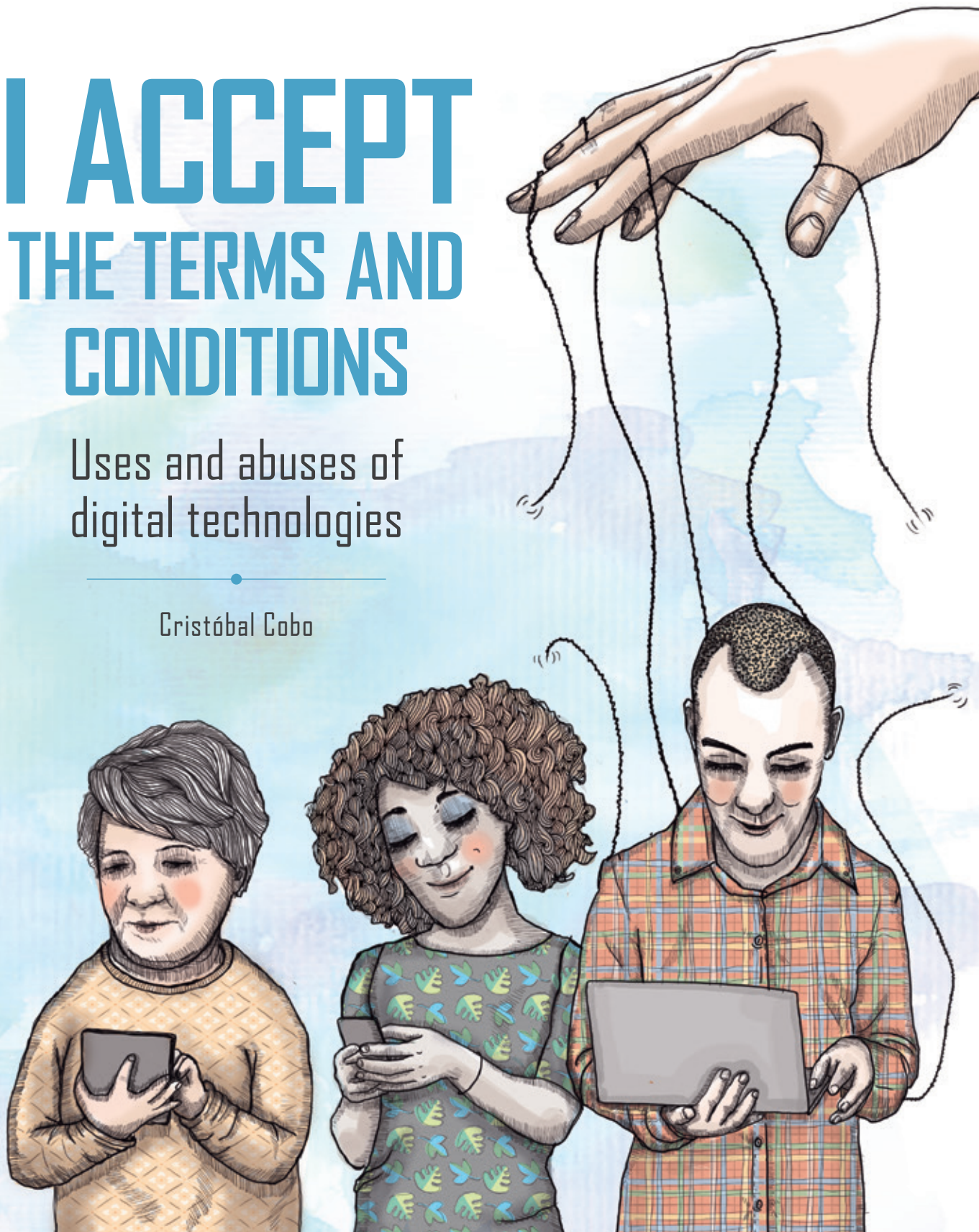
I ACCEPT
THE TERMS AND CONDITIONS

Uses and abuses of digital technologies

Cristóbal Cobo



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Works at the intersection between technology, knowledge and society. He has published three other works, all freely available online: Planeta Web 2.0 (2007), co-authored with Hugo Pardo; Invisible Learning (2011), co-authored with John Moravec; and Impending Innovation (2016). Cristobal is also a researcher, advisor and an active producer of scientific knowledge. He served as founding Director of the Center for Research Ceibal Foundation, in Uruguay. He is an associate researcher at Oxford Internet Institute, University of Oxford, United Kingdom. He has been distinguished by the British Council for Economic and Social Research (ESRC) and holds a Ph.D. cum laude in Communication Sciences from the Autonomous University of Barcelona. Cobo considers himself a perpetual traveler, and he has lectured in over 30 countries. Although Cristobal researches and works on issues related to digital technologies he continues reading on paper.

SPOILER ALERT!

Twenty years into the Internet boom, this platform is no longer thought of as a tool for inclusion. Today, it generates and amplifies new forms of power and control (e.g. surveillance, influence and manipulation, extortion, loss of self-control and cognitive overload).

Ignoring these issues leads to new digital gaps. We are experiencing a kind of digital feudalism in which a few companies manage data that the population provides for free without financial compensation. The concentration of digital power in a handful of companies (e.g. Google, Facebook, Amazon, Apple and Microsoft) has not only resulted in new forms of power and control that exacerbate the existing ones but is also creating new forms of exclusion and marginalisation.

For decades, researchers argued that the skilful use of technology would eventually generate advantages for those who could adapt to these new tools, but the reality that we see today is different. Cities are teeming with «smartphone zombies» (individuals so obsessed with the media and networks in the digital world that they lose track of what is real) who, instead of using technology, are being used by technology.

These pages question the purported neutrality of technology. They explore the extent to which the algorithms that give life to digital tools become the new

oracle, the interface of connection with reality—a reality modified to satisfy the interests of a few. In this scenario, states are late to the discussion and the population at the individual level lacks the tools to regulate and manage their digital lives. It is crucial to understand the limitations of the current era and to take account of the fact that artificial stupidity (resulting from systems offering poor or bad information in an automated fashion) can be more dangerous than the lack of timely information. Today, it is necessary to develop an improved understanding of the meaning of critical digital literacy so that digital citizens can help make sense of, and act on, the new rules of the game.

It is the end of the digital honeymoon. Various international experts are exploring important questions: What can we do to address the current power asymmetries? Who watches those who watch us? Why does it seem that we work for the benefit of technology companies by relinquishing a large number of our individual rights? Is it possible to make these tools transparent and audit them? In a society heavily influenced by data, isn't it necessary to have a new form of data ownership that will benefit and protect citizens?

To respond to the challenges the current technological landscape poses, it is necessary to respond in a cross-cutting, inclusive and open manner to this question: How can we prepare society to act in a landscape of changing technologies?

ACKNOWLEDGMENTS

Travelling with somebody is always much more stimulating than travelling alone. After all, travel not only occurs when visiting places but also when conversing with others and in the exchange of ideas when discovering new realities. This book has been a journey that I have taken together with several supportive Sherpas. Many of these exchanges occurred through the reading of texts and resources that contributed to a rethinking of the role of technologies in today's and coming societies.

Somehow this literary journey has allowed me to revisit some of the communities I worked or lived with on my previous trips.

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It has been an intense experience. Collecting views and ideas of nearly a dozen nationalities made for a great journey.

HOW TO READ THIS BOOK

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PREFACE. THE NEW «GREY POWER»

In 1941, Aldous Huxley published *Grey Eminence: A Study in Religion and Politics*. It was the biography of François Leclerc du Tremblay. This French Capuchin friar was also known as the grey eminence for a cloak he wore and because, although he was not a cardinal, he was just as influential in his role as adviser to his eminence Cardinal de Richelieu (who was also King Louis XIII's First Minister). François Leclerc du Tremblay profoundly shaped French and European politics and the course of the Thirty Years' War. This conflict was one of the longest and most destructive in European history, virtually a World War Zero (before the First). It was this ability to control events and the behaviour of people by operating behind the scenes to influence the influential that I had in mind when I coined the term «grey power».

There is «grey power» in every society, and both change together. The process can sometimes be dramatic, even revolutionary, but it's never linear and doesn't move at a regular rate. Let's think of how societies and their grey powers were changed by the complex interactions between mercantilism, colonialism and the emergence of the so-called Westphalian system of sovereign states, the speed with which the United States was transformed during the Golden Age (approximately from 1870 to 1900) and the «grey power» exercised during that time by wealthy industrialists and financiers such as Andrew Carnegie, Andrew W. Mellon, J.P. Morgan or John D. Rockefeller. Changes in society and

in the «grey power» within it do not follow a domino effect pattern; they are more like a complex waltz in the ballroom of history, where society and «grey power» dance together, sometimes returning to some corners, changing rhythm and taking turns to lead each other.

This long premise is necessary to make it clear that asking how «grey power» has evolved to adapt to our current societies is both a pressing issue and a potential trap. It is pressing because the «grey power» of those more mature information societies is not the same as that of industrial societies, media societies or ecclesiocratic societies. Developing a better society can be more challenging than it should be if we do not have a better understanding of how the nature and exercise of «grey power» (i.e., its morphology) have been altered. We need to know what it is that we want to improve. A scholarly account of the history of «grey power» would make very interesting reading, but the question can become a trap if we are not careful about superficial simplifications. Let's not forget that «grey power» is like ivy: it grows on the walls of official power and blooms in the shade. In an age of great social transformations and widespread conflicts, it is tempting to highlight some news headline as a factor driving the transformations in the morphology of today's «grey power». Immigration and terrorism, globalization and financial markets, the real estate «bubble» and the reform of the banking system, inflation and deflation, hacktivism and armchair activism, cyber war and the Second Cold War, the euro and the European Union, multinationals and American cultural colonialism, the Arab Spring and the Colour Revolutions, the GDP of China and the Greek crisis, Russian influence on the US elections, the trade war between the Trump Administration and China... The list is long, but it can be distracting because it focuses on contingent historical phenomena that do not identify the most profound change in the means by which events and people's behaviour are controlled or influenced. Therefore, such historical phenomena are prepared and conditioned to relate to the more mature information societies. Using a different analogy, these are the waves on the surface of history. No matter how gigantic or even threatening they are, we have to focus on the underlying currents that will linger when the storm is over. We need to go deeper if we want to understand the new morphology of «grey power». Let me take the first step.

We saw at the beginning of this article that when Christianity dominated Europe, «grey power» was a religious issue exercised through the creation and control of faith. In industrial societies, «grey power» is exercised through the creation and control of things. More precisely, events and people's behaviour can be manipulated not only by means of force, land tenure and the monopoly of faith, but also, and increasingly, by controlling the means of production of goods and services and the corresponding management of wealth or capital. The «grey» worn by the new eminences influencing the influencers is that of their business suits.

In the long run, capitalism, competition and consumerism are destined to erode industrial-financial «grey power» by turning goods and services into commodities, that is, undifferentiated articles of trade that become so generic that any perceptible difference in value between brands or versions is blurred. At some point, manufacture no longer guarantees a place behind the throne, but rather kneels in front of it. So, the decline of industrial-financial «grey power» began long ago, but it reached its symbolic climax in 2009, when General Motors and Chrysler were faced with bankruptcy and liquidation and had to be bailed out by the governments of the United States and Canada with 85 billion dollars.

Meanwhile, another «grey power» had emerged based on the control of the means of production of not things, but rather information about things. As Orwell wrote twice in the novel *1984*: «He who controls the past controls the future. He who controls the present controls the past». Do not forget that there are no computers or digital technologies in that novel, which is quite a dystopian description of a society with the mass media at the service of a totalitarian regime. In that society, those who control (the means of producing) information can control and influence the behaviour of people and events. Information has always been power, even in the times of Richelieu, but it was only with the growth of the mass media industry, the rise of intellectuals and a techno-scientific intelligentsia, the development of propaganda and advertising, and the emergence of the press and the journalism called the «fourth estate» that «grey power» became considerably informative. If it is necessary to identify the day of its full emergence, it may be August 8, 1974,

when Nixon resigned over the Watergate scandal, brought to light *by The Washington Post's* investigative journalism.

Some experts suggest that this is still the context we find ourselves in today. They may be talking about the knowledge industry or the internet as a substitute for wealth or capital as a source of power. Perhaps, but this would be a dangerous mistake if applied to the interpretation of «grey power,» since it is anchored in an anachronistic vision of the information society as a mass media society, and it therefore focuses on visible aspects of socio-political power: the community of bloggers and Twitter users, networked individuals, citizen journalists, hacktivists, etc., but not on what lies behind that. The risk has to do with mistaking whoever is sitting on the throne for those who are behind these powers. If the information and the means for its production were the new «grey power» newspapers would not be in danger, journalism would not be a profession in crisis, and publishers, bookshops and libraries wouldn't go out of business. Wikipedia would be more powerful than Facebook or Twitter. Publishing houses would be imposing their conditions on Amazon. The music industry would have revolutionized Apple. Hollywood would influence Netflix. Newspapers would have imposed their will on Yahoo! first and Google next.

To understand who today's new grey eminences are, we must realize that information is a matter of questions and answers. The informative «grey power» that worked in the media society was the power of those who controlled the means of producing responses. We must remember that publishing or broadcasting, like advertising, involves sending responses to recipients who may not have asked any questions: it happens even if no one is reading or listening. But nowadays, in more mature information societies, the transformation of information into another commodity means that the responses are extremely cheap. Controlling it does not confer any «grey power» which has hidden away even further behind the scenes, moving from the control of information on things to the control of questions that generate information on things. In this case, if I had to choose the date when the new «grey power» came of age, I would say September 4, 2014, when the White House announced that it had appointed Megan Smith, Google's executive, as her next Chief Technology Officer and Alexander Macgillivray (a lawyer

who had started working for Twitter in 2009, after eight years at Google as lead counsel) as Deputy Chief Technology Officer. It is significant that the Washington Post was purchased in 2013 by Jeff Bezos, founder and CEO of Amazon, and Time magazine was bought in 2018 by Marc Benioff, a billionaire who had co-founded Salesforce, the cloud computing company.

The emerging new «grey power» is exercised in relation to what questions can be asked, when and where, how and by whom and, therefore, what responses can be given. And since an unanswered question is just another definition of uncertainty, all this can be summarized by saying that in the more mature information societies, the morphology of «grey power» is the morphology of uncertainty. He who controls the questions controls the answers. And he who controls the answers controls reality.

Issues such as transparency, privacy, freedom of expression and intellectual property rights are part of a more fundamental debate on the new morphology of «grey power». The controversy surrounding an experiment in 2014, in which Facebook manipulated the percentage of positive and negative messages that were viewed by 689,000 Facebook users without their knowledge or consent, showed how deeply influential Facebook's «grey power» can be. (Facebook is basically an interface that manages the flow of questions and answers of social information). Years later, the Facebook and Cambridge Analytica scandal ended up involving the gathering of personally identifiable information from 87 million Facebook users. Or let's consider the debate about the so-called «right to be forgotten» also in 2014. This was also a debate on whether socio-political power can regain control from the «grey power» of Google, which has a virtual monopoly on how people find information online (disclosure: the author is a member of the Advisory Council to Google on the Right to Be Forgotten). Google is no less present in homes either. According to the government transparency group MapLight,[1] in the first quarter of 2015, Google became, for the first time, the company that spends most money on pressuring the federal government of the United States, surpassing military contractors such as Lockheed Martin or oil and gas companies like ExxonMobil Corporation. This trend continues to grow, and in 2017 Google spent more than any other company on influencing Washington.[2]

If the above diagnosis is correct, there are two tasks ahead. One is forecasting: we need to better understand the nature and possible development of the new «grey power» that is emerging as a way of controlling uncertainty. The new «grey power» is clearly more similar to the old ecclesiocratic power than to the «grey power» of the mass media, which is actually being cannibalized. And like industrial «grey power» it tends to subordinate politics to economics. But we must resist the temptation to regard it as just another case of business as usual. In part, this is exactly the narrative quietly promoted by the new «grey power». The other task is therapeutic: we have to understand what can be done to ensure that the morphology of uncertainty is properly monitored – with control by legitimate socio-legal and political powers – and is not replaced by worse forms of «grey power». These are long and tiring tasks, so we had better start.[3]

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3. Luciano Floridi Luciano Floridi thanks Süddeutsche Zeitung editor Alexandra Borchardt for allowing its reproduction in this modified form. This is a revised and updated version of an article published by the Süddeutsche Zeitung on 10 July 2015, entitled «Die neue graue Macht», http://www.sueddeutsche.de/politik/gastkommentar-die-neue-graue-macht-1.2559908.

INTRODUCTION. I HAVE READ AND ACCEPT THE TERMS AND CONDITIONS OF USE

- Why the following examples are different from other traditional ways of exerting influence or spreading propaganda?

> **Power pushes asymmetrical communication forward: the higher the degree of asymmetry the greater the power.**
>
> Byung-Chul Han, 2017[1]

> **Ignorance is strength**
>
> George Orwell, *1984*, 2009.[2]

We live in the age of big data. Artificial intelligence and algorithms suggest streets to drive down, book to read and how to translate a text. However, artificial intelligence poses a divorce between the ability to perform a task successfully and the need to be smart to perform it. When a person can do without their intelligence (e.g. when using certain kinds of apps), something counterintuitive occurs. People are freed from the need to use certain cognitive abilities; at the same time, they depend more on what allows them to perform the task. Perhaps we should consider whether this makes us more or less autonomous as well as who wins and who loses in this new context.

