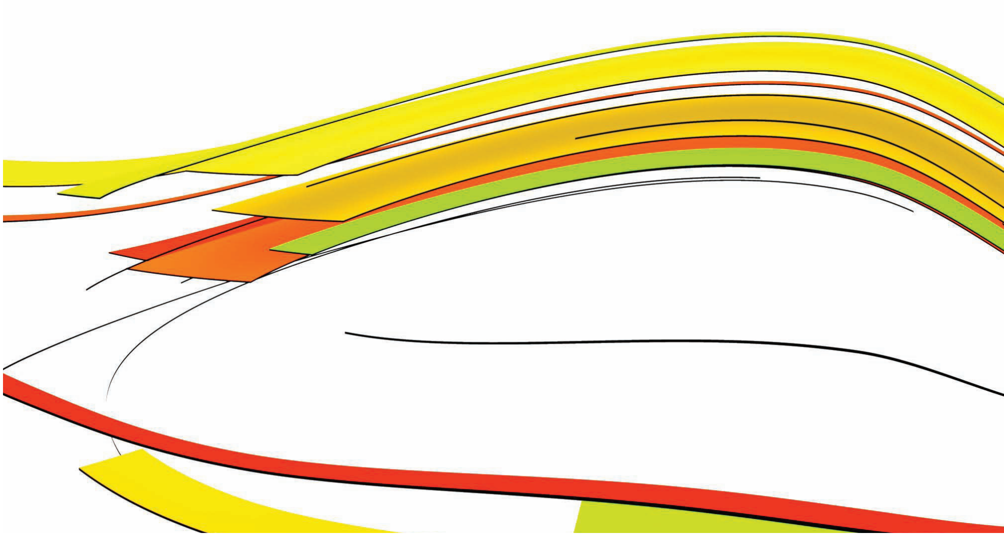
in which it does have an incentive to do so—to increase its own profit, to manage bandwidth on its network, or to exclude unwanted content. Consistent with these theoretical predictions—and in spite of heightened public attention from the ongoing controversy about the need for network neutrality regulation, examples of discriminatory conduct have started to appear in practice. As Lawrence Lessig has put it, "if 'network neutrality' was 'a solution in search of a problem' in 2002, and 2006, the network owners have been very kind to network neutrality advocates by now providing plenty of examples of the problem to which network neutrality rules would be a solution."[2]

Does a network provider really have an incentive to discriminate against applications?

For example, network providers may want to exclude applications that threaten their traditional sources of income. In 2005, Madison River, a rural phone company in North Carolina, blocked the Internet telephony application Vonage, which threatened its revenue from traditional phone services. In 2007, Comcast, the second-largest provider of Internet services in the U.S., shut down peer-to-peer file sharing connections, degrading the performance of applications such as Vuze that legally deliver television content to end users based on a peer-to-peer protocol and threaten Comcast's traditional cable-based content delivery services. ISPs such as AT&T or Verizon, which offer co-branded services with Yahoo may have an incentive to increase their joint advertising revenue with Yahoo by slowing down Web sites or portals that compete with Yahoo. Network providers need not necessarily be able to monopolize the market for a specific application to make discrimination profitable; the increased revenue from selling more copies at the market price may be incentive enough.



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Network providers may also be motivated to interfere with applications to manage bandwidth on their network. Because of the prevailing flat-rate pricing structure, network providers have an incentive to block or degrade applications that consume more bandwidth or consume it in unexpected ways. After all, if the use of the network increases, the network provider's costs increase as well, but due to flat-rate pricing, its revenue stays the same. For the network provider, blocking or degrading selected applications is a quick fix that requires less investment than upgrading the network or devising a nondiscriminatory solution. Comcast's blocking of BitTorrent and other peer-to-peer file-sharing applications is an example of this type of behavior.

Finally, network providers may have an incentive to block unwanted content that threatens the company's interests or does not comply with the network provider's chosen content policy. In 2005, Telus, Canada's second largest ISP, blocked access to a Web site that was run by a member of the Telecommunications Workers Union. At the time, Telus and the union were engaged in a contentious labor dispute, and the Web site allowed union members to discuss strategies during the strike. In 2007, Verizon Wireless rejected a request by NARAL Pro-Choice America, an abortion rights group, to let them send text messages over Verizon Wireless' network using a five-digit short code. In the same year, AT&T deleted words from a Webcast of a Pearl Jam concert in which the singer criticized George W. Bush. Both providers argued that the rejected or deleted content violated their content policies.[d] While the latter two examples are not direct examples of ISPs restricting content on their networks (Verizon Wireless restricted a service on its wireless mobile network, not the wireless Internet, while AT&T acted in its role as a content provider, not as ISP), it is easy to imagine virtually identical incidents in which an ISP enacts a content policy and restricts content on its network accordingly.

