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Net Regularity and Its Ethical Implications on Internet Stake Holders

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***Abstract*—**Net Neutrality (NN) is the principle of treating all online data the same without any prioritization of some over others. A research gap in current scholarship about "violations of NN" and the subsequent ethical concerns paves the way for the following research question: To what extent violations of NN entail ethical concerns and implications for Internet stakeholders? To answer this question, NR is examined using the two major action-based ethical theories, Kantian and Utilitarian, across the relevant Internet stakeholders. First some necessary IT background is provided that shapes how the Internet works and who the key stakeholders are. Following the IT background, the relationship between the stakeholders, users, Internet Service Providers (ISPs) and content providers is discussed and illustrated. Then some violations of NN that are currently occurring is covered, without attracting any attention from the general public from an ethical perspective, as a new term Net Regularity (NR). Afterwards, the current scholarship on NN and its violations are discussed, that are mainly from an economic and sociopolitical perspectives to highlight the lack of ethical discussions on the issue. Before moving on to the ethical analysis however, websites are presented as digital entities that are affected by NR and their happiness is measured using functionalism. The analysis concludes that NR is prone to an unethical treatment of Internet stakeholders in the perspective of both theories. Finally, the current Digital Divide in the world is presented to be able to better illustrate the implications of NR. The implications present the new Internet divide that will take place between individuals within society. Through answering the research question using ethical analysis, it attempts to shed some light on the issue of NR and what kind of society it would lead to. NR would not just lead to a divided society, but divided individuals that are separated by something greater than distance, the Internet.

***Keywords*—**Digital divide, digital entities, digital ontology, net neutrality, internet ethics, internet law, internet service providers, websites as beings.

I. Introduction

NN is defined, according to [36], as the principle of treating all data online equally without any discrimination of any form. Therefore, according to the NN principle, there should not be any discrimination with regards to IP addresses, content or destination; Internet and its users should operate openly and freely with the same quality and speed. For instance, a YouTube video should not stream faster for a California resident and slower for an Arizona resident simply because of their residence. Similarly, a YouTube video should not be streamed faster than a Facebook video for the sole reason that YouTube chose to pay the communications companies for faster download speed. The Federal Communications Commission, as in [19], explains that NN is having "an Open Internet means consumers can go where they want, when they want". NN also allows developers not to worry about taking up too much space on the Internet uploading or downloading their content if they need to, or if their customer's requests for downloading their content increase, as in [19]. Moreover, according to [19], ISPs are solely responsible for offering better broadband to users and content providers, without being able to "block, throttle or create special "fast lanes" for that content".

Nowadays, however, there have been violations of the NN principle, where ISPs restrict the user's Internet experience, according to [10]. Violations have reached a point where a debate had started online with some standing for protecting NN and some standing against it, as in [27]. On one hand, there are mostly the daily Internet users and companies that provide Internet content (ICPs) who are concerned that their Internet experience will deteriorate unless they pay extra for a better service. While, on the other hand, there are mostly ISP companies who believe that ignoring the NN principle will give an incentive for ICPs to improve their business and that it would fuel the competition between ICPs. The NN debate has always gained news coverage across the world, yet it had little to no attention from the average Internet user due to the boring context it was put in, as in [11]. Nevertheless, after the political satire show "Last Week Tonight" hosted by comedian John Oliver aired a 13-minute segment on NN that went viral on YouTube, explaining it in a simple, funny and attractive way, the average user became aware of how his Internet experience is endangered.

II. Research Gap and Research Question

Nevertheless, ever since the segment aired, the focus on NN has been more from economic and sociopolitical standpoint, and not from an ethical perspective. Considering this gab, the research question of this paper will focus on the ethics of NN. It is suggested that the violations of NN is fundamentally unethical in terms of the major action-centered theories of applied ethics and particularly duty-based (Kantian) and consequence-based (Utilitarian). It has to be noted that since the NN principle involves and presupposes primarily practical moral judgment and action, the essay emphasizes the Kantian and the Utilitarian ethical theories, without ignoring the character-based virtue ethics theory, which could be actually the subject of another study. In the light of the above discussion, it is supported that NN should be protected in ethical terms both for the benefit of the Internet users and

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websites. It would be particularly suggested that the primary ethical concerns that are raised through NN is the issue of the digital divide, and more particularly, a new aspect of an Internet divide within the Internet.

III. Thesis Program

In order to support my position in this essay, the first section will offer an explanation of a few technical terms that are crucial to fully understand the concept of NN. Following the technical recap some NN violations that are taking place now will be presented to construct the kind of implications they result in. Subsequently, a new term denoting the NN violations will be introduced as NR, which will prove highly useful throughout the essay. Afterwards, current reporting on NN from both the economic and sociopolitical perspectives will be presented to explicitly point out the lack of NN ethical concerns. Based on the reporting, the following section will revolve around examining the two most popular action-based ethical theories, Kantian and Utilitarianism, against the stakeholders of the Internet. As a result, the conclusion will prove the unethicality of NR and lead to the next chapter of Digital Divide. The Digital Divide section will present the implications of NR and conclude with the need to overcome NR with NN laws.

Now, to fully understand the principle of NN and how it may directly affect daily users, society as a whole and companies out there, regardless of their size, the next section will focus on the basic technicality and functionality of the Internet.

