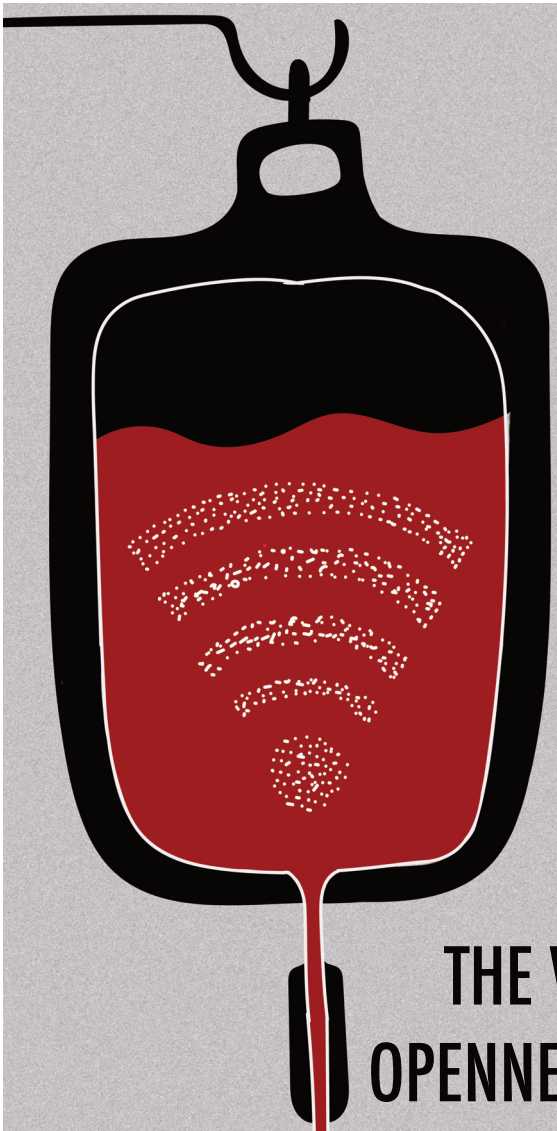

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THE VALUE OF INTERNET OPENNESS IN TIMES OF CRISIS

OFFICIAL OUTCOME OF THE UN IGF COALITIONS ON NET NEUTRALITY AND ON COMMUNITY CONNECTIVITY

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EDITORS

LUCA BELLI, NIKHIL PAHWA AND OSAMA MANZAR

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PREFACE

Vint Cerf

Internet Lessons from COVID19

The novel SARS-COV-2 virus that leads to COVID-19 disease is teaching us a great many lessons about infrastructure writ large. We are discovering weaknesses in socio-economic safety nets, in our healthcare systems, public transportation system, our education systems and many others. Societies around the world are organized around a presumption that people can work, play and interact with each other in close proximity. Our dependence on this assumption has been upended by a virus that propagates through proximity and through the air and on commonly touched surfaces. Among the responses, social distancing has become a strong recommendation around the globe. But our physical infrastructure is operationally dependent on people being able to work together in proximity. That includes traveling together. One has only to look at the airline industry to see how quickly that mode of travel has evaporated. Schools have been closed in favor of remote education and "work from home" has become a guideline for those whose jobs permit it. For many, of course, work requires proximity, from haircuts to grocery stores, people need to be present. If that isn't safe, many people cannot work and the economic impact is catastrophic.

To the degree that working and living can be done in some remote way, the Internet has become an important component of COVID-19 response. It permits remote interaction with customers and even patients. It allows people to order goods and services online for delivery to doorsteps. It provides researchers with access to global sources of information and to computing power in unpreced-

ented quantities. The openness, interoperability and distributed nature of the Internet has contributed to its utility. Its scalability in many dimensions has allowed it to expand to accommodate new demands. Remarkably, the capacity to support streaming video is now also supporting real-time videoconferencing as a substitute for in-person meetings.

Of course, the Internet is not uniformly implemented. Only about one half of the world's population appears to have direct access to the Internet and much of that is via mobile 3G-4G-5G services. There is a clear urban/rural Internet access divide. There is an economic divide as well. Even if the service is available, it may be unaffordable. In inner urban environments, cost may inhibit effective uses. These observations suggest several potential remedies. Physical build-out of Internet access is necessary. This could range from direct optical fiber access to homes, to free-space laser "middle miles", to 5G mobile implementation. Where costs are high, subsidies may be warranted – not unlike the notion of Universal Telephone Service subsidized by a Universal Service Fund.

Novel ideas are emerging, like outfitting school buses with WiFi and parking them to provide residential access at night. Libraries and other public facilities as well as commercial enterprises are offering WiFi access to the Internet. Private sector companies such as SpaceX are placing tens of thousands of satellites in low Earth orbit with the intent of providing Internet access to every square inch of the Earth's surface. Cost of Internet capable equipment is also coming down with low-cost pads, tablets and notebook computers. Given the rich varieties of Internet-based services aimed at facilitating socially distant economies, it is not hard to argue for policies that encourage more Internet infrastructure.

Of course, it cannot stop with the physical infrastructure. The operation of the Internet must be robust, safe, secure, reliable and adapted to improve privacy. Useful content must be available in locally common languages. The scourge of misinformation and disinformation needs to be attenuated and better global or at least bi-lateral or multi-lateral cooperation is needed to cope with harmful and criminal behaviors on the Internet. Strong authentication and cryptography are needed to defend against identity theft and hacking. Variations of the European Union's General Data Protection Regulation (GDPR) are propagating around the world with good intent although implementation has shown some unintended consequences, not least of which may be the ability to share health information that would assist in finding a vaccine against SARS-COV-2.

As we try to move education to online modes of operation, it has become very apparent that learning this way is different from traditional teaching formats. Adapting online regimes to allow students to work together remotely, to allow

teachers to track and coach student progress, to support individualized remedial lessons at need, among other things, highlights the challenges and opportunities that online education brings.

More directly associated with COVID-19 is the need for detecting exposure and tracking contacts to reduce the spread of the disease. Mobiles and the Internet appear to have roles to play for at least some tracking and tracing system designs. The application of machine learning to large medical datasets may help identify the ways in which SARS-COV-2 actually works. It seems that we are finding new syndromes triggered by this virus as research progress is made. We don't know enough and we must learn more.

Among the stark lessons we have learned is the fragility of food and medical equipment supply chains, either because of excessive concentration or because transport connections are broken. We are seeing this dramatically in the United States where farmers have been unable to sell to restaurants that are closed or operating at much reduced capacity out of concern for the propagation of the virus. These lessons should teach us to create much more resilient infrastructure in every dimension. We need to refresh national stockpiles of protective equipment, medical devices and vaccines. More generally, we must imagine other potential global catastrophes and put in place plans to mitigate. The time to agree on best practices for emergency response is before the emergency, not during.

We must not allow this pandemic or a future one to become our society's Titanic.

PREFACE

Sébastien Soriano

Internet Openness toward Digital Sustainability

Managing the worldwide health crisis is an ongoing challenge, not only for our healthcare system, but also for our economy and our everyday life. Covid19 changed the way we work, we interact, we socialize, relying even more than before on digital tools. This crisis was, as a consequence, from the very beginning a stark reminder of how vital networks are. It also brings to light that Internet and telecoms networks constitute the "Infrastructures of freedom". Freedom of expression, freedom to communicate, freedom to access knowledge and to share it, but also freedom of enterprise and innovation, which are keys for each country to grow and provide jobs. It is more crucial than ever to guarantee that internet stays aa smooth-running, open and accessible common good.

A prerequisite is thus to guarantee accessibility to those networks. The obvious and absolute need for connectivity is pointed out by many authors in this symposium, notably Vint Cerf, Rolf H. Weber, the Alliance for Affordable Internet, the Internet Freedom Foundation or APC in partnership with Rhizomatica. As explicated by Luca Belli, providing real accessibility also requires Internet openness, and net neutrality is at the core of an open Internet. During the Covid19 crisis, in Europe, net neutrality regulation has once again proven its relevance and its capacity to adapt, given the specific risks of networks congestion. More importantly, it is showing the way forward. When it comes to governing common assets, the "law of the crowd" will always win out over "law of the strongest".

European Union regulators who are members of BEREC and the European Commission all reiterated these principles throughout the crisis, as depicted by Frode Sørensen. In France, Arcep worked to ensure that no content were prioritized, despite the very singular charge over the networks. As showed by Smriti Parsheera, in India, one of our key partner of BEREC on open internet issues, the crisis also challenged net neutrality rules and led to recommendations on its implementation. In the opposite direction, the crisis also highlights that the freedom of access to the Internet continues to be threatened in a number of countries. Anna Orlova and Andrey Shcherbovich give insights of the restrictions observed in Russia in response to the COVID-19 crisis.

This period and the many events that punctuated it also fueled awareness of the need for more interaction between stakeholders. In addition to the non-discrimination obligation imposed on operators, major content and service providers' tremendous impact on the networks warrants attention. The dialogue between these players (video streaming players especially) and operators over improving network management has sometimes seemed like one of variable geometry, for instance when rolling out new services, introducing certain options or posting updates to certain especially popular games online. It would be wise to establish a proper dialogue mechanism that would enable operators to anticipate and plan for these events. It would also be worth assessing how efficient online service providers' optimisation measures (downgraded video format) were in reducing their bandwidth consumption. But, let us be clear, permission-less innovation needs to remain the rule for one and all, even if the handful of heavyweight OTT companies whose traffic shapes how networks are provisioned should proactively commit to a systematic dialogue.

The development of contact tracing solutions to help fight the spread of the epidemic, thanks to the use of digital technology, also confirmed how important it is that everyone work to ensure an open Internet, beyond telecom operators. As to the decisive role played by the two main mobile operating system (OS) providers, it seems increasingly vital to be able to challenge these players on their technological choices, and the fetters they place on app developers. Is it really acceptable that private sector players' technical decisions can influence the choices made by democratic governments such as ours, on matters of public health? This is the question that the current public health crisis is forcing us to ask, separate from any underlying debates about the tool itself. Extending the principle of an open Internet to include operating systems, which Arcep has been proposing to public policymakers since 2018, seems more pressing than ever before. Moreover, to respond to the challenges of Big Tech, Arcep has also proposed to the European Commission to set up a new ex ante regulatory regime, inspired by telecoms regulation and targeted at a few structuring players.

Finally, the period of crisis that we experienced confirmed how urgent it is to make environmental issues the centrepiece of our actions. In France, Arcep is firmly committed to this path, with the launch of a collaboration platform "Toward digital sustainability". This platform calls on all interested associations, institutions, operators, digital industry businesses and experts to invent together a new framework to make sure that communication networks, devices and usage are developed in the respect of environmental concerns.

This year, for the first time, Arcep's report on the state of the Internet in France devotes an entire chapter to environmental issues, including a reminder of the first available quantified findings on digital technology's carbon footprint, and an exposé on the preliminary actions that Arcep has taken to measure the environmental impact of a sector that today represents around 3% of the globe's greenhouse gas emissions.

But let there be no misunderstanding. The necessary digital sobriety must not be seen as synonymous with placing limits on online exchanges. The crisis revealed how crucial these interactions are to the life of the Nation, and no authority in a democracy could or should stand as arbiter of good or bad uses. The Internet's profusion must remain an inexhaustible source of vitality, expression and innovation. The challenge that awaits us is far more meticulous: it is by breaking down the different uses' technical chains that we can make every link along those chains accountable, maintaining an overall cap on digital technology's environmental footprint, and remaining deeply committed to eco-friendly design.

This unprecedented period confirmed the extent to which networks must be a "common good". The situation raised a number of questions regarding unlimited trade globalization, the level of decentralization for public decisions, risks related to climate change, loss of digital sovereignty, etc. It reinforces the citizens' calls to place the "common good" at the center of our life, decisions, societies, institutions. Those demands are opportunities to be seized for the telecoms sector. Starting with the regulation itself, innovative spectrum approaches could be of great interest following the logic of spectrum commons, i.e. free access to certain frequency bands, of which Wi-Fi remains the global standard. Those innovative strategies are initiated notably in South Africa, as presented by Dr Senka Hadzic, Pablo Aguera, and Dr Alison Gillwald, in France where Arcep has also initiated a reflection about dynamic spectrum management. The global demand for establishing the "common good" at the center of all that we do will necessarily require regulators around the globe to take action swiftly.

INTRODUCTION

Luca Belli
Osama Manzar
Sarah Farooqui

COVID-19: A Harsh Reminder that Open Internet Access and Meaningful Connectivity are Essential

The COVID-19 pandemic has harshly highlighted the fundamental importance of Internet access, and the total exclusion that the unconnected face in times of crises. Internet connectivity, has now emerged as the backbone of all social, political and economic interactions along with services during the Covid-19 pandemic. For some of us, our new routine comprises of e-learning, telemedicine, online meetings, and using e-commerce and delivery apps for our essentials. However, all of this is only possible if we have connectivity: without Internet access, it is simply impossible to isolate, while also having access to basic social and professional interactions.

For the almost 4 billion people in the world who do not have Internet access[1], who cannot afford connectivity during the pandemic, the arrival of COVID-19 equals house-arrest. Additionally, an undefined portion of the population formally considered as "connected" is de-facto only partially connected. Official statistics consider a connected individual someone who has accessed the Internet at least once over the past three months[2]. Besides being a rather questionable way of defining who can be deemed as an individual enjoying Internet access, this definition simply fails to consider that an incredibly large number of undue restrictions, either politically or economically motivated, can affect one's con-

nectivity, thus enormously restricting Internet openness.

If your Internet connectivity is blocked or throttled for political reasons, but you have access to a reduced number of government approved websites, you would be considered as a "connected individual," according to the commonly used definition, but the degree to which you can enjoy Internet access is very limited. By the same token, if you are a needy person who cannot afford to pay for Internet access, and only receives sponsored social networks on her smartphone (so-called[3]), you are far from being an Individual connected to the Internet, though you are officially considered as one.

An Internet user is an active "prosumer"[4] as he or she has the ability to access but also to create any content or applications and share them easily at low cost. Users can actively contribute to the evolution of the Net through their creativity. This fundamental Internet feature has allowed innovation to flourish online, reducing barriers to communication, participation and cooperation and empowering the end users at the edges of the network.

However, a user who is free to decide, communicate, innovate and disrupt, represents a risk for established political and economic powers. On the contrary, when users' attention is artificially concentrated into authorised websites and service provided by commercial partners, the prosumers turn into passive individuals, only receiving approved information and whose personal data can be collected ad infinitum.

The more time an individual spends on a given service, the more data on him can be extracted, refined and traded.

Hence, while forcibly keeping us at home, the COVID-19 pandemic obligates us to face some tough questions. How can almost half of the world population be regularly excluded from the Internet, which increasingly forms an integral part of our social, political, and economic life? In many countries – especially in lower-income ones – we may encounter individuals with mobile phones, and basic 2G connections, however this seldom translates into what is required in our current scenario. Covid-19 has exacerbated the need to advocate not just for open internet, but also for devices that enable realistic connectivity, and that allow users to make a meaningful use of Internet access – e.g. a smartphone may allow to access apps but not to create them.

How can millions of citizens across the world, be connected to the internet in a way that allows them to utilise the full potential of technology? How can we think that those enjoying a glimpse of Internet access, and only accessing a small number of predefined services can be considered as connected individuals? How

can we think that "sponsored" applications, the access to which is paid with personal data, rather than with money, represent a sustainable business model, instead leading to the concentration of data in the hands of few dominant and frequently unaccountable corporations? How we understand better the factors that drive production of devices? What is the role of governments and private entities, towards this end? What could be done differently?

To address such questions, and provide concrete answers we decided to publish this book, dedicated to The Value of Internet Openness in Times of Crisis. Several dimensions of Internet openness will be explored from a variety of perspectives although, of course, it will not be possible to be exhaustive.

Although the openness debate also interests issues such as data portability and the interoperability of digital platforms, or the restrictions existing in mobile operating systems, we decided to focus primarily on connectivity challenges as this volume is a product of the United Nations Internet Governance Forum (IGF)[5] coalitions on Network Neutrality[6] and Community Connectivity[7].

OPENNESS BY DESIGN

Openness it is key to understand that the original structure of the Internet gave birth to a general-purpose network where any kind of information is encapsulated into "data-packets" and conveyed according to a "best effort"[8]. This latter point is particularly relevant as, by transmitting all information on a best-effort basis, the Internet allows to access and share all content and applications in a non-discriminatory fashion.

For the first time, network operators act as "mere conduits", simply transporting data-packets in a neutral fashion, while the user can choose for what purpose use the network. For the first time, end-users acquire an active role, independently deciding how to use and – why not? – create apps, services and any kind of content. For the first time, individuals are truly free to "seek, receive and impart information and ideas of all kinds, regardless of frontiers and without interference[9]."

To safeguard such a user-empowering structure, several legislatures around the world have debated net neutrality principles[10] mandating non-discriminatory Internet access and enshrined them within the law[11]. Indeed, over the past 20 years the Internet ecosystem has been visibly changing, posing some tangible threats to the original openness.

Traditional media and communications systems have been converging into one single Internet ecosystem. Content and application providers have been vertically integrating with network operators and what was a quintessentially open and decentralized environment has been centralizing. Few tech giants with almost unlimited financial capacity and influence have emerged, while existing policies struggle to contain them[12].

Meanwhile, Internet access has become essential to convey the information to form one's own opinion regarding who to vote for, whom to trust, what to purchase and so on. When the openness of such environment is unduly restricted, democracy, fundamental rights and the rule of law are endangered. And this is why Internet openness must be preserved.

ZERO RATING AND THE SCRAMBLE FOR DATA

While Net Neutrality policies have been usually adopted to preserve openness and avoid undue blocking or throttling, the emergence of[13] in numerous countries has triggered a new breed of Net Neutrality debates, focusing on the impact of price discrimination. Zero rating models are mainly implemented on mobile networks and are based on subsidizing a limited set of applications, whose data consumption is not counted against the users' data allowance. To understand the rise of Zero Rating, four factors must be considered.

First, the Internet is increasingly accessed via mobile and wireless devices. Although such devices usually access the Internet via WiFi, many of them solely rely on mobile Internet connection. Second, the provision of audio-visual services is becoming a key strategic objective for many operators that have witnessed the saturation of many Internet access markets – as there is only a limited percentage of people able to pay for Internet access in any given country – and seen their revenues plateauing. Hence, they are vertically integrating with content and application providers.

Third, and perhaps chiefly, personal data is the "world's most valuable resource" and, in order to collect it, app providers and operators are becoming ready to sponsor users' access to applications. Sponsoring access to applications must be seen in the context of a real "Scramble for Data"[14], where market players struggle to capture users' attention and, consequently, their personal data. Hence the Net Neutrality and Internet Openness debate has become intimately intertwined with data protection.

Lastly, but extremely importantly, application providers increasingly aim

at "hooking" individuals into their services, through addictive application configurations[15]. Thus, the sponsorship of an application increasingly aims at creating user-dependency on such an application.

In this context, the purpose of Zero Rated offerings may be to steer users' Internet experience towards the mere use of sponsored services. Particularly, when subsidized access to a few applications is combined with the imposition of limited data caps, Internet users – especially the less wealthy – may have a strong incentive to access only sponsored applications.

