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NETWORK NEUTRALITY REGULATION IN BRAZIL: AN ECONOMIC SOCIOLOGY APPROACH AND THE CHALLENGES AFTER THE FCC'S DECISION

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ABSTRACT

Why different groups have different opinions on network neutrality? Can a group impose their opinion to others and have their claims respected by the regulatory authorities? This paper aims to present some insights about the network neutrality regulation in Brazil and discuss the challenges after the FCC's decision in the United States regarding network neutrality. It is hypothesized that there are conflicting groups and that such groups will seek, in the open discussions, to impose their calculation devices. The process of implementation and regulation of the Brazilian Civil Landmark of the Internet is a conflict arena, in which the actors could present their world views and their calculation devices.

Key-words: Network neutrality; Regulation; FCC

1 INTRODUCTION

Nowadays, all the sectors of the economy depend on the information transmitted over the internet. Not only new activities could be created with the internet evolvement, but also other could use it to increase their productivity. Internet is considered nowadays as important as was in the past railways, waterways and power transmission (Hitchiner, 2009; Shima, 2013).

With the increasing quality and volume of broadcasted information, more quality and velocity are demanded. Internet is not more only a way of message changing and document repository. The interactivity allowed among users, video broadcasting via streaming, teleconferences, online learning, data storage and other factors denote the importance of increase the capacity and the quantity of connected users.

On the other hand, these new services demand more infrastructure and bandwidth, which could congest the broadband pipes. One of the most controversies in this sense is the network neutrality controversy. This involves the collision of different perspectives for the internet. In one side are those advocate equal treatment of the data package

transmitted and in the other side are those propose the discrimination with the aim to offer differentiated products (McKelvey, 2010). At the other side, are those who claim for the necessity of manage traffic by identifying data packages ad prioritizing them.

In a neutral network, users can access, at the contracted speed, any content. In a non-neutral network, for instance, the users would pay differentiated prices to access different contents. Not only the user is affected by the net neutrality, but also the content and internet service.

In a neutral network, the content providers are free to offer content directly to the final user, without worry about the ISP. The content discrimination can incentive as well as disincentive innovation and competition among content producers and ISPs. Net neutrality is regulated around the world and, in Brazil, the law that regulates it among other things is the Brazilian Civil Landmark of the Internet.

This paper aims to present some insights on net neutrality regulation in Brazil. It is hypothesized that there are conflicting groups regarding net neutrality, and that such groups will seek, in the open discussions, to impose their calculation devices. The process of implementation and regulation of the Brazilian Civil Landmark of the Internet is a conflict arena, in which the actors could present their world views and their calculation devices.

2 THE CALCULATION AGENCIES: FINDINGS FROM ECONOMIC SOCIOLOGY

Granovetter (1985) explains which transactions in modern capitalist society take place in the market and which are confined to hierarchically organized companies and criticizes the conceptions that for him are oversocialized (present in sociology) or undersocialized (present in neoclassical economic theory). The first assumes that people have no choices to make, and that they seek only the approval of others. The latter, in turn, ignore the influence of social relations on economic exchanges. Both conceptions, for the author, make the same mistake of considering that decisions are driven by atomized beings. For Granovetter, in fact, economic behavior is embedded in social relations. Thus, market coordination will take place through competition or company

hierarchies, not depending on transaction costs, as in Williamson's approach, but in the construction of denser social networks.

Michel Callon and Fabian Muniesa (2005) treat the markets as collective devices that allow commitments to be reached in terms of the nature of the goods, the production and the distribution and the value attributed to the gods. For the authors, market relations are the result of calculations developed by what the actors call calculation agencies. Like Granovetter, the authors also seek a midterm between neoclassical economic theory and sociology for an appropriate definition of the notion of calculation. For economists, agents are calculating and rational; for the sociologists and anthropologists, calculation is derived from judgment or conjecture, which means that agents do not calculate (Callon and Muniesa, 2005).

To be calculated, the entities taken in consideration are isolated. A finite number of entities are moved, sorted, and organized into a single space. This single space, called calculation space, is the account and the surface on which the entities to be calculated are moved, then compared and manipulated based on a common operating principle. “An invoice, a grid, a factory, a trading screen, a trading room, a spreadsheet, a clearing-house, a computer memory, a shopping cart - all these spaces can be analyzed as calculative spaces, but all will provide different forms of calculation” (Callon and Muniesa, 2005, p. 1231).