IV. I.T Background

To have a better understanding of NN, a basic diagram of the Internet and how it works is necessary. To construct this diagram, the terms of what an ISP, a user, and an Internet Content Provider (ICP) are, need to be identified. According to [8], a user like you and I, is anyone that has access to the Internet from his home through his mobile device or computer. However, an individual who has access to the Internet through an Internet café, a friend's device or through an institution cannot be considered an Internet user. The user's frequency usage and number of hours or days the user spends surfing the Internet is not taken into account, as in [8], the only thing that categorizes him as a user is whether or not he has the means of access to the Internet. While an ISP, according to the Oxford English Dictionary (OED), as in [33], and Microsoft.com [12], is any company or an organization that provides the user access to the Internet. They usually have the necessary equipment and telecommunication lines to do so for the geographic areas they serve, as in [1].

Mostly users have access through their telephone cable company, meaning that their telephone cable company is also their ISP, this is why large ISPs include Comcast, Verizon or AT&T in the US, similar to HOL or OTE here in Greece. This is how it has always been regardless of whether the user accessed the Internet through a Dial-Up connection back in the day or through ADSL, as we have nowadays. Finally, according to [15], an ICP is any "website or organization that handles the distribution of online content". Content may vary from type to type; it can be for entertainment, education or news purposes. Famous content providers, for example, may be news ICP similar to CNN.com, or Netflix.com for entertainment which provides streaming services for TV Shows and movies. The previously defined terms paint the following picture, a user, uses the help of my ISP in order to surf the Internet and watch a movie that is provided by a website, an ICP. Therefore, it is completely valid to deduce the diagram in Fig. 1, representing the relationship between any user, ISP and ICP. However, Fig. 2 should be deduced, as the Internet is made of ICPs of different types providing and producing different types of content meeting the needs and preferences of different users, deducing Fig. 2.

Fig. 1 User, ISP, ICP relationship

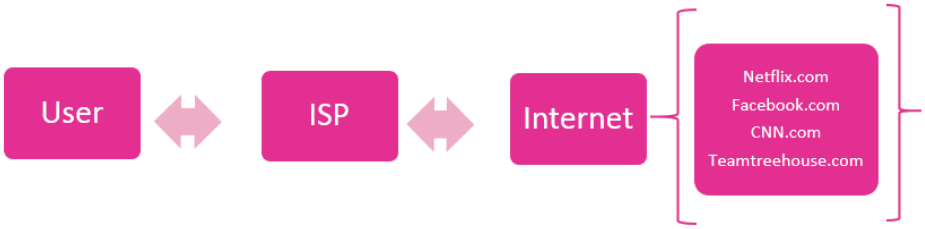

Fig. 2 User, ISP, Internet relationship

V. IT in Action

Now since the basic definitions have been provided, it is time to examine the relationship in the previous diagrams in much more detail. Users, when they wish to access the Internet, send a request to their ISP, which the ISP obtains the user's content from the ICP and delivers it to the user as requested. How does the ISP know which user requested which content though? In order to answer this question, the

following scenario is needed to facilitate the answer: you and your colleague both go home and the first thing you do is start-up your computers and they automatically connect to your Wi-Fi that is provided by your ISPs. This connection is completed when your ISP assigns a unique IP (Internet Protocol) address to your device, an IP address is like a phone number that is assigned to your mobile phone so people can reach you and give you a call. ISP use IP addresses to differentiate between which user requested which content and to know where to deliver it to in order not to mix them up. Now you have typed in www.facebook.com on your browser, where your friend typed www.netflix.com. Now the ISP will retrieve content from both websites, and deliver them to the corresponding IP address that made the request, as in [1].

Similarly, to how fees may differ for a pre-agreed phone plan you might have with your phone company, you pay your ISP depending on the Internet Speed you prefer. However, it is slightly a bit more complicated. There is a trade between both the user and the ISP; the ISP provides such services in exchange for a pre-agreed fee from the user in order to provide him access. Fees differ according to the speed that is provided, however one cannot think of it as a car going certain kilometers per hour, because all data by default are sent and received with the same speed, as explained by [1]. Internet speed is the user's allocated bandwidth, therefore it might be a good idea to rather think of it as a freeway where all cars, in this case the data or content online, are driven with the same speed, but in this case your speed is the number of lanes in this freeway. For instance, you may ask your ISP to allocate you one lane, or maybe five lanes. Assuming that one lane corresponds to 1MB and it takes one second to download, if you are downloading a picture that is 5MBs and you have asked to be allocated one lane it will take you five seconds to view your picture, on the other hand; however, if you were asked to be allocated five lanes it would take one second to view your picture.