If ISPs have an incentive to block selected applications or content or discriminate against them, why should we care? Preventing discrimination is necessary if the Internet is to realize its full economic, social, and political potential. Discrimination restricts users' ability to choose the application and content they want to use. This ability to choose is fundamental if the Internet is to create maximum value, for us as individuals and for society. The Internet is a general-purpose technology. It does not create value through its existence

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[d] They later changed their view after the incidents had been widely reported.

alone. It creates value by enabling us to do things we could not do otherwise, or to do things more efficiently. Applications are the tools that enable us to realize this value. Through the applications and content it offers, the Internet has enabled us to become more productive in our professional and private lives, to interact with relatives, friends, and complete strangers, to get to know them, communicate, or work with them, focusing on anything we like, to educate ourselves using a wide variety of sources, and to participate in social, cultural, and democratic discourse. In the process, it has spurred economic growth, improved democratic discourse, and created a decentralized environment for social and cultural interaction in which anyone can participate.

ISPs ability to discriminate changes this. In a world without network neutrality rules, ISPs determine which applications and content can become successful, distorting competition in the markets for applications and content. As we have seen, who network providers decide to support and who they decide to exclude may be motivated by a number of factors that are not necessarily aligned with users' preferences, leading to applications that users would not have chosen and forcing users to engage in an Internet usage that does not create the value it could. If I am working on an open source project that uses BitTorrent to distribute its source code, and the network provider chooses to single out BitTorrent to manage bandwidth on its network, I am unable to use the application that best meets my needs and use the Internet in the way that is most valuable to me. If I am interested in content that my network provider has chosen to restrict, my ability to educate myself, contribute to a discussion on this subject, and make informed decisions is impeded. Instead, ISPs gain the power to shape public discourse based on their own interests and idiosyncratic content policies. In addition, the risk of being cut off from access to users at any time and at the sole discretion of the network provider reduces independent innovators' incentive to innovate and their ability to secure funding. Throughout the history of the Internet, successful applications such as email, the Web, search engines, or social networks have been developed by independents, not network providers. By threatening the supply of all those exciting new applications that have not even been thought of yet, discrimination by network providers reduces the Internet's ability to create even more value in the future.

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But do we really need regulation? That competition will solve any problems, should they exist, is a common argument against network neutrality. If AT&T blocks an application that its customers want to use, the arguments goes, customers will switch to another provider that lets them use the application.

This argument comes in many flavors: Some, like many European regulators, use it to argue that the problems that network neutrality is designed to address are caused by the concentrated market structure in the U.S., but are not relevant to European countries that, due to open access regulation, have more competition among ISPs than the U.S.[e] Others, particularly in the U.S., argue that governments should focus on increasing competition among ISPs instead of enacting network neutrality rules.

These arguments neglect a number of factors that make competition less effective in disciplining discriminatory conduct than one might expect. First, if all network providers block the same application, there is no provider to switch to. For example, in many countries all mobile network providers block Internet telephony applications to protect their revenue from mobile voice services, leaving customers who would like to use Internet telephony over their wireless Internet connection with no network provider to turn to.

Second, customers do not have an incentive to switch if they do not realize the network provider interferes with their preferred application. If network providers secretly slow down packets or use methods that are difficult to detect, their customers may attribute an application's or Web site's bad performance to bad design, and happily switch to the network provider's supposedly superior offering.

Third, finding another ISP and making the switch requires significant time, effort, and money, reducing customers' willingness to switch. All this suggests that while increasing competition is good for other reasons, it is not a substitute for a robust network neutrality regime.

Finally, some argue that allowing network providers to discriminate against applications and content is necessary to foster broadband deployment. This argument concedes that network providers have an incentive to discriminate to increase their profits. By removing the ability to discriminate, network neutrality rules reduce network providers' profits.

Fewer profits may mean less money to deploy broadband networks. I am not convinced that network neutrality rules would reduce ne twork providers' profit enough to push deployment incentives beyond the socially efficient level,[f] or that network providers would really use the additional profits to deploy more networks instead of using the money to please their shareholders.