The purpose of sponsoring access only to a limited set of applications makes sure that (new) users become reliant – and possibly addicted – only to the sponsored services, always remaining passive consumers[16] and never being able to create new apps competing with what you sponsor. While providing controlled communication free of charge, zero rating plans – the majority of which are based on the combination of low data caps with sponsored services [17] – ensure that users' data will keep on flowing unidirectionally into the servers of the applications' sponsor.

Brazil is a telling example. A broadband connection can cost up to 15 percent of a household's income[18], mobile plans with unlimited data, common in rich countries, are rare, while "zero rating" plans that typically sponsor access only to social networks like Facebook, WhatsApp and Twitter are extremely common. More than half Brazilian users utilize such plans. As a result, 95 percent of them affirm they mostly go online for messaging apps and social media[19].

Concretely, this means that the personal data of the majority of the population is continuously harvested by and concentrated into the hands of a few entities that, coincidentally, are also deemed as the main vectors of so-called "fake news" and currently scrutinized for their dominant position and their tendency to capture control over key channels of data collection, information communication and distribution of (digital) goods and services. This situation is remarkably common in several developing countries that have no data protection or very weak protections. Try to imagine what could possibly go wrong.

DOING THINGS DIFFERENTLY

Many groups of individuals around the world have not resigned to be left with the false choice between zero rating plans paid with personal data or no access at all. An[20] [20] have decided to take their economic, social and cultural development in their hands, becoming the protagonists of their digital future and es-

tablishing their own crowd-sourced infrastructure, known as Community Networks[21].

From Argentina[22] to Zambia, local communities are building their own networks, to overcome lack of Internet coverage and to develop services that cater for the needs of the local populations[23], creating new opportunities for learning, trading and creating new jobs for the locals, in an open and decentralized fashion.

Importantly, community networks represent a new paradigm[24], where connectivity is considered and is managed as a common good. Indeed, these networks are designed, owned and managed by the local communities that decide to create them and that retain control on them.

Community networks are open by design and by default because there is no need for the provider to favor a commercial partner or disfavor a competitor. The community is the provider and all network users are partners in developing shared connectivity.

These experiences tellingly demonstrate that, when the unconnected have basic information on how to build their network infrastructure[25] and the freedom to choose this option, they do so. By doing so, they demonstrate that empowered individuals, able to decide how their data are used and free to access and share content and innovation are a driving force of openness, sustainability and self-determination[26].

MEANINGFUL CONNECTIVITY

What the pandemic has highlighted more than before is the need for meaningful connectivity. According to a recent A4AI report[27], there are four broad requirements that define meaningful connectivity. An appropriate device, regular Internet access, fast connection, and enough data. In this context it becomes important to differentiate between connectivity and meaningful connectivity. In India for example, the latter is what is needed to serve people to access online education, biometric authentication to access their entitlements, and the same applies to healthcare and front line workers, to map and deliver facilities to diverse populations. Through the pandemic, the realisation has been that meaningful connectivity is something that needs to be regarded as a basic necessity.

Often the issues and themes within the digital space are looked at in silos, disconnected from one another in their context, as well as geography. However,

with the pandemic the realisation is stark -- that it is not possible to talk about any of the above, without understanding their interdependence on one another. These issues are all intimately intertwined in the digital environment, and have to be considered fundamental, to overcome a crisis such as the COVID-19 pandemic.

The essays also reveal the magnitude of these issues across geographies. An essay explicates the impact the COVID-19 breakout on the European internet traffic evolution and network capacity. Another sheds light on South Africa's failure to release high demand spectrum for over a decade, and its ramifications on the country. An essay delves into community networks in Latin America and highlights the barriers responsible for the lack of Internet adoption. The chapter on fake news, emergency laws, and surveillance tools, among others, sheds lights on restrictions and disinformation in Russia. The chapters on India delve into the digital divide in the country.

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ONE

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Meaningful Connectivity: Advancing the Open Internet during COVID19

The public health, social, economic, and political challenges that we now face around the world because of the COVID19 pandemic are severe. What has also become obvious in a short space of time is that this global phenomenon does not impact everyone in the same way – with the digital divide representing a key difference for many. One of the ways that people everywhere are trying to cope is by accessing information, entertainment, and other content online, as well as by studying[1] and working from a safe location. However, half of the world who are offline today cannot access these benefits. On current trends[2], the offline are coming online at slower rates than before.

Indeed, it is especially important now for governments, the private sector, and civil society to accelerate efforts to achieve universal internet access. The Alliance for Affordable Internet (A4AI) recently shared a set of policy recommendations[3] [3] for doing just that during the pandemic with the position that internet access is an essential public good. This includes providing free or subsidized devices to public institutions, low income households and under-served groups (e.g., women, rural and remote populations); making it easier for smaller companies to enter the market and alternative models like community networks to thrive; increasing data allowances on all mobile data packages; and opening up public-facing wifi so residents in close proximity can log on to free wifi in areas covered by an operator.

Another way in which existing inequalities mediate the impact of the pandemic

is that in addition to whether or not a person has access is the kind of access they have. Last year, A4AI started a consultation and research process to develop a new definition of access called meaningful connectivity[4]. Based on research in 3 countries (Colombia, Indonesia, and Ghana, which included nationally representative household surveys, focus groups, and interviews), it developed this definition based on having a connection that allows people to use the internet in a way that benefits them. This includes having a fast enough connection for video for study, work or entertainment; having a device that is multifunctional and portable; having a connection that avoids data rationing, and being able to use the internet frequently.

As a result we proposed the following minimum primarily technical standards for users to have meaningful connectivity: having a 4G mobile broadband connection; a smartphone; a fixed wired or wireless connection at work, home, or place of study; and using the internet every day.

Our research showed that the use cases that people viewed as important to making meaningful use of the internet relied on these components. For them the combination of all four components was what made internet use meaningful. More importantly, this definition points to crucial avenues for targeted policy responses that can help reduce what is now an emerging new digital divide between the poorly connected (those who only use a single application or website once a month) and the hyper-connected (those who watch streaming movies and work remotely every day).

In fact, the current pandemic has highlighted this new divide in stark terms. Online video classes from a place of study or home will require more than what a simple text-based messaging app may need. However, simply counting both types of connectivity as the same (which is what the current definition of internet use does) means that policies that simply try to improve access in general will exacerbate these divides. Instead, meaningful connectivity can allow policymakers to better understand which communities and groups do not have the right kinds of access, and in fact make all their citizens better prepared to meet the pro-longed challenges of future pandemics, natural disasters, or other emergencies.

One important requirement that we have proposed for any form of meaningful connectivity is access to the open internet. This is important as it conforms with A4AI's position that access to the open internet is key to economic growth and human development and is part of its guiding principles and good practices[5]. In practice, this means the assessment of meaningful connectivity following the four components above will preclude artificial restrictions (either economic or

political; e.g., zero-rating or excessive censorship) on internet access and rejects economic and legal barriers to posting and creating online. Thus, an individual should be able to use the internet based on their own volition. This also means precluding partial or full network shutdowns and blocks of specific internet based services or platforms.

In terms of measurement we can use surveys to assess each of the 4 meaningful connectivity components (e.g., by asking people if they have a 4G connection, smartphone, are daily users, etc.). Nationally representative surveys of this type should also include questions on access to the open internet and can include for example whether the user relies solely on a zero-rated plan to get online, has experienced an internet shutdown, or restriction to a particular app within the last three months (the typical time period for assessing internet use). People that confirm that their internet use is restricted in any of these ways would then not be eligible to be included in the count of those with meaningful connectivity.

This is important as it can also point policymakers and others to the proportion of their populations that cannot realize meaningful connectivity because of a lack of access to the open internet. It can also reinforce how such restrictions undermine the efficacy of internet use during a crisis such as the pandemic.

Note that while a nationally representative survey is not the only way to assess restrictions on internet use (e.g., we can also refer to publicly available data[5] on incidents of internet shutdowns), it is critical that any measurement of meaningful connectivity (and by extension restrictions on access to the open internet) be gender disaggregated data. This is needed because of the large[6] [8] existing global gender gap in internet use, which cannot be addressed without this kind of data.

Building on these ideas, A4AI plans to develop detailed policy guidelines that can help governments and the private sector improve the levels of meaningful connectivity in their countries. Such policies must be specific to the context of each country and can include targets that encourage gradual improvement over time (e.g., increasing 4G use at appropriate levels across both urban and rural areas over a 5 year period). It should be clear however, that such policy recommendations can start with commitments to the open access to the internet in order for us to reduce the divide between the poorly connected and the hyperconnected, and enable meaningful connectivity for all.

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TWO

Frode Sørensen

COVID-19 and the Value of Internet Openness: The European experience

This essay describes the impact the COVID-19 breakout has had on the European internet traffic evolution and network capacity, the application of the European Open Internet Regulation, and preventive measures taken by stakeholders after the breakout. Overall, European internet infrastructure has coped well with the situation despite significant increase in internet traffic load.

2.1 SETTING THE SCENE AFTER THE COVID-19 BREAKOUT

In Europe, different countries imposed lockdowns[1] to contain the pandemic, starting with Northern Italy on March 8. Internet access proved to be vital for modern society when physical movement was limited. This facilitated a steep increase in the use of teleworking facilities and online teaching tools from peoples' homes all across Europe. Internet communications also became more important when business meetings and business travelling were replaced with virtual meetings to maintain economic activities.

The whole situation caused a significant increase in internet traffic in Europe. Concerns emerged[2] regarding whether network capacity would be sufficient, but also whether the open internet regulation would provide any limitation to operators' measures.

In case reservation of capacity or even traffic prioritisation would become

necessary, how could this be done in line with the European Open Internet Regulation? Or would the Regulation even prevent necessary measures from being taken?

2.2 RELEVANCE OF THE EUROPEAN OPEN INTERNET REGULATION

When considering COVID-19 and the value of internet openness, the specifics of the regulatory regime are relevant. The European Open Internet Regulation[3] [3] follows the general approach to net neutrality known from the international debate, and clarifies several aspects that tend to vary between jurisdictions where net neutrality rules are introduced.

When looking into specific cases, such as the situation during the COVID-19 breakout, it is important to distinguish between the network layer and the application layer to be able to assess the different measures that are taken. The open internet rules apply only to the network layer, which is managed by the internet service providers (ISPs).

On top of that, end-users access different content and application providers (CAPs) at the application layer. Based on the European Open Internet Regulation, end-users have the right to access and distribute content, and to use and provide applications of their choice via their internet access service.

The distinction between network and application layers is illustrative regarding the different measures taken during the course of the COVID-19 pandemic. Measures may be applied at the application layer, many of which are automatically taken by the software applications . Other measures may be applied inside the network infrastructure, usually referred to as traffic management, which comes in different flavours.

2.3 FLEXIBILITY OF THE INTERNET TECHNOLOGY

The application layer is implemented at the endpoints, that is, at computers attached to the internet. Such endpoint-based functionality is essential for the traffic handling of the internet. Looking deeper into the internet technology, endpoints actually execute two layers, referred to as application and transport layer.

The transport layer contains generic endpoint functions that are used by the different applications. Many of the transport protocols (such as TCP and QUIC) perform congestion control[4], which is a function that slows down transmission

of traffic if necessary to prevent congestion. This means that these protocols adapt to the traffic load on the internet.

Furthermore, many modern video streaming applications use dynamic adaptive streaming[5] that adjusts the video coding according to the available bandwidth on the path from the video server to the viewer. Thereby the viewer receives the best available video quality according to the traffic level on the internet.

Finally, larger CAPs distribute their content via content delivery networks[6] (CDNs) that consist of proxy servers located relatively close to the content receivers. This leads to better performance for the transmission of the content due to shorter distances, at the same time it reduces the traffic pressure on the internet since traffic is not sent unnecessarily across internet interconnections.

2.4 INITIATIVES TAKEN BY EUROPEAN INSTITUTIONS

The European Commission took an early initiative[7] by establishing a dialogue with different video streaming providers, regarding the possibility to switch to standard definition instead of high definition during peak hours. The European Video Games Industry announced[8] [8] that to mitigate potential network issues during the COVID-19 crisis, they would conduct downloads of new releases late at night to early morning when the internet usage is low.

Such precautions relate to the application layer, though this layer also has the built-in mechanisms to prevent network congestion as described previously.

Shortly after, BEREC and the European Commission announced[9] a joint initiative on coping with increased demand for network connectivity due to COVID-19. In their statement, they committed to preserve open internet access in the circumstances of the COVID-19 crisis, noting that the Open Internet Regulation "prohibits operators from blocking, slowing down or prioritising traffic."

This announcement refers to traffic handling at the network layer, where reasonable traffic management measures are allowed. Furthermore, due to the COVID-19 situation, BEREC and the European Commission found it relevant to clarify that "operators can avail themselves of this exception [exceptional traffic management], if such traffic management measures are necessary to solve or to prevent the congestion and they can only be maintained for as long as necessary."

2.5 OBSERVATIONS FROM THE EUROPEAN PERSPECTIVE

Approximately a week later, BEREC announced[10] its initiative to report on the status of internet capacity in light of COVID-19. BEREC committed to setting up a mechanism to ensure regular monitoring of the internet traffic situation in Europe, through regular monitoring twice a week, and to signal any significant unexpected event.

In general, their observation has been that the overall traffic in fixed and mobile networks has increased during the crisis, but that no major congestion issues have been reported. According to the information available to BEREC, network operators have been able to cope well with the additional internet traffic load.

Another source assessing the impact of COVID-19 on internet traffic conditions is Tech4i2, which observed[11] that the average time to reach leading CAPs increased. This seems to gradually improve. A stress test performed on 10 April, showed similar results for Europe and US, with US slightly better than EU27, and EFTA slightly better than US.

The Tech4i2 paper also notes that access speeds are influenced by the capacity of routers and internet exchanges on one hand, and cloud and edge servers on the other hand, that are available in the proximity of end-users. This corresponds to the network layer and the application layer, respectively.

2.6 CONCLUSIONS SHOULD BE DRAWN BASED ON THE FULL PICTURE

In the aftermath of the European measures, there have also been allegations[12] that these measures indicate that there were problems that needed to be mitigated with the internet in Europe under the pandemic, and even that there were "tremendous problems". However, there are no observations supporting such conclusions.

Wherever such assessment is to be done, it is advisable to draw the conclusion based on the full picture. So far, the flexibility of the internet technology and the efforts contributed by ISPs and CAPs together have led to a situation where the networks can cope with the increased internet traffic in Europe, as elaborated above.

When considering the European Open Internet Regulation, the rules are designed to take care of exceptional circumstances. ISPs may implement exceptional traffic management measures if necessary to keep their networks running.

At the same time, end-users' rights are safeguarded by the requirement that equivalent categories of traffic must be treated equally. As we have seen, the European model is working.

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THREE

Apar Gupta
Sidharth Deb

Bridging India's Digital Divide during COVID-19 requires a Comprehensive Strategy

PART 1

COVID-19 has forced the world to retreat and the internet has become more integral than ever before. The internet supports people to work from home, take online classes, stay in touch with loved ones, and access essential facilities. These essential facilities include e-payments, e-commerce, videoconferencing, instant messaging, critical information sites, e-medicine, social media, general entertainment, e-governance, etc. It also supports the continuing operation of institutions within government and the judiciary. These manifold applications of the internet convey the urgency for policymakers to support people on the wrong side of the digital divide.

Access to the internet and telecommunications is a prerequisite for social distancing. When India's Prime Minister announced a national lockdown, there were waves of reverse migration from rural to urban centres. Osama Manzar observes[1] that many of these people travelled in large groups disregarding social distancing protocols. This was because many did not have access to functional mobile phones. Reasons for this included not:

- Paying mobile bills;
- Recharging prepaid subscriptions;
- Accessing functional devices; or
- Having sufficient power in mobile devices.

The digital divide may also exacerbate systemic inequalities during COVID-19. Educational institutions across the world are transitioning to online classes. A recent report highlights that even in its national capital, nearly 1.6 million students[2] from economically disadvantaged families are at risk of falling behind their classmates during the coronavirus pandemic. The digital divide erodes equal opportunities for certain students to compete since they suffer from inherent disadvantages like having no access to reliable internet connectivity or internet compatible devices. Similarly, another report observes[3] that only 12.5 percent of students in India have access to internet connectivity at home. Such inequalities are also seen at a macro level as well.

I. 3.1 THE MULTIDIMENSIONAL NATURE OF INDIA'S DIGITAL DIVIDE

According to the Telecom Regulatory Authority of India ("TRAI"), in September 2019[4], India had 687.62 million internet subscriptions. Even if we assume that each subscription is linked to a distinct individual, around half of India's over 1.3 billion population does not have access to an internet subscription. However, according to our assessment the percentage of unconnected people is probably higher. In September 2019, India's total number of internet subscriptions per 100 population was 52.08. Pertinently, India has a history of dual SIM usage[5]. Therefore, these numbers need not convey a complete picture of the digital divide. In fact, in urban areas India has 104.25 subscriptions per 100 population whereas in rural areas it languished at 27.57. Such numbers confirm the extent of India's rural-urban digital divide evident. India also struggles with a stark gender divide when it comes to internet access. As Smriti Parsheera remarks[6] that the GSMA in a 2019 report observed that only 16% of women in India have access to mobile and internet services.

Paradoxically, even these multifaceted inequities coincide with a widening of India's internet base. In June 2016, India had approximately 350 million internet subscriptions. This growth began with the entry of Reliance Jio Infocomm Limited (RJIL) which yielded a manifold reduction in data prices. India now has the cheapest mobile data rates in the world and the world's highest average wireless data per user per month — at more than 10 GB per month.

This period has also seen India's retail telecom market shrink. Plummeting data prices and ARPUs have led to a competitive multiplayer market becoming a virtual three player ecosystem. Moreover, the prevailing stress within its telecom sector means there is a risk of further exits of telecom operators. Such eventualities also pose a risk to India's existing, albeit suboptimal, telecom network capacity.

Stakeholders must keep a watchful eye on this since India's internet growth story is mobile-first. India has only 22.26 million wireline internet subscriptions. Therefore, the digital divide is a continuous moving target. 3G/4G LTE mobile connections struggle to sustain applications which require high speed and low latency connectivity. With the ongoing pandemic demonstrating the importance of solutions like videoconferencing, there is a need to consider the quality of internet people have access to. In this regard in March 2020, Ookla's Speedtest Global Index ranked[7] India 130th in terms of mobile and 71st in terms of fixed line internet speeds.

II. 3.2 ADDRESSING BANDWIDTH INEQUITIES

When considering access, interventions must address issues ranging from universal coverage to bandwidth inequities. India has 625.42 million "broadband" internet subscriptions. Therefore, more than half the people in India do not have access to broadband. Unfortunately in India, the term itself remains a misnomer.

India's telecom authorities define "broadband" as an internet connection with a minimum download speed of 512 kbps. In contrast, the US classifies fixed line services as broadband when they have a minimum download speed of 25 Mbps and upload speed of 3 Mbps. For mobile connections it is 5 Mbps for downloads and 1 Mbps for uploads.

India must approach access through the lens of modern website/application design, and domestic network capacity. This includes revising metrics for measurement like the definition of "broadband". India must also address the bandwidth divide in terms of unequal availability of telecommunication capacity. A 2014 study found[8] that China, US and Japan combined for half of the world's total installed telecom bandwidth potential.