This book discusses what the redefinitions are in terms of the old and new forms of power and control that occur in the digital age. It also explores how these forms of power are linked to the leading role that digital devices have taken on in everyday life. Technologies not only produce large volumes of data but also redraw traditional authority structures. In this context, it seems necessary, now more than ever, to distance oneself from the prevailing techno-enthusiasm and (re)learn to think autonomously (without any digital prostheses or other forms of assisted intelligence). This will be related to the expansion of spaces for technological disobedience and critical reflection that help us to understand the risks of emerging artificial stupidity and act accordingly.

Over the last few decades, we have seen that many of the forms of contemporary influence (whether political, cultural or commercial) are closely linked to certain uses of digital technologies. The current paradigm shift is cut across by the power of technological devices and a gigantic data mining industry. Any phenomenon that ignores this would be obsolete, outdated or liable to vanish. The prominence of technologies can be seen in the

emergence of new governments and forms of organisation, but also in rethinking the current models that determine how education, health, the economy, employment and a large number of dimensions of our social lives are shaped.

Digital technologies are often presented as «neutral», suggesting that they are neither good nor bad in themselves. Although we know that they can be used to benefit the power of a few or produce new forms of collectivism, it seems important to remember that technologies have inherent properties that are not neutral. Technological development often responds to certain goals or to the political or commercial motivations of its creators, so its properties are hardly unbiased. Technologies can also have non-neutral effects that occur as a result of their own design. If technologies benefit people in some way, or favour one group over another, their neutrality is questionable. We will see that the Internet and derived technologies are not equitable tools. Technologies not only affect the dynamics of power in a society but can also reinforce power imbalances or asymmetries existing in a society, which Floridi describes as the «grey power» in the Foreword. The foregoing does not mean that technologies cannot be used for the opposite purposes. Perhaps one of the most obvious examples is the Internet itself. The same tool that is used to offer new forms of democratic expression (e.g. the Arab Spring or the demonstrations of sexual or ethnic minorities) is the same infrastructure that is used to monitor and manipulate people. The contradiction of these mixed visions is typical of a double agent. However, there is no doubt about the growing power that communication devices (and the use of data) have acquired today.

Furthermore, we can see that the digital age has given rise to new centres and peripheries. This results in different forms of inclusion and exclusion with major ethical and

Isn't it somewhat naive to believe that these technologies are completely neutral?

1. Byung Chul Han, *In the Swarm. Digital Prospects*, vol. 3 (MIT Press, 2017).
2. George Orwell, *1984* (Everyman's Library, 2009).

social repercussions. Digital spaces seem to be playing an increasingly leading role in people's lives. According to Pew Internet, in the United States, 95% of teenagers report they have access to a smartphone, and 45% say they are online «on a near-constant basis».[3] Another report added that 74% of users visit Facebook on a daily basis, and about half (51%) of these users admitted to accessing Facebook several times a day.[4] If we assume that these data can be extrapolated and that dependence levels are equally high, isn't it somewhat naive to believe that these technologies are completely neutral? And shouldn't we reflect on whether the use of the Internet makes us freer or quite the opposite?

In the early days of the Internet, everything that emerged from the digital spaces was the cause or the effect of the so-called democratising effect of digital technologies. We should not forget that the Web is the result of a set of rather utopian visions that espoused the idea that everyone would have a voice and a place in (virtual) space. The Internet was to be the «cyberspace» (as it was called) of opportunities for those who hadn't had their place in the analogue world. Platforms such as the World Wide Web, Wikipedia, the free software movement and Creative Commons licenses represented the most fundamental principles of openness, inclusion and diversity that offered the promise of an Internet at the service of humankind. The Internet even came to be thought of as a neutral space where all the flaws of society could vanish.

This democratising power was extolled by different observers who highlighted, for instance, how the Zapatista guerrilla movement in Mexico had joined the world of the Internet. At the end of the 1990s, this case was regarded as a great revolution, and the fact that the indigenous communities from the Lacandon jungle could access and take ownership of the new digital spaces was clear evidence of digital inclusion. We also saw something

3. Monica Anderson and Jingjing Jiang, «Teens, Social Media & Technology 2018», *Pew Research Center: Internet, Science & Tech*, 31 may 2018. http://www.pewinternet.org/2018/05/31/teens-social-media-technology-2018/.
4. Aaron Smith and Monica Anderson, «Social Media Use in 2018», *Pew Research Center, Pew Research Center: Internet, Science & Tech* (blog), 1 March 2018. http://www.pewinternet.org/2018/03/01/social-media-use-in-2018/.

similar at the beginning of this decade with the so-called Arab Spring, when the uses of social networks were reinvented to give a voice to the oppressed peoples of the Middle East, who used these digital channels to organise themselves and demand changes or improvements in the policies of their governments. However, there is another side to the coin. For instance, the Islamic State spread their horrific images in a similar fashion, using YouTube to carry a message of disturbing violence to five continents. This duality of serving not only noble but also horrendous causes is evidence of the emergence of new forms of power and influence on digital environments. Who wins and who loses in this scenario? Who are the new intermediaries?

About 10 years ago, social networks were all the rage in the United States, and they became the key platform that turned Barack Obama into much more than a presidential candidate. His speech for change («Yes We Can») aroused great fervour in the country but also among young people from different corners of the planet, quickly turning this politician into an example of the potential that the Internet would have in political campaigns. The viral spread of his message, the remix culture that resulted from his speeches, as well as a substantial amount of digital content generated by the citizens themselves were some of the examples of this power of democratic expression through digital environments. Television, which had been the king of pop culture in every home for decades, now had to give up part of its leadership (monopoly until then) to the new digital environments. However, it wasn´t long – just one term of government – before the landscape changed drastically. The same Internet that had been used as the platform for citizen expression later came to be considered a source of manipulation (fake news) that threatened the transparency of American democracy. While the case of the Donald Trump campaign is still being investigated, there is enough evidence to suggest that external interests, coupled with the power of social networks and a great capacity for data processing, may have been used to manipulate the information voters received. Both cases are almost antagonistic due to the political profiles of the candidates and the kinds of campaigns that were conducted. However, there is no doubt that the great winner over the last decade is the Internet, as it has

become increasingly prominent in terms of influencing the future of the person sitting in the most important presidential chair in the Western world.

When it comes to either advocating democracy or influencing the behaviour of others, the common denominator is the emerging ways of exercising power, with a special predominance of digital spaces and languages. It's not actually about access to technology or the simple act of uploading a message to the Internet; rather, it is about generating spaces for alternative influences and resonance, new forms of articulation of mega-communities that adopt a language that resonates and multiplies at an incredible rate and on surprising scales. The mass use of data plays a key role in this exercise. The institutions, companies or other kinds of organisations that can adequately deal with these new rules of the game are increasingly playing a leading role by transforming the traditional ways of exercising power.

In this context of redefinitions and complex contradictions, it is clear that the utopian, disruptive and libertarian dream of an Internet for all is still up in the air. Over the last decade, the appearance of different whistle-blowers' warnings about the uses and abuses of power through the Internet has dealt a decisive blow to the digital naivety of the early years. Whether heroes or villains, Julian Assange (the WikiLeaks case, starting in 2006), Edward Snowden (former specialist with the National Security Agency of the United States Government in 2013) and Christopher Wylie (former Cambridge Analytica official whose whistleblowing prompted the Facebook scandals in 2018) – among many others – are clear examples of the end of the age of naivety. Each of them has shown how the Internet is also used for manipulation, surveillance, abuse and blackmail.

Why are the examples above different from other traditional ways of exerting influence or spreading propaganda?

Perhaps a key, differentiating element is the role of digital technologies today. At first, mobile technology was mostly used for phone calls (and text messages, better known as SMS messages), but everything changed with the widespread use of the so-called smartphone. In the first place, smartphones stopped being devices used mainly to talk on the phone and became far more ubiquitous, complex, versatile socialisation tools. Gradually, these devices stopped being exclusive to the segments with the greatest purchasing power and became a form of social projection regardless of the socioeconomic level of their users (as had previously been the case with other technologies). However, in addition to an increase in the number of people with access to them the age range of the users and the length of time connected also increased.

The smartphone and all its associated services started playing a fundamental role as a basic tool for life in society. It is impossible to list the many ways smartphones are now used, although the irony is that phone calls are playing an increasingly modest role within the overall functionality. Although the number of traditional telephone calls seems to be falling steadily (in addition to the decreased use of telephone booths), a migration to voice calls via Internet protocol (with services such as Skype, WhatsApp, etc.) has occurred.[5] We have stopped using the phone and started to rely on this device, or at least all the information we receive

5. James Titcomb, «Phone calls a thing of the past as Britons use smartphones for everything but phoning - Telegraph», *The Telegraph*, 2015. https://www.telegraph.co.uk/technology/mobile-phones/11847773/Phone-calls-a-thing-of-the-past-as-Britons-use-smartphones-for-everything-but-phoning.html.

from it, to make different kinds of decisions (e.g. searching, surfing, driving, contacting people, services or contents). It is not clear whether the smartphones have become a significant part of our lives or if our lives are part of the smartphones.

A fundamental element here is the transformation in behaviours when we relate to each other and interact through smartphones and the information and interaction spaces they provide. People create a kind of symbiosis with their mobiles and other technologies to the point that users develop very close relationships with their devices that are considered exclusive to human beings (love, hate, intimacy, etc.).

It is not clear whether the smartphones have become a significant part of our lives or if our lives are part of the smartphones.

The use of mobiles is so convenient that sometimes they end up becoming a problem—one that has to do with the ability to define the limits of how to use them as well as how often. These limits, as we will see later, create different kinds of conflicts. Phone-free zones are increasingly scarce, as are moments of silence without a smartphone. A clear example of this is the growing number of car accidents that result from the uncontrolled use of smartphones. The United States is an interesting case that shows evidence of the annual increase, and how it affects not only young but also older people (aged over 60). In that country, 69% of drivers admit to having used their phones while driving.[6] In short, people's ability to concentrate is impaired by hyperconnection and the bombardment of information to which users are exposed[7].

When I first visited the city of Seoul, in South Korea, I was awestruck. I felt this way not only because of the extent of the mass use of smartphones in that country or because a large number of subway passengers were watching television online on the displays of their mobile phones accompanied by a small portable aerial, but also because visiting a different culture helped me to think about the scene that was eventually to come our way: everyone was connected

through their mobiles, and, at the same time, were disconnected from each other. It was impossible to make eye contact with anyone; everyone's eyes were fixed on their respective screens. This reality is evidently not exclusive to this Asian country, since a similar scene can be observed on the New York subway, on a Montevideo bus and on the Berlin light rail train.

Is this overexposure to smartphones good or bad? The answer will probably depend on what we define as «overexposure». The first impression is that digital technologies are becoming increasingly humanised (e.g. they speak to us, remind us, give us suggestions), while humankind seems to be becoming increasingly technological. It draws attention to the current dread of the digital vacuum (or the discomfort of staying offline for more than 24 hours) that we find in today's society. This sort of discomfort due to «digital silence» is observed at any moment and level of modern life, such as in modes of transportation, while waiting in a bank (which often has trouble persuading its clients not to use their mobiles on its premises) and elsewhere. If no spaces are created for «digital silence», we are less likely to have time to think, reflect or simply talk to ourselves. The current overconnection frenzy prompts the belief that the more the information consumed, the more up to date we are with today's society, and this takes its toll. If citizens are mere consumers of content generated by others, that consumption is likely to end up consuming them. In other words, an individual consuming content all the time, producing digital traffic, generating endless streams of clicks and scattering their data everywhere is a perfect scenario for those who profit from our attention on digital environments. It is clear that this results in well-being and power for those who build these digital traffic spaces, but it is also evidence of new asymmetries.

6. Ashley Halsey, «Distracted Driving: 9 Die, 1,060 Hurt Each Day, CDC Says», *Washington Post*, 2014, https://www.washingtonpost.com/news/dr-gridlock/wp/2014/02/24/distracted-driving-9-die-1060-hurt-each-day-cdc-says/?utm_term=.d99f87e935ed.
7. Timothy M. Pickrell and Hongying (Ruby) Li, «Driver Electronic Device Use in 2016», June 2017, https://trid.trb.org/view/1473826.

Ignoring the rest is part of the new normalcy. We are now hardly surprised if we see people walking down the street or eating at a restaurant exclusively looking at their phones. This reality is part of the current landscape. Because this worries some, there are cities that have decided to put up signs warning users about the risks of overexposure to screens. Although the risks of overexposure are still being studied, it seems wise to assume that the problems go beyond stumbling, having a traffic accident or simply dropping the phone due to walking carelessly. The repercussions seem to go well beyond these incidents.

It is clear that this results in well-being and power for those who build these digital traffic spaces, but it is also evidence of new asymmetries.

Individuals who use their smartphones at any time and place are called «smartphone zombies». This category does not distinguish between sexes, ages or socioeconomic strata. The distinctive factor is that they are people who live (or survive) at the service of their telephone. Instead of the rhetoric in the early days of the Internet (back in the nineties) that presented individuals as empowered through the use of digital technologies, today we find individuals who need their screens, access to the Internet and electricity for the batteries of their devices at all times and everywhere. Instead of people with more power, we are actually seeing an increasing number of «smartphone zombies» worried about being up to date with the latest developments discussed in digital spaces.

The first step towards not being manipulated is to understand the forms of power, control and dependence that exist today. Strangely enough, despite the unrelenting flow of information we are exposed to, this doesn't necessarily make us more critical and it doesn't imply a greater understanding of reality. The result is actually «pseudo-ignorance or digital amnesia» in which we are overwhelmed with data, updates and short messages. However, participating in this endless flow

of data has little to do with being able to analyse or realise the tangle of interests and redefinitions that technologies bring with them. It seems to give rise to a new form of ignorance that is not created by the censorship of knowledge, but rather by the fact that users are anesthetised in the presence of a 'smart' phone that clutters us with micro-updates that hide what is substantive in an endless stream of noise (spam, likes, tweets, selfies, etc.).

Our ability to make decisions is fundamental if we are to make sense of our lives. This ability to decide is essential for life in society (for democracy). For instance, defining one's own identity is the result of continuously making countless decisions: from trivial ones, such as what movie to see or at what restaurant to dine, to far more important ones such as who to vote for in the next elections and even with whom to spend our lives.

But the truth is that decisions can also be a burden. Our cognitive ability to investigate and make the right decisions is limited. In modern life, having to make deliberate, wise decisions can often be overwhelming. That is why, at different times, many of us choose not to choose. In other words, we go for default options, thanks to which we avoid the cost, responsibility and/or energy involved in making decisions. When establishing these options, organisations (both governments and companies) adopt the results by default. By acting this way, citizens decide not to think and give up some of their autonomy to a third party.

According to Sunstein,[8] most of us choose not to choose when we accept online services by default. Our daily overload leads us to transfer that authority to digital systems (search engines, social network, recommendation services, etc.). We stop using the technologies and instead have to rely on them. It is essential to understand the value of choice here, and what happens when those decisions (often very personal) are put in the hands of online services that are usually influenced by

8. Cass R. Sunstein, *Choosing Not to Choose: Understanding the Value of Choice*, 1.ª edition (Oxford: Oxford University Press, 2015).

commercial interests or are not fully transparent.

The temptation to reduce our cognitive capacity can have profound consequences. We are barely beginning to understand the impact of adopting the default settings of the services we use. There are important questions to explore: What will be the long-term effects of limiting our options? Does it affect our ability to make good decisions? Who ends up deciding for us? Are the decisions made by default a kind of digital free will? These dilemmas arise when we stop thinking and allow data-driven decision-making to influence our personal lives and play a key role in them when we communicate with others, define our digital relationships and filter the information we want to consume.

As we will see below, today we live in an economy of data based on a sophisticated surveillance structure of extraordinary scope that monopolises almost every aspect of personal information – not only the data traditionally gathered by companies such as one's name, phone and address, but also one's browsing history, emails, voice messages, fingerprints, face recognition and location data (in real time). The collected information can be analysed as observable and measurable units, so once the behaviours have been processed, they are turned into data, which in turn undergo advanced analyses and are then marketed in the emerging forecast and behaviour-modification markets. All these aspects make it necessary to establish new limits to the data companies collect, as well as greater control over how, when and by whom people's personal data are used.[9]

Some of the questions we will explore in this book are as follows: Is technological innovation an end in itself, or is it a means to a higher objective? Who benefits and who is affected by the respective discourses of change and of the status quo? Are the technologies enough to favour a change in our ways of thinking? Does the use of digital technologies make us freer, or does it simply offer us a pre-set menu of options? What are the ethical dilemmas that are evident in the digital context? We live in the age of digital hyper positivism, where everything is measurable and quantifiable («dataism»). Does the age of big data bring us closer to the truth, or is it just a technophilic mirage?

This work is articulated around three hubs. (Depending on how they are interpreted, they will offer an optimistic and utopian vision or a pessimistic and dystopian vision of the immediate future.) The three hubs of analysis are as follows:

- What are the new gaps and asymmetries emerging (or consolidating) in the digital age?
- What are the «new» forms of power and control in the digital age, and how do they generate new peripheries (forms of exclusion) in society?
- What are the actions and strategies necessary for reducing the current information asymmetries occurring in the age of big data?

It seems necessary to improve coordination between the challenges the technological landscape poses and how society is educated to face these challenges. Bad or poor coordination between these two worlds could pose serious challenges. There is growing anxiety over the development of technologies on the closest horizon. It is essential to develop future-proof skills not limited to certain tools, instruments or methodologies, adaptable to different contexts and updatable during the learning process with others. In short, they should favour the development of new capabilities that are not limited to the technical aspect of certain technological tools. They should also contribute to learning to think differently and facing new problems from a perspective that goes beyond the instrumental dimension. An improvement in critical digital literacy is about understanding that being digitally competent is more than just gaining «isolated technological skills». As technological sophistication

Most of us choose not to choose when we accept online services by default.

