Net Neutrality

JOHN P. WIHBEY
Northeastern University, USA

Net neutrality is the principle of noninterference, or nondiscrimination, by Internet service companies, governments, or other network managers who control the exchange and routing of digital data. In its broadest form, net neutrality allows for the free flow to end users of competing applications, content, and data across the networked infrastructure that constitutes the Internet. Its opposite, generally speaking, is a form of network management wherein certain kinds of sites, applications, and information might be either given privileged, faster speeds or slowed down, given differential access in exchange for monetary payment, or otherwise blocked.

Internet management practices differ around the world, with some countries upholding net neutrality and others manipulating information flows. The term itself, first coined by Wu (2003), continues to undergo refinement, particularly as wireless mobile technologies connecting to the Internet become ubiquitous and the evolution of digital infrastructure complicates precise meaning and understanding. What remains constant, however, is that substantial issues of power and social control hang in the balance as the net neutrality principle is threatened, contested, and potentially reversed across twenty-first-century societies.

Legal, economic, and technology policy scholars have thus far produced the majority of academic literature in the general area of net neutrality, although other types of social scientists are becoming more interested in the issue as threats to neutrality carry the potential to exacerbate existing inequalities. The public debate over net neutrality remains, at any rate, far ranging and nuanced (Zittrain, 2008). While the nondiscrimination principle can seem both ideal and simple in the abstract, its reality and practical execution can be quite complex depending on commercial and national context. As the Internet and the Web have become pervasively embedded in so many forms of cultural exchange and economic production, the idea of net neutrality has come to embody a set of contested rights and values that implicate everything from free speech to innovation, human rights to economic policy. Many observers assert that net neutrality is now the central telecommunications question of the twenty-first century, as it carries implications for the capacity of independent media, the free flow of information, users' privacy rights, the participatory-democratic nature of the Internet, and general political participation, as well as the viability of libraries and educational institutions (Blevins and Shade, 2010).

Of course, all technical architectures, and the computer code that often shapes them, express underlying values, and the Internet, with its origins in openness and decentralization, is no exception (Lessig, 1999). The net neutrality principle, which underpins what is broadly referred to as the idea of an "open Internet," may conflict with the political values of illiberal or authoritarian countries, and it may clash with free market ideologies that would presume to give more rights to private corporations for control.

The original "end-to-end" design of the Internet, ensuring decentralized technical interoperability at all points, requires that information be broken into data "packets" that are efficiently reassembled for end users. This system facilitates, for example, Web site access through browsers and connections to other applications under universal data transfer protocols, called TCP/IP (Transmission Control Protocol/Internet Protocol). Under the principle of net neutrality, packets are to be passed along on a first in, first out basis, with network managers indifferent or "dumb" as to the origin or content of packets. All data thereby flows unimpeded, irrespective of the volume of network traffic sites or applications may generate, the type of services provided, or the political or social nature of the content. Typical analogies in this respect are to public roads, water or electricity lines, or other public infrastructure that serve as "common carriers" of persons, goods, resources, or services.

The Blackwell Encyclopedia of Sociology. Edited by George Ritzer and Chris Rojek.

DOI: 10.1002/9781405165518.wbeos1318

The debate over net neutrality, which might be understood through both sociological conflict theory and a functionalist perspective, has continued to generate fierce resistance along a variety of lines. Through blocking and throttling, many political regimes, such as those in China, Russia, and Iran, have contested the rights of certain oppositional Web sites or platforms to reach the public. Internet service providers have sometimes claimed that strict net neutrality does not allow them to manage traffic adequately to keep their networks running smoothly. Further, some telecommunications companies claim that such a "hands off" approach does not allow them to monetize the networks sufficiently, diminishing their ability to expand network access.

As a public policy matter, the issue of net neutrality suffers because of its technical nature and the largely invisible character of its execution and effects. Net neutrality activist movements have highlighted the need to make explicit the values, assumptions, and norms that have been built into Internet technologies, in order for citizens to make more informed collective design and policy decisions (Flanagin, Flanagin, and Flanagin, 2010). In the United States, for example, a series of running policy disputes over the future of net neutrality since 2010 – when the Federal Communications Commission (FCC) first attempted to enshrine nondiscrimination in formal policy – have triggered broad public information campaigns.

To analyze the deeper competing values and tradeoffs in this domain, it is helpful to understand the history of the Internet and its governance. Its founding extends back to the late 1960s, when ARPANET, a network for sharing digital resources among computers, was developed as part of a US Department of Defense research project called ARPA, or the Advanced Research Projects Agency. That agency was dedicated in part to studying questions of how to sustain connectivity among information networks in the event of nuclear attack. Initially, ARPANET was run by academics, connecting a small group of American research universities and institutes. In 1974, Robert Kahn of ARPA and Vinton Cerf of Stanford University coined the term "Internet."