Market transaction consists of the transfer of the ownership of the goods. Once transaction has been completed, buyers and sellers are quits and return to their original position. For the good to be exchanged, it must be singularized, that is, taking properties that have value to the buyer. By being singled out, the good is detached from the seller’s world and attached to that of the buyer and can then be exchanged, when it becomes attached to buyer’s world. When singled out, the good is calculable (Callon and Muniesa, 2005).

Singularization is a process of classification, clustering and sorting that makes products both comparable and different. A consumer can make choices only if the goods are endowed with properties that produce distinctions. However, “The more complex a product is, the more its marketing poses problems in terms of singularization. The product wavers between a high level of singularization (weak substitutability) and a high level of standardization (strong substitutability)” (Callon and Muniesa, 2005, p. 1235).

Once singularized, the products can be calculated and thus marketed. The calculations are made by the calculation agencies which are collectives hybrids, made up of humans and non-humans who, equipped with calculation devices, calculate and make the best choices. The more an agency can singularize the product, the greater its computing power.

The power of calculation, however, is not equally distributed among the agencies, which depend on the calculation devices. In certain situations, consumers have the best information and can therefore impose their calculation devices on negotiations. In other situations, the producers have the greatest calculative power. The calculations are completed when agencies can: i) establishes a list of states of world; ii) hierarchize these states of world; and iii) Identify and describe the actions that allow the production of each of the states of world (Callon, 1998). Each state of the world corresponds to a list of actors and assets certain distribution of these assets among the actors.

Once these states of the world are defined, the agencies establish a hierarchical list, defining which states of the world are preferable after the negotiation. In order to be able to define these states of the world and to anticipate the effects of the different conceivable actions, an operation called framework is necessary. This operation of defining the agents that are clearly distinct and dissociated from each other, for Callon, consists in the clear definition of objects, goods, and goods that are perfectly identifiable and can be separated not only from other goods but also from other actors involved, for example, in its design, production, circulation and use (Callon, 1998).

3 REGULATION AND NETWORK NEUTRALITY

Blind (2012), identifies three kinds of regulation: (i) those dedicated immediately to the promotion of the innovation; (ii) those that seek other types of objects, but not the innovation itself; and (iii) those that influence firms' strategy, but not necessarily to promote more innovation. The regulation can both encourage and disincentive innovation, depending on the costs and incentive effects.

As a network industry, telecommunication is fragmented, modular and evolving constantly given the technological innovations and the evolution of the telecommunication and information technologies. These are the characteristics that

Brousseau & Glachant (2012) present as the "new economy". In this new economy, when the property rights are not completely established, it rises the negative externality question as result of the processes of unbundling, modularization and continuous innovation. These processes significantly increase the risks associated with congestion and security (Brousseau and Glachant, 2012). Congestion, by the way, is one of the main arguments against network neutrality (McKelvey, 2010).

Even though there is no clear definition on what network neutrality is, as a general matter, network neutrality mandate would prohibit network owners from discriminating against particular applications and content providers (Wu and Yoo, 2007). Most of the NN debates address network interconnection, access, and discrimination (Shin, 2014)

According to McKelvey (2010), two processes compete to shape the network: End-to-End (E2E) and Quality of Service (QoS) processes. E2E prioritizes home computers and peer-to-peer (P2P) networking, while QoS privileges connections, central servers and infrastructure.

E2E and Qof advocates form groups called by McKelvey (2010) Netheads and Bellheads, respectively[1]. While the Netheads' perspective see the internet as a social good, the Bellheads' perspective sees the internet as another commodity service. The main Bellheads' arguments claims for traffic management and the Quality of Service principle, assign "well behaved" and "bandwidth hungry" labels to the applications and prioritizing the "well behaved" ones instead of treating both types of applications equally.

A well-known debate about network neutrality is the "Wo-Yoo debate". While Tim Wo suggests network neutrality to preserve competition in applications and content, Christopher Yoo advocates the "network diversity" principle to preserve the competition at the last mile network market (Wu and Yoo, 2007).

The McKelvey's network neutrality controversy and the Wu-Yoo debate show that there are groups clamming for a neutral network, treating equally all the data packages and groups advocating for a vertical integrated network, prioritizing some packages and with the network owners offering their own products. Anyhow, it is possible, in an open debate, identify both groups and categorize them.

[1] McKelvey recognizes two approaches to categorize groups according their perspectives of the network. Although in many parts of his article mentions the existence of three groups, most of McKelvey's arguments is based on the categorization in two groups.