9. Shoshana Zuboff, «Big other: surveillance capitalism and the prospects of an information civilization | SpringerLink», *Journal of Information Technology* 30, n.º 1 (2015): 75-89. https://link.springer.com/article/10.1057/jit.2015.5.

increases, it is essential for citizens to think critically and autonomously, especially when it seems that technologies are trained to make decisions for people. A wider and more robust range of programmes and opportunities for education and skills development is required for a response to a far more complex scenario than that of today.

The structure of this text seeks to avoid reductionism. Depending on the kind of path that is followed when reading, one can go from optimism (utopia) to tragedy (dystopia) or simply from diagnosis to (possible) reaction. The reading is tailored to the liking of the reader. There are no recipes or doctrines that can be installed as easily as an update in one's operating system. The ultimate objective is to reflect from a critical and open perspective on the consequences of the widespread use of technologies and their impact on the new forms of power and control in today's society.

1. THE GAPS AND ASYMMETRIES DIVERSIFY

- When «we choose not to choose» (or when others choose for us)
- Is the Internet the source of eternal youth?
- Free service... Just click on «Accept»
- Irresistible design
- If attention is distributed, it is also diluted
- Conclusions: Turn off your phone, turn on your life

> **I believe that we will soon be so saturated with the virtual, that many will want to return to face-to-face.**
>
> Michikazu Taneda, 2018[1]

The advent of different means of communication gave rise to a variety of ways to classify individuals according to their ability or inability to be part of a certain technological revolution. This phenomenon occurred with the appearance of radio, television, faxes, etc. Those who had both the means and the opportunity to access the use of any of these instruments in their earliest days must have been considered privileged people and very likely to be envied by their closest circles, However, as the number of people accessing these devices has increased, in addition to the greater possibility of having one or more of these devices, the prestige (or acquired power) that the early owners had become diluted.

During the early years of the digital age – probably during the early decades, from the appearance of the first personal computer to the rise of the Internet – this distinction between privileged and underprivileged must have been quite similar to that described about the preceding technologies. In addition, the term «digital divide» was coined; it establishes a clear classification between those who have access to digital devices and content and those who do not. This new form of social segregation that distinguishes between the info-rich and the info-poor lingers to this day. However, as we will see, these divides have evolved significantly.

Since the appearance in the 1990s of the Internet as we know it, having computers and connectivity has been considered a sine qua non for – at the very least – access to the so-called knowledge society. In order words, in order to be beneficiaries of the opportunities opening up in this (not so) new post-industrial paradigm, it is essential to have at least one device as well as access to the network. This is what has led to a large number of public policies through which states seek to ensure that these minimum conditions are met as a basic requirement to facilitate the generation of new opportunities

and, at the same time, prevent this paradigm shift from generating (or exacerbating) various forms of segregation. While the reduction of this gap has been much more evident in high-income countries, it is a fact that access to the Internet and devices has increased at an unpredictable rate in almost all regions of the globe. However, this doesn´t mean we don't still have a long way to go.

In 2018, half of the world's population was connected online. However, this statistical detail can be read the other way round: half the world was still offline (20 years after the creation of the World Wide Web).[2]

So far, the number of people who have access to technological devices and – especially – connectivity have determined the common denominator. That is why, in last decade, we talked about one-to-one policies (for instance, one laptop per child), in which what mattered was the people/technologies relationship (e.g. connectivity level or the number of digital devices per household). But that is not enough anymore. Today, even citizens of low-income countries or people from low and very low socio-economic contexts may have access to devices and some forms of connectivity. But, as the reader will have to imagine, this does not entail an end to the segregations the knowledge society has established. On the contrary, all it does is transfer the categories of inclusion and exclusion to other dimensions.

This statistical detail can be read the other way round: half the world was still offline.

1. Michikazu Taneda, «Mejor que innovar es repetir con estilo propio», *La Vanguardia*, 24 June 2018, https://www.lavanguardia.com/lacontra/20180625/45382236892/mejor-que-innovar-es-repetir-con-estilo-propio.html.
2. Spotlight on, «Box - Half of humanity is NOT online», 2018. https://www.2030spotlight.org/en/book/1730/chapter/box-half-humanity-not-online.

When «we choose not to choose» (or when others choose for us)

What matters today is not only whether a person has access to devices or connectivity but also what that person can do when connected. In other words, in what way can an individual take advantage of these instruments to amplify his or her abilities, develop new skills, or generate new opportunities for his or her own benefit or that of the community? The capacities that are valued have been evolving over time along these lines as well. At an early stage, the main asset was the ability to know how to use basic office automation and communication software and, later on, the possibility of producing contents and sharing them on digital social spaces (social networks, web 2.0). Simultaneously, it also expanded to include the development of skills related to managing one's digital identity and citizens in line with the new spaces and dynamics the Internet offered.

All the capabilities and skills described here remain valuable, but they are evidently not enough anymore. It would be naive to suggest that instrumental capacities are sufficient today. Since the new technologies are an object in flux, it is evident that the associated capabilities must also evolve. Nowadays, users are expected to have a better understanding of what happens with their data. Similarly, it is essential for Internet users to understand to what extent their decisions are more or less influenced by a set of algorithms that adjust «reality» based on certain interests.

Nobody expects every citizen to become an expert in computer systems, but the Internet, which plays an increasingly prominent role in our lives, should stop being a black box and should instead offer more transparent protocols and practices in relation to what happens with our information. All these aspects make it much more complex nowadays to measure, understand and come up with actions to reduce a digital divide that, as we have noted, does not end with access to the devices, but is determined by the kinds of

uses that are made of and on the Internet. Assuming that this is an issue for technicians and the public has no say in this regard, as Sunstein said, it means that we are «choosing not to choose» (or that somebody else is choosing for us).

When a grandchild receives the call from his grandmother asking him for assistance in configuring the remote control of her TV set or WhatsApp on her smartphones, the relationship between authority and power is redefined. This redefinition occurs within a family as well as in the relationship between governing bodies and technology companies. Digital technologies have been platforms of the disintermediation and resignification of the relationships between authority and power.

This process of redefining relationships also gives rise to increasing asymmetries of power. History involves many moments of asymmetries of power. In the Middle Ages, for instance, monk-scribes had the knowledge and skills to transcribe a book. Finkelstein and McCleery[3] offered this explanation:

Digital technologies have been platforms of the disintermediation and resignification of the relationships between authority and power.

Through to and even well past the 1500s (when mechanical printing comes into play), writing and knowledge of it was confined to the elite social groupings of society – the court, the law, the laity, monks, and priests. The rise of regional power bases with formal political structures required individuals who could interpret written codes: the decoder, the scribe, whose role in official circles of recording, deciphering, and disseminating information grew and developed so as to become the ears, eyes, and voices of rulers and the political elite. Such access gave them power. (...) In this context, Western European manuscript and textual production was undertaken with the assumption that few could read the results, but that many more would end up hearing them.

3. David Finkelstein and Alistair McCleery, *Introduction to book history* (Routledge, 2012).

This generated an evident relationship of power and dependence between those who could write books and were able to read them and those who had to adhere to listening to books read by somebody else because they were illiterate. Although the advent of the printing press was a turning point, it was several centuries before a significant segment of the world's population of could read and write.

Will something similar happen today in digital spaces in the relationship between those who program the algorithms and those who use them? A reductionist vision of Internet-related uses and consumptions could lead us to believe that those individuals who use many digital services in their daily lives (various applications and digital tools) are advanced users. Along the lines of the metaphor above, intensive users («smartphone zombies») of these tools are simply people who read or listen to what others read. But there is a dependence on these services or, even worse, ignorance about how the decisions made by those who design or write the code of these devices influence the way we think and act. When «we choose not to choose», we choose to give up some of our autonomy to third parties.

Thinking that this technical dependence is part of reality and cannot be changed is to assume that we live in a sort of pseudo digital Middle Ages. Under this assumption, there would be at least two social castes: the digital scribes (code creators, regulators, producers and intermediaries of digital content and services) and the data vassals. The caste of the enlightened (read digital scribes, today known as geeks) has the powers (skills) to generate commercial platforms, regulate and manage their services to serve the interests of a few. Meanwhile, the other caste would be in a sort of data vassalage (i.e. any kind of servitude that has an imbalanced relationship with the higher caste). In this case, the vassalage – a metaphor that embodies a form of information vulnerability – is illustrated by the delivery (conscious or otherwise) of raw material (e.g. private data) that others (experts) then exploit and market in an «extractive» economy.

It is not necessary for a citizen to learn everything about the mechanics of a vehicle to know

how much a certain car pollutes. Similarly, it is not necessary to be a food engineer to identify what products are healthier than others. In both cases, the authorities establish codes, protocols and guidelines to guide consumer decisions. The Internet today is more than 20 years old, and it's been more than 10 years since the appearance of the first iPhone and the creation of Facebook. However, there are still not enough tools to guide the public on what digital services are the most recommendable and how they compare with other services. The best way to break relationships of dependence and ignorance is to strive for transparency in information and more comprehensive education at the service of citizens. It is necessary to secure the conditions that will give citizens more tools to make better decisions by offering them reliable information while developing knowledge and skills related to these topics, such as computational thinking, critical digital literacy, data or networking literacy, among other skills described below. These literacies seek to complement or have a dialogue with others of a more instrumental nature (e.g. computer or technology literacy).

Thinking that this technical dependence is part of reality and cannot be changed is to assume that we live in a sort of pseudo digital Middle Ages.

Today, anyone who uses a means of communication is exposed to false stories for propaganda or manipulation purposes (fake news, hoaxes, etc.). There have always been fake news stories, but the difference at present is that with technological tools, such stories can be adapted to specific individuals, because it is possible to know the psychological profile, prejudices and fears of a particular individual in much more detail.[4] The asymmetries of power that we see in today's society are not determined by whether or not we are exposed to these problems. Rather, they are determined based on whether or not

4. Andrew Anthony, «Yuval Noah Harari: "The Idea of Free Information Is Extremely Dangerous"», *The Guardian*, 5 August 2018, sec. Culture, http://www.theguardian.com/culture/2018/aug/05/yuval-noah-harari-free-information-extremely-dangerous-interview-21-lessons.

we have the skills or tools to identify, recognise or react to them.

«Critical capability» is a meta-skill or the ability to analyse complex environments, contrast them and be able to reflect independently in different contexts. This does not mean resisting change; instead, it means adapting to changes in a reflective way. This capacity for critical adaptation is what distinguishes Homo sapiens from other species through natural selection. Another necessary skill for a society in transition is going beyond awareness of the information (texts, facts and data) to develop the ability to understand the «what» and the «why», as well as their contexts and relationships. Which of these skills can be taught effectively through different training systems (traditional and non-traditional)? What skills will be the hardest to teach on a large scale? Will alternative mechanisms emerge to promote and/or recognise the critical digital literacy that seems so necessary today?

Although collective intelligence and collaboration can be important tools for reducing the effects of fake news, education is still the best tool to prepare people to function in highly complex environments. It is an asset to have citizens with tools, but a critical point is for them to acquire the necessary skills to be able to distinguish false news or contents from those that are not. Although having these skills is no guarantee that no mistakes will be made, it is important to understand that the distinction between having or not having these capabilities ends up defining two strata within the current digital divide. The difference lies between those who are in a position to critically analyse the sources, filter the content for accuracy and discard unreliable information and those who are not. This digital divide is less instrumental and attaches greater importance to the cognitive dimension (see «critical digital literacy»).

Is the Internet the source of eternal youth?

Power relations are also embodied in the profiles of certain people. If one takes account of the digital Mecca, Silicon Valley, for instance, the most prominent individuals in the current age are stigmatised according to their characteristics: male, young, Caucasian, with advanced studies, middle or high income, living in urban centres and with access to technology. While the concept of youth can be something flexible depending on culture, the reality is that the sociodemographic characteristics described represent the stereotype of people who are at the heart of digital society (Steve Jobs of Apple or Bill Gates of Microsoft in the early days of office automation, or Mark Zuckerberg of Facebook and Elon Musk from Tesla today). This profile is quite close to those who lead the main technology companies of our time. In the United States, for example, the average age of workers is 42 years old, but it is 28 and 29 in the cases of Facebook and Google employees, respectively.[5]

Therefore, there is a latent reading that suggests that being young is fashionable in the digital age. This is a reality that advertising companies have managed to exploit tirelessly over the past few decades. The discourse of creative young people who were born into and live in a completely digital world is a topic of abiding interest. New discourses constantly appear that analyse what the current generation of young people (Millennials) is like or what the future will be like (Generation Z).

Similarly, when Silicon Valley is discussed or analysed in the media, it seems that young people are the only protagonists. The developers of some of the most important applications– with a central position in the stock market today – they are usually young people, too. This youth factor coupled with their leading digital role is not

5. John Naughton, «Magical Thinking about Machine Learning Won't Bring the Reality of AI Any Closer | John Naughton», *The Guardian*, 5 August 2018, sec. Opinion, https://www.theguardian.com/commentisfree/2018/aug/05/magical-thinking-about-machine-learning-will-not-bring-artificial-intelligence-any-closer.

negative in itself (and it also accounts for how young people have gained a position of power that they did not previously have). However, there is also another dimension that should be considered: in the digital age, those who are not young seem to inherit, explicitly or implicitly, a status as second-class citizens.

For some, age generates divides. To a greater or lesser extent, those who are not so young can be marginalised or at least not feel included (of equal consequence) in this so-called digital revolution. Rather than seeking to defend older people to the detriment of other age groups, the aim is to emphasise how the relationships between power and influence are redefined. When adults or older people turn to younger people for help or technical assistance, and think about what that interaction was a century ago, we are likely to see how the circles of influence have been redefined.

Does this mean that people who are over 35 or 40 are not part of the digital age? Although this depends on the specific contexts, what we see is that as the extent of Internet use has increased, so has the age of Internet users. For example, the percentage of US adults over 65 who use the Internet increased from 14% in 2000 to 66% in 2018.[6]

Let us think for a moment about the voices that warn us about the emergence of artificial intelligence—those that caution that robots will take our jobs and that their expansion will have a strong impact on the future of work. According to this view, those older workers are also likely to be in a situation of greater vulnerability, since they would theoretically find it more difficult to adapt to the changes. A quick analysis would therefore make us think that the more time goes by, the further we will be from the opportunities digital society offers.

It seems important to take account of the fact that the forms of exclusion are also cumulative and strengthen each other. If a person is not only over 50 or 60 years old but also lacks knowledge of the use of digital technologies (either instrumental use or the ability to perform a

6. Pew Research Center, «Internet/Broadband Fact Sheet», *Pew Research Center: Internet, Science & Tech* (blog), 2018, http://www.pewinternet.org/fact-sheet/internet-broadband/.

critical analysis of the risks of privacy or manipulation) and is unable to understand or create an algorithm, then they are twice or three times more likely to occupy a peripheral or marginal position within the knowledge society.

As such, it seems appropriate to remember that the demographics of global society are changing, which the World Health Organization has noted. In other words, the population is living much longer than they were 50 or 100 years ago. In the same way, the life expectancies of the population at the end of this century will also be different from today's expectancies. It is expected that the population will have to work for more years of their lives. Similarly, they will have to be in a continuous process of lifelong learning and keeping themselves updated, and this will also include a set of technological and cognitive skills for individuals who want to remain relevant. It is difficult to calculate how this power asymmetry between young and old can change in the course of this century, but we can be sure that this age gap scenario will be exposed to new tensions and complexities.

Another equally latent asymmetry lies in equal opportunities for girls and women to be part of the digital revolution. The 2015 World Economic Forum estimated that global gender parity, or the economic and social equality of the sexes, would take at least 177 years.[7] This reality is not limited to economic activities, and technologies are not neutral on gender issues. Gender gaps on the Internet and access to smartphones are difficult to measure due to the lack of data, especially in low-income countries. However, research conducted in developing countries has indicated that women are almost 50% less likely to access the Internet than men from the same communities. Moreover, women are 1.6 times more likely than men to declare that the lack of digital skills is a barrier to using the Internet.[8]

According to the National Centre for Women and Information Technology, in the United States,

7. World Economic Forum, «The Global Gender Gap Index 2015», World Economic Forum, 2015, http://wef.ch/1Mkpfot.
8. «Women's Rights Online: Translating Access into Empowerment», World Wide Web Foundation, 2015, https://webfoundation.org/research/womens-rights-online-2015/.

women accounted for only 25% of all «professional computer technology» jobs in 2015. At Facebook, Google and Apple, only 17%, 19% and 23% of their technology staff are women, respectively.[9] The lack of equality in access to ICTs is a key concern in the field of human rights in many countries. Almost four billion people around the world have no access to the Internet; most of them are women and girls. This digital divide exacerbates the inequalities that exist outside digital spaces. [10]

If we take these data into account, men are much more likely to access the Internet than women, which generates a digital gender gap. [11] The proportion of women who use the Internet is 12% lower than the proportion of men. This gender gap rises to 33% in less developed countries. Achieving gender equality is necessary not only for economic reasons, but because it is also an obligation to guarantee a balanced set of opportunities. [12]

Many of the power asymmetries described here can be explained even through the spaces where technology is created today. When analysing different «unicorn» companies in Silicon Valley (start-ups valued at over $1 billion), as well as technology companies in other cities of the world, one finds a culture that systematically excludes those who are not young, white and male, as Wachter-Boettcher noted.[13]

9. John Boitnott, «30 Inspirational Women to Watch in Tech in 2017», Inc.com, 28 March 2017, https://www.inc.com/john-boitnott/30-inspirational-women-to-watch-in-tech-2017.html.
10. Nanjira Sambuli, «Africa's Offline Gender Gap Is Getting Repeated Online», SciDev.Net, 2018, https://www.scidev.net/index.cfm?originalUrl=/global/icts/opinion/africa-s-offline-gender-gap-is-getting-repeated-online.html.
11. Web Foundation, «Measuring the Digital Divide: Why We Should Be Using a Women-Centered Analysis», World Wide Web Foundation, 2018, https://webfoundation.org/2018/05/measuring-the-digital-divide-why-we-should-be-using-a-women-centered-analysis/.
12. Bhaskar Chakravorti, «There's a Gender Gap in Internet Usage. Closing It Would Open Up Opportunities for Everyone», Harvard Business Review, 12 December 2017, https://hbr.org/2017/12/theres-a-gender-gap-in-internet-usage-closing-it-would-open-up-opportunities-for-everyone.
13. Sara Wachter-Boettcher, *Technically Wrong: Sexist Apps, Biased Algorithms, and Other Threats of Toxic Tech*, vol. New York (W. W. Norton & Company, 2017).