Importantly, the network's early development and the use of the universal TCP/IP standard coincided with the progressive cultural revolutions of the 1960s and 1970s and with the advent of the personal computing industry. This cultural milieu was marked by garage-style technological tinkering and inflected by a spirit of antiestablishment politics, libertarianism, and utopian social thinking (Markoff, 2006). In 1989, Tim Berners-Lee first proposed the software system called the World Wide Web, which through the hypertext transfer protocol (HTTP) and uniform resource locator (URL) would eventually allow for public access to Web sites through browsers. The Web revolution thus ushered the Internet into the broader political sphere, where the principle of neutrality would become squarely implicated in issues of power and social control.

Some enthusiasts saw the birth of the web as creating "cyberspace," a universal, anarchic and "horizontal" new dimension of human civilization. Early statements and manifestos that celebrated this networked technology platform saw its primary values as distinct from hierarchical social and political structures. The Internet's embedded lack of control, in other words, was adopted as a kind of politics; it was generative of what has been called cyberutopianism or cyberlibertarianism, carrying new notions of distributed social, political, and economic power.

The Internet's meteoric growth in the 2000s, however, has complicated visions of greater social equality as a function of the network. Indeed, monopoly or near monopoly Internet businesses, among other things, have begun to develop with the benefit of an open Internet. Neutrality has in part enabled novel forms of economic exchange and disruptive new strains of capitalism, including what has been called the sharing economy and the "gig" (gigabit) economy. New relationships between buyers and sellers, producers and consumers, have changed traditional economies in wide-ranging areas such as travel, food, transportation, housing and real estate, retail sales, entertainment, social communication, and news production. The open Internet has even enabled new economic modalities themselves, through technologies such as blockchain currency. Labor–management relations have been altered across many spheres, as short term contract-based work becomes more efficient and therefore more common by virtue of digital platforms operating at vast scale.

It is increasingly clear that the effects of net neutrality, or its absence, on dispensations of power may be highly context dependent. Benefiting from an open Internet, large technology companies, primarily those located in America's Silicon Valley, such as Facebook, Google, Netflix, and Amazon, have staked out massive shares of certain kinds of exchange and commerce. This has led some in Europe and Asia to contemplate, at times, potential changes to Internet data flows, based on a perception that net neutrality privileges large-scale actors and leaves local businesses and groups at a relative disadvantage. Further, in a country such as China, where net neutrality is subordinate to the goals of state authorities, certain large information companies such as Baidu, Alibaba, and Tencent have benefitted from favored status in terms of network access.

Scholars have suggested that even when comparing two technologically advanced economies, such as South Korea and the United States, it is difficult to say exactly which policies would maximize both market competition and the public interest (Shin, 2014). The European Union has strong measures to ensure net neutrality, with countries such as India moving in this direction, while Brazil, for example, has had general rules that emphasize certain kinds of neutrality but has not always enforced them (Meinrath and Foditsch, 2017).

Leaving aside issues of direct censorship, much of the most fervent debate over net neutrality continues to focus on questions of how best to promote innovation. Some telecommunications companies contend that their ability to expand their services and improve quality would benefit from policies allowing for certain kinds of non-neutral practices. Under this theory, matters of speed and congestion are not properly priced in the marketplace because of neutrality, which in turn limits funding for innovation and expansion (Hahn and Wallsten, 2006). Basic Internet access remains an issue in the developing world, as it does in many rural areas even in developed countries; a "digital divide" remains in many places.

As Lee and Wu (2009) point out, however, a lack of net neutrality may lead to rising prices for both consumers and content providers, with no guarantee of improved Internet services. This is particularly true in consumer markets where there is little competition among Internet service providers. A system of paid data prioritization could also risk further fragmenting the Internet, with various Internet service providers having different libraries or tiers of content. Net neutrality advocates argue that innovation is most likely to take place at the "edges" of the Internet, where individuals, businesses, and institutions can build new services, content, and applications without uncertainties in terms of the cost of reaching consumers and end users.

As the debate over net neutrality continues to evolve, several key issues are poised to shape the debate, including: the further fragmentation of the global Internet, as national governments increasingly control certain kinds of access; the rise of Internet access through smartphone or mobile phone systems, which frequently operate under different rules for treatment of data traffic (cellular wireless capacity is typically more limited than dedicated broadband lines); and increasing monopolization of total network data traffic by dominant multinational technology companies. These factors are likely to make coherent policy-making to ensure neutrality only more difficult in the future. As changes to strict neutrality potentially unfold, scholars may be able to measure more precisely how this deeply embedded technological norm helps structure the social and economic behavior and welfare of communities.

SEE ALSO: Internet Governance; Technological Innovation; World Wide Web; Cyberculture; Cyberlibertarianism; Digital Divide Global; Censorship

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