India has commenced its own set of initiatives to remedy this. Its BharatNet project is the world's largest rural broadband connectivity programme. It is designed to offer rural residents subsidised access to high speed internet connectivity and help otherwise unconnected people access essential online offerings like e-medicine, e-health, e-education, e-governance, e-retail, etc. Specifically it is meant to augment middle mile infrastructure capacity, through the deployment and operationalisation of fibre optic networks (100 MBPS) to India's villages. Once connected, the last mile connectivity is to be executed through the installation of village-level WiFi hotspots and 4G base stations.

The targeted date for completion for the project was March 2019. Had these targets been met, the rural population's ability to navigate the pandemic would

have been easier. However, the project's central portal[9] reveals that the project remains far from completion owing to several setbacks. This includes delays in laying optic fibre cables, village, wi-fi installation and operationalisation, connection and equipment installation of OFC, etc. The reasons behind these delays and setbacks are manifold[10], and include slow on-ground permissions processes, fiscal constraints and questions with respect to incentive structures.

Consequently, the Indian Government has pushed its timeline for completion to August 2021. Once complete, the government aims to ensure that all internet access providers (including mobile operators, ISPs, cable TV operators and content providers) can provide last mile services in rural areas in a non-discriminatory manner.

III. 3.3 SO WHAT'S NEXT?

As a first step, Indian authorities must intervene immediately to address the accelerating need for everyone to be digitally connected, with both demand and supply side interventions. Interventions should strive to bridge inequalities and maximise societal impact, and must be aligned with:

- Current network availability and concomitant capacity;
- The state of India's telecom market; and
- Prevailing resource constraints.

Here, India may take cues from recent efforts in the US, UK and Europe.

From a demand side we need to consider strategies which can increase availability of infrastructure which supports high speed internet at the last mile. Second, the end user must have access to sufficient/affordable voice and data services. In addition users from disadvantaged backgrounds require support in accessing internet compatible devices as well. For instance, the UK which has decided to deploy 4G wi-fi routers for students in disadvantaged communities to be able to access for free. Similarly, US lawmakers are looking to introduce a Bill, to utilise a particular fund of USD 2 billion which can be controlled and disbursed by the FCC to schools and public libraries. These institutions will be allowed to spend allocated funds towards purchasing wi-fi hotspots, routers and internet connected devices.

On another note, we have also observed that telecom operators in the US have taken a pledge along with the FCC to make best efforts to not disconnect user subscriptions for non-payment of bills. Similarly, telecom operators in Europe are offering free voice and data services (with monthly allowances) for certain demographics like senior citizens or healthcare professionals.

Similarly, Indian authorities should consider commencing an initiative which utilises resources available under a central Universal Service Obligation Fund (USOF), National Disaster Relief Fund and State Disaster Response Funds. These funds may be mobilised toward facilitating public wi-fi hotspots, 4G routers, internet devices and so on, in particular targeting benefiting students from underprivileged backgrounds, informal workers, healthcare workers, first responders, and people from marginalised communities.

These funds must be targeted at interventions which can maximise public benefit. Therefore, when it comes to rural areas, they must be designed to augment public access to crucial internet-enabled services. Funds must therefore be allocated to set up high speed internet availability at spots like Common Service Centres, post offices, cyber cafes, public wi-fi hotspots, schools, public libraries, public kiosks, etc. Even as the aspiration remains ensuring each household having access to high speed broadband coverage, such initial measures will allow for greater coverage of free/subsidised internet connectivity to otherwise under connected demographics. Further, it would also allow people to access essential services connected with government and judicial institutions.

From a supply-side perspective, there is a need to consider ways to raise existing network capacities. These may include increased operator access to other unused or underutilised spectrum. Further, there is a need for the central government to work with state and local governments in improving processes for streamlining of local permissions for right of way. At the same time there is a need for us to assess how shifts in network traffic are affecting existing network capacities and whether there is in fact any deterioration in network performance or quality of internet connectivity. India must be strategic if it aims to make internet affordable and high quality internet universally available. This also involves adequate incentives for private sector players.

In Part 2 of this essay series, we analyse key governance issues Indian authorities will need to address to preserve the openness of the internet.

PART 2

Part 1 of this essay considers issues of internet access through the lens of universal coverage and the bandwidth divide. In this post we address a complementary aspect — governance.

Robust internet governance is needed for equity and will support people to negotiate this pandemic as everyday life ports to the internet. Interventions must

embed principles of proportionality, transparency and accountability which are centred on progressive constitutional and human rights value systems.

Due to lockdowns and social distancing, Internet usage and resulting traffic has shifted in a manner which diverges from existing network design and concomitant network capacities. This shift in internet usage in terms of total and peak traffic loads caused a surge in the use of high bandwidth low-latency solutions like real time video conferencing apps. This has also been an uptick in the general usage of services like video content services, social networks, live streaming platforms, video gaming, etc.

3.4 MANAGING SHIFTS IN NETWORK TRAFFIC

The shift in pressures on underlying internet and mobile infrastructures has seen Indian telecom operators advocate for relaxations to net neutrality obligations. Telecom industry bodies have written to the Telecom Regulatory Authority of India ("TRAI") requesting exemptions from charging data charges to access certain websites described as critical services. These include sites containing information about COVID-19, government services, e-commerce and certain digital payments applications. Such requests deviate from Indian regulations which prohibit internet providers from zero rating particular data applications/services.

To be sure, TRAI's Prohibition of Discriminatory Tariffs for Data Services Regulations, 2016, do provide for limited exemptions. Under Regulation 4 service providers are allowed to reduce tariffs for accessing emergency services, during times of individual or public emergency. However, the Regulation mandates that any such exemption must be sanctioned by TRAI (where TRAI's decision is final binding) within 7 days from date of implementation of reduction in tariff.

While the above interactions were not strictly within the confines of the prescribed framework, we must read the above instances along with the fact that these industry bodies have written to online video content providers, to reduce their bitrates. By referencing measures taken by online content providers in jurisdictions like Europe, we have noticed that most participants in the Indian online video market have complied and reduced their offerings to SD bitrates.

To be clear, many of these service providers charge a premium to consumers to access high definition content feeds. These measures have been taken with little evidence available to the public of the actual stress being placed on India's underlying networks. India's internet infrastructure has traditionally been char-

acterised as underutilised. This fact may be contrasted with a report[11] which found that mobile internet use only increased by 10 percent in the month of March 2020. Pertinently, in Tier 1 metros the increase was even more modest at 3-5 percent.

Without appropriate review and response mechanisms, there is a threat for discretionary responses which threaten net neutrality. As such net neutrality in India remains imperfect owing to the fact that we are yet to finalise a definition of "reasonable traffic management practices", and actual means of monitoring and enforcement. This lacuna has meant internet providers in India continue to operate with relative impunity[12] when it comes to net neutrality. Therefore, it becomes even more imperative that TRAI expedites its latest consultation[13] on defining traffic management practices, monitoring, enforcement and a multi-stakeholder body for net neutrality.

In the meantime authorities in countries like India must undertake an evidence based review of the impact COVID-19 may have on existing network capacities. Transparent and broad-based dialogue is key. Indian authorities should follow in the steps of international counterparts like BEREC[14] which convenes stakeholder meetings twice a week to dynamically track the impact COVID-19 and lockdown has on underlying network infrastructure.

Based on this authorities have the ability to audit service providers and ensure they do not deploy undue network management practices. Laudably, to ensure transparency BEREC publishes weekly reports of these discussions. Along these lines we suggest India should have twice a week meetings between DoT, TRAI, TSPs/ISPs, internet exchange points, CDN providers, cloud service providers, content providers, small businesses, video conferencing app developers, consumer groups and so on, to ascertain the actual impact COVID-19 is having on internet capacity and quality of service. Any remedial action must be consistent with the principle of network neutrality. Like BEREC, Indian authorities should make the findings from these discussions public via weekly reports. Subsequent actions must also keep in mind India's domestic telecom capacities which have traditionally been underutilised.

IV. 3.5 INTERNET ACCESS AS A CIVIL RIGHT

The final key component in addressing the digital divide is addressing aspects relating to internet access as a human right. Notably, the internet has morphed from a luxury into a necessity. Therefore, governance of the medium must also start reflecting this heightened importance. The Hon'ble Supreme Court of India in KS Puttaswamy v Union of India [(2017) 10 SCC 1] remarked that Article 21

of India's Constitution, which protects people's right to life and personal liberty can be:
" … interpreted to include a spectrum of entitlements such as … the right to means of communication …" [emphasis ours]

Subsequent internet jurisprudence has evolved to accord heightened recognition to the internet. In September 2019, the Kerala High Court recognised[15] [15] access to the internet as a fundamental right. The High Court held that the right to access the internet falls under India's overarching right to life and liberty and in particular at the intersection of the right to education and the right to privacy.

Such recognition of constitutional rights being attached to internet access is not novel. During India's net neutrality debates[16] access to the internet has been connected with people's right to freedom of speech and expression. In January 2020, India's Supreme Court judgement in the matter of Anuradha Bhasin v Union of India acknowledged that people's fundamental rights apply online. These include rights like:

- the right to freedom of speech and expression; and
- the freedom to practice any profession or to carry on any occupation, trade or business.

The above case pertained to government mandated internet shutdowns and suspensions in Jammu and Kashmir. However, India's Supreme Court refrained from going the extra mile and aligning itself with international human rights benchmarks. India is a signatory to the International Covenant on Civil and Political Rights (ICCPR). In this regard, a UN Special Rapporteur report on the promotion and protection of the right to freedom of opinion and expression, concludes[17] that any decision by a government to cut off internet access for users, regardless of justification, is violative of the internationally protected freedom to hold opinions, speech and expression.

Instead, the Supreme Court of India mandated the Indian Government to reform India's current telecommunications and internet suspension framework. It also made other directives vis-à-vis transparency, accountability and also explicitly held that indefinite shutdowns are unconstitutional. Unfortunately, there have been no steps taken by the Government of India to review the country's internet suspension framework in a manner which reflects or operationalises the treatment of the internet as a core human right.

Instead, governments in areas like Kashmir have commenced sophisticated ways to undermine internet access. Since January 2020, the Kashmir Government has issued directions (under India's internet suspension framework) to allow very limited public access to the internet. In particular the public were

only allowed to access a few sites, while most remained blocked — via a process known as whitelisting[18]. After much public pressure this practice was eventually lifted by the Kashmir Government.

However, we have also seen efforts by the region's government to deny people access to meaningful connectivity. Heavy handed government control means that only fixed wireline services have had access in the region to full speed internet connectivity. However, the access to such services requires users to share static MAC addresses with the Government, which allows them to snoop on people's activities online.

Notably, the Kashmir Government has ensured that mobile subscribers (who comprise most internet users in the region) are only able to access the internet at 2G internet speeds[19]. Such speeds render internet access inconsequential. Even here there is a greater degree of control for people with prepaid mobile subscriptions. Such individuals must go through fresh processes of registration with authorities to even have access to such such slow internet connectivity. Such control makes it difficult for most people to even access 2G internet services.

Such tight control over internet connectivity and the lack of meaningful bandwidth has had a crippling impact on the region — from a humanitarian and from an economic perspective. These challenges are of course exaggerated during the coronavirus[20]. Specifically, it thwarts doctors from downloading manuals/treatment related information from the internet since most files are large — and it would take hours for a 2G connected device to download.

Most recent, the Supreme Court of India heard a matter on internet slowdowns and restoring 4G/high speed internet connectivity in Kashmir. During substantive arguments[21], the petitioners highlighted the impact of the internet slowdown on access to healthcare and education in the region. These contentions were supported by personal narratives from doctors, teachers, students, business persons and lawyers and a technical comparison of web performance at 2G and 4G speed.

The technical report[22] revealed that tasks on observed 2G speed can take upto 50 times longer. Moreover, 2G network conditions were well below the minimum requirements of video streaming/video communication platforms like YouTube, Zoom and Skype. According to an accompanying simulated test some interactive interfaces like the World Health Organization's Situation Tracker did not function at observed 2G speeds at all. The Supreme Court ultimately passed[23] an order in which it directed the Government to immediately constitute a high-powered Special Committee to look into the contentions of the Petitioners for 4G restoration in Jammu and Kashmir.

Given that the Supreme Court shifted the ultimate decision making power back to the executive, we strongly believe the political must converge with the technical. Given new pressures on network capacities, government officials must appreciate that any politically guided decision to shutdown the internet causes undue stress on the network underlying infrastructure. As a policy brief by Internet Society[24] puts it:

"When a complete Internet shutdown occurs in a given country, the technical impact can extend beyond the country's borders to the rest of the global Internet … shutdowns hold the potential to generate systemic risks."

Specifically, shutdowns can have an adverse impact on the integrity of the internet's core infrastructure. This includes[25] disruption of core operations like domain name services or routing infrastructure.

Therefore, there is a need for India's Government to understand the need for continuous access to high speed internet during all times but especially during a pandemic like the coronavirus. As argued, these imperatives stem from the prism of civil rights, utilities, and technical considerations. Any misuse of the internet does not mean that access to the medium is denied for millions of people in a time where any down time can have grave economic, health and sustenance related consequences.

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FOUR

Smriti Parsheera

Net Neutrality in India: From Rules to Enforcement

Policymakers in India have acknowledged that non-discriminatory treatment of content, or, in other words, maintenance of network neutrality, constitutes an essential feature of having an open Internet. This essay focuses on the development of India's net neutrality framework, tracing the steps that have been taken so far and the questions that lie ahead. In the follow-up piece[1], I discuss some of the specific ways in which the net neutrality rules may be tested by recent developments surrounding the COVID-19 crisis.

In the period between 2016 to 2018, India took two major steps towards establishing what can be regarded as one of the most powerful net neutrality regimes in the world. The first step, taken by the Telecom Regulatory Authority of India (TRAI) in February 2016, was the adoption of a regulation[2] to prohibit any content-based pricing of data services. The immediate impetus for this decision came from the tie-up between Facebook and Reliance Communications to introduce the Free Basics platform in India. This raised serious concerns about the Internet being splintered into free and paid versions, with accompanying negative effects for online innovation and free speech.

Having decided against the zero rating of services, the regulator then went on to conduct a robust, multi-stage consultation process on the other net neutrality principles. This resulted in a decision by the Indian Government[3] in July 2018 to adopt a comprehensive set of principles on non-discriminatory access to content. Through this decision, Internet service providers (ISPs) were disallowed

from indulging in any kind of discriminatory treatment of content, including practices like blocking specific websites or speeding / slowing down of content. Note that the term ISP is used here to refer to both wireless telecom operators — that control 97%[4] of India's broadband Internet access market — and fixed line access providers.

4.1 WHO IS RESPONSIBLE FOR ENFORCEMENT?

Unlike the tariff regulation of 2016, which TRAI itself is responsible for enforcing, the broader net neutrality framework was brought about through amendments to the licences agreements that are entered into between the Government and each ISP. Accordingly, the Department of Telecommunications (DoT), as the executor of these agreements, declared that it would be the one responsible for monitoring and enforcement. However, Section 11(b)(i) of the TRAI Act, 1997 makes it clear that one of the functions of TRAI is to "ensure compliance of terms and conditions of license". In addition, TRAI also has the powers, under Section 12 and 13 of the TRAI Act, to call for any information or explanation from service providers and issue directions to them.

This illustrates India's complex regulatory structure[5] in the telecommunications sector, with a division of responsibilities between DoT and TRAI. While DoT's intention appears to be to reserve the monitoring of net neutrality violations for itself, this cannot override TRAI's statutory functions. Accordingly, the position that emerges is that TRAI is also responsible for monitoring quality of service and traffic management practices (TMPs), in addition to putting in place appropriate disclosure and transparency norms. The law, however, does not empower it to impose penalties for violation of the licence conditions. Any enforcement action against an observed net neutrality violation can therefore be implemented only by DoT.

4.2 HAVE THERE BEEN ANY VIOLATIONS?

Close to two years have elapsed since the adoption of these principles and so far there has been no public information on any monitoring or enforcement initiatives, either by TRAI or DoT. Stakeholders from the telecom industry suggest that the need for such enforcement has not arisen as there is no evidence of non-compliance[6] on their part. These claims are, however, contradicted by multiple news reports[7] and the crowd-sourced information collated by the Internet Freedom Foundation[8] that point to the selective blocking of websites by various ISPs. This list of blocked websites includes VPNs, torrents sites, porn sites and even sites like Reddit, SoundCloud and CollegeHumour. An empirical study by re-

searchers at the Centre for Internet and Society[9] confirmed that there are many inconsistencies in the websites being blocked by different ISPs and in the blocking techniques being used by them.

A large part of this problem arises due to the opaque nature of the process through which the Government can legally direct[10] ISPs to block access to a website, on its own behalf or to give effect to court orders. The net neutrality principles clarify that any measures taken in accordance with such directions would not constitute a violation, provided that the measures adopted by the ISP are "proportionate, transient and transparent" in nature. India's blocking rules, however, contain a legal obligation to maintain the confidentiality of blocking requests and any action taken under them. This apparent inconsistency between the two sets of rules can allow ISPs to indulge in unjustified interference with Internet traffic under the shield of confidentiality offered by the website blocking rules.

4.3 TOWARDS A MULTI-STAKEHOLDER FRAMEWORK

While adopting the net neutrality principles, the Government had announced that it would constitute a multi-stakeholder coordination body to play an advisory role in monitoring compliance. TRAI's original recommendation was that this body, consisting of ISPs, content providers and representatives from academia, civil society and consumer groups, should be made responsible for developing technical standards and recommending them to TRAI. In a notable departure from this suggestion, the DoT decided that the Department itself would formulate the necessary TMPs while taking recommendations from TRAI but without any role for the proposed new body.

In January this year, TRAI initiated a consultation[11] process to seek inputs for the operationalisation of the multi-stakeholder body. The consultation paper also raised questions about the process for determining what should be regarded as reasonable TMPs. As may be expected, many of the telecom operators were of the view that there is no need for the creation of a new body and its intended function can be fulfilled by existing industry groups. Such a proposal is, however, antithetical to the very purpose of creating the proposed body, which should be able to offer independent advice to the authorities while taking into account the perspectives of different stakeholders. Neither the objective of independence nor diversity of viewpoints will be met by an industry-led body.

Following this consultation process, TRAI has recently submitted its recommendations to the Government[12]. The recommendations suggest that the

multi-stakeholder body should be set-up as a non profit society. Its membership would automatically include all categories of licensed internet service providers while members belonging to other categories — content providers, academics, researchers, civil society, consumer representatives, standard setting organisations, government agencies and individual consumers — would be nominated by the DoT. TRAI has proposed that this body should assist the DoT in monitoring and enforcement initiatives. Some of its suggested functions will include maintaining a repository of TMPs based on information submitted by the service providers, investigating complaints, and recommending suitable technical standards.

In a pervious version of this piece (written prior to the release of TRAI's recommendations) I had noted that the creation of the multi-stakeholder body should ideally be guided by the following principles.

One of the key recommendations made by the UNESCO[13] in the context of multi-stakeholder participation is that the participants in such a process should collaborate on an equal footing. With this in mind, the body should be designed in a manner that shields it from any kind of industry capture, either by the telecom sector or large Internet-based businesses.

As pointed out in Mozilla's submission[14] to TRAI, it is important that the members should not be stratified into different tiers. Doing so will inevitably lead to the dominance of a particular group. For similar reasons, we must also be cautious of civil society or consumer representatives who might enjoy any kind of commercial relationships with interested entities.