Free service... Just click on «Accept»

A decade ago, Anderson (2009)[14] celebrated the Internet's principles of free service. In his work, the author suggested that all or almost all the Internet could have zero or almost zero cost. To substantiate his argument, he described four different categories of free Internet models:

- Direct cross-subsidies: An individual gets something for free by paying for another product or service. The products and the price are set at zero (or almost) so that the other products are more attractive. By paying for one, a person gets another. The price is hidden here or one is expected to buy something else.
- The three-party market: One party offers a product or service, a second party receives it and a third party subsidises the benefit received. The third party provides funding through advertising and pays to participate in a market created by a «free» exchange between the first two parties. The main cost is presented as non-existent, but the attention of the audience (or their data) is «sold». It is the most common model.
- Freemium: Some people subsidise all others. For each user who pays for the premium version of the site or service, 19 others get the basic version for free. Today, there are different streaming content and digital communications services based on this model.
- Non-monetary market: This is an economy of gifts (donations or contributions). People give something away in exchange for non-monetary rewards. It includes a range of possibilities, from reputation or attention to less measurable factors such as the possibility of expression, influence, visibility, leadership and interest itself. Time, work and/or resources are donated.

14. Chris Anderson, *Free: The future of a radical price* (Random House, 2009).

While there are examples of each of these categories, the advertising model («three-party market») is the most prominent on today's Internet. A significant number of the services offered on the Internet are not funded by an economic transaction between the service provider and the final consumer; they are actually subsidy models. Apparently, no money changes hands, but there are other forms of compensation that benefit either the provider or the party who exploits the data emerging from the attention or traffic generated.

This model is not exclusive to the digital environment. Almost a century ago, there were already forerunners of this with radio or print advertising; later on, it was apparent it in advertisements on free-to-air television. However, when we think about how audience data were used in the examples of radio, television and the press versus how they are used today in the age of big data, the old days look like a fairy tale as opposed to the current scenario.

Today, the increase in the number of data collection points seems to have no limit. At any time and place, unbeknownst to the user, data are being collected on their behaviour, their interactions, their movements, their consumption, etc. There is no doubt that social networks and search engines are tireless collectors of data on our online lives. Additionally, the generation of data is practically ubiquitous. They are generated anywhere, at any time. The only requirement for it to occur is the user's connection to a computer, a smartphone or any other device that generates or consumes data (e.g. GPS, sensors, smart speakers or smart watches). The other factor that becomes the differentiating element is the substantial integration and processing capacity of the different sources of information, which generate powerful ways of monitoring and influencing (if not modifying) our behaviours.

Therefore, it is evident that what is free is actually not; it only seems to be. As a result of ignorance or the «I choose not to choose» attitude, we relinquish our information, and – along with it – our privacy, secrets and more. Those who lack the necessary knowledge are left at a disadvantage and, to a certain extent, are dependent, as described in the section on digital vassals.

1. THE GAPS AND ASYMMETRIES DIVERSIFY

The Internet honeymoon is over. The values attributed to the Internet have evolved over time. Instead of thinking that Facebook, Google or YouTube offer «free» services, it would be more appropriate to ask ourselves this question: At what cost do we give our information? The paradigm of free (nothing «free» is for free; everything has a price, and someone always pays it) embodies the false premise under which individuals give up their fingerprints in exchange for digital services under a guise of pseudo-free. It is also important to come to terms with the fact that this relationship generates significant responsibility on the part of citizens, since one of the ways to break the current duality of being users of digital services and while simultaneously being used by these same services. If we are willing to pay for high quality food, clothes and cars, why don't we apply the same premise to high quality information? Moreover, who is willing to change the rules of the game?

Lanier,[15] a highly respected voice in the technological world, has explained that almost everything

Today in the age of big data, the old days look like a fairy tale as opposed to the current scenario.

on the Internet is free (i.e. only companies pay to sell ads). Then, as technology improves steadily, computers become more powerful and economical, and they have greater data-processing capabilities. What began as forms of mass advertising has evolved into hyper-segmented strategies for information not only for advertising but also on the contents and stimuli found on the Internet. Today, users are monitored on their devices and receive targeted stimuli as part of mass behaviour modification schemes.

Privacy is scarce or increasingly less available. Online users can hardly aspire to total privacy in digital spaces. It is true that contact with all digital channels and associated services (banking, health, education, transport, entertainment) can be interrupted, but the cost would

15. Noah Kulwin, «Jaron Lanier Q&A: `One Has This Feeling of Having Contributed to Something That's Gone Very Wrong'», Select All, 2018. http://nymag.com/selectall/2018/04/jaron-lanier-interview-on-what-went-wrong-with-the-internet.html.

It is true that contact with all digital channels and associated services (banking, health, education, transport, entertainment) can be interrupted, but the cost would be very high.

be very high. For an average individual, it is obviously not easy to discontinue using search engines, smartphones or any other type of online communication or information platform on which her or his data are exposed to third party uses. There is an imposed or self-imposed pseudo-dependence, which is difficult to put to an end. Asymmetry is what defines the current scenario. According to Stallman, the problem is that these companies are collecting data about us. We shouldn't let them do it, since the data that are collected will be used in an abusive way. It is not an absolute certainty, but it is a practical extreme probability, which is enough to make data collection a serious problem.[16]

However, acting alone in the face of these dilemmas is not the right track to take. For instance, if an individual seeks to assert the protection of his data from a large telecommunications company, it would resemble the figure of David (the citizen in his solitary individuality) against the digital Goliath (the multinationals, either acting severally or as a conglomerate). The «Terms and Conditions» established by technology companies are a clear example of the current black box that today's Internet represents. They are written as lengthy texts with sophisticated jargon and, thus, are highly complex and incomprehensible to the vast majority of people, who often don´t even bother to thoroughly read them.

Regarding the length of companies' terms and conditions, we found the following when we reviewed those of GAFAM (Google, Apple, Facebook, Amazon and Microsoft). Google's [17] contract contains 2,200 words and Amazon's [18] contains 7,300, while Facebook's[19] includes more than 15,000 (it is broken down into different pages). In addition, the terms and conditions of Apple iTunes[20] have more than 8,600 words. This adds up to more than 30,000

words, which is like reading the equivalent of a third of Orwell's novel 1984.

McDonald and Cranor[21] compared the length of the privacy policies [22] of the 75 most popular websites, which at the time turned out to be 2,514 words. If users had to read the privacy policies on each website they visit, they would spend 25 days of the year just reading the privacy policies. Inevitably, these complex terms and conditions constitute a readability barrier and also – indirectly – a trust barrier to these online service providers. Once again, this puts users in a situation of clear asymmetry, so they end up «choosing not to choose» and decide to trust the companies or resign themselves to relinquishing their personal data into the hands of these digital operators.

16. Noah Kulwin, «F*ck Them. We Need a Law': A Legendary Programmer Takes on Silicon Valley», Select All, 2018, http://nymag.com/intelligencer/2018/04/richard-stallman-rms-on-privacy-data-and-free-software.html.
17. Google, «Condiciones de servicio de Google - Privacidad y Condiciones - Google», undated, https://policies.google.com/terms?hl=es#toc-about.
18. Amazon, «Amazon.es Ayuda: Condiciones de Uso and Venta», 2018, https://www.amazon.es/gp/help/customer/display.html?nodeId=200545940.
19. Facebook, «Políticas de Facebook», Facebook, 2018, https://www.facebook.com/policies?ref=pf.
20. Apple, «Legal - Apple Media Services - Apple», Apple Legal, 2018, https://www.apple.com/legal/internet-services/itunes/es/terms.html.
21. Aleecia M. McDonald and Lorrie Faith Cranor, «The Cost of Reading Privacy Policies», *ISJLP* 4, n.º 543 (2008): 22.
22. Alexis Madrigal, «Reading the Privacy Policies You Encounter in a Year Would Take 76 Work Days - The Atlantic», *The Atlantic*, 2012, https://www.theatlantic.com/technology/archive/2012/03/reading-the-privacy-policies-you-encounter-in-a-year-would-take-76-work-days/253851/.

Irresistible design

Like many other technologies, smartphones at first seemed to be luxurious, sophisticated, almost unnecessary items that were mostly used by high-income segments to clinch deals while playing golf. However, this scenario changed over a very short time. Today, the total number of mobile lines exceeds the number of inhabitants on the planet.[23] Similarly, the social value of the smartphones was also transformed extremely quickly for both high-end and low-end devices. Socioeconomic segments increasingly have access to smartphones.

Although mass access to technology can be positive and offers opportunities or possible benefits to its users, there are side effects that give rise to new gaps. Perhaps one of the aspects that has attracted the most attention from the scientific community is the consequences of ever-increasing exposure to telephone devices. Recent research has identified a correlation (not causality) between intensive uses of these devices and vulnerability, especially among minors (anxiety, depression, loneliness, etc.).

In addition, research has shown how the frequent use of digital devices and the Internet raise the levels of dopamine (a neurotransmitter) in the nervous systems of users, which significantly stimulates their sense of anxiety or constant alertness. Dopamine manages the sensation of reward in the brain, which is why it is known as the «happiness molecule». It is released after certain actions or behaviours. Moreover, neuroscientist Daniel Levitin noted that multitasking creates a dopamine-addiction feedback loop that rewards the brain for losing focus and for constantly seeking external stimulation. The prefrontal cortex has a novelty bias, which means that something new can easily hijack its attention.[24] Other recent research has highlighted the significant

23. ITU, «Statistics», ITU Committed to connecting the world, 2018, https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx.

correlation between changes in plasma dopamine levels and weekly online time. [25, 26,27]

In his book *Irresistible*,[28] Alter articulated that mere dependence on a substance or behaviour is not enough for a diagnosis of addiction. In addition, he warned that Internet abuse is different from addiction to other substances because although an individual can recover, it is virtually impossible to go back into society without using the Internet again. Although Internet addiction has generated increased interest and has been widely researched by neuroscientists, the results achieved to date do not seem entirely conclusive.

When I first read Haruki Murakami's[29] comment, «Cell phones are so convenient that they are an inconvenience», it came across as an oxymoron. However, I later concluded that there was a good deal of lucidity in his words. The convenience and practicality of these pocket devices transformed a significant part of the practices and behaviours in mod ern life.

B. J. Fogg founded the Persuasive Technology Lab[30] at Stanford University in 1998. The former

24. Daniel Levitin, «Why the modern world is bad for your brain», *The Guardian*, 2018, https://www.theguardian.com/science/2015/jan/18/modern-world-bad-for-brain-daniel-j-levitin-organized-mind-information-overload
25. Min Liu and Jianghong Luo, «Relationship between peripheral blood dopamine level and internet addiction disorder in adolescents: a pilot study», *International Journal of Clinical and Experimental Medicine* 8, n.º 6 (15 June 2015): 9943-48, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4538113/
26. Christian Montag *et al.*, «An Affective Neuroscience Framework for the Molecular Study of Internet Addiction», *Frontiers in Psychology* 7 (16 December 2016), https://www.frontiersin.org/articles/10.3389/fpsyg.2016.01906/full
27. Matthias Brand, Kimberly S. Young and Christian Laier, «Prefrontal Control and Internet Addiction: A Theoretical Model and Review of Neuropsychological and Neuroimaging Findings», *Frontiers in Human Neuroscience* 8 (2014), https://doi.org/10.3389/fnhum.2014.00375.
28. Adam Alter, *Irresistible: The rise of addictive technology and the business of keeping us hooked* (Penguin, 2017).
29. Haruki Murakami, «Cell Phones Are so Convenient That They're an Inconvenience». Tweet, *@_harukimurakami* (blog), 3 September 2014, https://twitter.com/_harukimurakami/status/507323138397315072.

students of this lab are currently working for Facebook, Instagram, Uber and Google. Fogg developed a psychological model that combined three factors to generate certain user behaviours through the use of digital devices: a trigger, motivation and ability. In order to understand this model, Facebook photos can serve as an example: A Facebook user receives a notification that she has been tagged in a photo (trigger element). She wants to make sure she looks good in the picture (motivation) and can quickly check the photo on her smartphones (ability).[31] Persuasion is not only automatic but also replicable as many times as one likes.

As Sean Parker, co-founder of Napster and the first president of Facebook famously stated, «God only knows what [Facebook] is doing to our children's brains». This social network is a service fundamentally designed to capture as much attention as possible without taking account of the consequences of its use. He and other people involved in the nascent social network sought to respond to this question: «How do we consume as much of [the users'] time and conscious attention as possible?» Parker added that Facebook is «exploiting» human psychology on purpose to keep users engaged in a «permanent social-validation feedback loop».[32] This social network, like other digital companies, designs its products by adjusting them and readjusting them until they make it practically impossible to resist them.

Is there, then, a redefinition of the power relation between a subject and an object? Although this topic has been widely discussed in the scientific community, there is no consensus on whether the use of the telephone may or may not result in some type of dependence or addiction. However, the use of video games has recently been characterised as a new condition that can cause alterations in mental health. In this regard, in 2018, the World Health Organization (WHO) recognised «gaming disorder» as

30. B. J. Fogg, «Persuasive Technology: Using Computers to Change What We Think and Do», *Ubiquity* 2002, n.º December (December 2002), https://doi.org/10.1145/764008.763957.

31. Nitasha Tiku, «Everything You Need To Know About Your Smartphone Addiction», *Wired*, 18 Abril 2018, https://www.wired.com/story/wired-guide-to-internet-addiction/.

an inability to stop gaming. This addictive behaviour disorder was also included in the 11th International Classification of Diseases (ICD in English).[33] According to the evidence, this health problem requires monitoring through the ICD; as a result of such monitoring, we now have better international frameworks to measure (and understand) those affected. The main symptoms are poor control over gaming (frequency, intensity and duration) and giving high priority to playing despite the negative consequences that this action may have. The hope is that with this WHO classification, new opportunities for more specialised services will be created, but, above all, this is a wakeup call for society to understand that this disorder can have profound consequences.

However, not all scientists agree on this matter. Some people say that recognising video game addiction as a mental disorder is still premature. In this sensitive field, it is evident that we must not reach hasty conclusions and that more research is fundamental. In any case, it is an alert that we should bear in mind.

«How do we consume as much of [the users'] time and conscious attention as possible?».

The use of smartphones spreads independently of the socioeconomic strata, ages and contexts of their users, but it is also expanding in terms of the number of hours of interaction with these devices. Several studies[34] have suggested that average use can range between 80 and 150 daily telephone consultations (and

32. Ellie Silverman, «Sean Parker: Facebook's founding president unloads on Facebook - *The Washington Post*», 2017, https://www.washingtonpost.com/news/the-switch/wp/2017/11/09/facebooks-first-president-on-facebook-god-only-knows-what-its-doing-to-our-childrens-brains.
33. WHO, «WHO | Gaming disorder», WHO, 2018. http://www.who.int/features/qa/gaming-disorder/en/.
34. Julia Naftulin, «Here's how many times we touch our phones every day», *Business Insider*, 2016, https://www.businessinsider.com/dscout-research-people-touch-cell-phones-2617-times-a-day-2016-7.

these are conservative figures compared to other studies). This implies between 30,000 and 50,000 consultations a year, which results in a significant number if multiplied by the time invested. Here, we could ask ourselves these questions: What can we do about smartphones now that we couldn't do before? And what things do we stop doing due to the intensive use of smartphones?

In North America, the statistics indicate that 46% of Americans say they couldn't live without their smartphones. Young people in particular are often accused of being too absorbed in their devices and online interactions, according to a Pew Research Centre study.[35]

Children and young people (but also adults) are spending more time than ever in front of their screens. This exposure is bound to have consequences or side effects, as the organisation Common Sense Media noted.[36] The arrival of the smartphone has changed many aspects of adolescent life.

Using data collected between 2010 and 2015 from more than 500,000 adolescents, Jean Twenge,[37] a professor of psychology at San Diego State University, found that the adolescents who spent the longest time on new media using Snapchat, Facebook or Instagram on their phones were more likely to identify with statements such as «The future often seems hopeless» and «I feel that I can't do anything right».[38] Twenge explained that today's teenagers are physically safer: they are less likely to be in a car accident and have less of a taste for alcohol and its attendant

35. Aaron Smith, «U.S. Smartphone Use in 2015», *Pew Research Center: Internet, Science & Tech* (blog), 1 April 2015, http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/.
36. Juana Summers, «Kids And Screen Time: What Does The Research Say?», NPR.org, 2014, https://www.npr.org/sections/ed/2014/08/28/343735856/kids-and-screen-time-what-does-the-research-say.
37. Jean M. Twenge, *IGen: Why Today's Super-Connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy-and Completely Unprepared for Adulthood-and What That Means for the Rest of Us*, 2nd Print edition (New York: Atria Books, 2017).
38. Jean M. Twenge, «Have Smartphones Destroyed a Generation?», *The Atlantic*, September 2017, https://www.theatlantic.com/magazine/archive/2017/09/has-the-smartphone-destroyed-a-generation/534198/.

ills than previous generations. However, they are psychologically more vulnerable, as shown in several studies that concluded that part of this deterioration can be traced to the use of their phones.