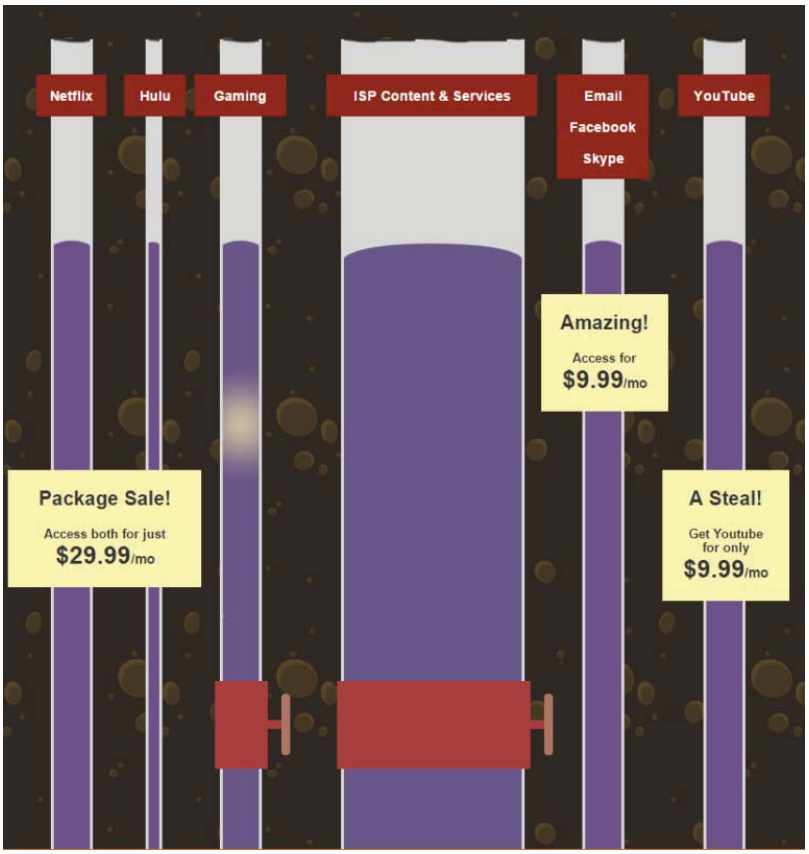

Fig. 3 Future of NN Violations: Charging users for browsing the Internet

Unfortunately, many reasons can contribute to slowing down an Internet connection, not just how many lanes one chooses to have allocated. This essay will focus on "traffic congestion", mainly the two types that are directly related to our topic. Traffic congestion, "a state where a link or a node carries more data than normal resulting in decreasing the quality of the service", as in [5], is one of the many triggers of slow Internet connections. First, User Traffic Congestion may be a result of too many users using the same network. Take for example, one user in one household surfing the Internet, and compare it to another household where five family members are all surfing the Internet at the same time, where both households have the same speed from the same ISP. In the second example more data will be requested causing the

network to be congested with data and resulting in a slower connection, while the other user, in example one, will experience the normal connection which will be relatively faster. The second type of traffic congestion is ICP traffic congestion, which is usually correlated to the time of day. Throughout the day ICPs receive requests for their content from different ISPs, however they reach the maximum number of requests during what is called "peak times". Peak times is usually during 7 a.m. and 11 p.m., the ICPs receive most requests for their content during these specific number of hours during the day. A case for one peak hour is when everyone is back from work maybe around 5 p.m. or 7 p.m. going back to the freeway model, the more data being sent, the more cars are on the freeway.

VI. NN Violations

Considering the above technical details about the functionality of NN and the Internet, this section will examine some NN violations and their consequences. Violations may vary from ISPs preventing their users from accessing certain websites or slowing it down, as what had happened with Netflix and Comcast in the US, where "for many subscribers, the bitrate was so poor that Netflix's streaming video service became unusable," as reported in [31], forcing many Comcast customers to complain. The lack of stricter NN rules abuse can be in the form of blackmail as well, seen in the same case between Netflix and Comcast, where "Comcast suggested that Netflix either pay Comcast a terminating access fee to interconnect, or go back to using paid CDNs to deliver Netflix traffic to Comcast's network", as reported in [31]. Similarly, ISPs may charge everyday users for more bandwidth, as shown in Fig. 3 in [4].

Another striking example is found in India, where "due to intense lobbying by telecom operators like Airtel and Vodafone, the Telecom Regulatory Authority of India (TRAI) is planning to allow them to block apps and websites to extort more money from consumers and businesses — an extreme violation of net neutrality," as reported in [6]. Moreover, in China, as Geremie Barme and Sang Ye mention in [13], "A network that allows individuals to do as they please, lets them go brazenly wherever they wish, is a hegemonistic network that harms the rights of others." In China, they have what is now known as the "great firewall of China," which is "designed to keep Chinese cyberspace free of pollutants of all sorts, by the simple means of requiring ISPs to block access to "problem" sites abroad," as in [13]. There is a lack of reporting, however, on how NN violations could be discussed as unethical towards the Internet population, which will be the main focus of this paper.

VII. NR: A Proposal

So far we have only examined the term "Net Neutrality," what it means and how it can be violated, however it is time to examine an antonym which is proposed in this paper, as "Net Regularity". As stated in the introduction, NN is the principle of treating all online data the same without any discrimination. However, the term itself does not necessarily have a positive or negative annotation; NN implies that the importance of data has been "neutral" as far as the *use* and *application* of data and relevant information are concerned. It is my intention to show the attempts to control the Internet through the term, Net Regularity (NR). But, is NR necessarily immoral or unethical? Nonetheless, it could be argued that some data are indeed more important than others. For instance, streaming hospital personal data of a patient should be more important in terms of confidentiality than just streaming a "cat video" on YouTube, as in [11]. NR is not necessarily qualified as ethically right or wrong, appropriate or inappropriate, not even defined in an integral aspect of moral standard. In this paper it is suggested that NN should imply a user's control over the Internet and its own relevant personal data and that is for every user to *regulate the Internet for himself or herself*. More precisely, that Internet regulation by any group, might be *determining* how fast or slow the data should be downloaded or uploaded on the Internet or if it should be accessed or even allowed on the Internet for a specific user. It also extends to prioritizing data on the Internet, going back to the previous example of the hospital data and the cat video. NR is simply keeping an eye out for the Internet traffic, it may be only considered harmful if the group regulating it is abusing it.

