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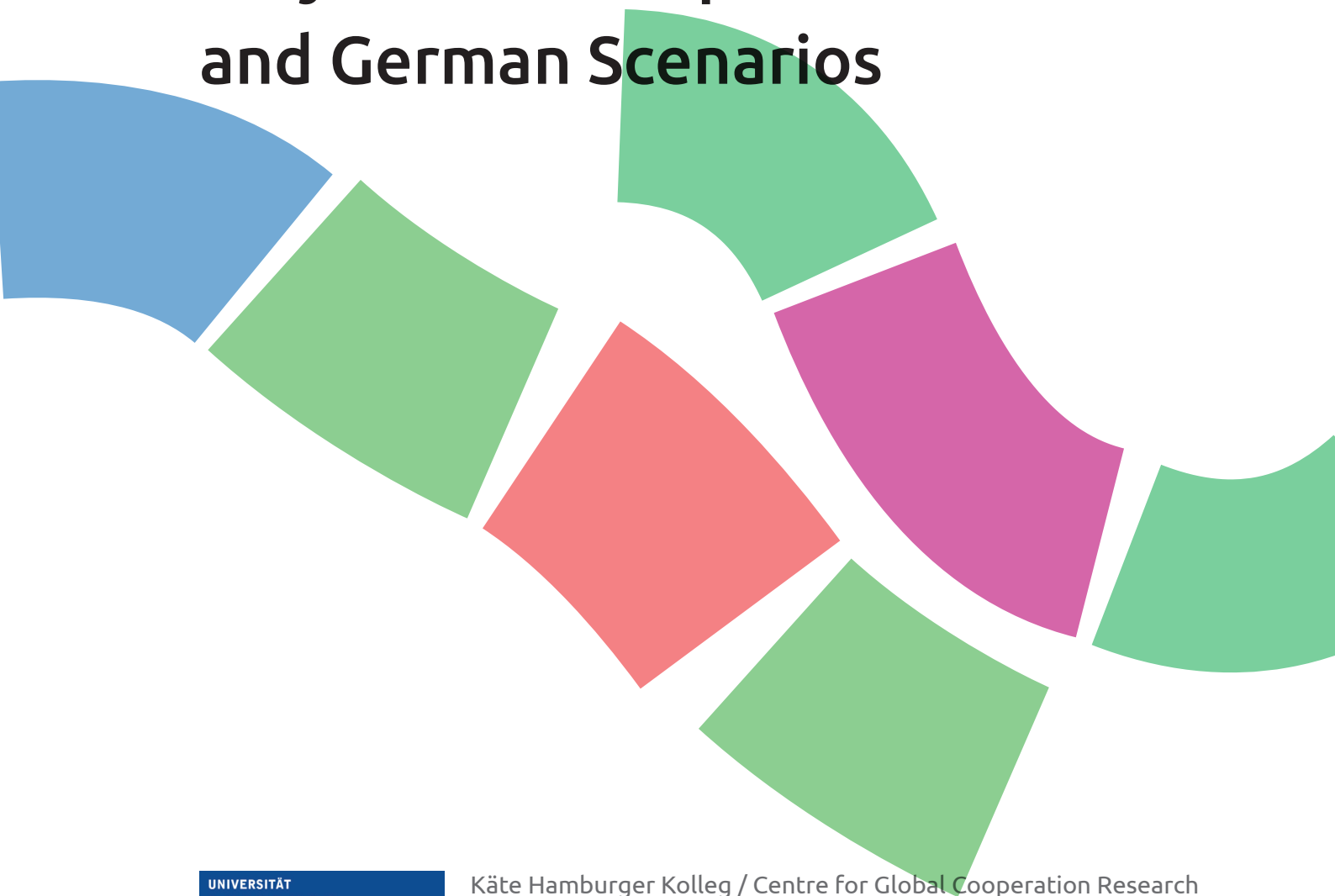
Nathalia Sautchuk-Patrício

Revisiting Net Neutrality From a Polycentric Perspective: Brazilian and German Scenarios



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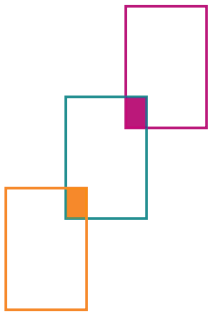

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Schifferstr. 44
47059 Duisburg
Germany
Tel: +49(0)203 379-5230
Fax: +49(0)203-379-5276
E-Mail: info@gcr21.uni-due.de
Internet: www.gcr21.org

A Central Research Institute of the University of Duisburg-Essen

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Nathalia Sautchuk-Patrício

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Preface

The term 'open Internet' has turned into a buzzword over the last years. Yet, few ordinary citizens have a clear grasp of the concept. By and large, 'open Internet' is being used as a synonym for net neutrality, meaning that Internet traffic should be non-discriminatory. In other words, data should be transmitted irrespective of content, origin or destination. Nathalia Sautchuk-Patrício, however, a trained computer engineer and former technical advisor to the Brazilian Internet Steering Committee, reveals that even among Internet scholars and stakeholders the term 'open Internet' has been associated with a myriad of meanings and used for very different political purposes.

To disentangle the complexity of the net neutrality debate, this paper adopts a polycentric perspective, a heretofore unprecedented approach. A polycentric viewpoint helps to analyse the different actors and institutions involved in the debate as well as the different conceptualisations and political uses of the term. Polycentric governing is a mode of governance associated with seven key attributes, all of which are here applied to the net neutrality debate (trans-scalarity, trans-sectorality, diffusion, fluidity, over-lapping mandates, ambiguous hierarchies and the absence of a final arbiter).

This paper first assesses whether the net neutrality ecosystem can be seen as polycentric and, in a second step, to what extent the features of polycentric governance apply to two empirical cases – Brazil and Germany. A closer analysis and comparison reveal that not all characteristics of polycentric governing can be found in both cases. In the German situation, four of the seven features of polycentric governing are missing, while in Brazil all of them apply. Another key finding is the fluidity of the governance system and the development of net neutrality over time. She detects a certain stability over the last few years in relation to the creation of new institutions and national and regional regulations which have meanwhile solidified the Internet ecosystem and implemented a final arbiter. In short, regional variations and changes over time reveal that the polycentric governing approach must be carefully screened when analysing and comparing national cases. Overall, Sautchuk-Patrício points to both the limits but also the potentials of the polycentric governing approach.

Nina Schneider (Editorial Board)

Revisiting Net Neutrality From a Polycentric Perspective: Brazilian and German Scenarios

Nathalia Sautchuk-Patrício

1 Introduction

In the various arenas of the Internet Governance debate, one of the points frequently highlighted is the need to the need to maintain an 'open Internet', commonly mentioned as one of the fundamental properties of the Internet that goes back to its pioneers. Despite the common use of the term, its meaning varies amongst the diverse cast of stakeholders and the various forums. In many cases, it is common to use this expression as a synonym for net neutrality. From this perspective, the Internet should be based on a non-discriminatory approach to the Internet traffic, which means that data is transmitted over the network, regardless of their content, origin or destination. Although net neutrality has been a topic of debate for at least two decades and many countries have regulations to protect it, new facets of this discussion continue to emerge, which leads to the principle being revisited constantly. Recently, this debate has expanded, adding new controversies like the intersection of the practice known as zero rating and the spreading of fake news.