The design and functioning of the multi-stakeholder body should be subject to robust accountability measures. This would include transparency in the membership process, selection of the governing body, discussions in meetings, any advice given to the Government and financial reporting.

While the present discussions relate to the specific objective of monitoring net neutrality compliance, successful functioning of the multi-stakeholder body can create opportunities for similar collaborations on many other fronts. Therefore, the body should ideally be designed in a manner that makes its mandate easily scalable in the future.

Finally, it is critical that users of Internet access services should also be recognised as an important stakeholder in the monitoring process. While it may not be possible to enable their direct participation in the proposed body, crowd-sourced information, collected in a semi-controlled environment, can be a valuable tool for identifying possible areas of concern. With the assistance of the multi-stake-

holder body, TRAI can leverage its existing knowledge of crowdsourced data analytics from its MySpeed app[15] to develop similar mechanisms in the area of net neutrality.

4.4 WHAT LIES AHEAD?

India's legal position on net neutrality can be seen to be performing an important expressive function. As explained by Cass Sunstien[16], the law's expressive function comes into play where its objective is not just to regulate direct consequences but to make a statement about acceptable social (or market) norms. In the context of net neutrality, this indicates a rejection of the ability of ISPs to act as gatekeepers of the Internet and signals a commitment towards open Internet access.

Having effectively made this statement it is now important for authorities in India to create appropriate frameworks for the monitoring and enforcement of the norms. The first step in this direction would be to specify the transparency obligations to be followed by ISPs in relation to their traffic management practices. This would include information about the actual practices as well as their context, duration, etc., so as to assess whether they can be regarded to be proportionate, transient and transparent in nature. TRAI's latest recommendations offer some useful guidance in this regard. The Authority has indicated that the proposed multi-stakeholder body will maintain a repository of TMPs adopted by each service provider and will collate a list of such practices and submit it to the DoT for its approval. The repository will also be published online and the service provider will be required to inform affected users of the application of any TMPs.

As the DoT evaluates these suggestions, the authorities also need to work towards resolving the tension between the transparency requirements under the net neutrality principles and the opacity of the Government's website blocking powers.

While the licence terms also authorise the Government to specify the scope of reasonable TMPs, it might be best to avoid any sort of ex-ante specification of TMPs at this stage. The existing net neutrality principles, coupled with robust transparency and monitoring, would allow ISPs the flexibility to manage their networks and adapt to new technological developments, including the eventual transition to 5G networks. TRAI's recent recommendations on TMPs seem to be aimed at striking a middle ground between ex-ante and ex-post requirements. The proposal indicates that a service provider would be free to develop and deploy its preferred TMPs as long as these are in line with the stated principles

and appropriate disclosures have been made to the authorities. The DoT will, however, have the ability to reject specific practices, which will then have to be discontinued.

The move towards the constitution of a multi-stakeholder body is welcome and should be implemented expeditiously keeping in mind the principles suggested above. However, it should be clear that the creation of such a framework is only meant to supplement, and not replace, the primary monitoring and enforcement responsibility of the regulatory authorities.

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FIVE

Smriti Parsheera

Net Neutrality in India:
Ensuring Openness Amidst the Crisis

In the previous article we traced India's journey down the net neutrality road, starting from the framing of the Telecom Regulatory Authority of India (TRAI)'s discriminatory tariff regulation in 2016 to the present debate on creation of an advisory multi-stakeholder body. Our focus here is to discuss the ways in India's net neutrality rules might interact with recent developments surrounding the COVID-19 pandemic.

5.1 TRAFFIC MANAGEMENT DURING THE CRISIS

One of the consequences of the lockdown imposed due to the COVID-19 crisis has been the increase in data consumption, leading to increased pressure on the networks. As per reports[1], there has been a surge of about 30 percent in the average data consumption, a large part of which is said to be on account of video content. This led the telecom industry body, Cellular Operators Association of India (COAI), to write to the Department of Telecommunications (DoT) and various over-the-top video providers like Netflix, Amazon Prime, Disney+ Hotstar and ALTBalaji seeking their co-operation[2] in mitigating network congestion.

Some of the major players in the digital content industry collectively responded to this issue through a press release[3] declaring their decision to take temporary steps to ease the pressure on mobile networks. The measures being adopted by

them include reducing the bit-rate of their videos and switching from High Definition to Standard Definition streaming.

Since these actions are taking place at the end of the content providers and not the Internet service providers (ISPs) they do not raise any direct net neutrality concerns. To the contrary, this episode represents a win for the net neutrality rules without which ISPs could have acted unilaterally to degrade the quality of Internet access for a class of applications or even for specific websites. The voluntary involvement of content providers helps ensure that the adopted measures will be transient and proportionate in nature, as it is in their interest is to provide the best possible quality of experience to their customers.

The European Union has also seen similar discussions in the context of their net neutrality regulations. Following a request from the European Commission (EC), Netflix announced[4] that it would reduce its steaming quality in Europe for 30 days. In addition to this, the EC and the Body of European Regulators for Electronic Communications (BEREC) also issued a joint statement[5] on the use of exceptional traffic management practices to tackle network congestion. One of the important elements of this statement is the decision to create a special reporting mechanism to enable effective monitoring of the Internet traffic situation and address any capacity concerns.

5.2 PROPOSAL ON FREE ACCESS TO SPECIFIC WEBSITES

The COAI has also put forth a more controversial proposal suggesting that free access to certain critical websites should be enabled in light of the COVID-19 situation. As per a report by the Economic Times[6], the proposed list of websites includes various government services, e-commerce sites and digital payments platforms. However, a copy of the COAI's letter dated 21 March, 2020 put out by MediaNama[7] indicates a much narrower list. As per this, the COAI has identified nine specific websites belonging to the Ministry of Health and Family Welfare, the World Health Organisation and others that offer information directly connected with the COVID-19 crisis. The distinction between the scope of these two requests is relevant from a net neutrality perspective.

As per Regulation 3 of TRAI's Prohibition of Discriminatory Tariffs for Data Services Regulations, 2016[8] any kind of discriminatory pricing of data based on content is prohibited, which includes providing free access to specific websites. Regulation 4, however, carves out an exception for any action taken by a service provider to "reduce tariff for accessing or providing emergency services, or at times of grave public emergency". The provider has to notify TRAI of such an

action within 7 days based on which the regulator will then take a final decision on the legitimacy of invoking the exception.

The terms "emergency services" and "public emergency" are not defined under the regulation but their meaning can be inferred from other related instruments. The telecom licence agreements define "emergency services" to mean relevant public, police, fire, ambulance, coast guard or any other services so declared by the licensor. Health and information services that are directly linked to the COVID-19 response could therefore fit well within this definition, if so notified by the DoT. So far, no such declaration is known to have been made.

Similarly, the term "public emergency" also has a very specific meaning that has been set out by courts in the context of its use in the Indian Telegraph Act, 1885. The Supreme Court noted in the PUCL case[9] that "public emergency would mean the prevailing of a sudden condition or state of affairs affecting the people at large calling for immediate action". Again, one can expect that the COVID-19 crisis could fall within the scope of this definition, if so declared for the purposes of the discriminatory tariff regulation.

While the text of the regulation clearly makes it possible for TRAI to allow free access to specific websites in a situation like the COVID-19 crisis, we caution that any such exception should not be invoked lightly. In particular, any exceptions should only be allowed after paying significant regard to the spirit of the discriminatory tariff regulation, namely its commitment to keeping the Internet open and non discriminatory.

5.3 SUGGESTIONS ON SCOPE OF EXEMPTIONS

Whether or not TRAI decides to allow the present request, this discussion presents a valuable opportunity to examine the principles that should determine the permissible scope of exemptions from zero rating restrictions in an emergency situation. We offer some recommendations in this regard.

1. Any exception should be designed in a manner that ensures the least possible intrusion into the principle of non-discriminatory pricing and access to data services. One suggestion that has been made is that, instead of invoking the exemption provision, a fixed data allowance[10] can be provided to each subscriber. While this sort of a model could be useful for the general expansion of Internet access[11] there are some limitations in using it to serve a narrower purpose like COVID awareness. This is because subscribers may legitimately choose to use the free data for purposes that are unconnected with the COVID-19 crisis.

2. Assuming that an exemption is to be triggered, the measures being adopted should be proportionate, transient and transparent in nature. This is in line with the requirements applicable to the exceptions permitted under the net neutrality principles[12] laid down in the telecom licence agreements. Moreover, the proportionality principle should be applied both in the selection of the subscribers as well as the content to be covered by the exemption.

For instance, telecom providers have already provided[13] low-income consumers with the benefit of extending the validity of their mobile plans and a small talktime credit for the duration of the COVID lockdown. Any exemption in the context of data access should be similarly targeted.

3. In no event should the provision of an exemption be backed by any direct or indirect commercial arrangements or contract between the ISPs and content providers. Wherever necessary, the costs for provision of the access services covered by the emergency exemption should be borne by the Government using the Universal Services Obligation Fund.

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SIX

Rolf H. Weber

Access as a Human Right

6.1 NEW CONCEPTS OF INTERNET AND DATA ACCESS AS HUMAN RIGHT

With the advent of the Internet almost thirty years ago, the new technical possibilities were expected to lead to a knowledge-based community, allowing all members of civil society to enjoy a right to information and participation. Human rights constitute the basic framework for society. Thus, the freedom of expression as the right to communicate and the freedom of information as the right of access to information are mainly knowledge-oriented. In situations of a pandemic environment such as COVID-19, these human rights are particularly relevant.

6.2 BROADENING THE HUMAN RIGHTS APPROACHES

The freedom of expression and, to a lesser extent, the freedom of information are enshrined in most significant international and regional human rights treaties. The typical wordings of international law provisions are centred around the formulation "everyone has the right to …". Consequently, the human rights are directed against state interventions into the protected sphere of individuals. Nevertheless, this concept does not exclude that human rights can also be invoked against non-state actors.

New technologies enabling a fuller realisation of communications exchanges

have the potential to support those persons who actively seek and impart information. Digital developments are empowering spaces for collaboration and participation in public affairs. Internet access via manifold devices (including mobile devices) also enable (i) people to express themselves more directly in public arenas without having to go through the traditional media gatekeepers and (ii) activists to apply new tools in the defense of human rights.

In view of these assessments, the human rights perceptions should be further broadened into two potentially promising directions

- Compared with the freedom of expression, the counter-directed freedom of information should get more substantial weightage. Legislators, on an international and a national level, must more deeply avoid restrictions related to this freedom, and guarantee it to all individuals.

- As far as the scope of application is concerned, a modern human rights approach is required, taking into consideration horizontal and indirect effects of human rights, and obliging non-state actors to comply with human rights.

If such broadened human rights approaches are realised, the right of people to take part in the political and social life, to benefit from scientific progress and to access knowledge and information will become more powerful.

6.3 STRENGTHENING SOCIO-ECONOMIC ELEMENTS OF ACCESS

Different layers constitute the digital environment:

i. The (physical) infrastructure layer determines the availability of access rights according to the geographical reach of the networks.

ii. The connectivity layer reflects the openness to the infrastructure.

iii. The application layer encompasses the platforms and tools for the navigation of digital content.

iv. The content layer having the closest connection to human rights has an influence on what can be seen, heard and watched as information.

Already 15 years ago, the WSIS Principles[1] crystallised the following goal for an open society: everyone should be able to acquire basic information and electronic education and everyone should have access to infrastructure under adequate economic conditions. Indeed, the freedom of information must be realised by

establishing access possibilities, not only to the technical infrastructure, but also to the content, that is, to the informational substance. The capacity of individuals to enjoy their rights in the social and political sphere can only be improved with better Internet AND data access.

A certain "systematic" problem with this assessment consists in the fact that access issues are often not considered human rights, but as elements of economic openness (encompassing open standards, open access/architecture and net neutrality). The Internet Universality (or R-O-A-M) Principles of UNESCO (2014)[2] are an example for this approach, even if the overall model enshrines all aspects in the designed circle. However, an artificial distinction between human rights and economic openness does not appear to be really future-oriented. Moreover, the International Convention on Economic, Social, and Cultural Rights (ICESCR)[3], having been adopted in 1966 together with the International Covenant on Civil and Political Rights[4], shows the desired parallelism. Article 2 of the ICESCR[5] [5] obliges states to create an environment which enables civil society to make participative decisions and provide basic public services (including infrastructure) to support individuals in the realisation of human rights. Article 15 §1(a) of the ICESCR requires states to see to it that everyone has a right to take part in the cultural life. A similar approach is applicable in the education context. Finally, equal access to infrastructure and information is an area in which the principle of non-discrimination should apply. Indeed, digital means do have the potential for improving the capacity of individuals to realise their rights in the social and political sphere.

Such an approach should be combined with the notion of a "right to development" as already contained in the respective UN Declaration of 1986 (Resolution 4/128). This direction is of particular importance in connection with the UN-Sustainable Development Goals (SDG). A recent UN report on "Shared Responsibility, Global Solidarity" (2020)[6], looking at the socio-economic impacts of COVID-19, shows that almost all the goals are affected by the present pandemic environment. Thus, not only access to information exchanges via the Internet but also access to data plays an increasingly important role.

6.4 EXTENDING THE NOTION OF ACCESS

As already outlined, the access to the Internet or, more generally, to the technical infrastructure does not fully cover the needs of the individuals in the digital society, particularly not in times of crises. Such kind of access must be complemented with the access to the informational substance, that is, to the data.

The legal challenge for access rights consists in the fact that data ownership, to

the extent such a concept is normatively accepted at all, does not play a decisive role in reality. More important is data control, that is, the person (or enterprise) holding the data and executing the data processing is in an "ownership-like position" and has the power to decide on the use of the data. As a consequence, for the individual being directly or indirectly concerned by the processing of data, the design of data access rules is crucial (particularly if health issues are at stake).

So far, data access rules exist in data protection laws, but the respective rights usually concern the "original" data delivered by the individual. As soon as the data is processed (for example in big data analyses), the controller of the applied processes considers to have changed the character of the data moving them out of the notion of "personal data". This limitation can be far-reaching, particularly since access rights to non-personal data only exist if sector-specific regulations (as partly in the European Union) are in place.

Looking from a broader perspective, future-oriented efforts should try to develop concepts which allow extending the freedom of information as human right to a broader right of access having a constitutional value. Insofar, a formal adaptation of the existing international legal instruments on human rights appears to be unlikely, court practice would have to step in and interpret the present legal norms in a more extensive way as it also happened in other cases (for example the acceptance of a "right to be forgotten).

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SEVEN

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Russia during COVID-19: Information warfare, Digital Passes and Digital Protest

Since March 2020, Russia has been suspected of information warfare, that is, proactive state propaganda and dissemination of the so-called "fake news", in response to the coronavirus crisis. This information war aims to diminish and downplay the current state of coronavirus pandemic in Russia.

Russia and China, in particular, were accused[1] of spreading online COVID-19 disinformation by a group of EU experts investigating disinformation and fake news in the midst of the coronavirus crisis.

Russian authorities have been already blamed[2] by Russian and international human rights organizations for information warfare practices, including cyberespionage, spreading fake news but also blocking and filtering specific content.

Meanwhile opposition/free journalism attempts to report on the COVID-19 pandemic in the country are being blocked. Laws on "fake news" and law which prohibits the spread of fake information in light of COVID-19 — both of which define "fake news/information" very vaguely and allow a state official to simply claim that a news article is "fake news" to have it removed — are being used used to do that.

11.1 LAWS ON 'FAKE NEWS'

The situation of state censorship is further aggravated by the fact that a year ago, Russia passed the "fake news" law (Federal Law on Amendments on the Law on Information, of 13.03.2019 31-FZ). According to the so-called law on "fake news", distribution of deliberately unreliable socially important information in the media, as well as in information in telecommunication networks under the guise of reliable messages shall entail the imposition of an administrative fine for citizens from thirty thousand to one hundred thousand roubles (an equivalent of US$450 and US$1500 respectively at the time when the law was passed).

On March 31, in response to COVID-19, Russia passed amendments to legislation on "fake news", in particular, regarding the spread of fake information that can threaten people's life and safety as well as distributing deliberately false information of public significance. Violation of these amendments can imply[3] imprisonment from three to five years. As such, the free flow of information is altered by filtering and blocking practices, legitimised in particular by the law on "fake news".

Roskomnadzor, the federal executive body in charge of media regulation and control, has threatened to block Novaya Gazeta's website, an opposition Russian media outlet, in case it failed to remove a COVID-19 related article[4] by journalist Elena Milashina within 24 hours. Published on April 12, 2020, the article covered events on the coronavirus pandemic in Chechnya. This request came after Milashina was verbally attacked by the Chechen leader Ramzan Kadirov, who has also called the article fake news and referred to the Russian "foreign agent" law calling for the Russian Federal Security Service (FSB) to investigate Novaya Gazeta.

Remarkably Roskomnadzor did not specify which part of the article was considered "fake news" and, instead, it merely referred to the order from the Prosecutor General's Office to remove[5] this content.

11.2 DIGITAL PASSES: USING DIGITAL TOOLS TO SURVEILL OFFLINE

The epicentre of the coronavirus pandemic is the Russian capital, Moscow. The call for citizens to abide by the rules of self-isolation did not work, new rules were introduced to suppress the rapid spread of disease in the country.

On April 15, a new anti-coronavirus measure called the "pass entry system" began to operate in Moscow and the Moscow Region (and later in several other

regions of Russia). In Moscow, the system was launched[6] by decree of the capital's mayor, Sergei Sobyanin, and aimed at using so-called "special digital passes". The pass entry system is based on Moscow's electronic government portal. The digital pass must be requested[7] either online on the Moscow government's official website, over the phone or per SMS message. Moscow citizens are not allowed to travel without the pass, and everyone is being checked at the entrance of the subway stations. These checks have been creating passenger jams and many were complaining[8] about it and criticising the pass system. A similar situation happened with the drivers, in the first days after the introduction of digital passes, every car was checked and that caused massive traffic jams at the highways entrances to the city. Procedure for requesting a digital pass that is divided into three categories — for work, medical purposes, and private — had a number of flows and issues, bringing confusion[9] among citizens of Moscow and the Moscow region. Issues with protection of personal data and with digital pass update and reissuing in case of expiration, were reported[10], among others. Also, there are many sub-categories of digital passes and the procedure is not very intuitive for the vulnerable groups of citizens (such as the elderly) especially if they don't possess a smartphone or a PC, which is often the case.

Aimed at reducing the movement of citizens and their use of the transport in Moscow, the digital pass is now required for anyone to be able to drive a vehicle or use the public transportation system. As for pedestrians moving in their local area and those travelling by bicycle, the digital pass is not required.

The digital pass is supposed to be instrumental to implement the "high readiness regime" (rezhim povishennoygotovnosti) that was introduced in Moscow on March 05. Initially the high readiness regime imposed[11] restrictions on mass events, schools and universities were put on holidays or on distant learning mode, obligatory 14 days self-isolation for everyone returning from countries with unfavourable epidemiological situations. It has since been expanded with further measures a number of times. By March 29, Moscow authorities had ordered citizens of the capital, regardless of their age, to not leave their homes.

Importantly, the regulatory acts of the city of Moscow cannot contradict federal legal documents of higher legal force, and especially the Constitution of the Russian Federation.