4 NETWORK NEUTRALITY REGULATION IN BRAZIL

In Brazil, network neutrality is regulated by Law # 12,965, dated April 23, 2014, which became known as the Brazilian Civil Landmark of the Internet which also provides for its regulation, initiated in 2015, through popular consultation. The process of drafting the bill, as well as the regulation, had popular participation and occurred in two phases, both lasting 45 days. In the first the users could post comments and proposals in the base text of the bill, which was written by the Ministry of Justice. In the second phase, users could comment on the draft of the bill (Cultura Digital, 2010).

In the first phase, the discussion topic on network neutrality appeared in some articles in the base text. Sub-topic 2.2.1 defined the end-to-end principle as the possibility that the Internet remains neutral in relation to its innumerable possibilities of use, without limitation of speed, access or content transmission, and that this principle is not always obeyed. (Cultura Digital, 2010). This subtopic received comments from nine different people: seven favoring neutrality, one person seemed not to understand what it was, claiming principles not related to the sub topic, and one person was not sure about the feasibility in maintaining the neutral network. The latter states that more information is needed.

Sub-topic 2.2.2 deals with the principle of improper filtering, stating that favoring or discriminating content for political, commercial, religious, cultural or other reasons may violate democratic principles. (Cultura Digital, 2010). This sub topic received 36 comments from 14 different people. Ten users are supportive of content neutrality, repudiating any information blockage. Four users were not clear about their favorable position or not.

In the next step, the discussion was carried out in the same way as the first one, with the net neutrality of 15 comments from ten different users on subsection IV of article 2, on the preservation and the guarantee of net neutrality, and 17 comments of 14 different users on Article 12 on the equal treatment of data packets. Regarding article 2, item IV, five users were in favor of net neutrality, one was contrary and three did not seem to understand what net neutrality was about. On article 12, in turn, ten users were in favor of the same treatment of data packets, one was contrary, two were not clear about their proposals and one made unrelated comment.

In addition to the direct comments on the platform, this second phase received e-mail contributions from 59 users, 23 of them national and 36 international. Of the 23 national users, 14 were in favor of network neutrality, one was against, one was neutral and three did not comment on neutrality.

The second public consultation process involving network neutrality was the regulation. The Secretariat for Legislative Affairs received 339 guidelines and 1109 comments during 82 days of debate (Ministério da Justiça, 2015). The "net neutrality" axis received 98 prompts from 81 different users, with large participation of access providers and defense institutions from the interest of telecommunications service providers.

The telecom companies had few participation in the first consultation process, but in the regulation consultation process they had a strong participation, with many institutions defending them. The main argument of the Internet Service Providers in the first consultation was that it was impossible to establish in law a definition of network neutrality. In the regulation consultation process, in turn, the discussion was about the exceptions to the rule, i.e., when it is possible to prioritize traffic.

Telecom companies, specially mobile operators, claimed for freedom of business and the possibility of the zero-rating practice. Although the regulation of the exceptions to the rule is not yet enacted in Brazil, a recent decision of the competition regulator in Brazil was favorable to zero-rating, establishing that future conflicts about unfair competition in the telecommunications industry should be treated case-to-case (Grossmann, 2017).

The participating groups evocated principles like freedom of business, control of illegal content, governance, consumer rights and competition. The participating institutions' claims are summarized in the table below.

TABLE 1: CLAIMS AND INSTITUTIONS

Claims	Institutions
Freedom of business	TIM Brasil, Claro S/A, Sky Brasil, TELCOMP, FEBRATEL, SINDITEBRASIL, SINDISAT, TELCOMP, TELEBRASIL, ABRAFIX, ACEL e ABINEE
Control of ilegal content	UBV&G, FNCP, Netflix, Motion Picture Association, Brasscon, e ABMID
Governance	ABEMID, ABRANET e Intervozes
Consumer rights	Fundação Procon-SP e ANJ
Competition	ABStartaps e ANER
Others	CTS-FGV, FIESP, CEPI, Ministério Público Federal, Ministério da Fazenda, Encontro Paranaense pelo Direito à Comunicação, TIA e ABRINT.

SOURCE: MINISTÉRIO DA JUSTIÇA, 2015 (OWN ELABORATION).

5 RESULTS AND DISCUSSION

Since in the net neutrality controversy there are two conflicting groups, and in a market the agencies try to impose their calculation devices, how does the relationship between these groups in a marketplace works?