VIII. Perspectives of NN: Current Reporting and Examination of the Economic and Sociopolitical Views

According to recent discussions and reports, jeopardizing the everyday user's NN rights will tremendously affect the economy and the sociopolitical status of the web as "Open Internet," that is actually realizes and exercises the NN Principle. However, the ethical perspective, as has been noted, is the least discussed, which is mostly, in my opinion, because of the lack of user interest in having a discussion. Even though following the John Oliver segment that aired, back in June 2014, where he called for participation of his viewers to voice their frustration in the form of comments on the FCC website, causing it to break down because of the number of comments they received "or at least slowed it down to a crawl", as in [29]; a study conducted in February 2015 [3], showed that 74% of the 800 interviewed adults were "not familiar with the term – NN - and do not know what it refers to." Since the day John Oliver segment to this day concerns regarding NN have indeed been raised, but these concerns are not raised by or for the user. Let us see in brief the economic and sociopolitical perspectives of Net Neutrality:

A. Economic Perspective

The discussion has been only revolving around money, as Nicholas Economides [18] points out in his article "The Economics of Net Neutrality," the "focus of much of the network neutrality debate has been on schema that are forms of second-degree price discrimination." The economics scope might fluctuate a bit, but whether it is from the scope of users and/or ICPs paying extra, as in [9], or from the blackmailing scope as the case in the Netherlands in 2011, where the "dominant mobile carrier, KPN, saw that its text-messaging

revenue was plummeting and made moves to block applications such as WhatsApp and Skype, which allow users to send free texts," as reported in [9], it still disregard the ethical violations committed towards the average Internet user. The main concentration is mainly focused on the companies (ICPs) either established ones similar to Youtube, Netflix or Facebook who indeed pay for premium, as reported in [17], and larger bandwidth or startups and how they would be able to compete with the current established ones, as in [2]. Finally, even on the "Save The Internet" website, a website dedicated solely to advocate for NN, and on their "Net Neutrality: What You Need to Know Now" section they include a paragraph titled: "Why is Net Neutrality important for businesses?" [9] and nothing about why it is important for the user and how it is violating the user's ethical rights of access. This does not come as a surprise since "Across the G-20, it already amounted to 4.1 percent of GDP, or $2.3 trillion, in 2010 – surpassing the economies of Italy and Brazil" and it will double by 2016, reaching $4.2 trillion, basically "if it were a national economy, the Internet economy would rank in the world's top five, behind only the US, China, Japan, and India, and ahead of Germany," as reported in [16].

B. Sociopolitical Perspective

NN has been used as a tool to criticize political administrations, governments or movements. It is particularly obvious when Fox News's legal analyst Andrew Napolitano accused President Obama's advocation and support for NN in [36] as destructive or as he stated in his own words "Orwellian." He accused NN as being "Orwellian," mainly towards the business industry, as it would "take out the choice of buyers and sellers out of the market" which will tremendously affect the ISP's business and claiming that it would not be neutral anymore. However, this is not a valid argument, as NN by definition is maintaining a leveled playing field among companies. Similarly, Megyn Kelly of Fox News in her coverage of NN manipulated the Obama Administration's push for NN laws to make it appear as they are trying to "control the internet." This is simply a false assumption that NN laws govern the Internet, but NN laws merely control and monitor the state of the Internet to ensure that it is not controlled or governed by any group. However, this is surely not the case as NN is by definition the prevention of any form of Internet regulation. NN laws, on the other hand, do indeed allow the Obama Administration, or any Administration for that matter, to "regulate the giant companies that provide it – ISPs-" as Josh Silver CEO of freepress.net argued on the Megyn Kelly segment. Josh continues to explain on the segment how the laws are passed to "prevent the big companies from censoring content on the web" and insisting that it "is not about government take over the Internet." Josh clearly distinguishes between NN and NR by pointing out that the only form of regulation in NN laws is regulating the ISP companies that provide the Internet to users and not the internet itself, in other words it is only a form of business regulation. On the other hand, NR is regulating the Internet provided by the ISP companies and not the companies themselves.

IX. Ethics of NN

In this section, the major ethical theories of an action-centered perspective would be discussed, particularly the duty-based Kantian ethics and the consequence-based Utilitarian ethics. They will be explained and examined against the case of NN as primal moral action that involves users, websites and ISPs as the stakeholders. However, it has to be noted, that due to the action immergence case of NN, the essay will focus only on the Kantian and the Utilitarian ethical theories, as they are action based theories that are focused on the moral agency of action. Hence the Virtue Ethics theory will be excluded at this first stage, as a character based theory, but definitely not omitted from a future plan for the ethical evaluation of NN. Finally, following the below analysis and examination it will show how NN should be the ethical standard of the Internet, unlike NR. Finally, before moving on to the analysis, the concept of websites as entities will be clarified:

A. Websites as Entities

Before moving on to the next section where websites will be examined as entities as stakeholders of the NN debate, they need to be examined as entities and treated as such. Dasein is an existential characteristic defined as "being-in-the-world" [37] according to Martin Heidegger, humans for instance possess this characteristic as they do exist. The world as we know it, according to Heidegger, is not the sum of the entities in it like animals, plant and humans, no these are "intra-worldly," meaning they exist "within the world" and do not constitute the world [22]. For entities to exist within the world is being "da," which exist there-here, like how humans are they exist [22]. The world is Dasein's mode of being and is not extant like things are but is something 'Daseinish" [22]. Similar to the world, we have the World Wide Web or the Internet, it also has the "Dasein's mode of being," it is not a thing, it is not extant and websites are "da," which again is that it exists there-here [37]. In other words, websites are entities that are within the World Wide Web. According to Joohan Kim, "the Net is opening up new horizons for Dasein's existential spatiality" [37], where we can be together in it websites and users, and as Heidegger states being together does not necessitate physical proximity [37]. The World Wide Web is a connected network and is not made of websites the same way our world is not made up of humans. Humans may populate our world and websites may populate the World Wide Web, but they do not constitute it [28].

