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The Challenges of Net Neutrality

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The challenges of Internet neutrality

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Freedom of Expression, Internet, Transparency, Discrimination, Regulation

Abstract
By treating all sorts of contents and applications in a neutral, identical manner, the Internet has developed as the most efficient, most democratic communication platform ever. Allegedly in order to avoid congestion and to support the development of new services, network operators have begun to give priority to a favoured share of the digital traffic, thereby blocking or slowing down the rest of the information that circulates over the Internet. The principle of net neutrality has been affirmed as a reaction against such discriminatory treatment. Its accurate scope remains intensely debated. So does the effectiveness of its protection.

1.- Because it supports the circulation of information and ideas, freedom of expression is nothing else than the beating heart of democratic societies and of democratization processes. Threats on the ability to nurture public controversies about government, economic powers, and generally all issues of general interest, automatically translate into threats on the political system that bases its legitimacy upon the participation and vigilance of free individuals. For the sake of democracy, freedom of speech guarantees the right for journalists, activists and citizens to "*recourse to a degree of exaggeration, or even provocation*" (ECrtHR, *Steel & Morris v. United Kingdom*, 2005, §90) when they to criticize public figures. Generally, freedom of expression protects the right to voice the messages "*that are favourably received or regarded as inoffensive or as a matter of indifference, but also those that offend, shock or disturb the State or any sector of the population*" (ECrHR, *Handyside v. United Kingdom*, 1976, §49). Besides these classical teachings by the European Court of Human Rights, the protection of free speech aims at safeguarding the effectiveness of the circulation of information and ideas. Under article 11 of the European Charter of Human Rights, it expressly extends to guaranteeing the pluralism of the media. In its *Autronic* decision of 1990, the European Court of Human Rights had affirmed that freedom of speech applies "*not only to the content of information but also to the means of transmission or reception since any restriction imposed on the means necessarily interferes with the right to receive and impart information*". Since then, the Court of Strasbourg confirmed that liberty could not remain theoretical or illusory; instead, it should be "*practical and effective*": such requirement has for instance been interpreted as meaning that an association or a small political party should be given access to airtime through the means of paid advertising, even if the broadcasting of their messages runs against a legal prohibition of political advertising (ECrtHR, *Verein Gegen Tierfabriken v. Switzerland*, 2001; *TV Vest & Rogaland PensjonistParti v. Norway*, 2008; DOCQUIR, 2002, 2011; LEWIS, 2009). In other

words, European free speech law has integrated the idea that public debate is conditioned by the actual openness of the infrastructures of public communication.

2.- The idea that democracy is undermined when communication platforms fall under exclusive control, should be kept constantly at the back of the mind when we observe the current evolution of digital networks. It is incontrovertible that the importance of the Internet as platform of mass communication is constantly growing. It has become the common place for an increasing number of services that people turn to on a daily basis, including the use of mobile devices of all sorts. It is driving major changes in the media ecosystem. It has played a part in the organization of large-scale social movements. However, the flows of file exchanges over peer-to-peer systems, of the streaming of music and high definition movies, of cloud computing and of online gaming in virtual worlds, exert a strong pressure over the available bandwidth. Congestion is the threat that might put an end to the impressive rise of the network of networks. There is indeed little point in developing a service that consists of streaming movies to subscribers if the bits of cinematographic information reach the audience too slowly to provide an agreeable viewing experience. Launching a raid on a dragon's cave is not going to be much fun if the guild's members have to wait long minutes in front of a still screen before the result of each of their moves finally loads. Neither is online cooperation in virtual meetings going to prove very efficient under such circumstances. In a time when digital economy is seen as a major key factor to economic development (EU Commission, *Digital Agenda for Europe*, 2010), it is generally not disputed that a strong and efficient Internet is wanted, one that could sustain the expected evolution of evermore bandwidth-greedy services operating on an ever-growing number of appliances.