Typically, net neutrality is not studied from a global governance and international relations point of view. Although this debate appears quite frequently in international forums, such as the Internet Governance Forum (IGF), most of them still do not exceed the sharing of experiences and case studies concerning the implementation of national regulations. Furthermore, the study of net neutrality has rarely paid attention to the multiple, highly fragmented decision centres of Internet governance. Thus, one possibility is that the net neutrality 'ecosystem' can be better understood if the polycentric governance theory is adopted. Scholte (2017) has already highlighted that Internet governance can be seen as a polycentric mode of governance since it 'occurs not only through many agencies individually and separately, but also and more particularly through their interconnections in regulatory networks'.

In order to evaluate the usefulness of the polycentric perspective concerning the issue of net neutrality, this paper will first trace the historical development of the debate, which was initially led by theorists in the United States, but then spread globally and influenced regulations in various regions. Second, how the adoption of net neutrality developed in two leading economic countries in their corresponding regions, namely Brazil and Germany, will be analysed more specifically. Finally, the article will revisit the net neutrality debate

through a polycentric perspective. The main goal is to highlight some aspects of this discussion that are generally neglected.

The paper consists of six sections. In the first section, the net neutrality debate is presented as an academic development, highlighting discussions on the end-to-end principle, human rights and zero-rating. The second section illustrates the main points of net neutrality in the international debate in the three most important arenas: the Internet Governance Forum (IGF), the Internet Engineering Task Force (IETF) and the International Telecommunications Union (ITU). Section three introduces net neutrality regulations both in Germany and in Brazil, discussing the context in which the regulations were adopted in these countries. Following this, the fourth section explains the polycentric mode of governance, stressing its attributes and structural layers to ordering dynamics in this context. Section five analyses net neutrality through the polycentric lens by considering the Brazilian and German contexts. Lastly, section six presents some considerations and sheds light on the challenges as well as future areas of research.

2 Net neutrality as an academic development

This section will provide an overview of the main aspects of the academic debate on net neutrality. It will map this discussion chronologically to see how it was initially developed by American researchers, considering the end-to-end principle debates through to the current zero-rating discussion. Additionally, this section will examine how new aspects, such as human rights issues, were depicted in the net neutrality discourse.

Net neutrality is a topic that has been debated since the early 2000s and continues to be at the centre of controversy. In one of the earliest articles dealing with this topic, Lemley and Lessig discussed the concept of 'open access', stressing the importance of the end-to-end (e2e) principle in the innovation:

> By its design, the Internet has enabled an extraordinary creativity precisely because it has pushed creativity to the ends of the network. Rather than relying upon the creativity of a small group of innovators who work for the companies that control the network, the e2e design enables anyone with an Internet connection to design and implement a better way to use the Internet. By designing the network to be neutral among uses, the Internet has created a competitive environment where innovators know that their inventions will be used if useful. By keeping the cost of innovation low, it has encouraged an extraordinary amount of innovation in many different contexts. By keeping the network simple, and its interaction general, the Internet has facilitated the design of applications that could not have originally been envisioned (Lemley and Lessig 2000: 8).

The end-to-end principle is commonly mentioned in tandem with the net neutrality discussion. Van Schewick (2016) explains that network designers have to decide the division of the network's functionality among layers, and the end-to-end arguments support this decision. According to her (2016: 292), 'the narrow version was first identified, named and described in a seminal paper by Saltzer et al. in 1981', that says:

> The principle, called the end-to-end argument, suggests that functions placed at low levels of a system may be redundant or of little value when compared with the cost of providing them at that low level. Examples [...] include bit error recovery, security using encryption, duplicate message suppression, recovery from system crashes, and delivery acknowledgment. Low level mechanisms to support these functions are justified only as performance enhancements (Saltzer et al. 1984: 277).

Lemley and Lessig explain the end-to-end argument in a more didactic way, stating that it organizes where functions will be located within the network, advising that the upper layers and end systems are where the 'intelligence' lies and the communications protocols (the 'pipes' through which information flows) are as simple and general as possible. They also add that this design principle applies non-discrimination among applications, since lower-level layers provide a lot of resources that are not particular to or optimized for any single application, even if they are sacrificing a more efficient design for at least some applications (Lemley and Lessig 2000).

The term 'net neutrality' was first introduced in 2003 by Tim Wu to the discourse concerning the level of interference that Internet Service Providers (ISPs) should have regarding the data stream in their respective networks. Although he does not directly define the concept, Wu (2003: 142) states that it is a network anti-discrimination regime that aims 'to give users the right to use non-harmful network attachments or applications, and give innovators the corresponding freedom to supply them'. In his vision, applications available on the Internet are in a battle for the attention and interest of end-users and it is essential that the network remains neutral to guarantee the meritocracy of this competition. While Lemley and Lessig are against the vertical integration of ISPs and cable operators and see it as the erosion of net neutrality, Wu believes that this approach has the disadvantage of retarding potential efficiencies of integration and may fail to deter other forms of discrimination. For him, it is necessary to make a distinction between local network restrictions, which are generally allowable (operators should have full freedom to 'police what they own'), and inter-network restrictions, which should be viewed as questionable (Wu 2003).

Meanwhile, the researcher Yoo is very critical of the need to maintain net neutrality. In a famous paper where he debates his positions with Wu, Yoo says

that he is 'not convinced that deviations from net neutrality will necessarily harm consumers and innovation", seeing those deviations as a representation of 'nothing more than network owners' attempts to satisfy the increasingly intense and heterogeneous demands imposed by end-users' (Wu and Yoo 2007: 575–576). In another paper, Yoo states that net neutrality proponents are focusing on the wrong policy problem, since the last mile is the most concentrated level of the broadband industry and, simultaneously, one that is well protected by entry barriers. Advocates are, however, focusing on preserving and promoting competition among providers of content and applications, which is already the most competitive level and the most likely to remain that way. That is why, he suggests embracing a 'network diversity' principle that would allow different network owners to experiment with various business practices and the regulation would occur only if such practices demonstrate some adverse effect on competition (Yoo 2005).

Another point of view commonly discussed is in relation to human rights. Nowadays, the Internet is seen as one of the most important means to promote human rights, especially the right to freedom of expression and the other rights it enables, including the rights to freedom of assembly and association, the right to education, and the right to participate in cultural life. McDiarmid and Shears (2016: 36) affirm that the defence of net neutrality 'means preserving the power of individuals to make choices about how they use the Internet – what information to seek, receive, and impart, from which sources, and through which services', which 'in turn advances the other cultural and civil and political rights'. Another interesting point the authors bring forward is that the freedom of expression advocacy is more concerned with state censorship of the Internet, sometimes forgetting that private ISPs are in a position to control their customers' access to Internet content. The authors also state that governments should take steps to prevent ISPs from taking actions that may interfere with users' enjoyment of those rights to fully protect user choice and freedom of expression and other rights online.