A website is operated and programed by humans to function in a certain way, not in order to act humanly, but rather to act rationally. On one hand humans are capable of feeling sad, happy excited or scared and act on those feelings in a way that has no rational basis. Other times, humans are capable of acting rationally and logically rather than on their feelings or psychological state. On the other hand, computers can only act logically for the time being, as they have only a mode state of on and off. For instance, when a user clicks on a website's button, the website is able to recognize the click and therefore

permit him access if he is authorized. Both processes of recognition and permission are logical processes that websites are capable of executing. Websites execute these tasks with the help of a knowledge database that has the details of who to give permission to and are made possible through algorithmic computations. Technology attempts to mimic the human characteristics, especially human intelligence, as much as possible, the more advanced the technology, the more "human like" it gets. However, "human like" suggests that the machine is as smart, not as emotional. An example of such technologies are Expert Systems, as Jay Leibowitz explains "An Expert System is a computer program that emulates the behavior of human experts within a specific domain of knowledge" (1988, p.3). Using their knowledge base [7], Expert Systems have been used to "answer questions submitted through a computer" [7]. Through this example we can deduce that computers are logical beings that exhibit some kind of rationality. Similar to the previously mentioned example of recognition and permission, if it was a human executing the task, they would cross check the person's details across a list, which is acting as the human's database, and allow him permission accordingly. As a result of both humans and computers being capable of executing rational processes, they are both rational beings. Moreover, behind every website are many employees sustaining, programming and maintaining it, who themselves are rational beings, as explained previously, and therefore should all be treated as one rational entity represented by the website. Therefore, the website has rights that are being violated when NN laws are violated.

B. Kantian Ethics

Kantian ethics is commonly referred to as a "Deontology", "Deon" from ancient Greek that translates literally to duty, hints that it is a duty-based theory of ethics. Kant's theory is considered Deontological as "it asserts that the right action is that action of all the alternatives available to be the agent that has the best overall outcome" [27]. In other words, how right an action is or whether it is indeed right is determined by how good the outcome of that action is, if it is at all [27]. Kant believes that "the only thing good without qualification is 'goodwill'." Moreover, goodwill is one that makes decisions guided by what he called the "Moral Law," which acts as a constraint on human desire. Hence "a will in which the Moral Law is decisive is motivated by the thought of duty" [27].

1) Categorical Imperative

The Kantian theory's essential principle of one's moral duty is the "Categorical Imperative" (CI), which are the things we all have to do, regardless of how different we might be, they are the actions we all have to take. Categorical in the sense that it applies to us unconditionally, it applies to all humans in the same way that they ought to do it. For instance, if you are running late for work in the morning and you come across a red traffic light, however there are no cars coming from any direction, should you ignore the red lights and drive your car? To answer that, you should not, the same way I should not and the random guy in another country should not, this is an example of a CI.

2) Universalizability [30]

Kant's initial construction of the CI "states that you are to act only in accordance with that maxim through which you can at the same time will that it become a universal law" [27]. Meaning that for Kant an action should have a universal application starting from the goodwill of the rational agent and extending universally to all other rational agents, this could be seen as a test of morality posed to the moral agent himself/herself as a rational agent, i.e. is this action right not only for me but also for humanity as a whole. Borrowing the previous example of you being late to work and facing the dilemma of crossing a red traffic light, the answer would be to consider that the action you are thinking of taking as it would be applied as a universal law. Meaning that everyone will be allowed to cross a red light, therefore you need to ask yourself whether you wish to live in a world that is dangerous in such a way. If yes, then you can cross the red light keeping in mind that if he is crossing the street at any time during a red light it is highly possible that a car will cross the red light and hit him and that would be considered ethical due to the world he constructed. However, if the answer is no, then you should not cross the red light regardless of the external conditions or consequences.

3) Respect

Another formulation of Kant's CI is one that "states that we should never act in such a way that we treat Humanity, whether in ourselves or in others, as a means only but always as an end in itself" [27]. This CI does not exclude using humanity from being used, but it rather excludes merely using it as means without an end [30]. This is logical, as we cannot not "use" humans; we do it every day in one form or another as a work force for instance. However, in this example, we use humans as a work force to produce something for all humans, as well to benefit themselves, meaning that we use humans for and to produce a human end. Therefore, what it guarantees is that one should act in a way where humanity is always an end, and so respect to humans themselves as individuals is absolutely essential for an action to be defined as ethical.

C. Kantian Ethics Applied to NR

1) User's Perspective

In not applying NN laws and allowing for NR, this give the opportunity to ISPs to extort and blackmail users to pay more for the same service that they are receiving now that should have been offered anyway without an increase in payment. This allows for ISPs to "treat" users merely as means and not as ends. Moreover, by allowing for such violations and blackmail, according to Kant's Universalizability, the world will be subjected to turn into a place where blackmail and extortion are nothing to be considered unethical but the exact opposite. Therefore, taking into account the first and second formulation of CI that say that (1) One should act only according to the maxim where at the same time your action will become a universal law, (2) Humans should not be merely

used as a mean, NR is a violation of Kantian ethics and is considered unethical according to a duty-based perspective because (A) Serious lack of respect in the treatment of both users and websites regarding the freedom and equality of access of data. (B) The Internet is by default a universal network making everyone and never only a few entities affected by NR, particularly the freedom of the Internet that is constituted of its functionality, which will later be expanded upon from a website's perspective.

2) ISP's Perspective

From an ISP's perspective, if they choose to not work with NN laws and discriminate against some data online with regards to speed and slowing them down to make others faster, then according to the formulation of the CI as a universal law, all data online should be discriminated against including the ISP's data, user's data and the website's data. However, this will not benefit anyone causing everyone's data to be subjected to slow speed. ISPs will have to slow user's data not giving them their money's worth of the speed they signed up for, forcing them to pay extra for a speed they should have had for the current price. This violates Kant's CI of treating humans with respect; i.e. ISPs should not treat the user or website merely as means to an end, an end of great profit in this particular situation. Moreover, ISPs will have to slow down their own data, which will affect their enterprise's functionality terribly. Both their internal and external functionality will be affected in terms of operating within the company online and delivering their services to their clients. Finally, they will also have to slow down all websites' data, which will again affect the ISPs in more of a financial aspect where websites will refuse to deal with the ISP because the clients are not receiving their website services in full speed. As a result of ISP's violations, they will lose both users and websites as clients, causing them tremendous financial and business problems.