Twenge added that evidence indicates that young people's use of such devices are having profound effects on their lives and make them less happy. Specifically, teenagers who spend more time than average on screen activities tend to be unhappy. On the other hand, those who spend more time than the average on non-screen activities tend to identify with higher levels of happiness. For example, children who use a digital device just before bed have a higher risk of sleeping less or worse and are twice as likely to be sleepy the next day.

A group of researchers from the University of Korea (Seoul) conducted a study that used magnetic resonance spectroscopy (MRS) to analyse 19 adolescents who had been diagnosed with addiction to their smartphones or the Internet. The study found that the diagnosed adolescents had a correlation with symptoms associated with depression, anxiety, severe insomnia or impulsiveness.[39]

Another research study, carried out by Australian scientists,[40] analysed the effects of digital disconnection. The participants who avoided using Facebook for a week as part of the experiment reported feeling less depressed at the end of the week than those who continued using it

Those who spend more time than the average on non-screen activities tend to identify with higher levels of happiness.

39. Maureen Morley and Linda Brooks, «Smartphone Addiction Creates Imbalance in Brain», 2017, https://press.rsna.org/timssnet/media/pressreleases/14_pr_target.cfm?ID=1989.
40. Eric J. Vanman, Rosemary Baker and Stephanie J. Tobin, «The burden of online friends: the effects of giving up Facebook on stress and well-being», *The Journal of Social Psychology*, 2018, https://www.tandfonline.com/doi/abs/10.1080/00224545.2018.1453467?journalCode=vsoc20&https://www.uq.edu.au/news/article/2018/03/quitting-facebook-can-reduce-stress.

(although the subjects studied also noticed the negative consequences of this «withdrawal» from Facebook).[41]

Concern over these risks makes it seem necessary to implement quick, easy solutions and recommend a course of action. For instance, the American Academy of Pediatrics (AAP) has warned that children need to reduce their screen time. The AAP suggested that entertainment «screen time» should be limited to one hour per day for children aged two to five years old.[42]

Various studies have indicated that if screen time is not controlled, children are exposed to a number of negative effects ranging from childhood obesity,[43] irregular sleep patterns[44] and even social and/or behavioural problems.[45] These works highlighted the significance of implementing a healthy diet of media consumption.[46]

Although this «diet» looks reasonable, it seemingly does not tell the whole story. A team of scientists from the University of Oxford[47] analysed the effectiveness of the AAP's recommended screen

41. The University of Queensland, «Quitting Facebook Can Reduce Stress», UQ News, 2018, https://www.uq.edu.au/news/article/2018/03/quitting-facebook-can-reduce-stress.
42. American Academy of Pediatrics, «Children and Media Tips from the American Academy of Pediatrics», 2018, https://www.aap.org/en-us/about-the-aap/aap-press-room/news-features-and-safety-tips/Pages/Children-and-Media-Tips.aspx.
43. Harvard School of Public Health, «Television Watching and «Sit Time», Obesity Prevention Source, 21 October 2012, https://www.hsph.harvard.edu/obesity-prevention-source/obesity-causes/television-and-sedentary-behavior-and-obesity/
44. Screen-Free Week, «Campaign for a Commercial-Free Childhood NonProfit Center», *Screen-Free Week* (blog), 2014, https://www.screenfree.org/resources/.
45. Elizabeth Armstrong Moore, «Too much screen time bad for kids' behavior», CNet Interactive, 2010, https://www.cnet.com/g00/news/too-much-screen-time-bad-for-kids-behavior/?i10c.ua=1&i10c.encReferrer=&i10c.dv=11.
46. Juana Summers, «Kids And Screen Time: What Does The Research Say?», NPR.org, 2014, https://www.npr.org/sections/ed/2014/08/28/343735856/kids-and-screen-time-what-does-the-research-say.
47. University of Oxford, «Children's Screen-Time Guidelines Too Restrictive, According to New Research», 2017, http://www.ox.ac.uk/news/2017-12-14-children%E2%80%99s-screen-time-guidelines-too-restrictive-according-new-research.

time guidelines, which proposes a limit of one to two hours a day for using digital devices to ensure the psychological well-being of young children. To this end, a titanic consultation was undertaken with parents (approximately 20,000 telephone interviews), who commented on and assessed the relationship between the use of technology and the well-being of their children.

The findings of this study indicated that the broader family context, the way in which parents establish rules on screen time, and the fact that parents actively participate in the exploration of the digital world with their children turn out to be far more significant aspects than simply imposing a certain screen time on children's device use.[48]

It is necessary to leave behind the debate about the effect of generic technology use on well-being. Better research is needed to differentiate the kind of technologies people are using, who is using them, and how. [49]

48. Andrew K. Przybylski and Netta Weinstein, «Digital Screen Time Limits and Young Children's Psychological Well-Being: Evidence From a Population-Based Study», *Child Development* 0, n.o 0 (2017), https://doi.org/10.1111/cdev.13007.

49. González, Robbie, «Screens Might Be as Bad for Mental Health as... Potatoes. Wired, 14 January 2019. https://www.wired.com/story/screens-might-be-as-bad-for-mental-health-as-potatoes.

If attention is distributed, it is also diluted

The iPhone was introduced to the world for the first time in 2007. Ten years later, we seem to have more scientific tools to understand how this family of devices has influenced our habits.[50,51]

A study published by the University of Chicago involving almost 800 subjects investigated whether the mere fact of having a mobile nearby influenced the cognitive abilities (mathematical and memorisation exercises) of its user. The experiment involved splitting the participants into three groups and asking them to place their phones in front of them (face down on their desks), keep them in their pockets or bags, or leave them in another room. In each of the groups, the phones' sounds and vibration alerts were turned off (to avoid interruptions).

The findings were surprising. Those who completed the maths and memorisation exercises while their phones were in another room performed better than those who had left their phones in their pockets. In last place came those whose phones were in front of them, face down on their desks. Similar results were recorded when the phones were off. Participants performed worse when their phones were close by, and better when they were away (in a separate room). The study concluded that the mere presence of smartphones can negatively affect our ability to think and solve problems, even when we are not using these devices. This limitation also applies when we are not looking at them, as well as when they are face down and even when they are completely off. Attempts to block our attention towards these

50. Adrian F. Ward *et al.*, «Brain Drain: The Mere Presence of One's Own Smartphone Reduces Available Cognitive Capacity», *Journal of the Association for Consumer Research* 2, n.º 2 (1 April 2017): 140-54. https://doi.org/10.1086/691462.

51. Kristen Duke *et al.*, «Having Your Smartphone Nearby Takes a Toll on Your Thinking (Even When It's Silent and Facedown)», *Harvard Business Review*, 20 March 2018. https://hbr.org/2018/03/having-your-smartphone-nearby-takes-a-toll-on-your-thinking.

devices take a toll by distracting us or affecting our cognitive abilities. In other words, when we succeed in resisting the impulse to pick up our smartphones, we are actually affecting our own cognitive performance.

Participants performed worse when their phones were close by, and better when they were away.

Beyond the scientific perspective, many see the smartphones as a great distraction in formal education spaces. At different educational levels, the presence of the smartphones in recent years has been generating a series of difficulties that seem to disrupt the traditional classroom dynamics. (Similar examples are observed in the family context, in the workplace, while driving vehicles and when operating heavy machinery). Some defend the presence of the device in the classroom as a tool that offers new learning possibilities, while others condemn these devices and accuse them of being a constant source of disruption that adds little value to the learning experience. This divergence has led to the adoption of various strategies: in some cases, the decision is made to seize or ban phones before the students walk in, and in other cases, they are encouraged to use the device in class to promote project-based learning, exploration and collaboration.

There are those who argue that the contexts of formal education are a perfect space to learn to set limits (i.e. develop self-regulation strategies) and know when it is appropriate to use smartphones and when it is not. Others argue that it is not feasible for generations that have had access to indiscriminate use of smartphones from early childhood to give up using them during class time. While some defend them as devices that amplify capacities, others reject them because they inhibit or neutralise their users. As we can see, the views are quite diverse.

I was recently invited to visit an exemplary public high school in the south of Washington DC. The school was extraordinary for different reasons: it was located in the middle of a critical socioeconomic context; all

the children and almost all the teachers were Black; they had excellent teachers who were highly motivated to teach in that high school; and they had a remarkable track record of training in the pedagogical use of technologies and demonstrated it through thought-provoking practices of incorporating digital culture into learning processes. However, it was interesting to note that despite the significant openness to technology at that school, the students were not authorised to have their telephones on them during the entire school day, not even on their breaks. This apparent contradiction was highly effective in this American public school.

If the phone were just another tool, we could ask ourselves why people often go back home when they realise they left without their phone in their pocket. Whether it is a source of distraction, a prosthesis or an amplifier of skills, what is clear is that, in a short time, these devices have taken on a role – or we've succumbed to a dependence on them – that would have been hard to predict at the beginning of last decade.

The smartphones also generate new asymmetries that alter what had traditionally been the relations of authority between teachers and students as well as between parents and children. Since this is a relatively recent phenomenon, a large number of parents have no references to help them to deal with their children's overexposure to smartphones. Today's parents can conceivably use a computer or television as a reference; however, these technologies' similarities to a mobile phone are limited.

For example, research has shown that smartphones' projected light, such as LED (light emitting diodes), stimulates the nervous system. Thus, the scientific community has recommended taking the device away from children a few hours before bedtime. Even babies exposed to digital screens at night show a significantly shorter night sleep duration than those with no night-time screen exposure, and this is due to the blue screen light's suppression of endogenous melatonin,[52] which causes phone use during the night to correlate with higher levels of tiredness.[53] But not all parents are aware of such a suggestion, and, in this regard, it is strange that many

parents establish rules and conditions for their children's use of technology (e.g. not using the smartphones at mealtimes) to which they themselves rarely comply.

Strange as it may seem, the providers of digital services themselves are making more and more recommendations in order to raise awareness of the overexposure to technology and to promote the adoption of appropriate self-regulation measures. This seems to be a rather recent phenomenon that recalls the incorporation of increasingly shocking warning images on cigarette packets to point out the importance of moderate consumption and/or to discourage consumers from smoking.

These devices have taken on a role – or we've succumbed to a dependence on them – that would have been hard to predict at the beginning of last decade.

Although the examples above are related to mobile telephony, many of the cases are equally applicable to the consumption of social networks, music or film streaming services and video games, among others.[54] The gap here is not so much between those who have access to mobile devices and those who do not; rather, it involves those who have the skills to discriminate and regulate their use depending on the context and needs.

52. Jenny Radesky and Dimitri Christakis, «Media and Young Minds», *Pediatrics* 138, n.º 5 (1 November 2016): e20162591, https://doi.org/10.1542/peds.2016-2591.
53. Jan Van den Bulck, «Adolescent Use of Mobile Phones for Calling and for Sending Text Messages After Lights Out: Results from a Prospective Cohort Study with a One-Year Follow-Up», *Sleep* 30, n.o 9 (1 September 2007): 1220-23, https://doi.org/10.1093/sleep/30.9.1220.
54. Alter, *Irresistible: The rise of addictive technology and the business of keeping us hooked* (New York: Penguin Random House, 2017).

Conclusions: Turn off your phone, turn on your life

Digital technologies seem to increasingly pose as a distraction. Permanent noise affects perception and decreases our ability to make effective decisions. The process of «continuous partial attention» is the inability to focus one's attention on a certain task. Informational over-stimulation is a major cause of individuals' inability to focus.

Picture a downtown a cafe, where Clotilde, a student, is writing an essay for an important exam. Her capacity for cognitive control is impaired by the fact that she's exposed to incessant noises (e.g. sounds from the setting, notifications of new emails reaching her account), as well as other interferences (e.g. the operating system update message) that take a toll on her performance. As Gazzaley and Rosen[55] explained, Clotilde is suffering from interference, which manifests itself in two dimensions: distraction and interruption. Distractions cause her to lose her concentration as a result of an external stimulus (e.g. a waiter asking aloud who ordered a cappuccino, or her smartphones flashing lights on the screen, vibrating or ringing), or an internal stimulus (e.g. anxiety about not knowing whether she'll finish her essay on time). The interruption occurs when Clotilde tries to simultaneously perform a variety of tasks (multitasking), such as talking on the phone with a classmate while reading an email that includes information about the exam. She attempts to intersperse different tasks at the same time, with reduced effectiveness, and will eventually decide which task on which to focus her attention. She finds it hard to focus because she interrupts herself (for instance, she checks WhatsApp and her Instagram profile while using Facebook Messenger). Clotilde may not know, but suffering constant interruptions will result in her

55. Adam Gazzaley and Larry Rosen, *The Distracted Mind. Ancient Brains in a High-Tech World* (US: The MIT Press, 2016), http://mitpress.mit.edu/books/distracted-mind.

having to invest more time and effort in remembering what she was doing before she interrupted herself. This process of continual reconnection will have a negative impact on her productivity and attention.

Many parents establish rules and conditions for their children's use of technology to which they themselves rarely comply.

While technologies do not cause distracted minds, they do exacerbate the tension between wanting to reach complex goals and achieving cognitive self-control. This self-control grows when individuals learn to focus their attention, maximise their working memory and manage their abilities to meet their objectives. This implies, among other things, ignoring inconsequential information and all associated stimuli, in addition to learning and developing self-control skills that contribute to better adaptation in hyperstimulating environments (such as those of a phone full of apps).

As American poet Donald Hall commented, «Information is the enemy of intelligence». Along the same lines, the philosopher Daniel Innerarity,[56] referring to the excess of complexity, stated that our society is one of misinformation and ignorance. There is an increase in information in the digital age that is a very modest advance in our understanding of the world accompanies. According to Innerarity, gathering information can be a way to get rid of the uncomfortable task of thinking. In environments of information saturation, data and information should not be accumulated (something that machines do very well); rather, it should be sensibly organised making sense of it. It is believed that information is never harmful. If the premise is that information consumes attention, we can conclude that too much information translates into limited

56. Por Viaje a Ítaca, «Conferencia de Daniel Innerarity», Viaje a Ítaca, 21 November 2013, http://viajeaitaca.net/conferencia-de-daniel-innerarity/.

attention. An information overdose paralyses decision-making and, in many cases, the easiest solution is chosen, which is «we choose not to choose», and we prioritise speed over depth (a sort of «fast-food information»).

Throughout the history of humankind, different ways of generating asymmetries within societies have existed. To paraphrase Orwell, we are all equal, but there are some that are more equal than others. The knowledge society is clearly not an exception. The asymmetries do not disappear; instead, they change. However, a differential factor is that some of the inequalities of the current era mutate and are different from those observed in other eras.

On the one hand, there are still communities that have traditionally been in the periphery, and data vassals that have been in a position of heavy dependence (e.g. communities living in the rural sector, people with disabilities, ethnic minorities and the elderly). At the same time, new asymmetries have arisen. As stated, these asymmetries are not limited to access to technological devices; they are evident in the different types of skills associated with the use of technology (literacies for the use and exploitation of information and communication or the conscious use of data or means of communication). This scenario generates asymmetries and benefits certain segments of society, such as those that generate new technologies, regulations, data processing, intangible assets or other services offered online. As the power of big data and related processing tools are increasingly influencing society, we can see how new centres and new peripheries are emerging.

If the premise is that information consumes attention, we can conclude that too much information translates into limited attention.

It remains to be seen whether artificial intelligence will lead to the generation of new capabilities and services that can be incorporated into the world of work. If it does,

in the same way that potential benefits are predicted in terms of productivity, this will also have side effects, and it is not hard to imagine that these transformations will result in new gaps between those who can adapt to this emerging scenario and those who will stay in a position of dependence or marginality. Is it possible to take action towards this?

On the other hand, according to the above, the false «free» aspect that prevails on the Internet has resulted in «new» gaps between the so-called scribes and the digital vassals. For instance, a gap has developed between the types of skills and knowledge that different sectors of society possess. The generation of these asymmetries of power, although not new, are transferred or transformed as society evolves according to the production models and the types of prevailing technological paradigms. Today, in the age of big data, those who simply give their data to third parties are marginalised (data vassals) as opposed to those who become agents that process, manipulate and/or exploit these data (digital scribes).

The speed of change is such that the institutions that traditionally played a central role in the past (the State, the mass media, formal education or political parties) have had to give up their prominence to the new digital spaces where the citizenry congregates (for instance, streaming services, different edutainment platforms, and social networks, among other digital services increasingly attracting people's attention).