A promising way to understand net neutrality is through the interests at stake. Wu (2003: 151) claims that it is necessary 'to strike a balance between legitimate interests in discriminating against certain uses, and reasons that are suspect either due to irrationality or because of costs not internalized by the broadband operator'. According to him, the extreme cases are self-evident. On the one hand, ISPs usually ban users from using applications as well as any conduct that intends to hurt the network or other users, such as spreading network viruses being an acceptable case of discrimination. Although this ban disfavours a class of applications, in this case, the ISP's actions prevent a user's imposition of negative behaviour on others. On the other hand, however, a completely unjustified blocking is clearly harmful. Wu (2003: 152) gives an example: 'imagine that the nation's broadband operators came to feel that IP 'chat' programs were just a waste of time, and were able to use their control

over the last mile to ban their use'. This kind of discrimination shows both a direct harm as well as many negative externalities (Wu 2003).

Along the same line, Ramos (2018) presents a conflict map tracing the interests of the major actors of Internet governance. One of those groups is composed of the ISPs, which could be divided in two categories: access providers and transit providers. According to Ramos, net neutrality could represent a loss of network control for access providers, which can lead to reduced profits and efficiency of their networks as well as smaller incentives for innovation in the telecommunication infrastructure. For transit providers, a net neutrality regime can reduce transaction costs charged by access providers and prevent them from using anti-competitive business practices to interfere in negotiations between transit providers and large application providers.

Another type of actor are the content and application providers, also known as over-the-top (OTT) providers. They deliver content and software applications to end users, such as Internet websites, mobile applications and Software as a Service. The size of this kind of provider is relevant to the net neutrality discussion. For large content providers, net neutrality has a dubious role. With the guarantee of net neutrality, they do not need to negotiate special conditions for their content with ISPs, thus being able to invest more resources in innovation. However, the prohibition of traffic prioritization agreements reduces the instruments available for them to maintain their hegemony. The effects for small content providers are different, allowing them to benefit from net neutrality. Since their content is treated in the same way as the ones of large providers, the barriers to entry in the market are reduced, generating a greater diversity of initiatives and innovation in this sector (Ramos 2018). Finally, due to a reduction of barriers, users also profit from net neutrality if they wish to stop being mere consumers and become content providers, guaranteeing greater content diversity, strengthening the users' autonomy, and increasing the freedom of expression. On the other hand, there is a potential negative consequence, which is the increase in access costs for 'heavy users' of specific applications (Ramos, 2018).

Regarding net neutrality violation, van Schewick (2016: 299) states that 'the original Internet was application-blind, that is, it was unable to distinguish among the applications on the network'. This means that the ISPs are deprived of three strategic options available in an application-aware network used as a means to violate net neutrality:

> First, a network provider in an application-aware network can block applications or discriminate against them. Second, it can charge an access fee to providers of applications and content who are not the network providers' Internet service customers. Third, it can charge different Internet transport prices for different applications, or it can exclude applications to price discriminate between customers of its Internet service (van Schewick 2016: 299).

Recently, one of the most contentious points in the net neutrality debate centres around practices known as zero-rating. According to Belli (2016), these practices consist in the sponsorship of the users' data consumption related to a limited set of applications or class of application by a mobile Internet provider or a third party, such as a content and application provider. At first glance, these practices seem to be interesting as they free the end user from using their mobile data plan for the use of certain applications, such as social media. However, they only make sense when, economically speaking, the mobile Internet providers offer reduced data caps in their commercial plans, but not when unlimited data models prevail.

Moreover, zero-rating practices can have some harmful consequences on the Internet ecosystem. Belli (2016) argues that those practices can trigger a phenomenon called 'Minitelisation of the Internet', explained as below:

> This phenomenon consists in the Internet's evolution from a general-purpose network, where users may freely generate and share innovation, into a predefined-purpose network, characterised by a centralised — and easy-to-control — configuration, where passive customers merely access predefined applications (Belli 2016: 24).

Another important point is that zero-rating practices can potentially lead to the fragmentation of the Internet into clusters of sponsored applications. Finally, 'the combination of low data caps, together with the simultaneous increase of mobile Internet access prices, represent de facto a limitation of choice, by posing an economic burden on the access to the forms of expression and innovation that are not sponsored' (Belli 2016: 29). In this context, many net neutrality advocates argue that these practices would violate the idea of a neutral Internet. Defenders of zero-rating practices say that there is no infringement of net neutrality as it is just a charging practice and since there is no discrimination at the level of packet routing.

With the maturation of the academic debate on net neutrality and the exchange of ideas between researchers and policy makers, this topic has started to expand into other spheres, such as in international forums on Internet governance and telecommunications as well as in the legislative spheres of different countries. The next section details how the neutrality debate has been portrayed appeared and developed in international forums. The focus of the subsequent section will be the development of net neutrality as a regulation in Brazil and Germany.

3 Net neutrality in the international debate

This section will show how the net neutrality debate came to be included on the agenda of three of the main international Internet governance bodies, namely the Internet Governance Forum (IGF), the Internet Engineering Task Force (IETF) and the International Telecommunications Union (ITU).

An important milestone for Internet governance was the World Summit on the Information Society (WSIS), held in Geneva and Tunis in 2003 and 2005 respectively. One of the outputs of this process was the WSIS Tunis Agenda for the Information Society, which established the Internet Governance Forum (IGF), 'a multistakeholder body convoked by the UN Secretary General to function as a space for discussions on public policy issues related to key elements of Internet governance' (Kurbalija 2016). Since 2006, the IGF has been considered the most important forum in relation to the themes of Internet Governance. According to Kurbalija (2016), the IGF is truly multistakeholder, since all players (states, businesses, academic and technical communities and civil society) participate on an equal footing.

Although the IGF started in 2006, it was only in 2008 that net neutrality emerged as one of the Internet governance issues and started to be debated during the IGF workshops proposed by the stakeholder community. With the maturation of the IGF itself and the exchange between multiple stakeholders came a demand for and the creation of new and more permanent interaction spaces. One such example is the Dynamic Coalition on Network Neutrality (DCNN). Its establishment as a long-term multistakeholder cooperation with the goal to produce concrete outputs concerning net neutrality was officially approved by the IGF Secretariat in July 2013. As Belli and De Filippi recognise 'while the IGF workshops are designed for various stakeholders to debate specific topics at a specific point in time, the dynamic coalitions are meant to guarantee continuity over the years, offering an exceptional opportunity to generate an enduring policy-shaping effort' (2016: 1).

One of the most relevant DCNN's outputs was a Model Framework on Network Neutrality, that was delivered to the Council of Europe in order 'to provide guidance on how to frame net neutrality and it has been subsequently used it [sic] as background material for the elaboration of a Recommendation on Network Neutrality' (Belli and De Filippi 2016: 2). During its existence, the coalition has been debating different issues, such as the role of the non-discriminatory traffic management in facilitating the full enjoyment of fundamental rights; the analysis and comparison of existing net neutrality frameworks; and the implementation of net neutrality rules in an effort to frame emerging challenges (Belli and De Filippi 2016). In 2020, the DCNN debate turned to reaffirm the importance of net neutrality, especially in the context of the pandemic. Another development that indicated an exhaustion of the net neutrality debate within the IGF-sphere was the alignment of the

DCNN with the goals of the Dynamic Coalition on Community Connectivity, which manifested itself as a focus on connecting disconnected communities to grant them access to the Internet.