3) Website's Perspective

If websites were to be examined as entities, as explained above, then it will be unethical, according to Kant, of ISPs to discriminate against some or all, as they would be, similar to users, simply used as means and not as ends. ISPs prioritizing some data by slowing down another website's data will result in websites paying ISPs more money to increase their speed, which is a form of extortion and blackmail and is violating the respect CI. In such an action by an ISP, they are using websites as means to make more profit and not as ends. Moreover, ISPs would be violating the respect of the employees maintaining and programming it, as they represent their website. Finally, Kant's universal CI is realized through the Internet into a practical sense of immediate universalizability, meaning that any action that is done on the Internet by an agent is automatically universalized, regardless of the agent's preference. By ISPs slowing down or discriminating against any kind of data, it is automatically universalized violating all websites' respect as entities and rational beings.

D. Conclusion

As a result of the previous stakeholder analysis with regards to Kantian ethics, we deduce that NR is indeed unethical to apply on the current state of a free Internet because it violates both respect and universalizability principles.

E. Utilitarian Ethics

While Kantian Ethics acknowledges a right action as one if you were to approve it as a universal law and do it with respect towards rational beings, Utilitarianism acknowledges an action as a right one in terms of its consequences, if and only if the action maximizes the greatest amount of pleasure over pain for the maximum amount of people [30]. Meaning if your action, regardless of what it might be, as long as it is causing the maximum amount of people to be happier than they would if you were not to do this action, then it is guaranteed to be the right one. According to Jeremy Bentham, "each person's happiness is constituted of the aggregate balance of pleasures over pains" [14], and this balance is what should govern each person's decision of what is considered to be a right action. Bentham goes on to talk about the four sources of pain and pleasure, physical, political, moral, and religious [14]. For now, the main focus will revolve around physical pleasure and pain which for humans is obvious, it is physical well-being. However, it becomes more unclear when it comes to websites, nonetheless, it can be claimed that for physical entities functionality is their form of happiness, or "Digital Happiness." Therefore, prohibiting websites from fully functioning would be more painful than pleasurable according to the Utilitarianism. In addition to the previous explanation of happiness, further elaboration on happiness as a state of mind and as a utility will be presented below:

1) Happiness

This approach focuses on one human happiness. It treats happiness as the one and only key to life, the result of pleasure over pain. Philosophers however, when they speak about happiness, are targeting one of the following definitions – or both:

1. Happiness as a state of mind;
2. Happiness as in a life that goes well for the person leading it (Utility).

To further understand the difference, both will be briefly analyzed bellow.

2) Happiness as a Mental State

Happiness as a mental state is a psychological matter, simply an inquiry regarding pleasure or depression. The focus is mainly on long-term happiness which is the study of certain mental states corresponding to happiness such as life satisfaction, pleasure, or a positive emotional condition.

3) Happiness as a Mental State for Websites

According to functionalism, one of the most popular theories of mind, mental states are recognized by their functionality and the role they play within a system [23]. Take the popular example of pain, functionalism categorizes it as such as it tends to be a result of "bodily injury, to produce the

belief that something is wrong with the body and the desire to be out of that state, to produce anxiety, and, in the absence of any stronger, conflicting desires, to cause wincing or moaning" [20]. In other words, mental states can and do multiply realized through various physical states and therefore forming a more inclusive theory of the mind [20]. For functionalism to be able to account for mental states as functions, it abstracts from whatever realizes them, not taking into account whether it is a machine, a human or a Martian [23]. According to functionalism, minds can be viewed as software running on different machines; it can be an animal, a human, a computer or a Martian [23]. While brains form the hardware that is necessary for our minds to run, again this can be an animal brain, a human brain, a computer machine, or a Martian brain. A mental state, in functionalism terms, is defined through three key characteristics (1) inputs, (2) relation to other mental states, and (3) behavioral disposition or output [23]. Pain for humans for instance can be observed if one is pinched by a pin and is felt through his bodily sensors (input), as a result this gave rise to anxiety (another mental state) and a desire to jump or run away from the pin, which he did (behavior or output), this is what constitutes pain as a mental state. Using both functionalism and the previous example it is fairly deducible that in functionalism terms, a machine is indeed capable of feeling pain and similarly happiness. A website is an entity that is used for one purpose, to serve, to function or execute certain tasks, it is given input by the user which it processes immediately and produces an output as a result. If a website's data or its server's, the hardware representation of the website, is being blocked when receiving requests from users by ISPs (input) it will display symptoms of slow online speed (another mental state) and will not be able to function and crashes as a result or produce poor results (output or behavior). That was an example of pain for websites, but a website can also experience happiness, taking the same example, if a website's data or its server's, the hardware representation of the website, is not being blocked by ISPs and is normally accepting a user's requests (input) it will display symptoms of high online speed (another mental state) and will be able to function without crashing and as a result producing excellent results without any obstacles (output or behavior). Therefore, happiness and pain that govern utilitarianism can be presented in the case of websites in terms of functionality, where a website is happy when it is functioning as it should, and in pain when external unauthorized blocking or throttling of its data is taking place.