Moscow mayor, as well the governors of the regions of Russian Federation, have been granted powers to restrict rights in response to the COVID-19 crisis by the oral order of the President of Russian Federation. However, as the president has not issued a decree enforcing the regime of emergency, and therefore the Law on Emergencies has not been applied, the powers that Moscow mayor and the

governors have been granted are not legally justified and do not include restrictions on freedom of movement.

Failure by citizens to comply with the requirements of regulatory legal acts of the city of Moscow aimed at introducing and ensuring a high readiness regime in Moscow, including failure to provide for a regime of self-isolation, would imply bearing administrative liability.

11.3 SMART CITIES: INFRASTRUCTURE FOR SURVEILLANCE?

Unlike censorship, online surveillance is not authorised by the Russian law and does not fall under the legislation that justifies the use of such technology in the case of a coronavirus crisis.

Another surveillance measure, an automated face recognition system, was first used in Moscow in February 2020 to control citizens prescribed to self-isolate for 14 days after coming back to Russia from China. Later, it became known that the same system will be put to track the whole population of Moscow.

Combining various elements of digital and technical infrastructure, such as Moscow's city CCTV system, Artificial Intelligence, smartphone geodata provided by telecom operators, and face recognition solution developed by NtechLab, this system offers[12] capability to track every citizen. However, so far the tracking will be focused[13] on a limited list of people, created at the federal level (from the lists formed by agencies/operating bodies with the right to access the system) within the provision that allows surveillance and tracking of a person.

Both the surveillance and control measures — digital pass and Moscow's automated recognition system — are based on Moscow's electronic government framework embodied in a Moscow Smart City project[14] that has been put into practice over the last decade.

The combination of the online and offline surveillance allows the government to control people's access to information and freedom of movement. For Russia, such measures can be seen as essential to cope with emergencies like COVID-19, given that several other countries have applied similar measures, such as China, Italy and Spain. However, Russia has not yet declared[15] a state of emergency which would be the legal basis for a total lockdown that is a complete quarantine measure for everyone allowing to implement emergency measures on a large scale.

Russia has specific legislation on the sanitary and epidemiological welfare of

the population, as well as the Federal Constitutional Law on the state of emergency (Constitution, 1993). Therefore the Russian law clearly outlines the legitimate legal regime in case of pandemic. The high readiness regime, which was introduced in Moscow on March 5 and in rest of Russia on March 19, and has since been constantly tightened and made more restrictive, is neither based nor justified by the law. Instead the legitimate regime that should have been declared in case of an epidemic would be the regime of quarantine prescribed in accordance with the Russian law.

11.4 RUSSIAN EMERGENCY LAWS

The Russian law defines an emergency as a situation in a certain territory developed from a spread of a disease that poses a danger to others, among other causes, that could result in or results in human casualties, damage to human health or the environment, significant material losses and disruption of human activity (Federal Constitutional Law on Emergencies of 30.05. 2001 № 3-FKZ). During the period when all working activities were stopped by the presidential decree, the high readiness regime was initially active till the end of April 2020 with prolongation till the end of May 2020, financial losses along with the severe limitations to people's living conditions – in addition to the risk of infection – all together became a massive problem for Russian population.

Under Article 18 of the aforementioned law on Emergencies that lists the rights and obligations of citizens in case of emergency, Russian citizens are entitled to medical care and compensation of damages. Given that there was spread of the COVID-19 disease, danger posed to others, human casualties, damage to people's health, significant material losses, and limitations of the living conditions of people, the current situation in Russia can be clearly defined as an emergency. However, the state of emergency, that would oblige Russian authorities to reimburse financial losses to the millions of Russian citizens, was not declared.

The reluctance of the Russian state to declare the state of emergency and therefore enforce a quarantine in Russia can also be explained by the unwillingness of the state to further delay[16] the public vote for the proposed changes in the constitution of the Russian Federation.

In whichever light we perceive these issues, there are already clear indications that Russian citizens are disagreeing with the governmental stance and demanding the declaration of the state of emergency and provision of financial aid to the people.

11.5 DIGITAL PROTESTS

A wave of digital protests swept across Russia's main cities like Moscow, St. Petersburg, Ekaterinburg, Rostov-on-Don, Samara, Chelyabinsk, Nizhny Novgorod, Novosibirsk and many others. Russian citizens are using the services of Russian tech giant Yandex — in particular to its services Yandex.Maps, Yandex.Navigator and Yandex.Conversations — to protest[17] and show their discontent.

Using the services in real time mode, protesters virtually gather[18] in locations that usually serve for meetings or protests in the city. According to online newspaper Meduza registered in Latvia, residents of Rostov-on-Don on April 20 staged a virtual rally against the high readiness regime. To do it, they used the "Conversations" function in the mobile version of Yandex.Maps[19] and Yandex.Navigator[20], which allows you to put a point on the map and write a comment on it.

Residents of Rostov added "dots" near the building of the regional government and wrote that due to the advisory nature of the high readiness regime, those who lose their jobs do not receive social assistance. Some demanded that either full quarantine be introduced so that one could rely on state aid, or restrictions that prevented people from working should be revoked. In total, there were several hundred comments stating protest.

Russia has taken a set of reactive measures to combat coronavirus pandemic. At the time of the writing, these measures appear to be incremental, imposing increasing restrictions online and offline. Dissatisfaction regarding how Russian authorities are handling the coronavirus infection is on the rise and a large number of observers is questioning both the legality and constitutionality of the adopted measures.

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EIGHT

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Innovative Spectrum Approaches for Internet Openness in South Africa

South Africa's failure to release high demand spectrum for over a decade has been cited by operators and analysts not only as a factor contributing to the high cost of mobile data[1] in the country, as operators deploy 4G services in suboptimal bands, but also as a massive opportunity cost to the country over the last decade, which runs into billions of Rands by various estimations.

The COVID-19 crisis has highlighted existing inequalities in the country, including the digital divide: only about half of all South Africans are online as most simply cannot afford smart devices. Wireless access remains the dominant way of accessing the Internet, with less than 2%[2] of the population using fixed broadband services. The Research ICT Africa After Access[3] survey also tells us that many of those who are online cannot afford data at current price levels — the cheapest mobile prepaid 1 GB basket[4] in the last quarter of 2019 was US$6.81. The After Access survey data from 2017 shows the difference in ownership of smartphones between urban and rural area residents: 54% of urban dwellers own a smartphone, compared to 33% of rural population. Most people cannot afford data for basic communications and information access, let alone homeschooling or remote work which arguably require more data capacity.

Soon after the COVID-19 pandemic was declared a national emergency, the Ministry of Communications and Digital Technologies announced that ICASA, the

Independent Communications Authority of South Africa, would make additional radio spectrum available[5] to ensure that the network can keep up with additional demand during the lockdown.

This demonstrates how quickly things can move when there is political will to do so. These temporary spectrum regulations have somewhat eclipsed the ICASA's spectrum hearings on the release of high demand spectrum, which was planned for April 2020. The speed with which access to temporary spectrum is being rolled out is prompting hopes of the impending assignment of the high demand spectrum to be fast tracked, as it will be an essential catalyst to the rebuilding of the post COVID-19 economy.

The Ministry and ICASA have emphasised that these arrangements are temporary and extraordinary and that the pre-COVID-19 status quo will be reverted to within three months after the end of the national state of disaster or by November 30 at the latest. The release of temporary spectrum should not delay the process to licence the spectrum on a permanent basis.

But with the narrow terms of those eligible to apply for such a short period, has ICASA not missed the opportunity to use the release of temporary spectrum as a real-life laboratory to see how spectrum might be more innovatively applied to the diverse needs of the country? It could be particularly used to bring the half of South Africans who are not online into the digital economy to redress the inequality that the novel coronavirus has highlighted.

Out of the 35 submissions for temporary spectrum that ICASA has received[6], only 17 were applications that fulfilled the requirements which circumscribed the assignments to mobile operators and TV white space deployments. The dominant players in the market with the deepest pockets to win the auction for permanent spectrum got the temporary assignments. These are MTN, Vodacom, Telkom, while smaller portions were also assigned to Rain and Liquid Telecom. The high demand spectrum was temporarily released to ease network congestion and enable licensees to lower the cost of access to consumers, however it is still early to determine how this measure had an impact on network performance and data prices.

Did we miss the opportunity to use this policy and regulatory intervention innovatively? It could have been used as an opportunity to test the potential of alternative licencing arrangements[7], such as regional licencing of lower cost

dynamic spectrum technologies, using secondary spectrum, community networks and lower power micro-networks able to offer niche services that meet unmet needs and complement existing services. These can be deployed to meet the demands of consumers and businesses during this economic catastrophe. The success of community networks is often hindered by expensive national exclusive spectrum licences, as well as the high, opaque and sometimes discriminatory wholesale network access pricing offered by incumbent mobile network operators. Currently most community networks in South Africa operate in licence exempt Wi-Fi bands and having access to the spectrum dedicated to mobile network services would enable them to benefit from already widely available low-cost GSM and LTE technologies[8].

Spectrum is classically thought of as a public good — not excludable and non–rivalrous — but is better understood as an impure public good where licencing or auctioning conditions create artificial scarcity — making it excludable—, and congestion — making it rivalrous. The current extractive rents being commanded by operators (South Africa is ranked 19 out of 47 on the RIA Mobile Pricing Index) and governments (licence, auction fees which Government has indicated its desire to maximise to offset massive public debt) through the commercial supply-side valuation of spectrum, represent a key bottleneck in affordably meeting public demand[9].

As Brett Frischmann points out, a demand-side, value-creation-focused analysis highlights that the outputs of digital infrastructure industries are generally public and 'non-market' goods that create positive multipliers in both economy and society[10]. Demand-side value can be recognised by expanding the "spectrum common". This can be done by opening up bigger tracts of spectrum for public access, such as is currently done on a limited basis in the unlicenced ISM bands intended for research and experimentation.

7.1 RECOMMENDATIONS

Wi-Fi operations on the licence-exempt ISM bands, for which it was not really intended, has already demonstrated the power of the commons and its potential as an access and backhaul technology. The nature of Wi-Fi means that there are very low market barriers for both the manufacturing and deployment of this technology. It has allowed people to build out broadband networks[11] and connect places deemed 'uneconomic' by operators in a manner that was not foreseen by

policymakers. This has resulted in a proliferation of independent non-profit community-led initiatives, as well as commercial wireless internet service providers, able to meet some of the pent up small and micro-scale demand.

This has the potential to provide complementary public services and reduce the cost of services operating on unlicenced spectrum.

With most spectrum still largely unused outside the main metropolitan areas, exclusive national licences have to be revised[12] to enable the optimisation of spectrum use to meet the diverse needs within the country. Besides being very aware of the negative consequences of artificially high reserve prices[13], South Africa should also draw on licencing and auction innovations being explored by European regulators to ensure more optimal outcomes than are likely from commercial agreements between incumbents and secondary users.

Building incentives for spectrum sharing into the licencing process at the start of secondary licence assignments or auctions allows for the incumbent in the second round to be given a choice of either granting access under a licence sharing agreement to the winner of the auction or not. If the incumbent accepts, its existing licence fee is reduced. If it rejects, its existing licence fee is increased.

The UK model of licencing 5G local coverage[14] for small areas of 50 square metres to anyone to develop their own local 5G network could be immediately instituted — and not only for 5G application. Local small coverage licences should be permitted wherever spectrum is not being fully utilised and where the entry of a small area licensee would not interfere with an existing licensee. Such licences could be default licences with minimal regulatory transaction costs and be subject only to the spectrum interference test by ICASA.

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NINE

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Open Internet Governance:
The 6F Framework and COVID-19

Keeping the Internet open and effective for communication and collaboration is vital for humankind in the struggle against the COVID-19 pandemic. This in turn depends on deeply understanding the forces that may damage or hamper the Internet through intentional or unintentional abuse and misinterpretations of its role.

Six factors allow us to either peel away the novelty contributed by the Internet and discover underlying conducts and motivations, thus identifying the Internet's specific contributions, or, in the inverse direction, to map from an offline conduct to its online possibilities. These are now refracted in the ongoing (at this date) first wave of the COVID-19 pandemic:

8.1 SCALING

The Internet was designed to be able to scale up well. Some of its most visible effects on human conduct, business, and society are in the massive scaling up from individual, isolated activities, to those comprising hundreds or even thousands of millions of units, further amplified through network effects.)

In response to the COVID-19 pandemic, a fraction of humankind has moved to stay-at-home, with mobility and contact diminished to an absolute minimum. For many, work-from-home (WFH) has become compulsory. Educational activ-

ities have been moved to the home as well, with schools closed for a long period of time (in some countries, to the point of abruptly terminating the school year.) Purchasing even the most basic of goods — including food and medical supplies — has reshaped e-commerce.

The Internet has responded remarkably well to this scale-up of activity. The last mile has suffered most while the core of Tier 1 networks have held up well. Suppliers of content, such as Netflix, or of connectivity, such as many ISPs, have adapted their offerings and continue to provide uninterrupted service even if this requires temporarily reducing quality by limiting video resolution in order to save bandwidth, in one example. ISPs and telcos, working together with regulators, have adapted price bundles and extended emergency communications for users.

Infrastructural components such as the DNS have responded well to increased and redistributed traffic; in some countries, domain-name registries and registrars are taking [1] additional steps as precautions against fraud and other forms of domain-name abuse.

8.2 IDENTITY

Identity management transforms online to offline conduct in critical ways. The lack of stringent identification requirements and mechanisms in the Internet layer leaves identity management to the edge of the network and to the higher layers, thus fostering anonymity and horizontality, for the good, and ease of spoofing and impersonation, for evil effects.

During the COVID-19 pandemic's first onslaught, we are seeing the need for strong identification, authentication, and authorisation mechanisms in order to provide trust in e-commerce, and the ability to function securely in work from home. Disinformation campaigns are rife and cyber crime using COVID-19 as a lever is growing, both facilitated by anonymity and identity spoofing.

Organisations that already had in place strong ID management have been able to transit to remote forms of working. They not only had in place ID management, but also systems, software, data, data centers and cloud services, and organisational ("layer-8") arrangements such as bylaws, rules, operations manuals and out of band communications to operate, while all non-essential workers work from outside the organisations' facilities. Others have struggled with anything from "zoombombing" e-learning classes at schools to sophisticated intrusions.

Bad science, conspiracy theories, superstition, "fake news", and disinformation are a grave concern during the pandemic. They make governments, companies, and people slow or unable to react to protect themselves. They can cause discrimination and hate even against essential medical personnel, and unnecessarily politicise the response to the crisis. In other words, they endanger millions of lives. The lack of an ascertained, trusted identity is a factor in their success, though solving that part of the problem would still leave us with the effects of gullibility and shortcomings in education.

Organisations such as WHO, governments, the Red Cross and Red Crescent, companies like Facebook and Google, and many in civil society have established active mechanisms to counter the spread and damage of misinformation. They, in turn, struggle with the identity-management problem, inwardly in making sure only authorised individuals use their networks, outwardly by filtering out unauthorised or overtly hostile spread of damaging content. Machine Learning and other automation techniques supplement human activity for analysing, filtering, and blocking content and malfeasant (often artificial) user accounts.

In the bigger picture, trust on the credibility of information sources depends on much more than identity; in many ways this is similar to the offline world, in which well identified sources spread lies and misinformation through print or broadcast.

8.3 TRANSJURISDICTIONAL

Nothing is more detestably transjurisdictional than a pandemic. A pandemic crosses borders and oceans, it spreads from country to country and from municipality to municipality. The virus doesn't read the law as it plows along through the population.

However, institutional response to the pandemic is fractionalised over political borders, national and sub-national, and global response comes as an effort to counter this fragmentation through coordination efforts. Some are led by multilateral institutions like WHO, but many others occur through bilateral, regional, or "club" agreements, through the private sector, through civil-society organisations, and often also through the spontaneous formation of cooperation networks. These share anything from medical and public-health knowledge to the files needed for 3D-printing of antimicrobial protection equipment.

This cooperation is facilitated by the trans-jurisdictional reach of the Internet. Attempts to apply regional or local blocking and filtering against certain content or sources in order to maintain territorial control have mostly failed.

The only hope for humankind to transcend the pandemic crisis lies in generalised cooperation across countries, organisations, and political systems. The trans-jurisdictional character of the Internet and the global cooperation it has induced over the last three or four decades will serve us well, including the examples of multi-stakeholder governance that will provide a laboratory for the future.

Of course, the trans-jurisdictional effects of the Internet are also at work in campaigns of fraud and phishing, that now use COVID-19 as a front. Authorities and groups such as the APWG (Anti-Phishing Working Group) are at work, dealing with these.

In addition, the Internet's governance takes into account trans-jurisdictional effects and has been built up (somewhat designed but also grown organically) for global as well as local authorities' remits. Lessons learned from Internet governance could be applied to the governance of responses to the pandemic. Some jurisdictions such as municipalities and city quarters enacted measures successfully, while others, even neighboring ones, haven't. Would a global governance mechanism be able to absorb and disseminate the best local experiences and still allow for enough diversity in response? Would the imposition of a global set of rules be beneficial or deleterious? Alternatively, can a global cooperation arise, like for Internet governance, that is decentralised, oriented to problem-solving, and diverse enough? What is the balance and how is it to be achieved? Who are the stakeholders and how are they to be grouped, how are their votes to be weighted? What is the equivalent of "rough consensus and running code" for the global health system or at least its response to the COVID-19 and future pandemics, considering also its many ramifications in the economy, lives, and livelihoods? Another set of questions arises around process and timing; many Internet-governance processes are notoriously slow, complex, and uncertain. Can lessons learned include how to improve on them before they are applied to the health system? Compared with the present function of that system, are they or can they be better? (do they scale?, to begin with.)

8.4 BARRIER LOWERING

As a consequence of its design principles of best effort, interoperability, openness, etc., the Internet has lowered the barriers for many activities worldwide. This barrier-lowering is both in rigorous economic terms — access to full industries and markets — and in less formal terms, like the formation of teams and companies in-country or across borders. While some would say that the COVID-19 pandemic is in itself an indirect, unwanted consequence of this barrier lower-

ing, through the facilitation of travel and other exchanges, the response to the pandemic is unequivocally facilitated by this barrier lowering.

The exchange of information between laboratories and health authorities in the pandemic's country of origin and elsewhere, communication to the public of risks and countermeasures, the formation of teams dealing with everything from clinical information to manufacturing, for information campaigns focused on specific groups like indigenous peoples, persons with disabilities, the elderly. Educational content has sprung up and best practices have spread for the benefit of families, teachers, students, and children.

Of course there is a counterpart to this barrier lowering in the ease of formation of anti-confinement protests and, as mentioned earlier, in cyber crime and other abusive activity.

8.5 FRICTION REDUCTION

Friction reduction is applied in the sense of economics as friction reduction in markets and as understood in the study of user experience. Friction reduction in markets works through information leading to more "perfect" markets where all actors are equally informed, with benefits like price transparency and competition. In user experience, friction reduction means less energy and steps involved to perform a desired action.We observe intense effects of friction reduction in response to the pandemic: facilitated access to health information and preventive measures, rapid traffic in the exchange of scientific knowledge and its processing which includes rejection of flawed publications in peer review, apps for tracking contagion and symptoms, and many more.

The downside of friction reduction is seen in the instant propagation of disinformation, fake news, conspiracy theories, and health-damaging conduct. Are there ways to introduce friction differentially? Some of the main social-networking sites have taken measures such including notifications which share trustworthy sources, thus creating at least a brief interval of time in which users can think twice before accessing and spreading damaging content. This certainly has not stopped the spread of disinformation, and is worthy of deeper analysis.