3.- In a briefly sketched presentation, it may be said that two complementary solutions may avert the risk of network congestion. First, the networks operators may consider how to increase the efficiency of the management of existing structures. Instead of letting herds of bits freely roam the digital seas (as is the case with the original design of the Internet), networks could either block or prioritize determined categories of content in order to alleviate the burden of traffic. In other words, blocking means that network operators could exclude one category of content (for instance, peer-to-peer trafficking, as in the Comcast case (see below)). In the case of prioritization, they would allow some part of the traffic to move smoothly and rapidly over a designed high-speed lane on the information highways, while the less time-sensitive content would have to find its pace on the common lane. The risk inherent to both traffic management solutions resides in the discrimination between services. To be sure, a network owner will be tempted to favour the fast circulation of its own services, thus driving its competitors out of the market by removing or slowing down their content (for instance, a company that distributes cable television and Internet over its network might be incited to block its competitors' IPTV flows or direct them onto the slow lane). This, as some argue, would mean the end of the great innovation processes the open Internet has so far supported. According to others, a pragmatic analysis of traffic prioritization should ensure that the common lane remains of a satisfying quality.

4.- The second answer to congestion is to improve the infrastructures. Not surprisingly, the question of who should support the costs of building new networks is not easily solved, because said costs are high and because they have to be negotiated between a large number of actors of varying sizes, that are entangled in a complex web (so to speak) of relationships. Individual consumers subscribe to local Internet access providers (for fixed or mobile access), but the interconnection of networks depends upon arrangements between larger industrial operators. Consumers also enter into contractual relationships with content

producers and service providers (hosting services, search engines and social networks) who cooperate more or less willingly for the distribution of information while they also compete for advertising revenues. Directly or through subsidiaries, companies may of course be active on more than one segment of this chain. From an economic point of view, competition has to be safeguarded and prices should be fair. In modern democracies, the universal availability of some services may add further requirements to the economic analysis of the evolution of communication platforms.

5.- This is a quick sketch of an open controversy that has become known as the debate of Internet Neutrality. To be sure, what exactly the principle of Net Neutrality is may be hard to express: as the Economist put it, "*Ask five geeks and you may well be given six definitions of it*" (Dec. 29, 2010). It can nevertheless be said that at its core lies the idea that network operators should not be authorized to apply any form of discrimination to the content and services they carry. According to the often-quoted father of the concept, professor Tim Wu, "*Network neutrality is best defined as a network design principle. The idea is that a maximally useful public information network aspires to treat all content, sites, and platforms equally. This allows the network to carry every form of information and support every kind of application*." (WU, Website). In order to shed more light on the issues that have barely been touched upon so far, the first part of this article will need to dive – although not too deeply – into the technical particulars of how the Internet works. The second part will focus on the reactions from regulatory authorities and legislators, both in the United States and in Europe. At the time of writing, the Netherlands had been on the verge of adopting the first European legal consecration of Internet Neutrality.

I. From "best-efforts" to efficient fast lanes

6.- The circulation of data on the Internet follows a specific strategy that differs from that of classical telephone lines, where a direct connection is established between interlocutors and maintained during their whole conversation. On the Internet, no dedicated connection is set between the computers that exchange data. Be it a short e-mail message or a high-definition video, every kind of content travels the same way: the information is cut into small parts and encapsulated into "packets", each of which is stamped with its destination (as identified by its unique IP address). Each packet then travels on its own before the information is reassembled upon arrival. While all packets need to be gathered at destination for the communication to be successful, they do not necessary follow the same road. This is why the Internet is said to work according to the "end-to-end" principle: the output of communication only occurs (through the protocols that organize and translate the flows of data) at the endpoints of the network. Computers that manage the circulation of packets are called "routers": they ensure the transmission of data from one computer to another across a vast array of interconnected networks. In the original design of the Internet, routers treat each packet independently and direct it on the best possible way to the next router until it reaches its final destination. When confronted with a flow of data that exceed the capacities of the network (i.e., congestion), a router will stock the packets and treat them in the order of reception ("first come, first serve"). In other words, routers do not prioritize any category of packets; instead, they process the flows of data in a non-discriminatory manner, aiming at best possible use of available capacity. Each router figures the most efficient route for a packet at the time of transmission but it can guarantee neither the effective delivery nor its perfect timing. This is why the Internet is said to work on a "best efforts" model. In that context, "intelligence" (that is, the implementation of complex functions) is not found in the