With respect to the development of Internet standards at the international level, there are two main arenas where this occurs, the IETF and the ITU. According to Internet Engineering Task Force (n.d.), the IETF is a 'large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet'. The RFC 3935 defines the mission of the IETF, which is:

> to produce high quality, relevant technical and engineering documents that influence the way people design, use, and manage the Internet in such a way as to make the Internet work better. These documents include protocol standards, best current practices, and informational documents of various kinds (Alvestrand 2004: 1).

One point that is worth highlighting here is that Internet standards are being increasingly developed by private and professional institutions, which is a trend of Internet governance. The IETF is a prime example; the standards it sets are developed by professionals linked to various sectors (companies in the network and applications sector, researchers in the field of networks, representatives of governments and regulatory agencies and representatives of organized civil society) through the Request for Comments (RFC).

By mapping the available documents from the IETF, it is possible to see how the discussion unfolded in this space. Considering the transcripts from the IETF meetings, it is possible to see that net neutrality was debated only once in a plenary in the IETF 75 in July 2009 (Internet Engineering Task Force 2009). At the beginning of this session, it was emphasized that the Internet Architecture Body (IAB) as a body did not have a position on this topic and the onus to be informed and understand the problem lay with the audience as well as the other participants. At this plenary, Professor Barbara van Schewick, from the Stanford Law School and one of the experts in the field, presented an overview of the debate. After her presentation, Professor Mark Handley, from the University College London and member of IAB, raised some thoughts concerning net neutrality implications for protocol design. After this discussion in the IETF 75 plenary, however, it was not possible to find any document with IAB's formal position on the topic.

Nevertheless, exactly five RFCs mention net neutrality in their texts[1] (nowadays, the total number of RFCs is over 9000). In the IETF context, net neutrality is commonly associated with Quality of Service (QoS), a measurement of broadband performance, traffic optimization and management, differential treatment and Deep Packet Inspection (DPI). However, a trend observed in these RFCs is that they do not address net neutrality directly. Instead, the term is cited either to affirm that this aspect is not taken into account or to argue that the RFC is in line with neutrality without providing any details.

Another body that plays a role in the debate on net neutrality is the ITU, which is responsible for the coordination rules among national telecommunications systems, the allocation of the radio spectrum and the management of satellite positioning. According to Kurbalija (2016), 'the ITU sets detailed voluntary technical standards and telecommunication-specific international regulations, and provides assistance to developing countries'. Despite its important role with regard to Internet governance, the ITU has been the subject of controversies concerning how it dealt with policy issues that are intersecting with the realms of telecommunication infrastructure, such as VoIP and cybersecurity.

The same polemic can be applied to the discussion of net neutrality. According to Kurbalija (2016), net neutrality was heavily discussed during the last World Conference on International Telecommunications (WCIT), which converged in Dubai in December 2012 in order to amend the International Telecommunication Regulations (ITRs) for the first time since 1988. During the WCIT-12, concerns regarding the impact of a new telecommunications regulation on the future of the Internet were raised. After many negotiations, participants did not reach a consensus on the amended text because of a contentious point regarding the role of the ITU in Internet governance, which divided participating states into two blocks: the multistakeholder model and the intergovernmental model supporters.

A point worth noting with reference to net neutrality during the WCIT-12 debates was the proposal made by the European Telecommunications Network Operators (ETNO), requesting international regulation to prevent national regulations from protecting net neutrality, which is a position contrary to the more popular one held by telecommunication operators to oppose any regulation on net neutrality. However, the US telecom operators were against this initiative at that time (Kurbalija 2016).

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1 RFCs that mention 'net neutrality' are the following: RFC 5290 – Comments on the Usefulness of Simple Best-Effort Traffic (July 2008), RFC 7536 – Large-Scale Broadband Measurement Use Cases (May 2015), RFC 7962 – Alternative Network Deployments: Taxonomy, Characterization, Technologies, and Architectures (August 2016), RFC 8337 – Model-Based Metrics for Bulk Transport Capacity (March 2018), and RFC 8404 – Effects of Pervasive Encryption on Operators (July 2018).

In addition to organizing the WCIT, the ITU also has several working groups that produce recommendations. Mapping the existing ITU recommendations available online, only four cite net neutrality[2], two of which say that net neutrality should be considered without further explanation and one cites the Body of European Regulators for Electronic Communications (BEREC) tool for measuring net neutrality. The fourth document on the list has a 2021 version in effect that is not open to the public. However, when reading the previous version from 2013, there is an extensive debate on the issue of net neutrality and traffic differentiation. It emphasizes that traffic management has beneficial aspects and that, due to the great need for investment in expansion infrastructure, ISPs are likely to want to use traffic management tools to provide services beyond packet transport.

When considering the previous presented arenas, it is possible to note that those related to standardization did not take a clear position on net neutrality, despite having discussed the topic. All attempts at advancing the discussion were so far unsuccessful and did not lead to a common position. The term net neutrality is used in a few documents, in most cases as a loose concept without further explanation. The only arena that deepened the net neutrality debate was the IGF, with special emphasis on the DCNN. But even in the IGF, it is possible to see a trend of cooling down in the debate, opting to focus on other aspects of Internet connectivity. In part, this trend in the debate can be explained by several countries having adopted regulations favourable to net neutrality, including the very recent executive order signed by the President of the United States, requiring the FCC to adopt adequate measures of net neutrality in the country, adding the US again on the list of major countries with net neutrality regulations (The White House 2021). In the next section, the net neutrality will be treated in a regulatory approach, dealing specifically with two countries, Germany and Brazil.

4 Net neutrality as a regulatory approach

Around the world, there are several regulations that protect net neutrality regionally, nationally and locally. These rules have particularities and may even differ from one another, showing different views of what net neutrality is. This section will focus on illustrating how academic and international Internet governance forums debates have influenced the adoption of pro-net neutrality regulations both in Germany and Brazil. Since Germany is part of

2 ITU recommendations that mention 'net neutrality' are the following: Interpreting ITU-T Y.1540 maximum IP-layer capacity measurements, ITU-T Y.3100-series – Awareness on use cases and migration aspects of IMT-2020, Internet protocol data communication service – IP packet transfer and availability performance parameters, and Supplement 9 to ITU-T E.800-series – Recommendations (Guidelines on regulatory aspects of QoS).

the European Union, there is no way to analyse its regulatory landscape without looking at the European debate in general.

On the European level, one of the first organizations to take part in the discussions on net neutrality was the Council of Europe (CoE), an international organization composed of 47 European countries, which promotes democracy and protects human rights and the rule of law. In 2010, the Declaration of the Committee of Ministers on network neutrality was released. It not only affirmed its commitment to this principle but also stressed the importance of electronic communication networks as a means to 'help to ensure freedom of expression and access to information, pluralism and diversity and contribute to the enjoyment of a range of fundamental rights' (Council of Europe 2010). Yet, in 2016, the CoE launched the Recommendation of the Committee of Ministers to member States on protecting and promoting the right to freedom of expression and the right to private life with regard to network neutrality, introducing some general guidelines on the topic, touching on points such as equal treatment of Internet traffic, privacy, transparency and accountability (Council of Europe 2016).