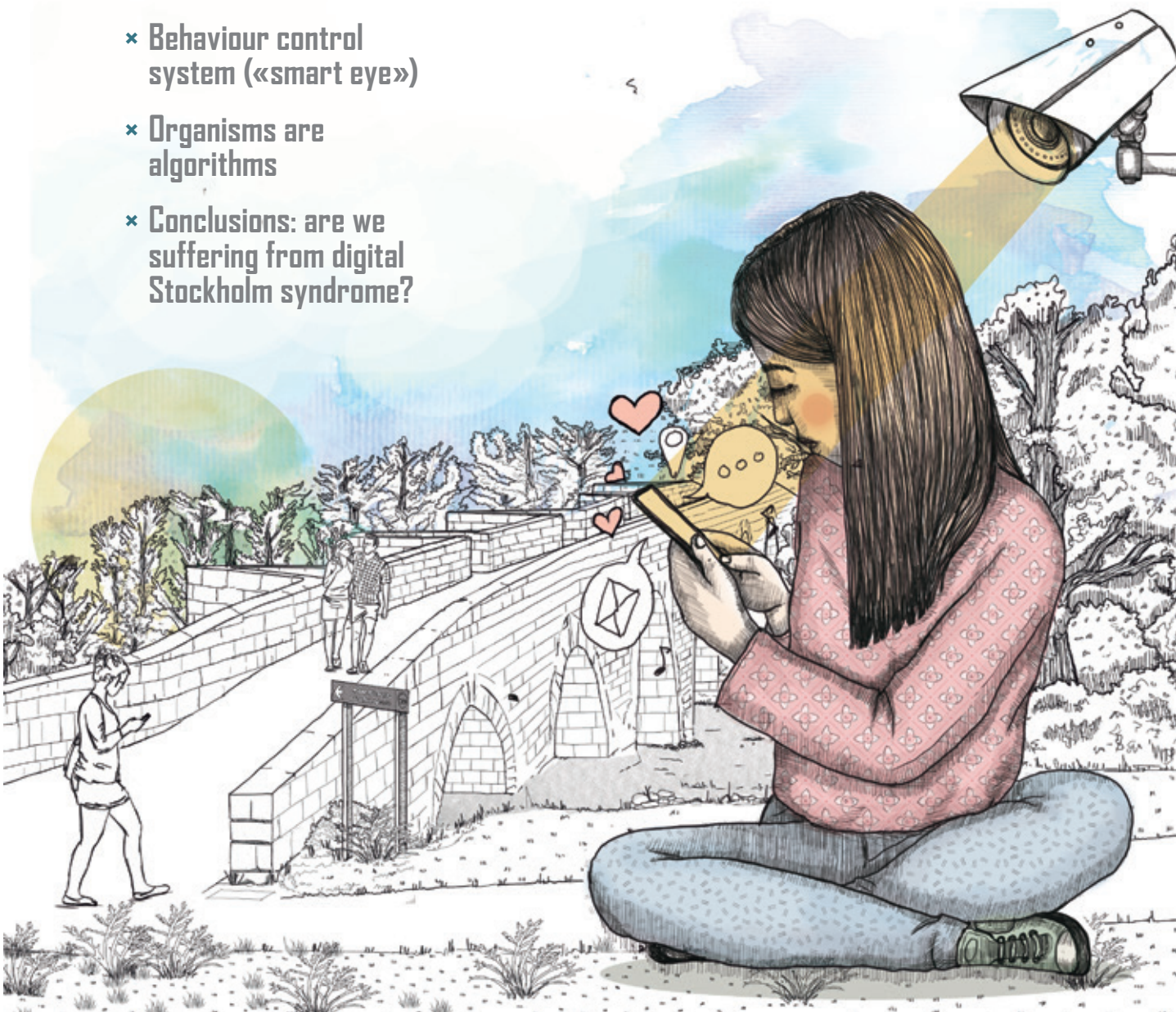
The current gaps arise during the transit from things to ideas. The current gaps, or at least many of them, go beyond access to the devices. They move to a more intangible or abstract level (changes in behaviour, development of skills and abilities, new literacies, production of new ideas, critical thinking, etc.). We will later explore how to think about actions to reduce these gaps.

One of the risks behind this perhaps subtle change (tacit rather than explicit) is to mistakenly believe that by merely having access to technology, Internet connection and basic digital skills, one is in a privileged position, when in fact

the opposite may occur. That is the case of many «smartphone zombies», who believe they are in a leading position because they have a YouTube channel or because they have thousands of followers, when in fact they are closer to being the object of consumption that is marketed in the current digital paradigm.

2. CHANGES IN THE WAYS OF EXERCISING POWER AND CONTROL

- Behaviour control system («smart eye»)
- Organisms are algorithms
- Conclusions: are we suffering from digital Stockholm syndrome?



> **Saying that you don't care about the right to privacy because you have nothing to hide is no different than saying you don't care about freedom of speech because you have nothing to say. It's a deeply anti-social principle because rights are not just individual, they're collective, and what may not have value to you today may have value to an entire population, an entire people, an entire way of life tomorrow.**
>
> Edward Snowden, 2018[1]

A «double agent» is a counterintelligence term for a member of a spy agency who ends up working for the rival organisation. This is essentially what one feels when wanting to access an online service and having to verify that he/she is not a robot. It's a sweet irony of the Internet. In a service that was created for people (in fact, it is called the «Internet of people»), humans today have to prove that we are not robots (bots or other software). For this purpose, it is necessary to perform a number of tasks, such as identifying images or recognising texts, for the benefit of the system itself.

This irony is repeated in digital environments. One should therefore wonder whether the Internet is a tool that is used to diversify forms of collaboration, participation and socialization or if it instead works as a control tool in the hands of a few. The answer is mostly likely not simple (or dichotomous), but everything suggests that the Internet works as a double agent, and that is why it is so important to make its role and its social implications transparent in order to understand its complexity and, at the same time, decide which side we are on and thus avoid ending up collaborating with the wrong side.

Something similar happens when we think about how the Internet contributes to democracy. To what extent has the Internet become a platform for consolidating the

1. Wikiquote, «Edward Snowden», 2018, https://en.wikiquote.org/wiki/Edward_Snowden.

dialogue and democratic exchange of a more global citizenry? It is impossible to know the number of existing platforms used for channelling the concerns and actions individuals and civil society organisations undertake for the common good. Today, they are already part of the digital ecosystem. Forms of collective organisation, channels of citizen expression, crowdfunding instruments, tools for collective narratives, voting and/or distributed content platforms are some of the examples of how citizens have made considerable headway on digital spaces.
These are all examples of one of the dimensions of this double technological agent. But enough has already been written on the rose-coloured Internet, and it is not necessarily what seems most suitable to reflect on at present.[2,3,4]

It is important to explore the other side of the coin, and we are going to use the rear-view mirror to do so before we look ahead. Both during the conflicts of the Second World War and – especially – in the Vietnam War, the atrocities of war and the military might of the states were indelibly captured in the headlines of newspapers around the world. Much of the capacity for intimidation was based on the power of pictures. Later on, with the advent of television, images of war entered into the living room of every home. Television broadcasted images of large numbers of tanks, skies full of planes or helicopters were to be part of the propaganda narrative at the time. However, that was not the end of the story. During the Cold War, the images were somewhat more abstract. While the press showed nuclear warheads from time to time, the complexity of the conflict between the two ways of understanding the world was not limited to the size of a given army. Much more

2. Cristóbal Cobo and Hugo Kuklinski, *Planeta Web 2.0. Inteligencia colectiva o medios fast food* (Barcelona/México DF: Grup de Recerca d'Interaccions Digitals, Universitat de Vic. Flacso México, 2007).
3. Cristóbal Cobo and John Moravec, *El aprendizaje invisible: Hacia una nueva ecología de la educación* (Barcelona: Universidad de Barcelona, 2011).
4. Cristóbal Cobo, *La Innovación Pendiente: Reflexiones (y Provocaciones) sobre educación, tecnología y conocimiento* (Montevideo: Penguin Random House, 2016).

emphasis was placed on the representations of power of those leading the American and Soviet superpowers (especially embodied by Ronald Reagan and Mikhail Gorbachev). Nuclear might, with an unimaginable destructive capability, was to become in itself a visually more abstract concept than that of previous conflicts.

Although appalling images of the conflicts of the second half of the 20th century have been released, the level of visual and media abstraction in these cases was greater. This process underwent another change at the turn of the century, since the start of the new XXI century was not without new war horrors (Iraq, Afghanistan, Syria, Yemen and Ukraine, among others).

With the expansion of the Internet, other kinds of war have also become prominent. Rather than being fought with ammunition and soldiers, these wars involve codes and programmers. The so-called cyber wars, which are quite frequent among the most powerful nations today, redefine our old visual perception of the idea of conflicts in an interesting way. In this case, the fighting is much more abstract, and the territories that are conquered are virtual. These aspects do not make them less important, but they are certainly different from yesteryear's clashes. Countries are allocating an increasing number of resources to the virtual defence of their respective digital sovereignties.

This transit from the trenches to the screen comes across as good metaphor for understanding how the forms of power have changed their interface.

In this new context, the powers and their allies share information and technology with each other and look for new ways to help and protect one another. All the forces at work are extremely similar to those of traditional wars. I don't mean to suggest that wars between different nations can be compared to cyber wars, but it is nevertheless interesting to note that we are moving towards more ambiguous or abstract forms of what we identify as wars (and power). For example, the theft or manipulation of data, cyber-attacks

and computer system plagiarism factors into the conflicts of the new reality that we are experiencing. As a reference, the current calculation for global cybercrimes (cyber-attacks, cyber-espionage, etc.) can cost the world almost 600 billion dollars, which is an estimated 0.8% of global GDP.[5] An example of these cybercrimes is observed in the country that first gave life to the Internet:

In the Russian cyber-attack on the 2016 election (between Democratic presidential candidate Hillary Clinton and Republican candidate Donald Trump), the hacking not only included the leak of the Democrats' emails. In addition, a plot was hatched which involved a cyber-army of fake Facebook and Twitter accounts created by a legion of impostors controlled by the Russians, whose operations are still not quite well known. American companies that invented tools for social networks could not prevent their networks from becoming engines of deception and propaganda. According to the New York Times, the fingerprints of Russians are on both Twitter and Facebook in hundreds or thousands of fake accounts that regularly posted messages against Clinton. This falsehood was perhaps a modest part in the midst of the uproar of genuinely American voices that participated in the pre-election hubbub, but it helped ignite a flame of anger and suspicion in a polarized country. It is still being investigated whether there was any kind of coordination between the Trump team and the Russian government in the electoral interference. To date, although Russian meddling has been confirmed, it is still unknown exactly to what extent Trump or his team participated in it. The case, still under investigation, has caused a deep crisis of confidence in the institutions and in US democracy.[6]

This transit from the trenches to the screen comes across as good

5. James Lewis, «Economic Impact of Cybercrime-No Slowing Down Report», 2018, https://www.mcafee.com/enterprise/en-us/assets/reports/restricted/economic-impact-cybercrime.pdf.
6. Scott Shane, «Rusia creó perfiles falsos de estadounidenses para influenciar en las elecciones», *The New York Times*, 19 September 2017, News sec., https://www.nytimes.com/es/2017/09/19/rusia-facebook-perfiles-falsos-elecciones-eeuu/.

metaphor for understanding how the forms of power have changed their interface. They are aesthetically more seductive (the images tend to be less violent); they are friendlier. They seem to be less harmful and invasive, but they are not unrelated to situations of danger or the abuse of power. Moreover, perhaps one of the great difficulties is that in the light of day, they may not look like a situation worthy of concern to an outsider.

We understand «power» as the ability to direct or prevent the present or future actions of other groups of individuals.

«Information is power» is a saying that has been repeated so many times that it has become a cliché. However, it is one of the key points to understand how power is accessed, managed and imparted in our lives. Both technology and innovation are a means of accessing various objectives. However, power is rather an end in itself. We will therefore see how different organisations (nations, conglomerates, companies, movements) use technology as a means to reach a higher end. This ultimate goal tends to have a direct relationship with reaching, retaining or expanding some form of power. There are clearly different forms of power, and power can be exercised for different purposes. One's goals may be for the benefit of humankind, but power can also be used to harm or affect others.

Power is not a new concept. It's lodged in the marrow of humankind and is present in each and every one of the chapters of the history of the human race—in its achievements as well as in its tragedies. Han[7] argued that power is a form of asymmetry. In this context, we understand «power» as the ability to direct or prevent the present or future actions of other groups of individuals. In other words, power is what enables us to achieve behaviours in others that they would not have exhibited otherwise.[8]

7. Han, B. C. (2017). *In the swarm: Digital prospects* (Vol. 3). MIT Press.
8. Moisés Naím, *El fin del poder: Empresas que se hunden, militares derrotados, papas que renuncian, y gobiernos impotentes: cómo el poder ya no es lo que era* (Debate, 2013).

2. CHANGES IN THE WAYS OF EXERCISING POWER AND CONTROL

While it is true that the world today is not the same as it was before the Internet, it would also be a mistake to attribute all the social changes, and especially the ways of exercising power, to the emergence of new technologies alone. The Internet did not invent power. Moreover, in its early days, it was thought of as a platform for decentralising some forms of power. Today, however, it transforms and amplifies different structures and manifestations of the exercise of power.

At present, there is a bias towards technology that tends to be directly or indirectly associated with any social change (be it economic, ideological, psychological or educational). That is the power of technology in the 21st century, and it is difficult to break completely free from technology because of the way we think of ourselves as a society. Recognising this bias, but trying to understand its implications, we will explore some ways of exercising power in which technology plays a substantive role.

As we have already mentioned, the forms of power evolve, too. Today, in the digital age, power is less visible. For example, nobody has seen Google or Facebook in person. Only a few have been able to make a pilgrimage to their campuses in Silicon Valley, and only a few have had the opportunity to speak with their creators. The vast majority of users interact with these technological giants in a virtual, remote way, without a single physical exchange. That is why the representations we have of these technological conglomerates are completely abstract and subject to propaganda. These are companies that are billed as young, sophisticated and very interested in putting the world at our disposal; above all, they seek to convey the idea that everything is cool. Everything can be solved with technology, and the more connected one is, the better her or his life will be. Amidst all these positive messages, it is not easy to read between the lines and see that users are not necessarily clients. As we will see, in many cases, they are

Nobody has seen Google or Facebook in person. Only a few have been able to make a pilgrimage to their campuses in Silicon Valley.

providers of data that will be sold or transferred to third parties.

When former NSA (National Security Agency) official Edward Snowden's leaks were released to the world in 2013, a great controversy ensued. All eyes turned to the tenant in the White House: Barack Obama. The then-president, who rose to fame with the help of the social networks, was faced with a major conflict that significantly affected his credibility and that of his Administration. In one of his first press conferences after Snowden uncovered the abuses and espionage of the US agency, President Obama said, «You can't have 100% security and also then have 100% privacy and zero inconvenience».[9] While there are many ways to read this statement, one of them is that we must be willing to give up certain forms of power to receive some of the benefits the current era offers. But we could also read into it that the ticket to access the digital era is not at zero cost. What are the costs that we have to bear? Who wins and who loses in this new scenario? Do citizens really have the right to have a say or negotiate rights and responsibilities in this context? Can one trust a state that spies on its citizens?

Next, we will explore four ways to exercise power and control in the current era. This power can produce positive or negative results depending on how it is used. The aim is to offer greater tools for reflection, and we will focus on aspects that we should be careful about and which seem critical enough to be taken into consideration from the perspective of citizenship.

- Surveillance and monitoring. This involves the ability to collect, record, find, retrieve, compile, recognise, add and systemise a substantive number of data generated in both analogue and digital spaces linked to our online (and off-line) life. Although the fate of these data may be the collecting organisation's personal use, reality indicates that surveillance and monitoring capacity grows to the extent that the stored data are exchanged

9. RT International, «Obama on NSA Surveillance: Can't Have 100% Security and 100% Privacy», RT International, 2013, https://www.rt.com/usa/obama-surveillance-nsa-monitoring-385/.

or complemented with third party sources of information that peers or other interlocutors generate. All this happens even if the subjects whose data have been collected are not aware (lack of transparency) that their information is being stored, processed, transferred and/or marketed for the benefit of third parties. Since this is not a new fact and the literature has been warning us for decades (with metaphors such as Big Brother, the panopticon and liquid surveillance), one of the main achievements of this form of exercising power is that surveillance has become invisible. In other words, we no longer pay attention to or simply don't see the panopticon. It seems it is unimportant to know we are being watched. We have naturalised it. We resign ourselves to saying «I have nothing to hide», accepting it as normal and inevitable that companies and the state routinely monitor us. In fact, today, an external power does not impose high levels of overexposure on digital environments. Rather, it is the free decision of those who agree to share their private lives in different channels and digital spaces. Why impose surveillance systems when people voluntarily choose to air their entire private lives?

- Influence. The current processing systems have access to our general profiles (for example: age, gender, ethnic origin, geographical location, income or educational level) and also go much further. The processing of these data was the objective of marketing in the last century. Today, however, the power that exists to collect and triangulate our fingerprint allows us to build a much sharper picture of our profiles – current and future. This knowledge is not limited to the ability to systematise our data, and it is now advancing towards the ability to predict, with high levels of certainty, fairly intimate aspects of our personality, such as sexual orientation, religious and political views, level of

We no longer pay attention to or simply don't see the panopticon. It seems it is unimportant to know we are being watched.

intelligence, consumption of addictive substances or even whether or not our parents are separated.[10] We receive the contents of our preference, and we are also given a tailor-made digital reality in which we find people who have similar tastes to ours and similar concerns and aspirations. This deep knowledge, based on advanced data processing mechanisms, can lead to the creation of mass hyper-segmentation strategies that seek to exert an important influence on our behaviour (behavioural micro-targeting). Under this deluge of messages, it becomes especially difficult to tell what is true from what is not. On the Facebook news wall, for instance, all the ideas look identical regardless of whether they are true. If a 17-year-old girl in Barranquilla searches the social networks for the hashtag «#MeToo» (the name of the movement against sexual harassment), she will find completely different contents from a 50-year-old man living in New York finds when looking up the same hashtag. This is a result of the so-called «filter bubbles», which personalise searches, and the news from social networks that show us what «others» think rather than what we want to see.[11]

x Loss of self-control. Attention is a highly coveted resource. On the Internet, everyone wants to attract the attention of online users. However, this is not a new phenomenon. In the heyday of television, there was great concern about the time viewers spent in front of the screen (mainly in the living room). The difference, in relation to

10. Wu Youyou, Michal Kosinski and David Stillwell, «Computer-based personality judgments are more accurate than those made by humans», Proceedings of the National Academy of Sciences 112, nº. 4 (2015): 1036-1040.