4) Happiness as a Utility

Unlike happiness as a mental state, here happiness has a tangible value. The value of happiness is measured by how a person is benefited, if this action is good for them whether it "is good for her, makes her better off, serves her interests, or is desirable for her for her sake" [30]. It differs from a mental state in the sense that you might think, for example you would get satisfaction to not lie to your mum when you were a kid when you stole a cookie from the cookie jar, when you told the truth however, you got grounded and that did not serve your interest. According to happiness as a mental state, you are happy, but according to happiness as a utility you are not.

F. Utilitarianism Applied to NR

From a Utilitarian perspective NN is the state that the Internet should be in and that NR is indeed unethical as it does not maximize pleasure for most stakeholders. We will carefully examine each stockholder and by proving that from a Utilitarian perspective their happiness is not being maximized with NR.

1) User's Perspective

By having NR and allowing for fast lanes to exist, users will not be able to access different content with the same satisfaction. Most, if not all, people will not be satisfied when they are obliged to pay extra for the same speed they already have now, which will minimize their happiness as both a state of mind and as a utility, especially every time they look at their bill. This type of financial change in a user's life will definitely decrease their pleasure, as a mental state, of using the Internet, which is a daily routine nowadays by exerting more stress on his mental well-being. Moreover, it will decrease happiness, as utility, as it is not benefiting the user in any way, actually the exact opposite the user can utilize the extra money according to his/her preference.

2) ISP's Perspective

To the contrary of what most people might think, ISPs will not benefit from NR rules to be applied on the current state of free Internet, at least not in the long term. The obvious benefactor of NR rules are ISPs, they are the ones who will create fast lanes and have both content providers and users pay for it. However, in the long run, both content providers and users will pick an ISP that operates with NN rules and that treats data equally in the Internet. ISPs might face a major customer loss as a result in applying NR because of service dissatisfaction. Similarly, they will face a major loss of content providers who allow them access to their content. As an ISP, the first category of happiness does not apply as it does not have a mental state; however, the second category, happiness as a utility, does. Therefore, considering the loss of both users and content providers, the utility of ISPs is not maximized by applying NR rules.

3) Website's Perspective

Some websites might benefit from NR rules while others not so much, however if both are examined closely it will show that no website will indeed benefit. We have two kinds of websites, established ones and startups.

a) Established Websites

Established websites will clearly benefit from the lack of competition from startups, as they will not be able to pay a premium for the fast lanes created the same way established websites can. However, established websites might not be able to pay the premium as well if it is set too high by the ISP and this might be deadly for some if their content consumes a lot of bandwidth. Unfortunately for some websites not paying a

premium is not even an option if their content does indeed need more bandwidth, because their data will not be able to load at all using the slow lanes alternative, therefore, they will be forced to shut down. On the other hand, if they are able to pay, they will need to increase their user subscription rates to compensate for their financial loss. As a result, they might lose customers who are not able to pay for the increased prices. Following the loss of customers, the website will not be able to be maintained due to the decrease in income, which will lower the website's maintenance and functionality.

b) Startups

Startups with low capitol will definitely not be able to pay for the fast lanes offered by ISPs, causing them to shut down before they even start. Even if their content does not need a fast lane due to its low bandwidth consumption, established websites will still be ahead of the competition with their payments for fast lanes that allows user to have a faster and better experience of their services. For instance, if a video streaming website service startup without enough money for fast lanes will only be able to stream low to medium quality videos, while an established one will be able to stream 4k (Ultra HD) videos effortlessly while paying for fast lanes as they can afford them. 4K video quality is the best quality there is nowadays [26] and due to its high resolution it consumes more bandwidth [21] making it necessary to pay for fast lanes and not able to function to its fullest capacity otherwise. As a result, Startups will never be able to surpass established service providers monopolizing the Internet. Consequently, the Internet will lose its key characteristic as a platform which is an incredibly fairly leveled playing field that gives rise to innovation.

Finally, when we speak of a website's happiness, in Utilitarian terms, happiness as a mental state does not apply, but only happiness as a utility similar to ISPs and as functionality. Therefore, as illustrated above, regardless of whether or not a website is established or just starting up their utility will again not be maximized. However, not only their happiness as a utility will not be maximized, but also their happiness in terms of functionality. NR will lower their functionality and therefore decreasing their happiness, favoring "Digital" pain over "Digital" pleasure.

4) Conclusion

After the examination of the three stakeholders, if NR is to be applied in Utilitarian terms, we deduce that NR violates the ethicality of each one as it does not maximize pleasure over pain for the most of the stakeholders involved.

G. Conclusion

In the above section it has been justified that NR is unethical both in Kantian and Utilitarian theories and in terms of the three stakeholders, the users, ISPs and Websites as entities. Moreover, the unethicality of NR has some negative implications involving and revolving around the three stakeholders.

X. From Inequality of Access to Digital Divide

The state that the Internet originally started with, which was exclusivity, has continued on taking on different shapes and forms to form a pattern over the years. Before the Internet was as widely used as it is now, it was first a very exclusive research project connecting less than a handful of universities within the US [34]. This project was an initiative by the US Department of Defense to develop a network that would survive a nuclear war [35], even though back then telecom lobbyists were against the creation of this network [34], which became successful in 1969 [35]. The history and pattern of telecommunication companies, who are the major ISPs nowadays, trying to stand in the way of the Internet, is extremely obvious while now standing against the NN rules by providing two speeds of service [11]. Before the Internet became public, is in my opinion, when the first divide was created, where we had the public who have no access on one side and the researcher and the people who have access on the other. Though this divide was eliminated around 20 years later, when the Internet became publicly accessible in 1990s [35], a new divide has however occurred as a result which will be discussed in the next section and is called the "Digital Divide" that was followed with what is introduced in this paper as the "New Divide" that will be caused if NN rules were to not be applied.