[e] In the U.S., most residents have a choice between at most two providers, the local telephony company and the local cable modem provider (residents in 34% of ZIP codes in the U.S. have only one or zero cable modem or ADSL provider who serves at least one subscriber living within the ZIP code). These providers are not required to (and generally do not) let independent ISPs offer Internet services over their infrastructure. By contrast, Europeans often have the choice between cable and DSL services, and can choose among a number of ISPs offering their services over the DSL network.

[f] After all, network providers would still be able to offer their own applications or content, but they would not be able to give them an advantage over competing products.

Still, there is a potential trade-off here that legislators need to resolve. Allowing discrimination reduces user choice and application-level innovation. It distorts competition in applications and content, harms economic growth and constrains democratic discourse. Sacrificing the vital innovative and competitive forces that drive the Internet's value to get more broadband networks seems too high a price; as Tim Wu has put it, it is like selling the painting to get a better frame.[6] While it is impossible to protect application-level innovation and user choice once network providers are allowed to discriminate, there are ways to solve the problem of broadband deployment that do not similarly harm application-level innovation and user choice (for example, if insufficient profits really are the problem, subsidizing network deployment may be one).

Changes in technology have given network providers an unprecedented ability to control applications and content on their network. In the absence of network neutrality rules, our ability to use the lawful Internet applications and content of our choice is not guaranteed. The Internet's value for users and society is at stake. Network neutrality rules will help us protect it.

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This column builds and partly draws on my academic work on network neutrality; see [1,3–5]. Thanks to Joseph Grundfest, Lawrence Lessig, Larry Kramer, and Mark Lemley for comments on an earlier version of this material.

Counterpoint: David Farber

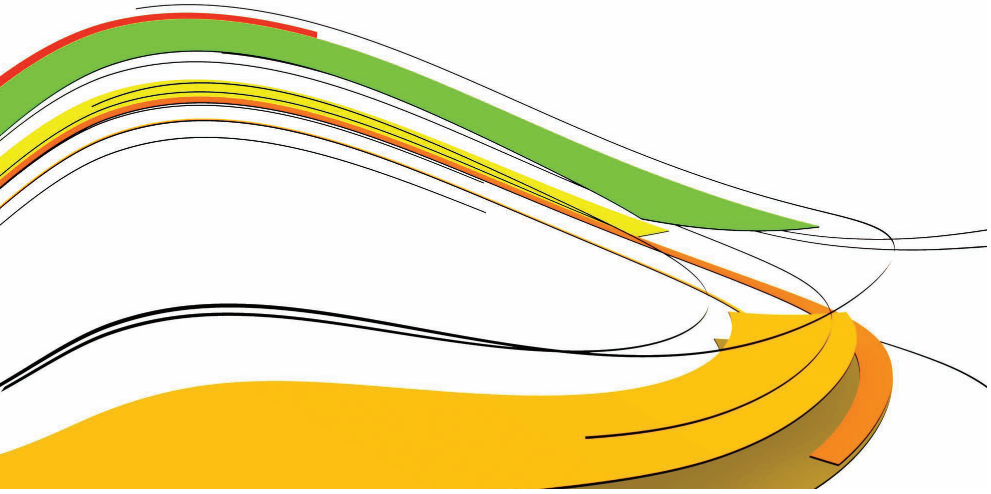
Let's say that I am completely in favor of network neutrality. But what would such a strong position actually mean? The definition of "network neutrality reshapes itself like our lungs. It expands, drawing in causes ranging from freedom of speech to open access. Then it contracts, exhaling a lot of hot air, and starts all over again. I would like very much to sharpen the focus to those essential issues that will form the basis of a future expansion of broadband Internet services as well as the widespread deployment of such capabilities.

There is one constant about the Internet: it has continued to evolve and change, often in ways none of us—even those of us directly involved in its development—would have predicted. This simultaneously makes the Internet so valuable and so vulnerable. Its growth and expansion into all corners of society have made it a major part of global life—but this expansion and the value of the Internet also frequently leads to efforts by some to try and predict and control its direction.

We've had cycles in the past where the Internet faced challenges due to rapid growth or the development of new forms of malware or online attacks. For example, in the dial-up era of the 1980s, the growth of list servers and FTP file downloads caused great concern about congestion. In the 1990s, there was a similar fear that the Internet would "crash" due to the rise of the Web. At various times, fears of new forms of viruses and botnets have arisen as well. In every case, the cooperative efforts of network providers, applications developers, and volunteers with a great amount of expertise have helped us make changes in protocols or add capacity that have helped us get through.