core of the network but rather at its ends, in the interconnected computers. In other words, the complex functions are organised in the upper layer of the Internet (i.e., applications or content) while the inferior layers of the Internet are supposed to neutrally transport all data.

7.- To be sure, the "best efforts" Internet has proved to be a tremendously efficient platform for communication and innovation before the threats of congestion became a great stir. In the event of a breakdown, the circulation of information can easily bypass the affected part of the network by simply routing packets through other roads, which makes the whole platform very resilient. The openness of the network to any kind of application or content has supported the continuous development of new services. Innovating entrepreneurs have benefited from the opportunity to have their new products distributed on an equal footing with pre-existing large businesses. The Web has been celebrated as empowering the individuals with unprecedented capacities of expression and indeed the Internet has been a driving factor of democratization (CARDON, 2010). The actual consequences of the Internet's growth may be hard to tell – after all, it is an ongoing revolution – but isn't it for instance just amazing that an article signed by a debutant blogger or the leading editor of a world-famous news magazine should circulate digitally under exactly the same conditions? The same observation maybe repeated about celebrated artists and newcomers – and it remains equally valid about the most frequently used search engine, or social network, and their emerging (future) competitors.

8.- Even the strongest supporters of Net neutrality admit that some ordinary traffic management measures are necessary to address security threats and congestion (for instance, see La Quadrature, 2009). Controversies really start when it comes to practices that reach beyond these two admittedly legitimate goals – for instance, when an Internet access provider slows down all packets identified as peer-to-peer sharing of files (see the Comcast case, below) or when VoIP ("voice over IP", i.e. services similar to Skype) is blocked on mobile networks. Some insist that a growing number of services that are distributed over IP networks, such as IP television, VoIP, or online games, require more than a "best effort" at delivery: for those new services to work convincingly, a certain "quality of service" must be guaranteed by the network. These services should be "managed", which means they should be given priority over other types of packets. From a pragmatic viewpoint, the existence of managed services translates into the creation of fast lanes dedicated to specific types of content, while the rest of the data would circulate according to the traditional best-efforts method on probably the meanest share of the network. In that perspective, the open Internet as we have known it appears to shrink, possibly eroding to the point of losing all attractiveness.

9.- However, it should be noted that a given quality of service seems to be almost impossible to guarantee on the Internet. The Net is a collection of interconnected networks of varying sizes and capacities: in order to be effective, the quality of service – just as the principle of net neutrality, for that matter – should be enforced on all the networks. In order to improve the quality of delivery of their services, the major content and service providers have begun to use "content delivery networks" (CDN): these parallel networks maintain cache copies sat the points of connection between the Internet "backbone" and the local networks. They offer a solution for faster Internet communication by shortening the road that packets have to travel: instead of letting the requested information travel on a best-efforts basis from a distant computer situated on another continent, the CDN will inject a copy at the connection point that is the closest to the destination. Obviously, CDNs are a very expansive solution (CDNs

are owned and managed by large companies such as Akamai, Limelight or Google) and only serve selected segments of the content that circulates on the Internet.