In 2015, the European Parliament and the Council of the European Union approved Regulation EU 2015/2120. The regulation explicitly uses the term open Internet in Article 1, stating that it aims to 'establish common rules to safeguard equal and non-discriminatory treatment of traffic in the provision of internet access services and related end-users' rights'. Article 3 delves into the safeguarding of open Internet access, which in this context can be understood as net neutrality. According to the article,

> Providers of internet access services shall treat all traffic equally, when providing internet access services, without discrimination, restriction or interference, and irrespective of the sender and receiver, the content accessed or distributed, the applications or services used or provided, or the terminal equipment used (Regulation 2015/2120 2015).

Since then, an addendum has been adopted, which allows access providers (also called ISPs) to implement reasonable traffic management measures. The measures are considered reasonable when they are transparent, non-discriminatory and proportionate. Another important aspect is that they cannot be based on commercial considerations, only on objectively different technical quality of service requirements of specific categories of traffic. And finally, 'such measures shall not monitor the specific content and shall not be maintained for longer than necessary' (Regulation 2015/2120 2015).

Additionally, the European regulation makes explicit exceptions for certain traffic management measures (such as blocking, slow down, alter, restrict, interfere with, degrade or discriminate between specific content, applications or services or specific categories). The idea behind this is to comply with the

European Union and national legislative acts, laws or orders by courts or public authorities to preserve the integrity and security of the network, of services provided via that network, and of the terminal equipment of end-users; and to prevent network congestion and mitigate the effects of exceptional or temporary network congestion, provided that equivalent categories of traffic are treated equally (Regulation 2015/2120 2015).

The article also established roles for the Body of European Regulators for Electronic Communications (BEREC) and the National Regulatory Authorities (NRAs). After consulting stakeholders and in close cooperation with the European Commission, it was decided that the BEREC shall henceforth issue guidelines for the implementation of the obligations of NRAs regarding net neutrality. The same regulation established that the NRAs shall monitor, promote and enforce the continued availability of non-discriminatory Internet access services at levels of quality that reflect advances in technology. The NRAs shall publish reports on an annual basis regarding their monitoring and findings and provide those reports to the European Commission and to BEREC (Regulation 2015/2120 2015).

In fact, the BEREC announced the first version of the guidelines in 2016 to help NRAs to assess agreements and commercial practices and 'specialized services' against a common benchmark and to reach consistent decisions and enforcement actions. In 2020, the guidelines were updated to reflect the experience of the NRAs and of the European Commission during the last four years, providing clarity on commercial offers with differentiated pricing or differentiated quality. Some adjustments were made to better fit to 5G use cases (European Commission 2020). In Germany, the NRAs role is fulfilled by the Bundesnetzagentur, which is the Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railway within the scope of responsibility of the Federal Ministry of Economics and Energy.

Furthermore, the European Commission published a report on the implementation of the Open Internet access regulation in 2019, aiming to review the provisions of this regulation. The report concluded the regulation's principles to be appropriate and effective in protecting end-users' rights and promoting the Internet as an engine of innovation and no amendments were necessary at this stage (European Commission 2020).

Compared to the European scenario, Brazil is not far behind, having a well-established debate on net neutrality as well as legislation passed even before European regulation. Unlike what happened in the European Union, the debate on net neutrality in Brazil was within the scope of a larger legislation, the Internet Bill of Rights (Marco Civil da internet), considered to be the 'Constitution of the Internet in Brazil'. According to Lemos (2017), the bill was proposed by the civil society and was the product of an open and collaborative effort, described as a multistakeholder process. In 2008, a platform for

debate and for collaboration on the bill was launched. During an 18-month consultation process, various stakeholders could contribute to a hybrid and transparent forum, among them Internet users, civil society organizations, telecom companies, governmental agencies and universities. After that, the government accepted the final draft of the bill, and it was sent to Congress on 24 August 2011. Political negotiations over the Internet Bill of Rights were extremely complex and took place over many years, with net neutrality as one of the more contentious points. The bill was signed on 23 April 2014.

Within this law, a specific section deals with net neutrality. Article 9 states that 'the agent in charge of transmission, switching and routing must give all data packets equal treatment, regardless of content, origin and destination, service, terminal or application' (Souza, Viola and Lemos 2017: 14). According to the law, traffic discrimination and degradation are exceptional measures, that 'may only result from: I – technical requirements essential to the adequate provision of services and applications, and II – prioritization of emergency services' (Souza, Viola and Lemos 2017: 14). Furthermore, the legislation also states that the ISP must refrain from causing damage to users, acting in a fair, proportionate and transparent manner in the event of traffic discrimination. It means that the access provider needs to communicate its traffic management and mitigation practices, including network security measures, and those measures have to be based on non-discriminatory commercial terms, limiting anticompetitive practices to users in advance and providing clear and sufficient details for an informed decision (Souza, Viola and Lemos 2017).

Net neutrality was regulated in depth by the Decree 8.771, which presents in its Article 5 the technical requirements necessary for the adequate provision of services, being those resulting, from: 'I – handling network security issues, such as restriction on sending bulk messages (spam) and controlling denial-of-service attacks; and II – handling exceptional network congestion situations, such as alternative routes in case of main route interruptions and emergencies' (Souza, Viola and Lemos 2017: 32). Essentially, these are the only hypotheses in which it is acceptable that there is discrimination in the users' traffic by ISPs.

Furthermore, the decree holds the National Telecommunications Agency, known as Anatel, responsible for issuing regulatory standards regarding net neutrality, taking into consideration the guidelines established by the Brazilian Internet Steering Committee (CGI.br). In addition, the National Consumer Secretariat would monitor and investigate infringements that harm consumers and the Brazilian Competition Defense System would do the same for economic infractions. Essentially, these entities are required to work collaboratively to enforce net neutrality in the country.

Among all the bodies mentioned, it is important to highlight the role of CGI.br in this process. The CGI.br was created by the Interministerial Act in 1995,

with the purpose of coordinating and integrating all Internet service initiatives in Brazil as well as promoting technical quality, innovation and the dissemination of available services. The committee is comprised of 21 members from the government, the private sector, civil society and the academic and technical community, constituting a multistakeholder body in the country (Brazilian Internet Steering Committee n.d). During the discussions over the Brazilian Internet Bill of Rights, the CGI.br was very active, participating in many debates in the Brazilian Congress to point out some concerns as well as to clarify some technical aspects. Another significant contribution to the process was an open consultation on the regulatory points (which included net neutrality) for the subsequent regulation by the decree. The material, together with contributions from the community and board members, was later sent to Congress to serve as a subsidy for the regulation.

Considering both countries and their regulation development, it is possible to assert that net neutrality is an important issue, but its debate in the processes of construction and enactment of regulations in countries unfurled in different ways. In Brazil, the focus was on the creation of a principle-oriented legislation in relation to the Internet, with an emphasis on users' rights and safeguards. In the European Union, a specific regulation deals with particular aspects, followed by guidelines for standardizing enforcement by different countries. One of the gaps observed in the case of Brazil is precisely the lack of concrete enforcement guidelines in cases related to net neutrality. Furthermore, there is a lack of transparency in relation to net neutrality complaints received by the bodies in Brazil and how they are dealt with (for example, such complaints are published in annual reports in Germany). In addition, the bodies responsible for dealing with net neutrality in Brazil do not seem to be acting in a coordinated manner. Instead, action appears to be taken only in an ad hoc manner when urged by legal instances. Similar to Brazil, the German Bundesnetzagentur shows certain condescension with zero-rating practices by the mobile Internet providers. Two German courts have recently consulted the Court of Justice of the European Union for cases involving the use of zero-rating practices by the operators Vodafone and Telekom Deutschland. The court responded that such practices go against the European Union's open Internet regulation.