11. Gloria Guerrero, «¿Cómo la "colonización de mercado" de internet volvió a los ciudadanos solo en consumidores? Comercialización del espacio en línea», en Análisis de una Juventud Conectada: Gobernanza de Internet, ed. Sara Fratti, Guilherme Alves and Adela Goberna (Estados Unidos: Youth Observatory Internet Society Special Interest Group, 2017), https://www.academia.edu/34102582/CROWDFUNDING_DIGITAL_COMO_EJEMPLO_PARA_LA_CONSTRUCCI%C3%93N_DE_CAPITAL_SOCIAL_Y_EL_CRECIMIENTO_DE_LAS_COMUNIDADES.

digital technologies, has to do with the fact that these screens accompany us throughout the day. Therefore, the consumption is more ubiquitous, but it also increases in terms of the amount of exposure to these devices. Han[12] indicated that digital technologies are machines with a narcissistic ego. In addition, certain scientific studies have suggested that this overexposure triggers new addictions. Artificial intelligence algorithms with an unprecedented number of personal data are particularly difficult to resist. There are those who say that technology is not a drug, like tobacco, and instead view it as an addiction of behaviour, like gambling.[13] On the other hand, there are also scientific studies that have refused to stigmatise the use of digital technologies as a source of addiction. The latter have claimed that the metaphor of addiction is unnecessarily alarmist. Although the use of networks and other online practices can cause negative consequences for some users, this finding is not enough to confirm its addictive power by itself. It is necessary not to mistake the true addictive disorders and the negative side effects of certain digital practices for each other.[14] As we saw, this does not ignore the existence of research that has shown the correlation between an excessive use of smartphones and negative consequences for

Attention is a highly coveted resource. On the Internet, everyone wants to attract the attention of online users.

12. Han, B. C. (2017). *In the swarm: Digital prospects* (vol. 3). MIT Press.
13. Nitasha Tiku, «Everything You Need To Know About Your Smartphone Addiction», *Wired*, 18 April 2018, https://www.wired.com/story/wired-guide-to-internet-addiction/.
14. Xavier Carbonell and Tayana Panova, «A critical consideration of social networking sites' addiction potential», *Addiction Research & Theory* 25, n.º 1 (2 January 2017): 48-57, https://doi.org/10.1080/16066359.2016.1197915.

Access to information used to be a scarce resource; today, attention can be considered such a resource.

mental health, such as anxiety, depression, stress and low self-esteem.[15] It is a fact that today there are a significant number of accidents that occur while driving or walking due to the use of smartphones.[16] Beyond the medical diagnosis and whether or not this can be defined as a pathology, it is clear that there is growing concern today about how long individuals (especially minors and young people) are exposed to digital technologies. In this context, it is important to reflect on how people have been losing or weakening their self-control mechanisms and to then act accordingly.

x Cognitive overload. An alternative form of control and censorship does not involve restricting access to information; rather, it floods communication channels with excess information that is often simply a distraction or false information. Psychologist David Lewis[17] coined the term «information fatigue syndrome». Although it is not recognised in medical manuals, it is characterised by a weakening of one's analytical capacity, attention deficit and tiredness due to excessive exposure to and consumption of information. In the age of overabundance, attention is scarce. Access to information used to be a scarce resource; today, attention can be considered such a resource. With the existence of a practically unlimited number of interesting resources, as well as distractions, the ability to focus on what

15. Tayana Panova and Xavier Carbonell, «Is Smartphone Addiction Really an Addiction?», *Journal of Behavioral Addictions* 7, n.º 2 (1 June 2018): 252-59, https://doi.org/10.1556/2006.7.2018.49.
16. Melanie Curry, «Traffic Safety Report Finds More Drivers Using Cellphones», *Streetsblog California* (blog), 23 April 2018, https://cal.streetsblog.org/2018/04/23/traffic-safety-data-company-finds-more-drivers-using-cellphones/.
17. Lewis, D. (1997). *Dying for Information? An Investigation into the Effects of Information Overload in the UK and Worldwide.* London: Reuters Business.

is substantive seems to be an especially important skill. However, the design of digital devices and smartphones in particular takes into account all our behaviours and weaknesses. Stimulating our capacity for surprise and uncertainty is an easy way to distract our fragile attention. This sense of alertness directly related to dopamine stimulation is one of the strategies technology designers commonly use. Different studies have explained the existing interest in analysing and understanding the role of the dopaminergic system in Internet use.[18] For example, when children use video games, they are so immersed in the virtual reality of their screens that they adopt mechanisms to prolong this hyperstimulation (which activates dopamine) as much as they can.[19] Similarly, the constant bombardment of information we are exposed to seems to leave us with a shorter attention span. In other words, the time we can focus on something seems more limited, or at least we find it harder to manage it. This is compounded by the fact that content providers and digital services are permanently giving us more content than we can consume. Those who do not have the tools and capabilities to manage this cognitive overload are consumed by their own consumption in a tidal wave of data. As Simon[20] concluded, monopolising attention is also a form of power. What the information consumes is obvious: the recipients' attention.

Monopolising attention is also a form of power.

18. Christian Montag *et al.*, «An Affective Neuroscience Framework for the Molecular Study of Internet Addiction», *Frontiers in Psychology* 7 (16 December 2016), https://doi.org/10.3389/fpsyg.2016.01906.
19. Seth Ferranti, «How Screen Addiction Is Damaging Kids' Brains», *Vice*, 6 August 2016, https://www.vice.com/en_us/article/5gqb5d/how-screen-addiction-is-ruining-the-brains-of-children.
20. Herbert Simon, «Designing Organizations for an Information-Rich World», *Computers, Communication, and the Public Interest,* Baltimore. MD: The Johns Hopkins Press, Martin Greenberger (Baltimore: The Johns Hopkins Press, 1971), 40-41.

Behaviour control system («smart eye»)

In 2013, while living in the United Kingdom, I visited the world's leading educational technology fair (British Educational Training and Technology Show or BETT, in East London).[21] Literally thousands of technology vendors, educational institutions and governments meet annually at the event to present the latest pedagogical and digital innovations. While wandering around the show, I heard a vendor speak of a «new» technology that promised to improve education. Curious about this promise, I sat to listen to him in detail. This company offered a surveillance circuit that is installed in each classroom and that the school principal can monitor from his or her office. Through a control panel, it's possible to simultaneously observe all the classrooms. While the vendor claimed that this was a powerful tool that provided teachers with feedback on their educational practices, I couldn't help picturing a prison governor. The «subtle» difference is that instead of inmates, in this case it was about controlling the relationship between students and teachers. I viewed it as a bad idea and surmised that nobody would be interested in something like that.

However, that wasn't the end of the story. As we know, there has been a surveillance boom in China in recent years. With millions of cameras and billions of lines of code, China is building a high-tech authoritarian future. It is the largest market in the world for security and surveillance technology: it is estimated that the country will have installed almost three hundred million cameras by 2020.[22] Students at schools and universities in China are often

21. BETT, «Bett Show 2019 | Creating a better future by transforming Education», 2019, https://www.bettshow.com/.

22. Paul Mozur, «El autoritarismo chino del futuro se basa en la alta tecnología», *The New York Times*, 13 July 2018, News sec., https://www.nytimes.com/es/2018/07/13/china-reconocimiento-facial/.

heavily monitored through closed-circuit television (CCTV). Imagine my surprise when I learned that five years later the Hangzhou 11 secondary school – in the city with the same name as the Zhejiang province, in China – was featured in the news due to the installation of facial recognition cameras as an experiment to optimise teaching and learning processes.

Facial recognition cameras as an experiment to optimise teaching and learning processes.

This data capture and processing system is designed to analyse the behaviour of the entire class. It is an efficient way to verify class attendance and key behaviours in the classroom, such as standing up, reading, writing, listening, hand raising and falling asleep in class. According to the company, the level of accuracy of the facial recognition software is extremely high, and it can identify when students focused, distracted, sad or happy.

The idea is for this monitoring mechanism to provide more insights into the learning experience. Even more, the system can send weekly reports to parents about their children («datafication» of childhood).[23,24,25,26] The system (or «smart eye», as it is also called) stores the identification numbers of all students. It is not clear whether the

23. Business Recorder, «Chinese School Uses Facial Recognition to Observe Inattentive Students - Business Recorder», 2018, https://www.brecorder.com/2018/05/18/418403/chinese-school-uses-facial-recognition-to-observe-inattentive-students/.
24. Neil Connor, «Chinese school uses facial recognition to monitor student attention in class», 2018, https://www.telegraph.co.uk/news/2018/05/17/chinese-school-uses-facial-recognition-monitor-student-attention/.
25. Chauncey Jung, «Big Teacher Is Watching You! Hangzhou High School Introduces Facial Recognition to Monitor Classroom Behavior», 2018, https://www.whatsonweibo.com/big-teacher-is-watching-you-hangzhou-high-school-introduces-facial-recognition-to-monitor-classroom-behavior/.
26. Radio Free Asia, «High School Students in Eastern China to Get Facial Monitoring in Class», Radio Free Asia, 2018, https://www.rfa.org/english/news/china/high-school-students-in-eastern-china-to-get-facial-monitoring-in-class-05182018113315.html.

Who wins and who loses with the concentration of these forms of power?

parents or students have given their consent for this system to be installed in their school. We only know that China Human Rights and Amnesty International China observers expressed their concern about the abuses that this «innovation» brings with it.

In the case described here, the state imposes control through the incorporation of technologies, with the promise of contributing to improving teaching processes – a story repeated elsewhere in the world through the «datafication» of education. However, in other cases, it is not an imposition; rather, it is a free and voluntary decision (conscious or not) of the citizens themselves, who want to have access to digital services. In defence of the users, it is fair to say that the companies that provide digital services are usually not completely transparent about how their personal information is used.

Therefore, power is not only manifested through the imposition of a certain technology. It's often a less obvious process that has to do with the use of the information produced. Many digital companies offer platforms presented as 'free of charge' in exchange for making use of the generated data. In this latter case, there is an asymmetry with whoever offers the platform establishing a set of rules of the game (terms and conditions). However, it is also the case that many of the dataflows that are generated (and traded) on the Internet are concentrated in a few companies nicknamed GAFAM (Google, Apple, Facebook, Amazon and Microsoft, although this does not mean there aren't others that also fall into this category). As Berners-Lee explained, these companies monopolise almost everything that happens online.[27]

27. Katrina Brooker, «"I Was Devastated": Tim Berners-Lee, the Man Who Created the World Wide Web, Has Some Regrets» *Vanity Fair*, 2018, https://www.vanityfair.com/news/2018/07/the-man-who-created-the-world-wide-web-has-some-regrets.

2. CHANGES IN THE WAYS OF EXERCISING POWER AND CONTROL

Together with a group of powerful government agencies, these multinationals can monitor, manipulate and spy in a way and with a power that are hard to imagine.

Who wins and who loses with the concentration of these forms of power? This concentration only benefits GAFAM. It's not good for transparency, nor is it good for democracy or trust. As Canclini argued,[28] «Concentrated information counteracts freedom». Are these digital giants so predominant, lucrative and influential that the state and its control instruments have trouble regulating them? Is it true that if the states regulate or limit these lucrative and influential technological giants, innovation is put at risk? It is evident that the state has lost prominence (and credibility) in different countries and that, in many cases, it seems to have fallen behind when faced with the prospect of appropriately regulating technological changes to defend citizen interests.

28. *La Nación*, Néstor García Canclini: «La lectura tiene dimensiones sociales muy importantes», 2017, https://www.lanacion.com.ar/2035476-nestor-garcia-canclini-la-lectura-tiene-dimensiones-sociales-muy-importantes.

Organisms are algorithms

In the winter of 2018, we organised a meeting of scientists interested in researching the impacts of technologies on today's society. Specialists from a dozen countries participated in the meeting, held in Punta del Este, Uruguay. One of our guests was George Siemens,[29] who gave his talk remotely because he couldn't join us in person for schedule reasons. Although many imagined that he would deal with some of his works related to connectivism, learning analytics and mass online courses, his talk revolved around the relationship between human and artificial intelligence. He explored the costs of discontinuing the use of artificial intelligence simply as a complementary resource to turn it into a tool capable of thinking with us now. Our cognition is distributed through social networks anymore as well as through technological tools and artificial intelligence systems. He added that when analysed on a large scale, this phenomenon would pave the way for a kind of distributed sociotechnical cognition.

During his presentation, he used a metaphor that intrigued me. Siemens indicated that we're living under a global data skin that articulates many of the social and technological transformations taking place today. This layer is present at every level of things, and it also affects the way we see reality.

To some extent, this view is consistent with the idea of the «datafication» of society that contains the concept of «dataism», which Harari popularised. Dataism[30,31,32,33] can be understood as a philosophical approach or ideology that interprets the human species as a single system of data processing. From this perspective, one of the objectives would be to maximise dataflows by connecting to many media sources or to all of them. This approach suggests that people are information: we routinely produce, record, share and consume information.

As Harari noted, the prophets of Silicon Valley have come up with a new universal narrative that legitimises the authority of algorithms and big data. Dataists

believe in the «invisible hand» of dataflow. Dataism perceives the entire universe as data fluid and sees organisms as little more than biochemical algorithms.

Dataism turns everything into data format. The data-based paradigm is at the core of the processes and practices of the 21st century. Life has been changed into quantifiable data. From this perspective, it is legitimate as a means to access, understand and control people's behaviour.[34] Dataism puts forward the idea that with enough biometric data and computing power, it is possible to understand humans much better than we do today. Once the big data systems know me better than I do, the authority will move from humans to algorithms. Therefore, people could someday give algorithms the authority to make the most important decisions in their lives.

The prophets of Silicon Valley have come up with a new universal narrative that legitimises the authority of algorithms and big data.

The dataism that worships the idea of big data is posited to some extent as a metatheory (general theory) or macrodiscipline—a kind of «scientific holy grail». This neologism suggests the idea of all disciplines becoming unified and generating knowledge that is superior to each of the disciplines separately. Harari presented the idea that dataism grows, expands and perfects as the

29. Fundación Ceibal, «EdTech Winter School 2018: Know the experience», Fundación Ceibal, 2018, https://fundacionceibal.edu.uy/noticia/edtech-winter-school-2018/.
30. Yuval Noah Harari, *Homo Deus: A Brief History of Tomorrow* (UK: Vintage Penguin Random House, 2017).
31. Yuval Noah Harari, «Yuval Noah Harari on Big Data, Google and the End of Free Will», *Financial Times*, 26 August 2016, https://www.ft.com/content/50bb4830-6a4c-11e6-ae5b-a7cc5dd5a28c.
32. Daniel Miessler, «Some Thoughts on Dataism», Daniel Miessler, 7 April 2017, https://danielmiessler.com/blog/some-thoughts-on-dataism/.
33. Yuval Noah Harari, «Dataism Is Our New God», *New Perspectives Quarterly* 34, n.º 2 (b de 2017): 36-43, https://onlinelibrary.wiley.com/doi/pdf/10.1111/npqu.12080.
34. Mirko Tobias Schäfer and Karin van Es, eds., *The Datafied Society. Studying culture through data* (Amsterdam University Press, 2017), http://www.oapen.org/search?identifier=624771.

Is there a risk in using algorithms on a large scale and incorporating bugs or omissions that unfairly discriminate against the most vulnerable profiles?

data flow is maximized. According to this premise, if there's enough information, the systems (or algorithms) can help us make the perfect decision.

Those who control the data control the future. Dataism is very attractive to politicians and businessmen because it offers innovative technologies with immense powers. What used to be access to or ownership of land, natural resources and industrial machinery is today in the control of data. This view is consistent with the singularity discourse,[35] which extols the idea that in the age of data, a permanent, endless flow of data would be instrumental in bringing us closer to the truth. This concept, which moves between satire and, at the same time, zeal (depending on whom you ask), offers the perfect discourse for those who market our data.

There is also the counterweight of the data sceptics. This sector has warned about the limitations and vices that we can encounter in the age of big data, and not only in relation to privacy abuses. We live in a complex reality, yet when we consult an algorithm, there is no magic; rather, there is an abstraction or reinterpretation of the information based on the available data. This reinterpretation process is subject to innumerable omissions, biases, assumptions, bugs, etc., although it is true that the information-processing capacity of these tools can be substantial (see «big data»). But we must not lose sight of the fact that the interpretation of these massive volumes of data is also the result of a way of understanding or seeing reality. It involves a set of logical steps that seek to solve a problem, and this makes it necessary to

35. Ray Kurzweil, *The singularity is near. When humans transcend biology* (New York: Viking, 2006).

prioritise certain values or variables over others. Is there a risk in using algorithms on a large scale and incorporating bugs or omissions that unfairly discriminate against the most vulnerable profiles?

Dataism and the possibilities it offers are usually mere estimates. The bias that exists when editing the data is inevitable. This brings about a trimming of the reality with which we interact (as does science). Patterns of behaviour nourish the personalisation of services, which is the result of a zealous crosscheck of data to build a profile of people. This is not the future: it is the present, and it's part of the digital landscape with which we interact on a daily basis. A priori, it is neither negative nor positive, but it is not without consequences. It is a way of understanding reality. The problem is when we don't know that the algorithms offer an economy of abstraction that simplifies (or manipulates) the reality with which we interact. Algorithms filter reality, ignore the specificity of contexts, value some data over others and show us an edited reality that highlights some services, ideas or truths over others. In other words, we consume a Photoshopped and Instagrammed version (which goes through the image editor) of the truth, thinking that it is reality itself. Conflicts occur when we believe that the information delivered by a set of algorithms (e.g. the search result, a route on a map or someone's popularity online) is an accurate representation of reality. This is when a relationship of asymmetry of power or dependence occurs between the creator or manager of the platform and the consumer of the information services offered.