10.- It has been mentioned that the circulation of data on the Internet depends on the collaboration between a great number of network operators. However, one specific category plays an important role: the local Internet access providers do not only allow the individual users to access the Internet, they also allow the service and content providers to access their clients (in economic terms, they are said to operate on a two-sided market). The strategic decisions made by the local Internet access providers – those who control the "last mile" or the "local loop" of the greater network – may thus deeply impact the availability of information or services. If your access provider has a policy of slowing down YouTube or of blocking peer-to-peer, you will be able neither to download videos from this website nor to launch your favourite P2P software, no matter the availability of said services elsewhere on the Internet. On the other hand, a starting business that has invented a potentially disruptive web service may see its chances of success quickly crumble to dust if it cannot reach its audience because the local access providers just won't let them. Controlling the effective access to the public at large is a precious asset that the operators are tempted to transform into a source of income by charging the content/service providers. If they reserve the best part of their networks to the development of managed services that are sold to their customers at a higher price, access providers could also progressively degrade the quality of the traditional, neutral Internet. In such case, they would be artificially creating a situation of scarcity in capacity in order to maximize their profits. That is why the traffic management policies and the pricing policies of national telecoms or cable industries are of particular importance in the net neutrality debates.

11.- The integration of content/service providers with telecommunication companies (i.e., vertical concentration), be it in capitalistic links or through contractual provisions, increase the incentives for local access providers to "manage" the circulation to the detriment of their competitors. Indeed, there are examples of access providers sorting out the flows of packets that their clients are allowed to send or receive (see for instance BEREC, 2010). Such concerns have triggered reactions from the regulatory authorities and the legislators.

II. The legal approaches to Net Neutrality

12.- The debate has first emerged in the United States of America and has notably retained public attention in April 2010 when a federal court of appeal granted Comcast, a large access provider, a victory over the Federal Communication Commission (FCC). Even if the court mostly contested the legal power of the FCC to regulate broadband services, the decision has been perceived as a serious blow on the regulatory authority's attempt at securing the principle of Internet neutrality.[1] The facts were these. Comcast had begun to slow or even block all traffic related to BitTorrent, a peer-to-peer file-sharing network. Such management of traffic constituted infringement of rules adopted by the FCC in 2005. In an effort "*to encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet*", the regulatory authority had affirmed four principles:

- "*consumers are entitled to access the lawful Internet content of their choice.*

[1] Comcast Corp. v. FCC, 600 F.3d 642

- *consumers are entitled to run applications and use services of their choice, subject to the needs of law enforcement.*
- *consumers are entitled to connect their choice of legal devices that do not harm the network.*
- *consumers are entitled to competition among network providers, application and service providers, and content providers*."

13.- Obviously, such notions as "lawful Internet content" or the "needs of law enforcement" are subject to interpretation, the details of which shall not be discussed here. However, these four rules are a clear indication that the FCC saw the importance of keeping the circulation of packets neutral. In 2010, they have been confirmed and completed by the FCC's Open Internet Order, which contained the following rules:

> *"i. Transparency. Fixed and mobile broadband providers must disclose the network management practices, performance characteristics, and terms and conditions of their broadband services;*
> *ii. No blocking. Fixed broadband providers may not block lawful content, applications, services, or non-harmful devices; mobile broadband providers may not block lawful websites, or block applications that compete with their voice or video telephony services; and*
> *iii. No unreasonable discrimination. Fixed broadband providers may not unreasonably discriminate in transmitting lawful network traffic."*

14.- The Open Internet Order is only going to enter into force when it is published in the Federal Register, an event that is expected to occur in September 2011 at the earliest and that will most certainly trigger judicial actions by network operators. It is also worth noting that the principle of net neutrality weighs less heavily on mobile networks. From President Obama's strong support to Republicans' opposition, net neutrality has definitely become a politically complex battle.