First, it is necessary to define which are the calculation agencies, these being a hybrid formed by human and non-human agents. On the Netheads' side, we can consider all those who use the internet, whether for download, upload or file sharing, while on the side of the Bellheads are those who make money by offering access to the internet. The agency we will call consumers, therefore, is a network made up of simple end users, those who simply use the internet for personal purposes, content producers such as websites, blogs, portals, and so on and P2P algorithms. The agency we will call providers is comprised of content providers, telecommunications executives, who seek to maximize corporate profits, network infrastructure, such as backbones and backhauls, the routers and the algorithms that allow the differentiation of the content.

If, on the consumer side, the perfect state of world is a free internet to access any content at any time and in any quantity, on the providers' side, the perfect state of world is one where they can maximize their income, possibility of establishing a hierarchical list of data packets to lead for each consumer, in descending order of financial returns offered by these packages.

In a neutral network, in which the E2E relationship prevails, consumers are favored. In this way, content providers are forced to offer access to "band hungry" data packets, such as P2Ps, which do not boost financial gains, limiting the possibility of offering differentiated products such as premium services.

In this, there is possibility for the formation of a free market for the content producers, like the streaming movies. Being consumers free to access any kind of data package, it opens a space for free price negotiation. In a completely neutral network any content producer can offer services without having to associate with the access providers

In a network in which the QoS relationship prevails, providers are favored, which, in the name of a "cleaner" network, limit or even prevent the traffic of certain data packets. In order to identify these "preferred" packets, the routers are equipped with software whose algorithms identify, hierarchize and potentially limit the speed of certain content.

There is no freedom, in a QoS network, for content producers. In addition, by having its contents identified as potentially profitable or not by the provider, as in this type of relationship the provider may limit the connection to certain data packets, content producers would have to associate with providers, losing part of their freedom to action. Going back to the example of selling a video streaming service, a provider that also sells pay-TV services, could consider it as a competitor, limiting its action, both for its content and its value pay the provider.

Although the affiliation of content producers in that market to the network of consumers or providers should occur prior to the definition of the relationship in E2E or QoS, the content producers themselves must have already made a list of possible states of world in each one of the relationships. Thus, the states of world of content producers, which includes their membership or the network of consumers, or the network of providers, are directly linked to the predominant relationship on the internet.

The Brazilian case for the regulation of the Internet's Civil Regulatory Framework and the contribution of Netflix offer two important information: First, Law No. 12.965 / 2014 establishes criteria in which content identification and /or degradation is possible (Brasil, 2014). Therefore, it is possible to establish a network that is neither purely E2E, nor purely QoS. It is therefore possible to establish degrees of closeness with both extremes. Second, as a content producer, Netflix claimed the freedom to do so by positioning itself more alongside the consumer than the provider side.

Regarding to FCC's decision, in December 2017, Federal Communications Commission approved a measure to remove the net neutrality rules. The expectations were that the ISPs would no longer be prohibited to block, throttle, and prioritize content if they wish to. This decision let several operators worldwide to start to press governments to terminate network neutrality too. In Brazil, fixed broadband operators claimed for stablishing limits for data, unlike it happens in mobile services. But in May 2018 the U.S. Senate voted in favor of reinstating the Federal Communications Commission's net-neutrality rules. This situation shows that the network neutrality controversy is far from ending.

6 CONCLUSIONS

The network neutrality regulation process in Brazil shows an evidence about how institutions, in open discussions, can form groups and impose their calculation devices. The few participations of the telecom companies in the first consultation process, followed by the strong participation in the second consultation can give some insights. Probably these companies saw the first consultation as a losing battle, because the network neutrality definition was already determined. In the second process, otherwise, it was not clear, probably because of the difficult on establishing exceptions to the rule.

In the opening discussions, it is possible to observe the institutions' alignment about the network neutrality. It is clear the position of the content providers' concern with the illegal content question. On one hand, they could be favorable to network neutrality because they would spread their content regardless of who owns the network. On the other hand, they are aligned with the telecom operators in the war against peer-to-peer applications. To the content producers, this is to avoid digital piracy. To the ISPs, this is to manage the network.

The ambiguous position of the content providers and the recent decision about zero-rating demonstrates that the network neutrality controversy is not over. Although the position of the ISPs against network neutrality is clear, and the telecom operators are winning some battles, the forces claiming for a neutral network are still strong, and the future will depend on the evolutionary processes. In other papers this study will be

expanded to analyze the participation of the agents in the phase of regulation of network neutrality.

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