The evolution of the Internet is thus driven equally by competition and cooperation, and by and large we continue to find ways, as messy and informal as they often are, to address problems as they arise.

I am concerned that we may succumb to fears about possible dangers to the Internet's future and react with proposals to legislate or regulate its operations. Many of these ideas are designed around presumptions as to how the Internet will evolve. We have seen the Internet become a truly mass-market phenomenon on a global basis. Broadband networks have been and are being deployed that are moving us toward higher levels of speed and capability. Some now suggest there is the potential for abuses that might harm consumers as these networks grow. They argue that the companies deploying wire-line broadband networks might use their position as network owners to favor the applications and services they provide and/or harm competing servic-



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es and applications offered by search engine companies, online content providers, and Internet portals.

The fundamental fact of the U.S. broadband capabilities is that we have a landline duopoly consisting of the cable companies and the "telephone" facilities—cable data and DSL. Each member of the duopoly is expanding their physical plant—both are evolving to fiber to either the home or close to the home and both are targeting a complete set of subscriber services from phone to video to data. In the long run there is no obvious winner in terms of technology and maybe even in terms of services offered. In the short run the competition between these duopolies encourages the modernization of their physical plants and the enhancement of their services.

All this sounds great for all. So where is the problem? The issue of Net neutrality first arose in the public's view in a remark by one of the carriers—SBC (now the "new ATT") —that services that use the facilities provided to reach their customers should pay a fee to the carriers for the use of their facilities. This trial balloon raised a firestorm with Internet-based companies such as Google who essentially argued that their customers were paying their Internet access fees in order to gain access to Google's services and that Google was paying the terminating carrier directly for high-speed access. They and others demanded that the U.S. Congress pass laws requiring essentially open access to the data networks on an equal-service-to-all basis. They asked the FCC to exercise their regulatory powers to require this in the absence of any specific Congressional actions.

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In both cases the cure might be worse that the disease. The ability of the U.S. Congress to pass effective legislation in the telecommunications area is open to question. The Telecommunications Act of 1996 was an attempt to provide unbundled access to the last-mile wire loop in order to allow and encourage the rise of alternative data carriers. Experience has shown that this portion of the bill was worse than ineffective. Those companies who believed the law would be effective lost a lot of money as the incumbents resisted and were forced to the courts. The incumbents argued that the existence of these unbundling obligations undermined the incentives for the incumbents or anyone else to make the heavy investment required for building new next-generation broadband networks. Counting on the FCC has yielded mixed results. Like Congress, its decisions are subject to influence by political considerations and special interest goups as administrations come and go. The FCC has a minimum amount of technical knowledge about the Internet and thus even when it acts, often misses the mark and can end up in lengthy court actions that an innovative new company cannot survive.

Recently there have been a number of activities that have been attacked, sometimes validly, as being against the public good and against the FCC guidelines. The result of this was an FCC action telling Comcast to stop a particular form of network action being used by them for network management, There were public hearings prior to the action during which time there was a mix of technical input and public discussion, all informal—that is, not sworn testimony as required in formal hearings. I will not argue the validity of the criticism, except to say technique used seemed not to actually work but I would comment that the procedure, such as was used, most likely is not an effective way of gathering critical technical information and is all too easily turned into a political show. It is also possibly illegal but the courts will eventually determine that when someone sues.

One of the major dangers that face the future of Internet business is whether those who control our access to the Net will implement procedures under the guise of managing the Net that will discourage competition to those services they offer—such as video over the Internet competing with the cable delivery of the cable operator.

In an Op-Ed article in the *Washington Post* in January 2007, Michael Katz, Christopher Yoo, Gerald Faulhaber, and I argued: "Public policy should intervene where anticompetitive actions can reliably be identified and the cure will not be worse than the disease. Policymakers must tread carefully, however, because it can be difficult, if not impossible, to determine in advance whether a particular practice promotes or harms competition. Current antitrust law generally solves this problem by taking a case-by-case approach under which private parties or public agencies can challenge business practices and the courts require proof of harm to competition before declaring a practice illegal. This is a sound approach that has served our economy well."[a]

Today, innovation and enhancements can occur at all levels of the Internet. Network providers, applications providers, portals, search engines, and content providers can all innovate in various ways and make needed improvements that can benefit the Internet's evolution. We should encourage this innovation, while preserving the other core strengths of the Internet: its cooperative spirit and openness to en-

[a] Farber, D., Katz, M. Hold off on Net neutrality. *Washington Post* (Jan. 19, 2007), A19; http://www.washingtonpost.com/wp-dyn/content/article/2007/01/18/AR2007011801508.html.

try by new players with new ideas and innovations.