15.- On the European side, reflexions at the supranational level (Council of Europe and European Union) have now given way to national discussions, most importantly in the course of transposing the reformed telecommunication regulatory framework into national legislations. The *Declaration on Network Neutrality* issued by the Committee of Ministers of the Council of Europe in September 2010 insisted on the "*public service value*" of the Internet and expressed support for the principle of net neutrality. It admitted that traffic management may be acceptable but "*should be considered with great circumspection and need to be justified by overriding public interests*". Similarly, the European Commission had expressed its attachment to "*preserving the open and neutral character of the Internet*" in a declaration attached to the reformed Telecom Package in December 2009. In this document, the Commission announced its will to monitor closely the implementation of the recently reformed telecom directives by Member States and underlined that "*the impact of market and technological developments on net freedoms*" needed to be kept under watch. They also insisted that competition law could offer remedies.

16.- In the new European regulatory framework, "*the ability of end users to access and distribute information or run applications and services of their choice*" is one of the policy objectives that the national regulatory authorities (NRS) should promote.[2] This regulatory principle is further supported by two elements, the combination of which could allegedly

[2] See Article 8(4)(g) of the Framework Directive.

"*address many of the concerns that have been expressed in the context of net neutrality to date*" (BEREC, 2010). First, transparency requirements are imposed to access providers. Under Article 20(1)b of the Universal Service Directive, they should specify "*in a clear, comprehensive and easily accessible form*" (a) whether they will limit access or use of certain services, (b) the minimum service quality level they offer, (c) the management measures they adopt in case of congestion, and (d) the restriction they impose on the use of terminal equipment.[3] The second element consists in the possibility to impose "quality of service requirements" to network operators: under Article 22(3) of the Universal Service Directive, "*Member States shall ensure that national regulatory authorities are able to set minimum quality of service requirements on an undertaking or undertakings providing public communications networks*".

17.- The impact of the 2009 Telecom Package on net neutrality commands three observations. First of all, it is important to note that fixed and mobile communication networks are treated equally, an orientation that diverges from the American approach. It must be acknowledged that the revised framework has not strongly protected the principle of net neutrality: instead, it mostly relies on competition and on the freedom of the individual consumer to choose between competing offers. Transparency, it is assumed, will help the market deploy its magic. Whether the range of offers presented to the public will comprise an access to the open Internet at a reasonable price is not guaranteed *per se*. And finally, the European framework relies on the Member States to establish the minimal quality of Internet access. Traffic management and prioritization measures in no way forbidden, it remains to be seen what the ordinary, "best efforts" Internet should at the very least offer. Since the national regulatory authorities (NRAs) are entrusted with this complex task, there is thus a probability that the minimal quality requirements will vary from State to State; there also is a risk that the monitoring effectuated by the Commission and BEREC[4] to that respect[5] may bring the higher national requirements down towards the lowest commonly agreed level of "quality requirements".

18.- After completing a public consultation on net neutrality, the European Commission held a summit on "The open internet and net neutrality in Europe" in November 2010. However, its most recent declarations confirm that it is not willing to adopt a firmer regulatory stance to protect the traditional Internet. Since it sees the economic growth of European telecommunication companies as instrumental to its Digital Agenda for 2020, the Commission seems to be ready to admit traffic management measures as well as the sale of access to clients to service and content providers.[6] It should be added that, on June 15, 2011, the Council of the European Union has adopted "Draft conclusions on net neutrality".

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[3] See also Article 21(3) of the Universal Service Directive.

[4] The Body of European Regulators for Electronic Communications (BEREC) was established by Regulation (EC) No 1211/2009 of the European Parliament and of the Council of 25 November 2009. It replaces the ERG (European Regulators Group) ; its missions are to "promote cooperation between NRAs and between NRAs and the Commission" and to "contribute to the development and better functioning of the internal market for electronic communications networks and services, by aiming to ensure a consistent application of the EU regulatory framework for electronic communications." BEREC has no legal personality and it is not a Community agency.

[5] Article 22(3) of the Universal Service Directive provides for a process of consultation involving the Commission, BEREC and the NRAs, in order to ensure that national minimum quality of service requirements do not adversely affect the functioning of the internal market.