8.6 MEMORY EFFECTS

The Internet brings to humankind an unprecedented ability to remember, to keep record of events, and has been transformational for this among other reasons (our other five factors.) Digital technology also creates unprecedented opportunities for forgetting, and oblivion, when huge tracts of stored information

are deleted, decay, or become inaccessible due to incompatibilities of media, software, or formats, and lack of foresight for these occurrences.

The memory of the world for the COVID-19 pandemic will be endowed with detail and data like none before. Even if the pandemic were suddenly stopped on its tracks by an almost miraculous combination of medication, treatment, and a vaccine, digging through the data generated will provide knowledge for decades to come. The detailed hard data of the biological aspect of the disease will be complemented with the emotional records of millions of individuals affected by either the disease itself, the lockdowns that were enacted to prevent its spread, or the consequences of both in the economy and in politics. Major economic and social trends will be discernible in the long term. We do need to make an active effort to preserve this record. Doing so will be a challenge in privacy and data protection; novelties like contact-tracking apps that tell Internet and mobile telephone users that they have been exposed to someone who has tested positive for coronavirus, plus old-fashioned government and corporate records will likely expose massive digital assets that could allow severe intrusions into personal life. The balance of rights that appears adequate during the management of the pandemic may be woefully off later on. Accountability for political and public-health decisions will be enhanced by a trustworthy record. Parts of this record should be secured by strong digital signatures and possibly also open-ledger technologies.

Some key pieces of this record will be lost due to applications of some version of the "right to be forgotten" (RTBF) or pure revisionism. Librarians, archivists, historians, and citizens concerned with a "right to the truth" must actively preserve the record of the decisions made by governments and other entities in order to be able to process lessons learned from this trying period.

8.7 CONCLUDING REMARKS

The 6F framework allows us to cut through many confounding factors that make discussions about "the Internet" confusing or even distorted. We can isolate human or social conduct and motivations and see how they are modified by their online expression. In the inverse direction, we can remove the Internet factor from complex phenomena and isolate their cores in human or social motivation. Thus "fake news" and disinformation are found at the core of the massive, frictionless campaigns going on in the media, gullibility and lack of education are found at the core of the consumption and re-diffusion of disinformation. Polarisation of political opinion exists widely in society; what the Internet, in its present form and through the most usual social media, does is to amplify it at scale and speed. The risks for openness arise from the same sources as openness

itself: the combination of the Internet's design with ancient — sometimes atavic — driving forces of human interaction. By being able to separate the core conduct from its Internet modification we are better able to address each separately; if disinformation about COVID-19 spreads fast, we can separately address the information itself and the means of its propagation. Again to take a concrete example, if low friction enables the fast propagation of polarisation or disinformation, one task is to address the polarisation and disinformation at the source, and another is to counter their frictionless propagation by introducing measures such as Facebook's constant posting of credible, legitimate sources, or Twitter's proposed signalling that a user may be about to tweet or retweet inflammatory language. This is an ongoing, global-scale experiment in which we all take part.

TEN

LocNet Team

Beyond Connectivity: Networks of Care

Near the end of 2019, the World Health Organisation was informed that unusual cases of pneumonia had been identified and mortality rates were on the increase in the city of Wuhan, China. Now, over five months into a worldwide health crisis, environmental experts say this this novel illness, a mutation of the SARS virus dubbed COVID-19, is a symptom of rapid changes in humanity's interaction with the natural environment. These range from human extraction of natural resources to territorial expansion into crucial natural habitats and declines in biodiversity and ecosystem resilience. Somewhat ironically, the result of this overwhelming expansion into the natural world has been a contagious virus whose spread can only seemingly be slowed by physical distancing. As a result, some governments are enforcing lockdowns in order to reduce transmission and fatality rates.

COVID-19 is exacerbating previously existing precarious situations in the Global South such as for those living in informal settlements with little space to distance or clean water to sanitise. Informal and day labourers rely on daily work to survive and must make hard choices about whether to risk their health to earn their daily bread or stay home and go hungry. Meanwhile, businesses and education facilities have been encouraged to shift their activities online and there have been millions who have done so, creating a new "normal" of online meetings, classes, app-enabled home deliveries, etc. The narrative of this shift online has generally been one of success — of people and institutions taking advantage of online spaces to keep afloat, and of ISPs and mobile operators keeping their net-

works up to the task of handling huge increases in data traffic. However, this is not the full story. In both highly developed and less-developed countries, there continue to exist major gaps in access to, and affordability of, connectivity. Under- and un-connected people and localities are unable to keep up as things have moved online during the pandemic, adding a layer of complexity for disadvantaged homes, whose daily realities also include hunger, environment destruction and violence.

What happens to communities in rural and underserved urban areas lacking access to the internet? What happens to those without access to machines and devices or whose lives do not fit into a digital model of e-learning and e-commerce? As these questions are being raised, the issue of the digital divide has come back into stark focus. Individuals, businesses and whole nations are grappling with the new reality that much of public and private life is moving online, at least for the foreseeable future. For those without meaningful connectivity, as in high-quality, persistent and affordable home and community internet connections, vast realms of social life become inaccessible or overly costly. Whereas before the digital divide strongly impacted livelihoods and communication, a lack of connectivity now means total disconnection from essential activities such as schooling, health information, and political participation. Even amongst countries with relatively high levels of connectivity, there has been a tremendous clamour to ensure that un-connected and under-connected areas be brought online.

While connectivity is enshrined as a basic human right, there is still much to be done in order to ensure meaningful and affordable connectivity for all. The current pandemic represents an ideal moment for public, private and community actors to come together to solve the digital divide challenge. Unfortunately, years of pro-business and short-term investment recovery strategies have predominantly guided broadband policy, contributing to current global digital inequalities and making it hard to quickly deputise other non-commercial actors to rapidly ramp up connectivity. Another observation is that as authorities around the globe have been preparing for 5G rollouts in urban centres, creating access to huge swaths of spectrum and other incentives and subsidies, they must now grapple with the new reality demanded by their citizens, and one in which the private sector's capacity for investment in 5G has been greatly diminished. In order to remain relevant, both the public and private sectors recognise they must quickly pivot to new strategies for connecting everyone.

But the public and private players are not the only actors on the scene, and in many cases their responses have been sluggish and inadequate. Community networks are important players as well, offering their grounded capacity of self-administration, decision-making and information management to help

community members protect and organise themselves in the face of an unprecedented crisis. Community networks have the added advantage of focussing on the value and culture of sharing within a community and generating relevant and localised content, especially in situations when people are being overwhelmed by information and misinformation. In the following paragraphs, we will explore and share some of the ways community networks are confronting the COVID-19 pandemic, rooted in care, decentralisation and community-based action and solutions.

At the most basic, human level, we have observed the vital role of community networks to break down the isolation that has led to re-traumatisation, depression and an increase of cases of gender-based violence. This observation is within a larger context of overload that women experience with regards to work, motherhood and education. In rural Brazil, in the community network Portal semPorteiras, women are communicating and relating through podcasts, sharing accurate information about the virus, countering fake news, and extending support to each other. And in Marrecas, Brazil, women who are part of the network have organised themselves to produce and sell face masks, an initiative that has been mirrored by TunaPanda in the informal settlement of Kibera, in Nairobi, Kenya. In these instances, community networks have proven to be a space of self and collective care to feel, heal, share, and discharge. The possibility of sharing how we feel day by day and creating collective virtual dynamics has been vital to the health of community members. Beyond this space for sharing, there are other community initiatives of digital care led by women farmers where complaints are received anonymously and temporary relocations are made, and collectives such as MariaLab have created web pages for reporting domestic violence.

COVID-19 is primarily a health crisis, and community networks have responded in kind. One example is the TosepanTitataniske Union of Cooperatives, which is based in the municipality of Cuetzalan, Puebla, in Mexico, that launched the Tayolchikawalis initiative. Based on "actions for a strong heart", it is a way to respond to the pandemic at the health level but that also addresses socio-economic concerns. The communication campaign transmits the importance of revitalising the countryside through planting. Part of this campaign uses broadcasted audio productions created by radio volunteers and a website created to convey accurate and appropriate community-related content. Finally, Common Room, Zenzeleni and TunaPanda have also been customising COVID-related information to be used in various portals to fit the local context and language. For example, through storytelling and creating a video and meme competition, TunaPanda demystifies what Covid is all about. They have also made available information on mental health with the support of volunteer doctors.

Due to the strict enforcement of physical distancing, many communities in rural and remote areas have found themselves further isolated and cut off from the rest of society. Abradig, a group that has been installing hybrid digital shortwave radio systems in very remote areas of the Amazon, has shown [8] how low-cost equipment using solar energy has become more important than ever. Communities closed their borders to protect themselves from the pandemic, but this system allows them to coordinate health responses and keep track of clinic inventory. In another example from Brazil, CooLab created [9] the #LiberaOWiFi campaign which trains people to open their WiFi networks safely so that unconnected people can access the internet, creating digital solidarity amongst neighbors and helping everyone stay connected during isolation.

Many community networks are found in vulnerable and precarious contexts, and can offer vital support to isolated or poorer communities. People working in community networks are going beyond access and provide access to support around holistic well-being of their communities. However, some community networks have cautioned that lockdowns are limiting the movement for members to maintain the physical infrastructure, much of which is done by volunteers. While some have shown the capacity to offer holistic responses, many struggle to deal with larger structural issues such as hunger and unemployment that have been enhanced due to COVID-19, and along with their networks, communities themselves have important needs for targeted social protection from government.

Community networks can embody the etymology of communication —"making common"— and we are witnessing their value in a pandemic. Some emerge as a life-centering ecosphere that decentralise communication, diversify infrastructure, and help reinforce balance and communities' right to self-determination. They operate on the principle of making technology more approachable, use open hardware and software, and promote sustainable energy use.

While the world economy is heavily affected by COVID-19, it has shed light on the preparedness and vulnerability of all systems, including community networks, to provide adequate and rapid response. Prior to the pandemic, policies did little to enable community networks in the Global South. Without informed and inclusive policies, community networks often operate in grey areas or in some cases, lack regulatory compliance, thereby impeding communities from maintaining and growing their local networks. Persistent issues such as the difficulty to upgrade network equipment due to lack of funds and major barriers to access hardware are now compounded by the lockdown, as it prevents the "technical expertise" from reaching sites.

A parallel from the health system and open-source innovation can be drawn around the design for critical ventilators, which allowed local community members with technical know-how to step in, replicate and produce life saving devices for hospitals. During a moment when connectivity is more vital than ever, now is the time for governments to quickly put in place enabling regulatory environments and policy practices that grant communities the right to set up and run their own communication infrastructure so that everyone can address their basic needs and exercise their basic rights.

Disclosure: *The community networks mentioned in this article were contacted directly to solicit their feedback on their rapid local response to COVID-19. While these local responses are currently not funded by the current "Connecting the Unconnected" project, we would like to disclose that community network partners were funded in sub-grant projects in 2019. The project partner information can be found here [10]. We acknowledge the hard work of our community network partners who are mentioned in this article (Common Room, Zenzeleni, Tosepan/TIC Mexico, Coolab, Abradig, Tunapanda, Portal semPorteiras, Instituto BemEstarBrasil), and many others on the ground who are working to connect their communities during these difficult times.*

"Connecting the Unconnected: Supporting community networks and other community-based connectivity initiatives" is a project being implemented by APC in partnership with Rhizomaticathat aims to directly support the development of community networks, with funds from the Swedish International Development Cooperation Agency (Sida). The ultimate aim of the project is to contribute to an enabling ecosystem for the emergence and growth of community networks and other community-based connectivity initiatives in developing countries. It is part of a multi-year, multi-donor strategy envisaged to address the human capacity and sustainability challenges, along with the policy and regulatory obstacles, that limit the growth of community-based connectivity initiatives.

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ELEVEN

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Community Network in Latin America: Unleashing Openness through Self-determination

Connectivity unleashes a virtuous circle of innovation and knowledge and the COVID-19 pandemic has demonstrated the confidential value it has acquired for our social, economic, and democratic lives. By reducing the costs of access to information and knowledge and expanding the ability to share innovation, open and affordable Internet access facilitates access health information and public services, allows to maintain work relations, during a pandemic, or increase productivity in regular conditions, and promotes greater civic participation[1]. In a nutshell, connectivity empowers people.

In many parts of the Americas, however, Internet penetration is still lagging behind most developing countries and, consequently, Information and Communication Technology (ICT) literacy, ICT adoption and opportunities that relates to the use of ICTs are still unevenly spread and, frequently, very limited. Needless to say, the current pandemic is exacerbating a situation in which digital divides are already very deep and digital dividends very unequally distributed[2].

Before the pandemic struck, the expansion of connectivity produced positive impacts, tellingly demonstrated data published by the World Bank, according to which a 10% increase in broadband penetration in Latin American countries can result in a gross domestic product (GDP) growth of up to 3.19%, with benefits ranging from the generation of services and jobs to an increase in family income[3]. Yet, the situation varies greatly among the different countries, income groups and urban or rural populations. The options available in most of Latin

America are often too expensive compared to the population's resources, the quality of connectivity remains limited, and about half of the population is still without Internet access[4].

In this context, in recent years the number of community networks has grown throughout the continent, providing a credible "community connectivity" alternative to the traditional model used to provide Internet access in Latin America. In this piece, we briefly explore the findings of our study on "Community Networks in Latin America: Challenges, Regulations and Solutions"[5] and we highlight that community networking represents a credible and promising strategy to respond to such challenges while fostering openness.

10.1 CHALLENGES TO CONNECTIVITY IN LATIN AMERICA

Approximately 250 million Latin Americans —more than half of the region's households— are still unable to access the Internet and the region maintains one of the world's highest levels of income inequality[6]. Several socio-demographic factors still represent barriers that affect Internet adoption. Traditionally, four main types of barriers are responsible for the lack of Internet adoption, especially in Latin America: the non-affordability of Internet access; the lack of infrastructure; scarce digital illiteracy and, more generally, the limited education levels of the population; and, finally, the lack of relevance of the services and contents that are offered[7].

These elements are compounded by serious gender barriers that have more recently been highlighted as a particularly relevant obstacle in terms of affordability[8]. Gender has a significant impact on access, as "men are between 5 and 9% more likely than women to be connected (the exact figure depends on each country)."[9]

Likewise, Latin America is a multilingual region with hundreds of indigenous languages that are still spoken on a daily basis, especially in Mexico, Guatemala, Paraguay and the Andean region. An estimated 40 million people in the region speak an indigenous language, and for many inhabitants it is their first language. However, these languages are underrepresented on the Internet. Although precise estimates are lacking, experts agree that few languages, including Spanish, dominate online content, thus reducing adoption incentives for native speakers of indigenous languages. The lack of linguistic diversity on the Internet reduces the incentives for the adoption and acquisition of ICT skills among speakers of minority languages, which reinforces social exclusion[10].

In this context, the public policies proposed and implemented to date are likely to have a positive impact and mitigate the first two types of barriers, yet they are leaving the last three barriers largely unchanged.

The complex scenario portrayed above is further complexified by the fact that 20% of the Latin American population lives in rural, often isolated areas where the geographical conditions make it difficult to develop any type of infrastructure[11]. These areas are technically defined as "market failure" areas, precisely as the private sector generally fails to meet their needs, as they represent a very unattractive market for mainstream operators.

Indeed, the expansion of infrastructure in remote and low-income areas allows a very slight increase for operators in terms of their number of users and revenue, considering that rural populations are generally very scattered and financially-limited, while the costs of infrastructure deployment and maintenance are typically higher in remote than in urban areas.

10.2 UNIVERSAL ACCESS OBLIGATIONS?

Starting in 2005 and based on the recommendations of the Latin American Forum of Telecommunications Regulators (REGULATEL), some countries in the region, including Brazil, Bolivia, Panama, Mexico, Cuba and Venezuela, established obligations for operators to promote universal access to telecommunication services in all sectors of the population. While these measures resulted in significant progress in the deployment of infrastructure, they largely failed to promote connectivity to populations considered unprofitable by the market – which was the main purpose of the measures.

In this context, Universal Access Funds (UAFs) were created through which telecommunications companies are obliged to hand over part of their income for the establishment of access programs in marginalized populations. As Barrantes and Agüero point out, while at first glance these universalization funds appear to be successful, a closer inspection shows that the most important issues were the implementation, and how such funds have been concretely used and, frequently, diverted[12]. As these authors point out, in some cases the waiting time between obtaining the resources and their implementation was four or five years.

The Brazilian example illustrates particularly well the above mentioned risks. Indeed, according to the Federal Court of Accounts, only 1% of the USD 7 billion collected between 2001 and 2016 as Universal Access Funds was used for universalization programs, while 79% was allocated to "unknown" purposes[13]. The

only case that stands out is that of Paraguay, which managed to make use of all the resources collected in their funds[14].

10.3 COMMUNITY NETWORKS: OPENNESS VIA SELF-DETERMINATION

In light of the challenges highlighted above, the search for alternative solutions to the traditional connectivity strategies that have been implemented to date is therefore not only desirable but truly necessary to mitigate the existing digital divides and the problems that the classic strategies – i.e. market dynamics and public interventions – have been unable to solve. Hence, as pointed out by the International Telecommunications Union (ITU), projects where the communities themselves are the decision-makers and responsible for the operation of last mile networks are the only initiatives that have been shown to offer functional options for the sustainable development of connectivity in remote areas[15].

In this context, in many communities, the establishment of community networks has provided an escape from the failures of market logic or the inefficiency of State subsidies[16]. Community networks are networks built in a collaborative, bottom-up fashion by groups of individuals who develop and manage new network infrastructure as common goods.

As explained in the Declaration on Community Connectivity[17], prepared by the Dynamic Coalition on Community Connectivity (DC3) of the Internet Governance Forum (IGF)[18], community networks are "are structured to be open, free, and to respect network neutrality. Such networks rely on the active participation of local communities in the design, development, deployment, and management of shared infrastructure as a common resource, owned by the community, and operated in a democratic fashion"[19].

Thus, these initiatives are driven by the community that benefits directly from the connectivity and its positive externalities, giving rise not only to new infrastructure, but also to new governance models, new business opportunities and access to information, making it possible to fill the gaps left by traditional strategies for the provision of Internet access[20].

In this perspective the establishment and promotion of community networks allow individuals and communities "to freely associate in order to define, in a democratic fashion, the design, development and management of network infrastructure as a common good, so that all individuals can freely seek, impart and receive information and innovation."[21] This latter principle, referred to as "Network Self-determination"[22] is based on the consideration that well-func-

tioning network infrastructure on affordable and non-discriminatory terms facilitates significantly the full enjoyment of every person's fundamental rights.

The principle directly stems from the right to self-determination, which is so fundamental in the UN legal system that both the first article of the Charter of the United Nations and the first article the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR) mandate its protection. In accordance with these instruments of international law, all UN member states agree that "all peoples have the right to self-determination" and that "by virtue of that right, they are free to determine their political status and pursue their economic, social and cultural development."

Article 1(3) of both International Covenants obliges the signatories to "promote the realization of the right to self-determination." In this perspective, we can argue that the emergence and dissemination of community networks allows individuals and communities to self-determine in the purest sense of the term: to enjoy their fundamental right to pursue their economic, social and cultural development through the opportunities that connectivity can offer[23].