A. Current Digital Divide

Currently in the 21st century, where we have more than 3 billion Internet users [8], we face a major Digital Divide phenomenon. The Digital Divide, as defined by Stanford, "refers to the growing gap between the underprivileged members of society, especially the poor, rural, elderly, and handicapped portion of the population who do not have access to computers or the Internet; and the wealthy, middle-class, and young Americans living in urban and suburban areas who have access." This divide also "reflects various differences among and within countries" [32], in terms of taking advantages of all the opportunities the Internet has to offer. In 2015 the divide has been reduced from 72.2% of the world's population having no access to the Internet in 2010, as in [24], to 56.6%, as in [25]. Nonetheless, it is still more than half the world's population with no access to the Internet.

B. The New Digital Divide

This section will show how if the NN rules were not to be applied and allowing for NR, it will create a new kind of digital divide than the one we already have, which was examined in the section above. The danger with NR is to create a digital divide within the Internet itself. As mentioned previously, NR will allow for the creation of fast and slow lanes for both users and content providers by ISPs, this will create different planes for both the users and ISPs. We will have a plane which consists of websites that are able to afford the fast lanes and separating them from websites that cannot. Similarly, the second plane will consist of users who can afford access to websites on the fast lane and users who cannot and separating them from one another. Consequently, we will

have a society that is divided, whose population cannot relate to one another and that are exposed to different content forcefully and not by choice. Similarly, in the business world, the same kind of divide will have websites who can afford fast lane payment on one side and websites who cannot afford the fast lanes on the other. Each with different kind of competition within their boundaries but not between one another, in other words a monopoly.

Both planes of the new divide will dramatically affect the Internet society, where we will have a disassociation between the users. Instead of having the Internet bringing together users from different backgrounds, it will be grouping them into cliques of the same backgrounds and opportunities of access. The original divide, "The Digital Divide," currently spans horizontally across countries or societies, it divides between them by separating them from one another as illustrated in Fig. 4. On the other hand, the new divide will span vertically within societies separating individuals from one another as illustrated in Fig. 5.

XI. Conclusion

To recap, NN, which is the principle of treating all online data equally without discrimination or prioritization of one over another is currently being violated in different countries all over the world. There has been reporting regarding those violations, mainly from economic and sociopolitical perspectives, but none from an ethical perspective, creating the gap for the research question addressed in this paper. Following the coverage of NN violations, the NR term was introduced referring to the opposite side of the coin. The new NR term assisted in the ethical analysis of the stakeholders that followed. Through Kantian and Utilitarian perspectives NR was proven to be unethical and sometimes unprofitable. In particular form a Kantian perspective NR violates both CI of universalizability of freedom on the Internet and of respect of both humans (users) and digital entities that are regarded as rational entities (websites). The latter gives a new perspective to Kantian ethics extending from human beings to digital beings. Moreover, in Utilitarian terms NR becomes not only unethical for most people and websites, but the pursuit of happiness could be seen as a pursuit of functionality in the digital world of the Internet. Through this perspective the unethicality of NR influences the profitability of all stakeholders. Finally, NR creates a new Digital Divide which applies an inequality of access on a vertical level between individuals within society.

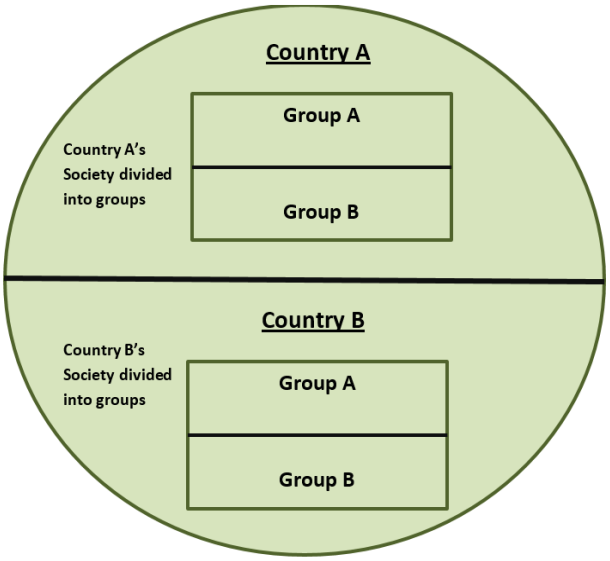

Fig. 4 Digital Divide: Horizontal divide

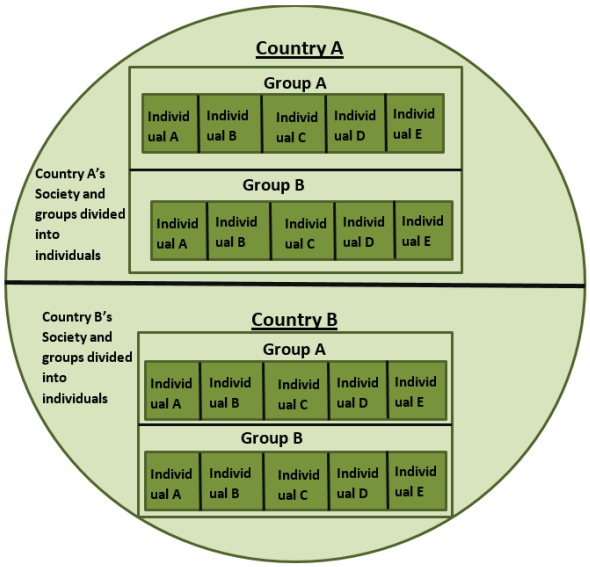

Fig. 5 Digital Divide: Horizontal and vertical divide

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