[6] See http://owni.fr/2011/07/13/lobby-operateurs-bruxelles-europe-internet/ (accessed July 11, 2011) and http://www.numerama.com/magazine/19229-la-commission-europeenne-enterre-la-neutralite-du-net.html (accessed July 11, 2011)

In this document, the Council sees the "*the need to maintain the openness of Internet while ensuring that it can continue to provide high-quality services in a framework that promotes and respects fundamental rights such as freedom of expression and freedom to conduct business*", a declaration that has been commented by NGO EDRI as a positive step (EDRI-gram). As concerns net neutrality, the draft conclusions underline the need to "*preserve the open and neutral character of the internet and consider net neutrality as a policy objective*" while the Council also emphasizes that users should be free to "*create, distribute and access content and services of their choice*". Further developments at the EU level are expected to happen at the end of 2011, when the Commission will publish the results of BEREC's investigations on traffic management practices.

19.- In that context, legislative and regulatory initiatives at the national level will be of special importance. The legal obligation to transpose the revised telecommunication directives before May 25, 2011, has helped ignite and nurture debates in the Member States. Although it is not possible to review here all national situations, three developments are worth mentioning. In France, an interesting report to the National Assembly has formulated the project to enshrine the principle of net neutrality into legal provisions. In Belgium, at the time of writing, the Senate was examining legislative proposals to the same effect. But it is the Netherlands that seem to lead the race. With a legislative proposal that attracted much attention worldwide, the Dutch Parliament seemed to be on the verge of adopting the first net neutrality laws in Europe.[7] The law – it still needed to be approved by the Senate – would prohibit Internet access providers from interfering with the traffic of their users. It would prevent providers from charging additional fees for the use of innovative web services such as VoIP. On the whole, the Dutch law would give a clear and firm signal in favour of the protection of open, unrestricted access to the Internet.

III. Closing comments:

20.- In June 2011, in a joint *Declaration on Freedom of Expression and the Internet*, the international rapporteurs on freedom of expression[8] have insisted that "*there should be no discrimination in the treatment of Internet data and traffic, based on the device, content, author, origin and/or destination of the content, service or application*", and that "*Internet intermediaries should be required to be transparent about any traffic or information management practices they employ, and relevant information on such practices should be made available in a form that is accessible to all stakeholders*." Their Declaration situates the core principles of net neutrality in a broader defence of the openness of the Internet, a communication platform whose "*transformative nature*" has significantly enhanced the ability of billions of people to access information and voice their concerns, and that holds the "*power to promote the realisation of other rights and public participation, as well as to facilitate access to goods and services*." It is indeed the democratic importance of the Internet that justifies the need to guarantee a sustainable open and unrestricted access to the most efficient communication platform ever. The European revised framework only ensures a

[7] For a presentation and a translation into English of the proposals, see https://www.bof.nl/2011/06/27/translations-of-key-dutch-internet-freedom-provisions/ (accessed July 18, 2011).

[8] Joint declaration by the United Nations Special Rapporteur on Freedom of Opinion and Expression, the Organization for Security and Co-operation in Europe Representative on Freedom of the Media, the Organization of American States Special Rapporteur on Freedom of Expression and the African Commission on Human and Peoples' Rights Special Rapporteur on Freedom of Expression and Access to Information.

weak, minimal protection that has not included a rule on non-discrimination. Its effectiveness will depend upon the will of national authorities. There is no doubt that transparency requirements are a sound component of any policy that aims at regulating communication networks, but transparency won't be a spontaneous move on behalf of the networks operators. It may be expected that the enforcement of the European transparency rules will be a hard task for the regulatory authorities. Indeed, for the sake of credibility and efficiency, the NRAs should themselves show a strong commitment to making their efforts transparent in order to bring to the knowledge of the public at large their monitoring activities. More precisely, monitoring the implementation of net neutrality could become an important field for cooperation between the Internet users and the regulatory authorities.[9] After all, isn't our traditional Internet all about open collaborative processes?

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