These sections explored net neutrality as an academic development, international debate and regulatory approach. The following section will conduct a bibliographical review of polycentric governance and consider its use as a theoretical framework for the analysis of the dynamics established in the debate of net neutrality in these different spheres.

5 Polycentric governance

In recent decades, global governance has become more complex and almost chaotic in certain ways. This observation also extends to Internet Governance. In order to deal with this high level of complexity, new approaches have emerged and are being used as a way to understand and explain recent global governance advances. One of these new approaches is polycentric governance.

According to Carlisle and Gruby (2019: 928), polycentric governance refers to 'a complex form of governance with multiple centers of decision making, each of which operates with some degree of autonomy'. Thus, the decision-making process is not a simple matter in this context, since it can cut across several jurisdictional levels and even include special-purpose governance units that operate in different jurisdictions simultaneously. Still, this kind of governance arrangement is neither centralized nor fully decentralized nor community-based; in fact, it attempts to strike a balance between those governance modes (Carlisle and Gruby 2019). According to this definition, Internet governance can be seen as a polycentric mode of governance, precisely because it has multiple decision centres at different jurisdictional levels.

Carlisle and Gruby add an important aspect about polycentric governance arrangements, its transience:

> We therefore propose that the best way to envision a polycentric governance system is not as a tidy and static network of discrete, connected decision-making centers. Rather, it is a dense and evolving web of decision-making centers—some transitory and others relatively fixed—and supporting actors from diverse sectors and domains (2019: 933).

For these authors, a polycentric governance system presents two important attributes. The first one is the existence of multiple, overlapping decision-making centres with some degree of autonomy, while the second is the way each governance unit acts while simultaneously assessing others through processes of cooperation, competition, conflict and conflict resolution (Carlisle and Gruby 2019).

Scholte (2017: 167) states that 'a polycentric mode of governance manifests seven main attributes: trans-scalarity, trans-sectorality, diffusion, fluidity, over-lapping mandates, ambiguous hierarchies and the absence of a final arbiter'. According to him, polycentric governance is not tied to geographical boundaries, which means that it occurs through interaction of agencies with global, regional, national and local attributions, defining the trans-scalarity of this mode of governance. Regarding the trans-sectorality, it is possible to see a combination of governmental, commercial and civil society actors, sometimes acting together in a 'multistakeholder' institution, especially in the case of Internet governance. The diffusion in polycentric governance can be observed

through the absence of a single 'world state', unfolding from multifarious locales. It is also possible to note that some issues, such as Internet regulation, are diffused within a nation state across several ministries. The Internet Bill of Rights, cited in previous sections of this paper, provides for exactly this diffusion among different bodies involved in Internet regulation in Brazil.

Just as Carlisle and Gruby (2019) observe the transience of polycentric governance, Scholte (2017) talks about the fluidity of the polycentric mode of governance. According to Scholte (2017: 171), there is a tendency of highly changeable over time with 'continual arrivals of new regulatory bodies, as well as frequent adjustments to the structures and mandates of existing institutions'. Again, as Carlisle and Gruby (2019) argue, Scholte reinforces that polycentric governance involves multiple agencies claiming responsibility for a given regulatory situation, which illustrates the overlapping mandates and jurisdictions.

In polycentric governance, the precedence among regulatory bodies is not often made explicitly clear, leading to contestable lines of command between those institutions and to a sudden need for ad hoc cooperation in order to reconcile ambiguous hierarchies. Not only that, the lack of an ultimate decision-making body within polycentric structures, as noted by Scholte (2017), might lead to a situation without an entity willing to take responsibility while each body is referring the issue to another authority.

Another interesting point to analyse is the 'governance of governance' known as metagovernance. Koinova et al. (2021) argue that norms of metagovernance are constitutive of actor interests and behaviour, and thereby produce regulatory effects in polycentric contexts. According to Deloffre (Koinova et al. 2021: 1996), 'metagovernance norms specify an aspirational vision for the governance of a policy area and generate shared expectations for actor behavior'. For example, in the global humanitarian field, which is polycentric, metagovernance norms were agreed on to provide humanitarian assistance in ways that do no harm and are accountable to affected populations, constituting what humanitarians see as a 'good' humanitarian action (Koinova et al. 2021).

Extending this discussion, Koinova et al. (2021) explore the ordering power of social relationships through norms, micro-patterns of practice and macro-frameworks of social structure that generate governance effects, 'ordering' chaos and making polycentricity work. In this sense, Scholte (Koinova et al. 2021) reflects that polycentric governance contains three different structural layers of ordering dynamics in this context: norms, practices and underlying orders. In a manner akin to Deloffre's definition of metagovernance norms (Koinova et al. 2021), Scholte states that 'norms are general articulated principles that inform the process of governing' (Koinova et al. 2021: 2009). But Scholte goes even further by saying that 'certain guiding ideas of the good

and the correct become embedded in the conduct of world politics, such that they acquire a force of their own, separate from the actors who enact them' (Koinova et al. 2021: 2009). Regarding practices, they are related to what people do and are usually tacit and even unconscious. Scholte distinguishes between four aspects of the practices. The first takes on discursive dimensions, comprising routines words, phrases, and narratives. For example, Scholte (Koinova et al. 2021) argues that open Internet can be seen as part of the discursive dimension in the Internet governance field. The second is related to routine forms of bodily interaction and, therefore, referred to as behavioural dimensions. Another one depicts objects as common reference points for a polycentric governing complex, commonly known as material dimensions. The latter covers the ways in which organizations build and execute their policy processes, generally referred to as institutional dimensions of practice (Koinova et al. 2021). The 'underlying orders' layer of structure in polycentric governance appears below the surface, being mostly unspoken and only indirectly visible through norms and practices, as well as actor motivations and decisions. They are systemic macro structures that permeate and integrate all locations and connections in a polycentric regime. According to Scholte (Koinova et al. 2021: 2012), 'underlying orders are social forces in their own right that to some degree impose a deeper organization on the surface disarray of polycentric governing'.

The use of a polycentric mode of governance brings both positive aspects as well as challenges for the matter 'being governed', for example, Internet. Regarding the good features of the polycentricity, Scholte says:

> Potential promises include a richness of policy inputs when multiple and different actors are involved; diversity and creativity of aims and strategies arising from decentred politics; more adaptive policy when numerous competing institutions are in play; less chance that issues get overlooked; and possibilities for advocates to 'forum shop' in order to obtain desired policies (2017: 173).

Carlisle and Gruby (2019) state that polycentric governance systems are generally associated with three major claims in the literature. First, this kind of system has a better capacity to adapt to social and environmental change. The second one has to do with the provision of a good 'institutional fit' for complex natural resource systems and, finally, risk mitigation is supplied in polycentric governance systems because of their inherent redundancy.

Despite the advantages cited, Carlisle and Gruby (2019) affirm that polycentric governance systems do not necessarily perform well or better than other forms of governance, and identify a number of potential pitfalls that stem from their inherent structural complexities. For them, one of these traps is the transaction costs related to the coordination that can be high, especially in larger or geographically dispersed systems. Another negative aspect has to do

with the accountability of the decision-makers that is more challenging with the dispersion of responsibilities in a polycentric governance system.