This requires, I believe, a new commitment to transparency, openness, and sharing of information as much as possible. Network capacity should be managed in a way that brings users the benefits of differentiated services but at the same time network providers must be very transparent about:

- What consumers can expect with regard to how their connection will work and what services it normally should be able to run; and
- Their traffic management practices and how those practices are likely to affect consumers' connections and the applications they are running.

I also think network providers should work together with those of us who informally keep involved in the Internet's workings to voluntarily develop better information about the Internet's overall health including capacity constraints and bottlenecks, the impact of a variety of applications on network capacity, and congestion problems. I think we can do this without violating proprietary information restrictions.

I believe applications providers should also be transparent about how their offerings affect customers and their network connections. They should ensure customers know how the use of their applications might affect the speeds they have and the speeds of the connections of those in their neighborhood.

Finally, all participants in the broadband value chain—from the content portals and search engines to the applications providers to the network providers—should also embrace key principles designed to ensure consumers have control over and full use of their broadband connections to:

- Access any content on the Internet;
- Run any application they choose; and
- Attach any devices to their broadband connection that do not harm the network.

Government agencies should continue to actively monitor what is going on with the Internet. If allegations emerge regarding actions that are alleged to be harmful and anticompetitive, companies and consumers should be able to petition to government and have the incident or practice investigated. Most importantly, all of us who care about the Internet and how it works—from those in the media, to academics, to bloggers, to industry players—must remain vigilant and ready to expose, discuss, and publicly upbraid what we feel are examples of "bad actors."

No one would have predicted even five or six years ago many of the advances and services we see today on the Internet. Few even knew what a search engine was, for example, or had used Instant Messaging or viewed a video online. All of this happened in large part because the Internet has not been subject to the slow, cumbersome regulatory processes of government. Inserting government into questions around network management and the evolution of the Internet's underlying technologies and applications will simply erode the cooperative spirit that has driven its evolution, substituting instead filings, charges, and countercharges. I shudder to see this happen.

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Rebuttal: Barbara van Schewick

David Farber and I both want to preserve users' ability to use the applications and content of their choice and the Internet's openness to innovation. We differ in how to get there.

Farber appeals to network providers "to embrace key principles" designed to protect users' ability to use the Internet as they want and to disclose any limitations, including those resulting from the network providers' traffic management practices. To a limited degree, this appeal would be backed up by the force of law: The regulatory regime he envisages would prohibit only "anticompetitive" practices (in the sense the term is used in antitrust law). Consumers and companies could petition the government to investigate (and presumably ban) specific allegedly anticompetitive conduct after the fact.

I don't think these measures will be sufficient to protect users' ability to use the Internet as they want and enable the Internet to realize its economic, social, and democratic potential. Appeals to shared values may have worked in the past, when most networks were operated by academic institutions. Today, networks are run by companies. Their goal is to create value for their shareholders, not to do what's in the public interest. To the extent commercial network providers do have an incentive to block or slow down applications or content, appeals won't be able to stop them.

I agree with Farber that network providers should disclose any limitations on users' ability to use the Internet. As disclosure may expose competitive weaknesses compared to rival providers, network providers may need regulatory pressure to engage in it. While disclosure will support competition by helping consumers make more informed choices, it will not be sufficient to prevent discrimination: Disclosure removes only one of the obstacles (incomplete information) highlighted in my statement that prevent competition in the broadband services market from being effective in disciplining providers.

If appeals and disclosure alone are not sufficient to restrict network providers' incentives to block or slow down applications, the scope of the regulatory regime determines whether network providers can act on their incentives. In this respect, Farber's regime would only capture a subset of the cases in which network providers have an incentive to exclude applications.

First, discrimination designed to exclude unwanted content or manage bandwidth on a network may often lack an anticompetitive motivation. In the examples of content-based discrimination described in my statement, none of the content providers whose content was blocked was competing with the network provider. Similarly, a network provider may have an incentive to exclude or slow down selected bandwidth-intensive applications to manage bandwidth on its network, even if the network provider does not offer a competing application itself. At the same time, the resulting harm—users' inability to participate in social, cultural or democratic discourse related to the blocked content, their inability to use the Internet in the way that is most valuable to them, or application developers' difficulty to obtain funding for an application—is caused by the blocking as such, not by the motivations that were driving it.