Such initiatives are key for Latin America and the Caribbean communities that still maintain organizational, economic, and political features not completely anchored in market logic and in the organizational dynamics outlined by the State. In this perspective, the construction and operation of community networks allows such communities to enjoy self-determination while keeping the Internet open and decentralized.

10.4 COMPLEMENTARITY BETWEEN COMMUNITY NETWORKS AND "TRADITIONAL" STRATEGIES

It is important to highlight that such models should not be considered antagonistic either to the State or to the market: On the contrary, they serve as a valid complement that allows filling the obvious gaps in both public and private strategies. Thus, the implementation of participatory mechanisms and logics based on the management of common assets allows the consolidation of projects that not only address the need for access to telecommunications, but also stimulate the generation and sharing of content, applications and services that can meet the specific needs of the inhabitants of unconnected areas.

These initiatives are different from state or commercial projects in that the same people who use the networks are those who build, maintain, and operate them. In this context, users become active members of the network, thus increasing the odds for sustainable connectivity projects and directly affecting network

evolution with the fruits of their innovation and creativity and having a direct impact on the evolution of a decentralized and participatory Internet.

The deployment of new community networks creates new socioeconomic opportunities and allows each user to fully enjoy the benefits of being a "prosumer", i.e., not only a consumer of content and services but also a potential producer of new applications and services that meet the needs of local communities, compete freely with established market players, and strengthen Internet openness and Internet generativity[24].

Although these general characteristics are shared by most of the projects, the form of technological appropriation varies between the different experiences that have occurred in the region. For example, in Argentina, Altermundi has developed an Internet access model based on a mesh network architecture[25]. Other initiatives, such as TelecomunicacionesIndígenasComunitarias A.C. (TIC A.C.) in Mexico have focused on access to mobile telephony based on self-management and ownership of infrastructure in the indigenous communities of Oaxaca. Other experiences have created a bank of digital content relevant to the community which can be accessed through closed networks, for example, as they have done in the community of Ciudad Bolívar in Colombia, or the Baobaxia projects in Brazil and the Yaj'noptik Intranet in Mexico. The socio-demographic contexts in which these networks are immersed are also very different, with some located in semi-urban areas, others in more rural contexts and/or within indigenous villages.

10.5 COMMUNITY NETWORKS: A FACILITATOR OF AN OPEN INTERNET AND SOCIETY

Because they are born from the communities themselves, these initiatives contain each community's values and ways of life and use technology to transform them according to their economic, political, and social forms of organization. Thus, technology does not determine how social relations develop; instead, it adapts to the characteristics of local social organizations and is transformed to allow particular ways of utilization, generation of content, applications and services, and infrastructure.

In general, these projects are all anchored in the territory and, without neglecting the business vision, they manage to remain in permanent contact with the populations they serve. To facilitate the community network dynamics, allowing such initiatives to empower local populations with the ability to create new open networks to expand the Network of Networks, the establishment of a favourable regulatory environment is essential. For this reason, since 2018, we have put together a detailed set of recommendations stemming from an evidence-based

analysis on "Community Networks in Latin America: Challenges, Regulations and Solutions"[26], and reiterated them within global venues, as highlighted in the DC3 2019 outcome on "Building Community Network Policies: A Collaborative Governance for Enabling Frameworks."[27]

We are pleased to notice that our research, combined with the outstanding and relentless work of community-network community – both at the Latin American level and at the global level, via the DC3 – have produced concrete and meaningful impact. in the past two years alone, the Argentinian Telecoms Regulator, ENACOM, has adopted a new regulation on Community Networks[28], the Brazilian Telecommunications Regulator, ANATEL, has explicitly endorsed them[29], and the ITU has launched an open consultation on Expanding Internet Connectivity in remote and under-served areas[30].

Brazil is a particularly interesting case. After having updated its regulation to facilitate the establishment of small and micro operators[31], ANATEL created a dedicated resource page on its website to provide guidance on community networks, explicitly quoting the Community Network Manual[32], elaborated by the DC3[33]. This is not only important for Brazil but also represent a strong piece of evidence that the IGF is not a mere talking shop and when people want to use the IGF process to produce meaningful outcomes, they can.

In a world increasingly torn by pandemics, characterised by ramping distrust towards science and research, and selfish unilateral behaviours, the fact that evidence-based research and proposals elaborated though a collaborative process within a UN Forum can have – and are having – a real impact on digital policies should be a reason for hopefulness and optimism.

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TWELVE

Karla Velasco
Daniela Parra

Context and Response of Community Networks to COVID-19 in Latin America

The recent COVID-19 pandemic has put the world under incredible strain. The analysis of how Latin American community networks reacted to the challenges posed by the pandemic is particularly important to understand the value of these initiatives to promote Internet openness and sustainability in the region and above. In this essay, we provide some concrete evidence, based on some of the experiences shared by our colleagues from community networks in Argentina, Brazil, Colombia, Ecuador, Mexico and Nicaragua.

12.1 BUILDING CONNECTIVITY IN ARGENTINA

In the City of Buenos Aires, Argentina, the Atalaya Sur organization shared that among the popular neighborhoods where the Atalaya Sur Villa 20 Community Network has been developed, crisis committees have been formed to solve economic, nutritional or health problems that arise. By not having Internet in their homes, many people do not have the possibility to stay at home, so Atalaya Sur has enabled relevant educational content for the residents of the neighborhoods. These contents are those distributed from the Ministry of Education of the Nation, and they are evaluating hosting them locally on the network in a short time. Regarding the network they manage, consumption rose 50% from one day to the next and, having a restricted bandwidth, the connectivity of families has been affected in a first stage. In a second stage, the

bandwidth that reaches each of the neighbors was stabilized, but this must be constantly monitored because more and more neighbors are joining the network.

Members of the Mesa de Comunicación Popular de Salta and Jujuy commented that, in the regions of Salta and Jujuy, in the north of the country, the emergency situation has further evidenced the gap between urban and rural areas and between capitals and smaller cities. In these territories, there are many communities that do not have any type of access to the Internet or cell phones and children cannot take classes online. Those who manage to have some kind of precarious signal have only one device to connect, mostly cell phones with little capacity to take classes. Although Argentina has a national scenario of change, the crisis exposes inequalities in access to technology, since neither data nor cell phones are enough to satisfy the needs of the people in these regions. To cope with this, the communities from Jujuy have organized themselves and through La Voz del Cerro from San Salvador, the community radio from la Rinconada, Radio Pachacuti in Cochinoca, supported by many local popular communicators and the Argentine Summit of Community Networks (CARC) as well as donor organizations such as ISOC and APC, they have installed mesh Internet networks at the end of August that are connected to local community radios.

AlterMundi[1], an organization located in the province of Córdoba that helps manage a network connecting six towns, shared that one of the equipment supporting the network was damaged last month. That's why its bandwidth has been drastically reduced and the network is always saturated. With the idea of increasing the capacity of the network, they contacted EPEC, the province's electricity and Internet company, to be able to connect to their fiber which reaches the villages. It has occurred to them that perhaps, by having access to the Universal Service Fund, they could afford the costs of that connection. While the government has shown openness to this alternative, there is still no proposal or approval for this to be done. Similarly, in order to contribute to online classes in schools located in the villages, the network decided to open its nodes at specific times so that students can access to download the educational content they need. Likewise, as in the case of Atalaya Sur, the possibility of implementing a local server has been explored so that students do not have to connect to the Internet and can download content from it.

12.2 ORDEM E PROGRESSO AND NETWORKING

In the Brazilian context, the situation has been complicated as government measures have been insufficient to stop the spread of the virus. Home education has been limited as only 46% of rural households and 79.4% of urban households

have Internet access. At the city level, the organization CooLab has created the #LiberaOWiFi campaign[2] which trains people to open their WiFi networks safely so that more people who need it can connect to them.

The community network Portal sem Porteiras[3] located in Monteiro Lobato, near Sao Paulo, has created an online radio to broadcast within the network where doubts are answered and fake news are disproved. However, the network does not cover the entire community so one of its needs is to expand it to reach the entire population. Similarly, the network is threatened by legal problems with its Internet provider, since in Brazil, community networks are not explicitly recognized within the regulatory framework.

In the case of Marrecas[4], a community in the municipality of Campos dos Goytacazes, in addition to having a community network, a community radio is also being devised as an effective communication strategy. Economically, the community is being negatively impacted, since transport between regions was reduced, limiting its economic activity. This is why, from the solidarity economy movement, one of the proposals has focused on the production and sale of masks with seamstresses from the city of Campo dos Goytacazes. The sale is planned to be reinforced with new servers that include digital services such as WordPress and an e-commerce platform. In addition, the Instituto BemEstar has been thinking about alternatives to create remote community networks. One option would be to send the preconfigured equipment and tutorials to install the networks without requiring the physical presence of trainers.

12.3 COLOMBIAN COMMUNITY ORGANIZATION

On the other hand, in Colombia, Colnodo[5] shares that for the existing community networks it has been valuable to be able to count on the infrastructure and community organization they have to face the crisis. The situation has definitely shown how valuable and necessary community networks are. However, electrical storms have caused damage to some equipment and it has been difficult to repair or replace it with the quarantines established by the government. Thanks to the training that was given in the past years, the communities have been able to solve some of the technical failures. There is also a great deal of interest from many new communities that have contacted Colnodo and other organizations to install and create community networks in their territories. It has been difficult to respond to so many requests.

Additionally, Ulises Hernández Pino, Academic Director of the ApropiACYT Corporation and Coordinator of the Working Group on Community Networks of ISOC Colombia, who works on the deployment of local networks and the co-

creation of open content in the education sector, mentioned the importance of open source tools and free software to meet the needs of communities, as well as ensure the protection of users and their data. Large companies such as Google, Facebook, Microsoft, among others, have taken advantage of this moment to promote their free services, and both teachers and students have accepted the terms of service without looking at its implications. For this reason, the technological and pedagogical empowerment of the communities is necessary, through the implementation, support and expansion of the network infrastructure and its own content, which also responds to the challenges of the current situation. For example, since the quarantine began in Colombia, visits to school servers by 1,500 students have gone from 200 to 2,000 visitors a day on average, with moments in which there have been more than 350 concurrent users, which has caused the saturation of the infrastructure.

12.4 ECUADOR

In Ecuador, the Confederation of Indigenous Nationalities in the Ecuadorian Amazon (COFENAIE), in the absence of connectivity in the Amazon, managed to support the installation of an HF radio system for the Suraka community last August, with the help of Rhizomatica who trained the network installers. This has benefited five base communities (Tsitsanu, Suraka, NimaMuricha, Pumayaku and Pindoyacu) to maintain good connectivity and communication during the health emergency and other contingencies in the territory.

12.5 STRONG HEART CONNECTIVITY IN MEXICO

The case of Mexico is not different from the previous ones, since there is also a great lack of knowledge of the subject fed by an immense amount of fake news. The social and economic crisis that has developed in the country, especially due to the high percentage of informal economy, is causing catastrophic consequences for the population.

This is why the TosepanTitataniske Union of Cooperatives, which is based in the municipality of Cuetzalan, Puebla, launched the Tayolchikawalis initiative[6], which is based on "actions to have a strong heart" and is a way to respond to the pandemic at the health level but also in a social and economic way. The communication campaign transmits the importance of revitalizing the countryside through planting. Part of this campaign are capsules created by radio volunteers that are broadcasted and a website is also being created to provide communities with content that is accurate and adapted to community needs.

On the other hand, in Oaxaca, the collectives CEPOS Media Lab and Herramientas Para el Buen Vivir[7] have accompanied educational processes since the teachers were left without platforms to practice. Both collectives are making a platform that is based on educational alternatives for teachers. Moreover, in Chiapas, the collective JnoptikIntrabach has created informative material on offline Intranets with educational contents so other communities can deploy them in order to face COVID-19.

12.6 AN ESSENTIAL TOOL FOR INFORMATION SHARING

Finally, the María Luisa Ortiz Cooperative[8] in Nicaragua shared how radio and its social networks have been its main means of sharing reliable and truthful information. The repercussions of the political crisis of the past years still permeate and this has also affected people's response.

12.7 THE ROLE OF WOMEN WITHIN THE NETWORKS

Isolation has increased and exacerbated cases of domestic violence. Likewise, the overload that women experience towards work, motherhood and education is a very difficult burden to bear.

In response, these are some of the initiatives that have been taken by the networks:

In Brazil, in the Portal sem Porteiras network, women are communicating and interacting through podcasts. In Marrecas, women have organized for the project to produce and sell masks. In Vale do Ribeira, indigenous community farmers managed to maintain their income and sales of their agroecological production thanks to the self-organization facilitated by the community network, as well as the relations with their feminist networks, since the city council canceled the transport that subsidized their productions. Collectives such as MariaLab have created self-care and reporting materials for domestic violence[9].

Support networks have been vital. In Argentina, for example, networks of women artisans have come together and organized to think about how products could be sold online. Of course, it's not easy. Many of the support networks are facing misogynist societies that limit their development.In Salta, there are barter networks among women where food, clothing, and other things have been exchanged, which has been very beneficial. Also, some women have organized rotating funds to help those who need it most, month by month.

Finally, the networks have proven to be a space of self-care to heal, share, discharge and feel. The possibility of sharing how we feel day by day or creating collective virtual dynamics of containment has been very important for the health not only of women but of the whole community.

DISCLAIMER

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THIRTEEN

Amali De Silva-Mitchell

Open Internet is Always an Inclusive Quality Internet

Covid-19 is unseen, unforeseen, uncontactable, unruly, undermining, and we are unprepared to meet it's challenge of us! One of the greatest threats to humanity in modern times, too small an opponent to the naked eye, Corvid-19, snuffed out life as we know it. Like a stop light, the direction flashed red and society stopped in its tracks. Dead still, we have lived, almost like cave men watching the carvings on the cave wall, for a sign of movement and wishing it would move, some-how.

Like a silent movie we are re-starting society and human interaction frame by frame. The normal colourful movie of our lives, backed up in time, to black and white silent movies. We have progressed in opening up physical human interaction from stage 1 to stage 2 and now in most countries stage 3, where stage 4 is the old normal. The Internet and its "openness" immediately became our "band aid" and our means of human to human interaction, became, predominantly human to computer interaction, when we dove in to Stage 1 lock-down. So, what is Internet openness and why is it important to everyone, everywhere, right now?

Access is the first word that springs to mind. Then lack of barriers and boundaries; no restrictions; transparency; no discrimination; the same for all; freedom of expression; perfection of human rights and civil liberties; privacy; trust in those that govern the space and ethics, as set by modern liberal societies, are but a few features as to what Internet openness can mean[1]. Each person will see the

value of Internet openness in a different manner, depending on their society's cultural norms and their own perceptions, skill level, access to software and hardware technologies, including access to telecommunications networks.

However, this multifaceted openness has also led to lots of unknown connectivity, unrecorded pattern building from information, storage in perhaps unknown locales, access to others who may not be thought of as a primary user, making social engineering of data so easy and even leading to mis-information and false information being generated[2]. This latter practice can arise from simple data aggregations without sense, to deliberate manipulations of data. The innocent user is then not protected and not educated or skilled to scan the outputs so easily accessible. This situation creates risk, to the quality of the intended outputs from Internet openness. Is this side of openness then valuable? Should we be concerned? The simple answer is, how the data and data that is created, is handled, is the issue of concern, not that the data is available in the first place.

It is like water, it is essential for human life, but if it is in the form of flood waters or avalanches then it is detrimental. So, an open Internet is a good thing in its simplest dimensions, but can be an untamed beast, if not managed according to principles for quality internet management or ROAM[3]. principles for the internet, which refer to Rights, Openness, Accessibility and Multi-stakeholder participation.

So, what can be the value of an Open Internet in times of crisis?

The most spontaneous answer is, once again, is the concept of "Access to The Internet". With access, there can be a sharing of information and collaboration to create medications, guidance, engagement of and warnings to the public, through multiple communication channels such as streaming, texting, email, social media networks and so forth. We have seen the great use of information and communication technologies in telemedicine, remote office work, shopping, all forms of delivery, communication between one and many, tracking, entertainment, social services, government services, transportation and logistics management, financial services, education and so forth.

The technological innovations in the pipelines, have become fast framed realities. Access to quality products and services serviced to remote areas which would never have been possible a year prior, without the Internet, have been fast forwarded to become a reality today[4]. For those who are so fortunate as to enjoy connectivity as in many parts of the affluent world, affordable access has become a reality, through the generosity of their telecommunications companies and government entities encouraged and championed by the flag bearers of the third sector[5].

But all these advancements are unevenly distributed and are limited by quality. Here is where the sink holes appear, where the water runs underground or blotches the movie negative or blueprints. Openness with poor quality of access, support and data, including false and misleading information, poor security and awareness there-of, can be a muddy water not suitable for drinking. While a limited or controlled supply of clean water may have been better, for human sustenance and reinvention in to the new normal.

With muddy data waters the pristine data lake and active tributaries that were imaged, now become a mirage, and lack of trust, setbacks and other negatives begin to mount and permeate, lagging and stalling use of, or new development of the internet and its associated technologies. For the public sphere to be healthy and for Artificial Intelligence and the Internet of Things to flourish, information available must be of good quality, so that the outputs of public debates or that of data-driven technologies are robust and trustworthy, for decision making and activity.

Some have heralded Blockchain as an answer[6], but right now it is not a universal one. But with everything that stands up with a backbone, the fundamental or core backbone principles of a well-functioning Internet, is an open and accessible internet and that is in in existence, albeit limited in some jurisdictions[7]. Access to the internet is also determined physically, through the gate keepers of hardware and software which have also to be affordable, if it is not to be an "exclusive" open internet. This is the concept of net neutrality.

If the internet had been strictly exclusive, billions of people would not have been able to access and share information and solutions, during this critical time, such as was evident in the options for access through mobile telephone networks[8]. The actual speed with which people can access information on the matters that are critical to counter the pandemic, can been enormously strengthened by the openness and the trust of the Internet and access to it. Openness of the Internet may seem like a dream for dreamers, but in reality, it can be, the single greatest achievement to strive for, for the future. Covid-19 will be with us for some time to come, it is how fast we manage its bite, that will be our new normal survival and an open Internet can be our shield and global defender. But like all shields, the quality of the shield matters. The sophistication of the protection required to harvest the benefits of an Open Internet, are known, and we have to strive to enhance and preserve[9] what already exists, so as to make it strong and resilient.

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FOURTEEN

Nikhil Pahwa

COVID19 and the Importance of Building Trust in the Internet

The onset and spread of the COVID-19 pandemic across the globe has largely led to an environment of greater restrictions. Some restrictions have been self-imposed: those who can afford to isolate themselves, have reduced physical interactions with the outside world, in order to protect themselves. Masks act as filters to prevent us from breathing each other's air, for the fear that we might be infected by it. Some governments have, at different times, locked their countries down, and restricted people from interacting with each other.

14.1 ACCESS ISSUES DURING COVID19

The imposition of physical restrictions has made us all-the-more dependent on the Internet for staying in touch with loved ones, for working and at times, for keeping a job, or for keeping a business alive. Services which enable work from home have benefited the most, as our dependence on them has grown: Zoom and WhatsApp video calls haven't just been essential for work: in India, where extended families are large and close, video apps have been used to both celebrate births and birthdays, and host prayer meetings when someone passes away. Many ecommerce businesses in India, following instructions from the government, expanded their operations to include groceries. For restaurant booking and food delivery service Zomato, while revenue declined from restaurant bookings - restaurants were operating at 8-10% of pre-COVID19 levels, the food de-

livery business grew. The economics of food delivery improved for Zomato: post the beginning of the pandemic, it made a contribution margin of around $0.37 per order, up from -$0.64 per order prior to the pandemic.