In addition to agreeing with the issue of accountability, Scholte (2017) includes more potential challenges in the adoption of a polycentric governance, such as: the capacity building of officials and citizens to enable them to deal with regulatory frameworks in a growing complexity; the policy negotiation through and among various scales and sectors; an inefficient duplication of policy efforts by several institutions; coherence, coordination and control among multifaceted governance actors; and compliance in ambiguous jurisdictions and lines of authority.

In spite of all the challenges exposed, polycentric governance offers a good framework for understanding how Internet governance takes place. The idea of this work is to use this concept to analyse especially the debate and the adoption of policies related to the net neutrality.

6 Net neutrality from a polycentric perspective

After exploring net neutrality from different perspectives in the preceding sections, this section applies the polycentric mode of governance as a theoretical framework to revisit the net neutrality debate and analyses which aspects can be observed.

First, the three layers of structure will be used to analyse whether it is possible to verify the property of polycentric governance in the issue of net neutrality. First of all, the presence of several norms in the net neutrality debate can be affirmed. Scholte cites some examples of norms such as democracy, economic growth, gender equality, human rights, peace, rule of law, sovereignty, sustainable development, transparency and accountability (Koinova et al. 2021). One of the sections of the article explores the issue of net neutrality as a regulation both in Brazil and in Europe in detail. In this sense, it is possible to see that rule of law is present. Human rights is another norm that appears in relation to net neutrality, especially with regard to freedom of expression online. As previously illustrated, one of the initial debates on net neutrality favours innovation in the application layer. This aspect ends up connecting with the idea of favouring the existence of competition, which, in a way, would also foster economic growth. Furthermore, transparency and accountability appear as important norms linked to net neutrality, also included in Brazilian and European regulations.

The second type of structure in a polycentric mode of governance concerns practices. In this sense, four aspects of these practices can be identified, as mentioned in the previous section. When analysing the discursive dimension,

it is possible to note that the expression open internet itself is used in narratives of the Internet governance field. Proponents of the concept defend the view that the Internet is based upon fundamental properties, which date back to the time of its pioneers and that these properties are worth protecting. One of these properties would be the open Internet, also understood in many cases as net neutrality, and the justification for the need for protection would be based on the end-to-end principle, as explored in the section on net neutrality as an academic development. In this sense, the narrative resulting in evolving towards the need to create regulations for this protection, considering that ISPs would not be respecting this fundamental property of the Internet for purely commercial interests. Still, in the discursive dimension, the same elements present in Internet governance in general are observed, such as the use of acronyms, the issue of bottom-up multistakeholder participation, shared inside jokes, among others.

Analysing the behavioural dimension, the governance bodies related to net neutrality present a certain ambiguity. While there are certain resemblances amongst the decision-making bodies, for instance the dress code, which tends to be more casual, or the ways deliberation takes place in Internet governance (commonly referred to as rough consensus), there are also nodes of this network of bodies in which different behaviours are presented, especially when analysing net neutrality in its regulatory approach. In these spaces, there is a much greater formalism, which is exemplified both in the dress code and in the forms of deliberation themselves (such as proposals and votes on laws by legislators).

As in the behavioural dimension, there is an ambiguity within the material dimension as well. In regulatory bodies dealing with net neutrality in Brazil and the European Union, it is unusual to distribute t-shirts, tote bags, stickers, pins and other freebies at their events, a practice that is common in other Internet governance bodies. With reference to the use of technological tools, there is a greater concern on the part of regulatory bodies' use of their own solutions or those wherein they may have greater control or sovereignty in relation to data. In the case of the public consultation of the Internet Bill of Rights in Brazil, for example, a platform was specially developed for this purpose.

Finally, the institutional dimension is strongly influenced by the multistakeholderism discussion. As in other Internet governance bodies, those in which net neutrality debates take place end up presenting similar bureaucratic layouts with executive boards, secretariats and constituency groups. Even though the regulatory authorities in Brazil and the European Union do not have the same structures as the other bodies, there is still an attempt to emulate and accommodate this form of organization through the creation of working groups and committees with external experts creating a multistakeholder environment. Public consultations and events are still commonly adopted to listen

to multiple stakeholders. Relevant examples include Anatel's committees in Brazil and BEREC's public meetings in the European Union.

The third layer of structure in polycentric governance, underlying orders, is systemic, permeating all locations and connections in a polycentric regime. Scholte sheds light upon aspects such as the hegemonic leadership of the United States government, capitalism and techno-rationalism which he describes as underlying orders that permeate Internet governance (Koinova et al. 2021). Regarding net neutrality, the US leadership was very prominent in the beginning of the academic advancement that ended up influencing the development of regulations in different regions and countries, including Brazil and the European Union. In relation to capitalism, it has shaped much of what Internet governance is today. In addition to the points cited by Scholte regarding commodification and surplus accumulation, there is also the private ownership of the means of production and the need for competitive markets. These characteristics are related to net neutrality, since both ISPs and content providers are mostly private entities and one of the central arguments of net neutrality is the guarantee of competition, as presented in the section about net neutrality as an academic development. Reflecting on the issue of techno-rationalism in the net neutrality debate, there is an ambiguity. On the one hand, this issue is manifested in the discourse regarding the existence of fundamental properties of the Internet, which comes from the vision of problem-solving through technology. However, on the other hand, net neutrality ends up taking a regulatory approach, in a way, from an assumption that technology alone is not addressing existing problems.