Second, even blocking that hurts a competitor is not necessarily prohibited by Farber's proposed regime. In U.S. antitrust law, which Farber's regime is designed to mirror, the term "anticompetitive" has a much narrower meaning than nonlawyers would expect.[a] For example, if a network provider excludes an application such as BitTorrent from access to the provider's Internet service customers, this only constitutes "anticompetitive" conduct under U.S. antitrust law if it creates a "dangerous probability of success" that the network provider will monopolize the nationwide market for BitTorrent-like applications. That the network provider's customers cannot use BitTorrent, or that BitTorrent is excluded from a part of the nationwide market, is irrelevant in the context of antitrust law, but not in the context of the network neutrality debate that focuses on different types of harm.

Prohibiting only "anticompetitive" conduct will not prevent all relevant discrimination. To protect user choice and the Internet's ability to realize its potential, we need rules that prohibit blocking and discrimination of applications and content regardless of the underlying motivation and independent of the network provider's market share.

[a] In particular, as Farber explains in his excerpt from an Op-Ed with economists Michael Katz and Gerald Faulhaber and legal scholar Chris Yoo, it requires a proof of "harm to competition," not just to a competitor.

Rebuttal: David Farber

I think all of us would agree with a basic premise underlying Barbara van Schewick's comments—that the ability of consumers and business to access the content and applications of their choice, without interference, is vital to the continued evolution of the Internet and the innovation, social progress, and economic advancements it promises.

But van Schewick paints with too broad a brush. She asserts "a rule against blocking and discrimination is at the core of all Net neutrality proposals." If only that were the case—ask six different Net neutrality proponents and you'll get six different definitions.

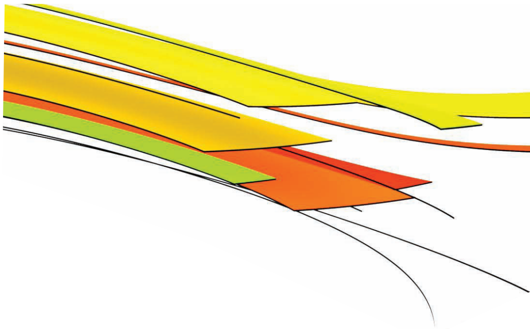
Van Schewick suggests there are incentives to discriminate or interfere with traffic. Providers are not free to operate in the market as they wish with no government role or policies. Since 2003, the FCC has had a set of principles in place it uses to oversee the broadband market. It uses them to assess developments in the market and where necessary, to engage in enforcement activities. The FCC used these principles in the Comcast case. Whether you agree or disagree with the FCC's findings and conclusions, the reality is the principles have acted as a framework not only for the FCC, but also for industry, consumers, and advocates. While these principles are not regulations, they are powerful in the sense that they set expectations and they have the merit of being flexible and adaptive and in that sense much more in sync with the Internet's core underpinnings.

In addition to the FCC's principles, the consumers are protected by many "eyes" watching the Internet and how it is working, including the FCC's enforcement role, the consumer protection and antitrust oversight of the FTC, and competition among providers. Because the Internet's protocols are open and because there are literally thousands of networks, millions of Web sites, and more than a billions of users online, there are lots of folks watching what is going on at all levels of the Internet. Companies doing dumb things won't get away with it too long, despite her comments to contrary. Consumers do have to be aware of what is going on in order to help ensure that companies are not taking actions that may harm them. That is why while regulations and new laws are potentially harmful in my view, there are some actions that should be taken.

There does need to be far more transparency on the part of companies regarding how their broadband services work, what types of network management activities they engage in and how those activities might affect consumers. Content and applications providers too need to be far more transparent about how their applications affect the Internet and consumers themselves.

Moreover, more transparency at the higher levels of the Internet—particularly the backbone—would help academics and Internet experts to better understand how well the Internet is working, what applications may be causing the most problems, and where network congestion problems are occurring or likely to occur.

Finally, Internet experts and academics need to avoid policy polemics and engage in more rigorous analysis, assessments, and fact-based reporting on issues like congestion. While there is not as much data out there as we would like, we can do more to develop rigorously balanced analysis that can help policymakers understand emerging issues around broadband networks and applications.



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