Telecom operators in India used the pandemic to petition the Indian telecom regulator TRAI to allow zero-rating of certain websites, ignoring the fact that price of data access is not a significant cost factor in Internet usage in India. In fact, the low cost of the Internet in the country has been an enabler of greater access: India has the cheapest access to the Internet in the world. As of March 2020, the average cost of data was around $0.15 per GB, which led to data consumption of 11 GB per subscription per month, for over 687.44 million broadband Internet connections[1]. Many monthly plans offer subscribers over 1 GB of data per day. It's worth keeping in mind that India has the strongest Net Neutrality regulations in the world, and thankfully, the TRAI did not allow telecom operators to zero rate websites.

Despite the low cost of access, Internet access has been limited both by the cost of devices, and the fact that most leading Internet services are available only in English. India has 22 official languages, and at least 27 other languages have over a million speakers each[2]. While a majority of India's 1.3 billion population resides in rural parts of the country, Internet penetration in urban India is at 99.12%, while that in rural India is still only 32.24%. The lack of usage and connectivity in rural India, means that many online-to-offline services like ecommerce deliveries do not service these areas.

Usage of digital payments is another restrictive factor: while India has 845.4 million debit cards, most of their usage is for withdrawing cash, and not for digital payments. Physical restrictions to movement restricted the ability of individuals to withdraw cash. Many ecommerce delivery businesses did away with cash-on-delivery options, thus trying to force users to make digital payments, especially via UPI, a payments mechanism which has seen its highest ever usage (over 1.6 billion transactions per month) during the pandemic. This system of payment, provided by Google, Amazon, Walmart owned Flipkart, among others, has been particularly susceptible to online fraud.

Poor connectivity, erratic power supply, and high-device costs also mean that rural students are disenfranchised when education switches to online, and expands the digital divide. Online exams, and technical requirements can be exclusionary. Online exams for India's prestigious National Law School of India University were eventually cancelled following a Supreme Court order, and intense criticism for restrictions placed on students appearing for the exams[3]. The initial set of requirements mandated only Windows desktops or laptops, with a minimum 1 Mbps connection, and integrated webcam with a minimum resol-

ution of 640 X 480 and an integrated microphone, Google Chrome, and a disabled Antivirus. While these were relaxed a little, the petition in the court argued that the technical requirements were onerous, arbitrary, discriminatory and illegal. When the usage of technology is an option, it is an enabler. When it is mandatory, it becomes a means to exclusion. It is important for trust in the Internet that it not be forced upon people.

The pandemic has brought into sharp focus the importance of lower costs of devices, accessibility in multiple languages, speed of connectivity, reliability of access, as well as the limitations of market economics and payments, that can impact access to services, content, and communications on the Internet.

14.2 SURVEILLANCE CONCERNS DURING COVID19

During the pandemic, the Internet has also been seen as means of imposing greater restrictions on people.

The Internet has played an important role in ensuring compliance with rules in India, especially during the various phases of the lockdown, and led to an increase in surveillance by the government, which might well be illegal. In Bangalore, quarantined patients were to upload a selfie photo every hour[4] - except between 10pm and 7am - to allow authorities to ensure that they were not violating quarantine. In some cities in India, drones were used to ensure that people stay indoors[5]. In other cities, they were used to measure the distance between two individuals on the road[6].

Nowhere have restrictions, and the risk of surveillance been more visible than in the implementation of India's contact tracing app, AarogyaSetu. Implemented without a law in place, the application collected sensitive personal health data from citizens. Its privacy policy was improved upon after its first iteration, and transparency from the government of India about its development and code base has been questionable. Its effectiveness in addressing concerns related to COVID19 have never been proven. It was initially forced upon citizens by many government departments, and made essential for travel both within and between cities. The police, at check-points, would demand to see that the app has been installed, and even schools asked parents for a declaration that they had installed the contact tracing application. It took upon the hue similar to another technology project from the Indian government that was "voluntary (as per the government) but mandatory (in practice)": India's national identity project: Aadhaar. Like with Aadhaar, which has been the subject of significant criticism from civil society and academia for its issues with privacy, exclusion and effectiveness, AarogyaSetu has been seen more as an initiative to enable a set of startup busi-

nesses. Just as Aadhaar was a means of enabling the digital payments startup ecosystem through the "India Stack" framework, AarogyaSetu was positioned as a means of enabling the digital health startup ecosystem, and a basis for the National Health Stack, and the generation and transfer of health data from citizens to businesses.

In the midst of the pandemic, India rushed through the Telemedicine guidelines, and began a consultation on the National Digital Health Mission's Data Management Policy, a part of which is the plan for a Health ID. The infrastructure being put into place for collecting health data, without a Personal Data Protection law or a law to reform surveillance in India, creates a situation where health data could potentially be surveilled by the government of India. In any case, the pandemic has seen several instances of violation of privacy, whether it is the lists of people quarantined being circulated via WhatsApp, addresses of people infected being mapped online, or the police releasing drone footage on Twitter.

Such approaches, which enable discrimination, only end up reducing trust in the usage of technology and the Internet.

14.3 GEOPOLITICS DURING COVID19

For many years, India has been seen as a US versus China battleground. Significant investments from Tiger Global, Walmart, Amazon, Google and Facebook in India have been matched by significant investments from Chinese companies like Alibaba, Ant Financial and Tencent. Earlier this year, both Facebook and Google invested billions of dollars in Reliance Jio, which is India's largest telecom operator with over 390 million broadband Internet connections. The investment from Facebook is meant to enable bringing more offline merchants online, especially for WhatsApp's foray into enabling e-commerce on its platform. Google's investment in Reliance Jio is meant to enable an Android powered low cost handset.

Even as this investment from US companies took shape, India put restrictions on investments from Chinese companies, by ensuring that all investments from companies with which India shares a land-border, need government approval. The economic impact of India's long initial lock-down on businesses led to a sharp drop in revenue and sustainability. This meant a significant reduction in valuations for technology startups, and India, just as the EU did, feared a takeover of its key technology companies by moneyed Chinese behemoths.

While China criticized the move then, a subsequent build-up of troops along the Indo-China border, skirmishes between soldiers of the two countries have led

to India banning almost 200 Chinese applications, including popular apps like TikTok, PUBG and CamScanner. India was the largest market, in terms of user base, for TikTok, and a flourishing ecosystem of creators and brands has been disenfranchised with this move. The reasons cited for this move was the fact that Chinese applications posed a national security threat, and they were collecting data on Indian citizens and storing it outside the physical boundaries of India. Subsequent reports about data being collected about influential Indian citizens by a Chinese company have led to renewed calls for data localization, and even the creation of a firewall in India, in order to protect the data of Indian citizens.

Questions are now being raised in Parliament about Chinese investments in telecom infrastructure, and it looks unlikely that Chinese infrastructure will be allowed for a rollout of 5G in India. Reliance Jio has already announced that it will be building its 5G rollout on OPENRAN.

This period of the pandemic has provided an impetus for data nationalism in India, and supported by the concern that under Chinese law, companies can be forced to act as an extension of the state. A certain level of adequacy, when it comes to accountability of governments to democratic principles, and the prevention of surveillance by foreign governments, is clearly a need of the hour.

It is very clear that for the Internet to remain open and global, there is a need to rebuild trust between governments, companies and citizens.

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FIFTEEN

Ritu Srivastava
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Internet Openness and Covid-19: Community Networks and their Importance to Foster Openness in India

COVID-19 has reminded us that community-led models are the requirements of this time. Rural communities not only build their own network, create their own local content, but also are able to share their local knowledge and sustain themselves while maintaining the social distancing without disrupting the local market.

The steady rise of COVID-19 cases is a huge concern for South Asian countries due to a lack of public health infrastructure and the limited availability of professionals. South Asia accounted for 1.25% of infections[1] and India has recorded some 174,500 cases and nearly 5,000 deaths[2] as of May 30, 2020. In response, governments, corporates and academic institutions have not only cancelled the public events and gatherings but also closed public spaces including museums, restaurants to avoid the highly contagious pneumonia-like disease to spread from one person to another.

On March 25, the government of India announced a nationwide lockdown. In the scenario of isolation, internet connectivity has never been so important. Reliable internet connectivity is still a distant dream in rural India. Today, mobile has become synonymous with smartphones in the urban context. Smartphone penetration in rural India is still limited[3] to the younger generation while the elderly and women are yet restricted to using feature phones, which do not have

internet connectivity. At a time when millions of migrant labourers[4] are going back home in this pandemic, questions arise whether they will be able to sustain themselves or receive better healthcare and education services for themselves and their children.

In this crisis, reliable and affordable internet connectivity is a critical need of the hour, to receive up-to-date health and COVID-19 information, and to continue work. The telecom networks that support voice, telephone, and broadband data services are critical infrastructures for a country like India much like electricity, water, sewage and road networks.

According to the CISCO report[5], devices and connections in India are growing at a rate of 7% of compound annual growth rate[6]. However, India stands at 132 out of 139 listed countries in mobile broadband, according to Ookla Speed Test report[7] (as of May 30, 2020). In fixed broadband, the country stands at 71 out of 174 listed countries giving an average speed of 35.84 Mbps. India has 19 million fixed-line broadband users[8] which include enterprises and offices and 17 million home fixed-line broadband users.

Most of this critical telecom infrastructure is built by few private telecom players using their capital. Around 45% of rural regions of the country are connected through the internet according to ICUBETM report by IAMAI and Nielsen[9] and most of them are connected through mobile connectivity. It is also time for rural communities to build their own network, create their own local content, able to share their local knowledge and sustain themselves while maintaining the social distancing and without disrupting the local market.

INTERNET ACCESS & LOW-COST CONNECTIVITY-DRIVEN SOLUTIONS

There are very few community-led social enterprises working for designing or deploying wireless networks that cater to rural parts of the country. AirJaldi in Dharamshala, Digital Empowerment Foundation (DEF) in Delhi, GeoMesh Informatics in Madurai, Tamil Nadu, MojoLab in Dehradun, Uttarakhand, Janastu in Tumkur, Karnataka, and GramMarg in Pathardi, Maharashtra are few community networks that are providing low-cost internet connectivity services to people, particularly those living in rural and remote areas.

For instance, GeoMeo mesh wireless network connects the unconnected in rural villages of Madurai and provides healthcare and security services with modular software and services. Using two 5 GHz radios and sector antennas, GeoMesh is an indoor/outdoor weatherproof 3-radios wireless mesh router that automatically forms a mesh network with another Geo Mesh router within range.

GeoMio Mesh creates both intranet and internet networks. It automatically creates hotspot using the 2.4 GHz radio and creates a local (intranet) network. Integrated with low-cost health devices, Allowear and mobile app, SaveMom[10], it is providing maternal health services to pregnant women and mothers. Since the outbreak of COVID, this integrated device also monitors the temperature of newly born babies and mothers. The data is stored in the local network linked with local hospitals.

The cash shortage in rural areas is making people's lives more difficult. According to Business Correspondent Federation of India (BCFI)[11], an industry body that represents fintech firms, only 30% of their business correspondents are active in rural regions. The lack of proper digital infrastructure including mobile connectivity and broadband communications to a large proportion of the populace makes it more difficult to address authentication challenges, card security infrastructure, and last-mile connectivity of Point of Sale (POS) terminals.

At this point, one of the community networks, established by Delhi-based organisation, DEF under its project Wireless for Communities (W4C)[12] is enabling rural youth to provide a variety of services in their neighbourhood. For example, Abhinav Pandya, from Guna, Madhya Pradesh, is bringing banking services and entitlements to people's doorstep. He has been working on the ground to ensure the community's safety from the coronavirus by delivering money to their homes from the schemes that the government has put in place for them. Many of those whom Abhinav is helping didn't even know that such schemes existed. He informs them of their entitlements and helps them avail the same online.

By providing banking services at doorstep, he is helping the villagers practice social distancing, the most important requirement to stop the spread of the virus. Like Abhinav, there are more than 1000 digital foot soldiers who are facilitating healthcare and banking services in rural regions of the country. In the last nine years, the programme has adopted various models of engagement, ranging from the Hub-and-Spoke and Wireless on Wheels to and Internet-in-a-Box set up.

Similarly, Janastu's wireless mesh community radio model[13] is reaching out to the remotest villages of Karnataka where COVID-19 awareness is considerably low. This mobile radio station is equipped with a computer, recorder, mike, amplifier and speakers have been fixed inside a van to form the mobile radio station. Using the local wireless mesh network, people living within 500 metre radius of the van can login to the radio station and listen to different awareness programmes.

Nasir Hashmi, who attended the first wireless network training in Chanderi, Madhya Pradesh, is now running ISP franchise in Gadchiroli district of Maharashtra and connected 500 households. In 2015, Nasir started a digital centre[14] to provide digital services such as photocopy, and government entitlements, and established the first wireless mesh network in Kurkheda block of Gadchiroli district, Maharashtra. BSNL (Bharat Sanchar Nigam Ltd) was the only telecom provider, reaching the district office until 2015. He started with four customers as a micro-entrepreneur, the network now employs over 10 local young boys. In the last five years, Nasir's franchise has become a wireless and fibre-based network provider for BSNL, BBNL and Railtel, laying out 55 kms of fibre connecting three blocks — Armori, Wadsa and Kurkheda.

Since March 2020, Nasir told us that the demand for providing internet connectivity in times of the pandemic has increased from 7 customers per month to 5 customers per day on an average after March 2020. His network is also providing internet connectivity to 55 students to continue their classes online. In the situation of the lockdown, the procurement and installation of devices are challenging, thus, he has opted to use unused bandwidth and customised bandwidth as per user demand to provide internet services continuously to his customers. Started his journey as micro-entrepreneur, Nasir now acts as an ISP franchise agent for three traditional ISPs.

These network providers are using different bottom-up approaches such as generating locally created content, innovative pricing and marketing approaches to content are gaining traction, providing digital services to information services to sustain these networks. These networks are trying to provide affordable, ubiquitous and democratically controlled internet access in rural regions of the country.

CONCLUSION

Connectivity, when combined with the Wi-Fi information hub and spoke model, can help to empower communities and bring holistic development. If people have access to broadband and adequate bandwidth, they could pursue distance education through video conferencing, able to share their local indigenous content with a larger audience. By delaying access to the Internet and not enabling communities with high-speed internet connectivity, we are constantly underutilizing our own potentials and, consequently, delaying economic prosperity.

Connectivity, when combined with different models including hub and spoke, can help rural communities sustain themselves locally. For the last nine years, community networks are transforming rural communities resilience by ensuring

these rural communities can deal with pandemics like COVID-19 in a way that fits the local context. Common to all models is the need to capitalise on the social and human value already present in the community, and transforming this into a socially sustainable wireless network model.

If people have access to broadband and adequate bandwidth, they could pursue distance education through video conferencing, and be able to share their local indigenous content with a larger audience. By delaying access to the Internet and not enabling communities with high-speed internet connectivity, we are constantly under utilising our potentials and, consequently, delaying economic prosperity.

This pandemic has reminded us to go back to decentralised solutions and to create community-led network solutions that enable rural communities' independence from privately built infrastructures. The notion of local living and the local dependence market will lead to sustaining the local economy to create a diverse system.

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POSTFACE

Anriette Esterhuysen

Internet Openness for an Open Internet Governance

First, I would like to congratulate the editors and the authors of this very important volume on the value of Internet openness in times of crisis. The reflections contained in this volume come at a historical moment where reliance on an open and inclusive Internet is more widely shared and understood than ever before. Internet governance, policy and regulation needs to respond to this moment.

WHY IS INTERNET OPENNESS RELEVANT?

Internet openness has been at the root of the idea of an "Internet for all" that enables access to information, innovation and expression, provided one can connect to it. It conveys the idea of the Internet as a platform for inclusion, for people to tell their stories, connect to one another,, participate, and create content and services. This openness has shaped the Internet into a platform that has grown beyond the expectations of those who first conceptualised and developed it.

It is through this notion of openness that the Internet has the ability to cross borders, languages, and all traditional barriers of identity and nationality. For a long time the openness of the Internet created the preconditions for it to be inclusive. Its openness made the Internet into an "interconnected network" both technically, at the level of interoperability of protocols, systems and applications, but also at a more human, people-to-people level.

The pandemic has highlighted the relevance and the power of an open and interconnected Internet. It has revealed the Internet's ability to emerge as a platform where people can work, learn, socialise, connect, and find solutions to problems.

IS INTERNET OPENNESS REAL OR IMAGINARY?

The pandemic also exposed that the idea of an open and inclusive Internet only works for those people with the resources to connect to it and use continuously. Huge numbers of people all over the world still do not have the necessary devices, access to infrastructure, skills or financial resources.

We have also seen how commercial Internet platforms exploits its openness through business models where people's personal data, and their online behaviour have become commodities that drive an ever deepening form of "surveillance capitalism". So huge are the financial benefits that can be derived from this kind of openness where people's data and information is not protected, that harmful content such as hate speech and conspiracy theories have been monetised – perverting the values and goals of Internet openness as conceived off by its original developers.

Actions from states have also encroached on Internet openness. These include so-called "Internet shutdowns" and increased surveillance under the guise of pandemic-linked emergency regulations that may en up not being temporary.

WHAT IS THE ROLE OF THE IGF IN FOSTERING REAL INTERNET OPENNESS?

The Internet Governance Forum (IGF) is a platform that enables us to rethink what we mean by "openness". For a long time, there has been an almost libertarian or hands-off approach towards Internet openness. This is highlighted by the notion that we can achieve it by avoiding any government involvement, and by just keeping the Internet unregulated. There is a need to rethink this premise. As I suggest above, we have reached a point where relying on leaving the Internet unregulated as a means of keeping it "open" can result in the exact opposite.

To achieve and maintain Internet openness, we need policies and regulations that provide the checks and balances that protect the Internet and its users from exploitation and abuse by business actors and from restrictive practices by States. There is a need to protect the neutrality that is embedded in Internet protocols and which is a key means of ensuring its openness. We need to safeguard

the Internet against distorted intellectual property regulations that limit people's ability to share and re-use public interest content.

The IGF – globally and through its national and regional network - remains the best platform for discussing and analysing these challenges with the input of diverse and often dissenting perspectives and interests from all stakeholder groups. It is a space where we can reimagine what Internet openness today, and what needs to be done to secure this openness in a manner that secures it as the global public resource that we believe it should be.

PREFACES AND POSTFACE
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This volume explores "The Value of Internet Openness in Times of Crisis" and is the official outcome of the Coalitions on Net Neutrality and on Community Connectivity of the United Nations Internet Governance Forum. This work stems from the consideration that the COVID-19 pandemic has harshly highlighted the fundamental importance of Internet access, and the total exclusion that the unconnected face in times of crises. Internet connectivity, has now emerged as the backbone of all social, political and economic interactions along with services during the Covid-19 pandemic. The current crisis brings to light that digital infrastructures play an essential role, shaping our development. The sustainability of such development relies on Internet openness and this book offers an ample range of perspectives exploring why it is more crucial than ever to guarantee that the Internet stays a smooth-running, open, and accessible common good.

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