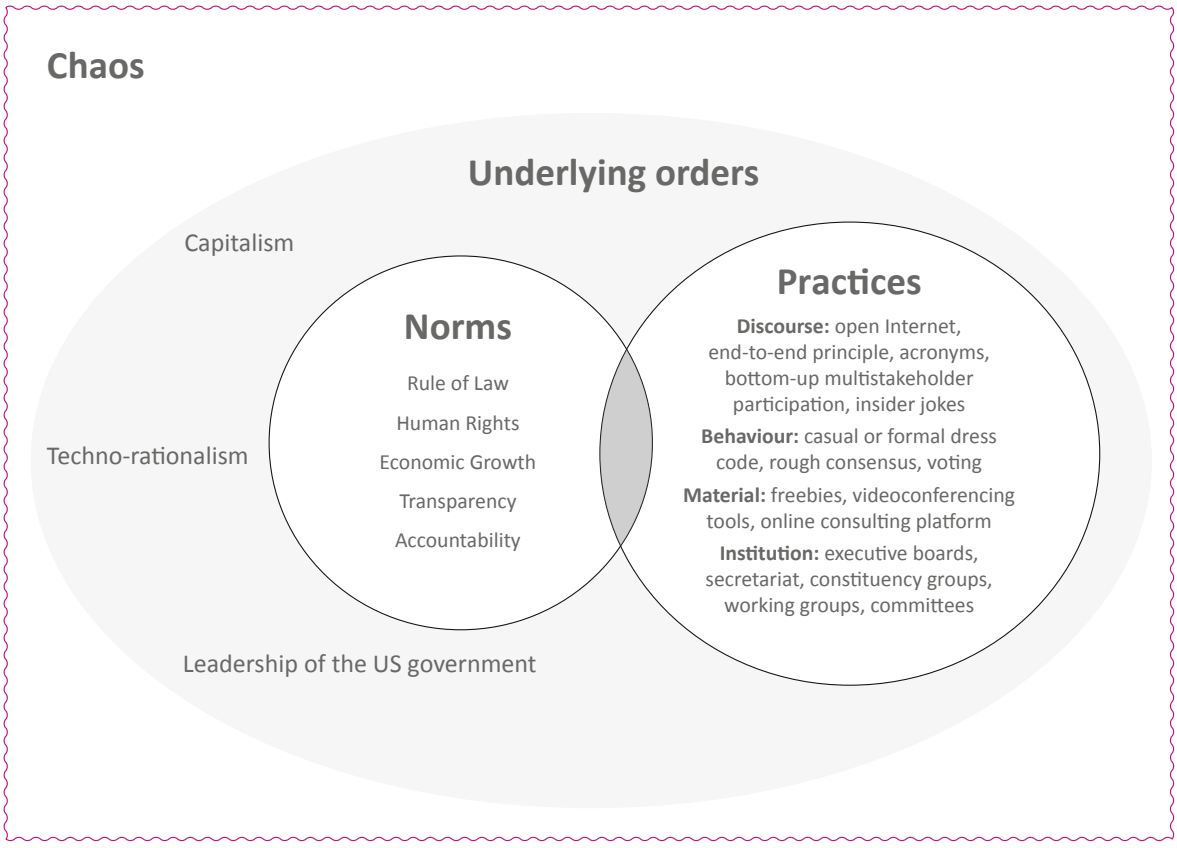

Figure 1: Layers of structure in the polycentric governance

Figure 1 illustrates this 'ordered chaos' or the layers of structure that help to organize the polycentric mode of governance in the net neutrality case.

As explained earlier, the polycentric mode of governance has some attributes that can be observed in reality. Table 1 below summarizes how the attributes are presented in the specific scenarios of the debate on net neutrality in both Brazil and Germany.

Table 1: Polycentric attributes and net neutrality

Attributes	Observation
Trans-scalarity	It is possible to observe that the net neutrality debate is not tied to any geographical area, as observed in the section about the international debate.
Trans-sectoriality	It can be noted that net neutrality debate involves different stakeholders in the international sphere, such as companies (ISPs and content providers), government, technical community and civil society.
Diffusion	In Germany, a department inside the Bundesnetzagentur acts the main decision-making authority. No diffusion into other governmental bodies can be observed. In Brazil, there is diffusion among Anatel, CGI.br, the National Consumer Secretariat and the Brazilian Competition Defense System.
Fluidity	Nowadays, it seems that the bodies in the international, regional and national scenarios are stable for several years without adjustments or creation of new ones.
Overlapping mandates	In Germany, the mandate is very clear: the Bundesnetzagentur is the regulatory agency. In Brazil, there is an overlapping mandate among agencies: Anatel, CGI.br, the National Consumer Secretariat and the Brazilian Competition Defense System. According to the law, they are required to work together.
Ambiguous hierarchies	In Germany, the hierarchy is set clearly with the Bundesnetzagentur situated at the top. In Brazil, the hierarchy is not clear and lacks a clear precedence among the bodies cited in the law.
Absence of a final arbiter	In Germany, the final arbiter is the Bundesnetzagentur in collaboration with BEREC. In Brazil, it is unclear who the final arbiter is.

In the German case, the absence of the four of the characteristics of the polycentric mode of governance is observable: diffusion, overlapping man-

dates, ambiguous hierarchies and lack of a final arbiter. Meanwhile, when analysing the Brazilian scenario, these characteristics are present. Moreover, it is possible to see that when it comes to regulation, countries ultimately end up being sovereign, despite the net neutrality debate encompassing many of the characteristics of a polycentric mode of governance. In this regard, they are the final arbiters at the top of the hierarchy, which may or may not present polycentric governance characteristics internally.

7 Conclusions

The main goal of this article was to revisit the net neutrality debate, analysing it under the light of polycentric governance concepts, such as its three characteristics and its seven layers of structure. This paper first assessed whether the net neutrality ecosystem can be seen as polycentric and, then, how this dynamic emerges in Brazil and Germany. From this analysis, the appearance of three characteristics in the context of net neutrality can be observed. However, when focusing on the regulatory bodies several deviating practices were found, which seem to stem from the fact that they are embedded in the governance system of their respective countries. Those, in turn, follow a different logic from what is observed in the more traditional Internet governance bodies.

Looking at the layers of structure, this dichotomy becomes even clearer, especially in the case of Germany. In the German scenario, four of the seven layers are not found: diffusion, overlapping mandates, ambiguous hierarchy and the absence of a final arbiter. In Brazil, all layers are discernible. Another point to be highlighted is the fluidity of the governance system. In the case of net neutrality, it is possible to see a certain stability over the last few years in relation to the creation of new bodies. Apparently, the fact that the debate has already resulted in national and regional regulations has meant that the ecosystem is nowadays more static and less fluid, since a final arbiter has been implemented.

Polycentric governance has demonstrated to be an interesting framework for analysing the net neutrality ecosystem. Future research can seek to validate the idea that the implementation of net neutrality regulations ends up impacting the fluidity of the ecosystem by imposing a final arbiter. If this hypothesis is confirmed, it is likely that this trend will be observed for other aspects of Internet governance as well, such as data governance, artificial intelligence, data protection and others.

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Abstract

In the various arenas of the Internet Governance debate, one of the points frequently highlighted is the need the need to maintain an 'open Internet'. Despite the common use of the term, which can be understood as a synonym for net neutrality, its meaning varies amongst the diverse cast of stakeholders. Internet governance can be seen as a polycentric mode of governance since the discussion takes place in different arenas and at varying levels. Moreover, these operate not exclusively in separate, individual ways but are connected through regulatory networks. Generally, polycentric governance contains three distinct structural layers to order dynamics: norms, practices and underlying orders. Also, this mode of governance manifests seven main attributes: trans-scalarity, trans-sectorality, diffusion, fluidity, over-lapping mandates, ambiguous hierarchies and the absence of a final arbiter. This text will revisit the net neutrality debate through a polycentric perspective, not used before to analyse this topic, as an approach to highlight some aspects of this discussion that were neglected in previous research.

Key words: *Internet governance, polycentric governance, net neutrality*

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Nathalia Sautchuk Patrício holds a bachelor's and master's degree in Computer Engineering from the University of São Paulo. She is currently a Research Assistant in the Karlsruhe University of Applied Sciences. She was a German Chancellor Fellow from the Alexander von Humboldt Foundation, researching network neutrality and liability of Internet intermediaries at the Centre for Global Cooperation Research at the University of Duisburg-Essen in Germany (cohort 2020–2021). Nathalia has spent many years as a technical advisor to the Brazilian Internet Steering Committee and as a lecturer of graduate courses in the IT area. She is a member of the audit committee of the Internet Society's Brazilian chapter. She is also a representative of the Latin American region in the Number Resource Organization (NRO) Review Committee.

✉ nathysautchuk@alumni.usp.br

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Käte Hamburger Kolleg / Centre for Global Cooperation Research (KHK/GCR21)

Schifferstr. 44
47059 Duisburg
Germany

www.**gcr21**.org