Algorithms may be understood as symbolic systems that operate at the intersection between cognition and reality. Therefore, they are intermediary agents that make it possible to filter or manipulate a particular reality. As algorithms become more important in social life, they become cultural machines that operate at the intersection of code and culture. Today, they have become tools for thinking about, interpreting and interacting with reality. Since it's not necessary to know how to build a complex algorithm to be able to use it, people use them at all times without being aware of it. The risk is that the more ubiquitous

Today the filter is the message. The ability to discriminate, weigh, contrast and contextualise information.

algorithms are as cultural devices, the more we seem to trust their capabilities.[36]

The decisions made by algorithms limit neutrality. Algorithms (but also the terms and conditions of the companies that create them) filter the information that millions of people around the world read and share daily.[37] If we aren't aware of the intrinsic bias of these tools, we will have trouble when we search for information on Google. If we don't know about latent commercial interests when using social networks, we don't know about the manipulation that comes with them. If we forget that the news circulating on the Internet can respond to certain commercial and/or political interests, we will be in a position of vulnerability. If we aren't familiar with the weaknesses of Wikipedia or YouTube, we may take for granted something that is not necessarily true. If we don't know that the Internet with which we interact is simply a version tailored or adjusted to our profiles, we are «choosing not to choose». To paraphrase Marshall McLuhan, today the filter is the message. The ability to discriminate, weigh, contrast and contextualise information plays a critical role every time we use the Internet or interact with others through digital technology.

36. Ed Finn, «What Algorithms Want», The MIT Press, 2017, https://mitpress.mit.edu/books/what-algorithms-want.
37. Gloria J. Guerrero Martínez (2017). Cómo la «colonización de mercado» de internet volvió a los ciudadanos solo en consumidores. Comercialización del espacio en línea. En Guilherme Alves, Adela Goberna, Sara Fratti *et al.* (Org.). *Análisis de una Juventud Conectada: Gobernanza de Internet.* Youth Observatory. https://digital.fundacionceibal.edu.uy/jspui/bitstream/123456789/250/1/JuventudConectada.pdf

Conclusions: are we suffering from digital Stockholm syndrome?

Let's think for a moment about the power relations suggested by the psychological concept known as Stockholm syndrome. «Stockholm syndrome» is a term used to describe the bond that some victims form with their captors. It includes paradoxically positive relationships with their oppressors (who impose some form of power over their victims). It is argued that a set of psychological mechanisms creates a paradoxical bond that can involve attraction, affection or dependence between the victims and the oppressors. It can also manifest itself in negative feelings on the part of the victim towards the family, friends or authorities who try to rescue or support them.[38,39,40]

We can borrow this concept from psychology to think about the relationship between technological services and users. As a result of the proliferation of digital technologies and their wide adoption, there is a growing understanding of the associated costs (side or unwanted effects) of intensive use of these devices and different related control mechanisms. The more we use technologies, the more apparent these social costs are. This seeming contradiction could be accounted for in many ways: the significance of digital technology in everyday life; its major role in socialisation and work-related activities; and society's positive attitude towards having a digital identity today. There

38. Chris Cantor and John Price, «Traumatic entrapment, appeasement and complex post-traumatic stress disorder: evolutionary perspectives of hostage reactions, domestic abuse and the Stockholm syndrome», *Australian and New Zealand Journal of Psychiatry* 41, n.º 5 (1 January 2007): 377-84, https://doi.org/10.1080/00048670701261178.
39. Andrés Montero, «Síndrome de adaptación paradójica a la violencia doméstica: una propuesta teórica», *Clínica y Salud*, 2001, https://www.redalyc.org/pdf/1806/180618320001.pdf
40. Andrés Montero, «Psicopatología del síndrome de Estocolmo: ensayo de un modelo etiológico». Ciencia Policial: Revista del Instituto de Estudios de Policía, 51 (1999), 51-72.

are probably numerous reasons of all kinds, but there is obviously a kind of contradiction in all this that makes us think of a digital pseudo Stockholm syndrome.

As an example of this contradictory relationship with digital technologies, young people are often criticised for using technology all the time or because they are overexposed on the Internet and lack the adequate strategies to regulate their exposure. They post information or images that may later prove controversial or produce unwanted effects. However, we also see the phenomenon of sharenting[42,43,44,45] which is the online practice of sharing everything that is related to the upbringing of one´s offspring. Parents now shape the digital identity of their children long before these young people open their first email; they abuse social networks by uploading photos with constant updates on their children's lives. This highly common practice results in a conflict between children's possible desire to protect or manage their privacy and parents' right to control their children's upbringing or the parents' right to

41. Solon, Olivia. «"Data Is a Fingerprint": Why You Aren't as Anonymous as You Think Online». The Guardian, 13 de julio de 2018, sec. World news. http://www.theguardian.com/world/2018/jul/13/anonymous-browsing-data-medical-records-identity-privacy
42. Abigail Locke *et al.*, «Sharenting: Why Mothers Post about Their Children on Social Media», The Conversation, 2018, https://theconversation.com/sharenting-why-mothers-post-about-their-children-on-social-media-91954
43. Wikipedia, «Sharenting», Wikipedia, 17 de marzo de 2018, https://en.wikipedia.org/wiki/Sharenting
44. Hannah Bouckley, «Sharenting: What Is It and Are You Doing It? Discover the Dangers of Sharing Too Much about Your Children Online», BT.com, 2018, http://home.bt.com/tech-gadgets/internet/what-is-sharenting-oversharenting-children-safe-online-11364174261249
45. Stacey Steinberg, «Sharenting: Children's Privacy in the Age of Social Media», SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, 8 March 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2711442.
46. Ashley May, «18-Year-Old Sues Parents for Posting Baby Pictures on Facebook», *USA Today*, 2016, https://www.usatoday.com/story/news/nation-now/2016/09/16/18-year-old-sues-parents-posting-baby-pictures-facebook/90479402/.

freedom of expression. This clash of interests may be to the detriment of the children's interests, and the cases of young people reporting their parents for posting pictures of their childhood on the Internet are evidence of this.[46] Do minors have the legal or moral rights to control their own fingerprint? That is the conflict this concept overlooks.

This practice involves clear risks: a) Children's self-esteem can be affected (shame, anguish or intimidation) by bullying, negative reactions or comments they receive either online or in person; b) It poses risks related to online predators who could misuse this information. There are studies that indicate that substantial numbers of innocent photographs end up on paedophile and hebephile websites.[47]

Most likely, parents do not seek to produce an unwanted effect on their children by uploading their pictures to the network. However, there is a complicity with turning the parental experience into a social practice, and the use of digital tools has become one of the most commonly used channels of expression in contemporary society. Parents – probably unwittingly – seem to end up acting as double agents, generating benefits for others. There is obviously a paradoxical use of the technology that needs reviewing. Whether due to dependence, ignorance or seduction, the digital Stockholm syndrome is a consequence of the asymmetry that exists between those who generate content at the individual level (accompanied by a torrent of data on private life) and those who deal in them on their platforms.

It is challenging – albeit not impossible – to re-calibrate our relationship with the different digital technologies.

We have analysed examples of power asymmetries that are

47. Stacey Steinberg, «Sharenting: Children's Privacy in the Age of Social Media», SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, 8 March 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2711442.

Is it possible to regain confidence?

One of the visible faces of GAFAM, Tim Cook, CEO of Apple, participated in the 40th International Conference of Data Protection and Privacy Commissioners (2018) in Brussels.[48]

In his speech, he maintained that privacy is a fundamental human right. He also added that regardless of one's country of residence, that right must be protected in accordance with four essential principles:

1. Companies should challenge themselves to strip identifying information from customer data or avoid collecting it in the first place.
2. Users should always know what data are being collected and why. This is the only way to empower users to decide which collection is legitimate and which is not. Anything else is a farce.
3. Companies must recognise that the data belong to the users. They should make it easier for people to obtain a copy of their personal data and also correct or delete said data.
4. Everyone has the right to the security of her or his data. Security is at the heart of data privacy and the right to privacy.

reflected in the use of digital technologies (surveillance and monitoring, influence, loss of self-control or cognitive overload). One of the complexities of immersing ourselves in these issues is that even if we become aware of their side effects, it is challenging – albeit not impossible – to re-calibrate our relationship with the different digital technologies.

As previously indicated, users often end up acting as a sort of double agent: although we access services for our benefit or for the fulfilment of our objectives, we also, to some extent, end up working for, benefiting from or defending the interests of these platforms or digital services.

Many complain about how GAFAM can misuse their information,

without this resulting in users choosing to remove all their data from these platforms. Obviously, these online services provide a series of tools that are very convenient, so many people – although they may be aware of the risks and vulnerabilities (or the non-transparent uses) – choose to continue using these digital services.

Are we trapped with no way out? The short answer is no, but, as usual, there is always some small print that it is important to review. However, implementing substantive solutions is not as simple as installing an app on our phones. In fact, there are some applications that promise to help us regulate our online time, reduce distractions, take care of our privacy or monitor our online activities (or our fingerprint).

Similarly, there are some tools that will reportedly disconnect us from any communication channel when necessary. Although it sounds contradictory, today we also find a trend towards offering users the possibility of not only raising their awareness but also giving them greater control over their online exposure. A clear example of this is Google Digital Wellbeing,[49] which includes features such as indicators of daily time devoted to the smartphones or to certain applications, notification blockers with a «Do Not Disturb» mode, an invitation to take breaks between YouTube videos and suggestions regarding one's bedtime.

Are we trapped with no way out? The short answer is no, but, as usual, there is always some small print that it is important to review.

In addition, Apple offers new parental control tools that allow parents to control and manage how children

48. Tim Cook, «It Was an Honor to Be Invited to #ICDPPC2018 in Brussels This Morning. I'd like to Share a Bit of What I Said to This Gathering of Privacy Regulators from around the World. It All Boils down to a Fundamental Question: What Kind of World Do We Want to Live In?», Tweet, @*tim_cook* (blog), 24 October 2018, https://twitter.com/tim_cook/status/1055035534769340418.
49. Digital Wellbeing, «Our commitment to Digital Wellbeing | Google», s/f, https://wellbeing.google/.

The social problems resulting from technology are not solved with more technology.

use their devices. This is incorporated from their iOS 12 operating system. The idea is to help users manage how much time they spend on their iPhones and iPads with specific assistance tools. Users can set the amount of daily time for applications and websites. «Do not disturb» tools are included for bedtime.[50]

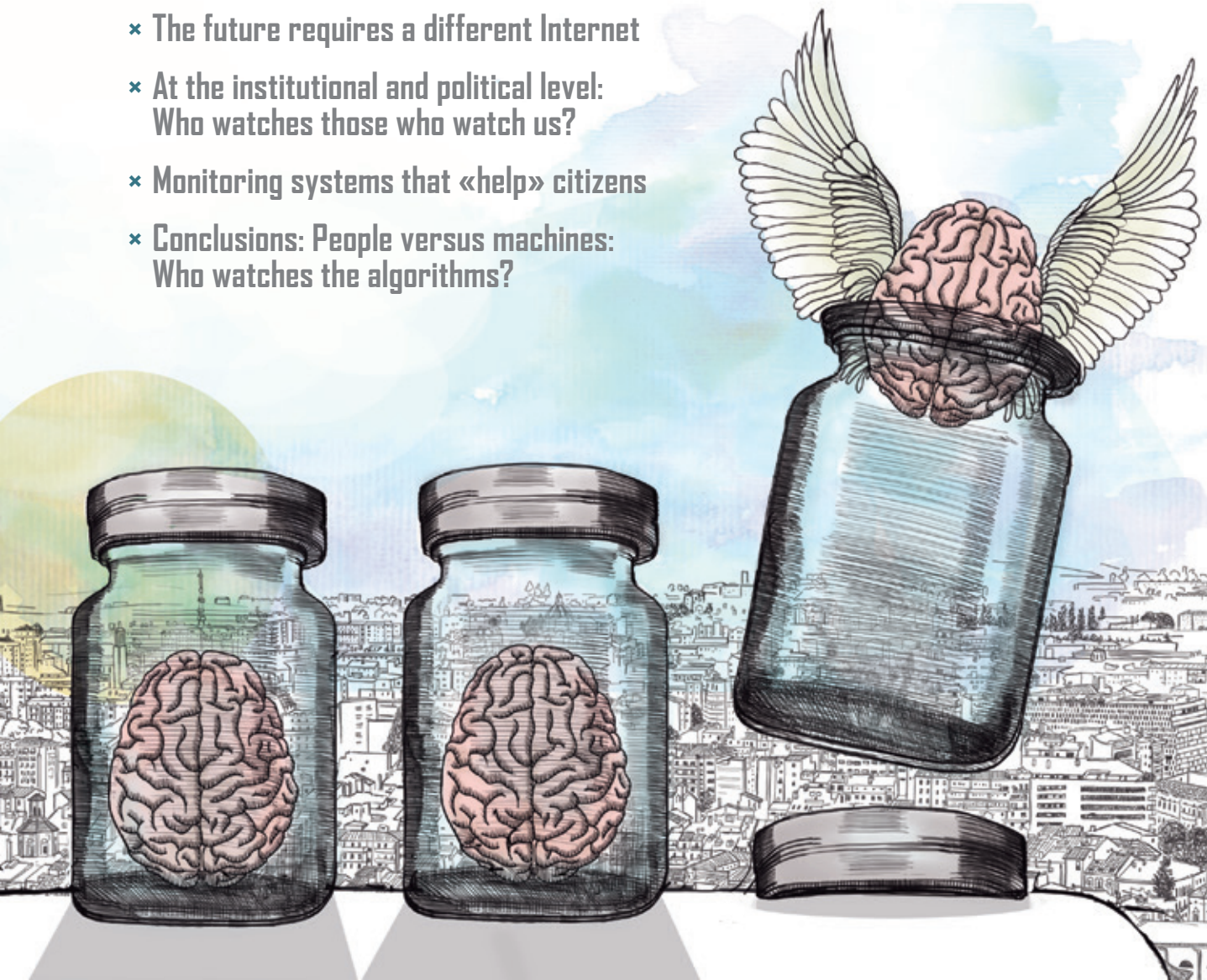
In 2018, large digital companies (Google and Apple) included certain adjustments or tools to provide users with a greater level of control over their digital consumption. It comes as a surprise that Apple has incorporated these control tools 11 years after launching its first phone operating system. Perhaps today we are in a better position to analyse the implications of digital technologies adopted and adapted by the population. Is it because it used to be an unimportant issue or because users are now in a position to demand greater controls in this regard? Or is it perhaps another example of our inability to decide?

The proposals described here are about technological solutions of an exogenous and instrumental nature. Therefore, they don't have to do with a change in user behaviour; rather, they concern the decision to transfer a greater (albeit still limited) level of control to end users. Yet, as Lewis Mumford suggested,[51] the social problems resulting from technology are not solved with more technology. The next section will explore the social, institutional and political approaches we can take to address these challenges from medium- and long-term perspectives.

50. Mark Prigg and Annie Palmer, «Apple Digital Health software designed to make people use phones LESS», *Mail Online*, 2018, http://www.dailymail.co.uk/sciencetech/article-5804549/Apple-unveiling-Digital-Health-software-designed-make-people-use-phones-LESS.html.
51. Lewis Mumford, *Técnica y civilización* (Madrid: Editorial Alianza, 1982).

3. RETHINKING FORMS OF INCLUSION

- At the individual and social levels: how to «leave the lift»
- The future requires a different Internet
- At the institutional and political level: Who watches those who watch us?
- Monitoring systems that «help» citizens
- Conclusions: People versus machines: Who watches the algorithms?



> **...We aren't proud of how that free and open exchange has been weaponized and used to distract and divide people, and our nation. We found ourselves unprepared and ill-equipped for the immensity of the problems we've acknowledged.**
>
> **... Abuse, harassment, troll armies, propaganda through bots and human coordination, misinformation campaigns, and divisive filter bubbles...that's not a healthy public square.**
>
> Jack Dorsey, Twitter CEO, excerpt from statement before the Intelligence Committee of the US Senate.[1]

The first cars with internal combustion engines were made around 1885, but it wasn't until 1950 that the three-point safety belt was invented.[2,3] In other words, it took more than 60 years to incorporate a form of protection that reduces the risks of this means of transport. The seatbelt is widely recognised as a technology with the highest impact on reducing the possible risks of car accidents.

Will we take more than 60 years to implement protection mechanisms that reduce the negative impacts of digital technologies? That is our race against time. The technologies proliferate, become increasingly powerful and influential, and now

1. Matt Binder, «Twitter CEO Jack Dorsey Tweets Opening Testimony during Congressional Hearing», Mashable, 2018, https://mashable.com/article/twitter-ceo-jack-dorsey-tweets-testimony-congressional-hearing/.
2. Arnold Clark, «Why Volvo gave away the patent for their most important invention», ArnoldClark Newsroom, 2013, https://www.arnoldclark.com/newsroom/265-why-volvo-gave-away-the-patent-for-their-most-important-invention.
3. Alasdair Wilkins, «Who invented the world's very first car?», 2011, https://jalopnik.com/5816040/who-invented-the-worlds-very-first-car.

they learn by performing cognitive processes similar to those of human beings. Ideally, it shouldn't take so long to incorporate safeguards that will protect citizens when they use digital technologies.

But, of course, not everything looks so grim. The emergence of new technologies has greatly enriched social relationships, education, economics, transport, gastronomy, tourism, literature and cinema, among many other dimensions of life. The challenge is to be able to seize opportunities without ignoring the inherent risks and asymmetries of these new scenarios. It is necessary to transform the current reality and the imbalances of power that affect information-vulnerable communities. This calls for intervention in terms of both ideas and actions. It is also necessary to take action at the micro, meso and macro levels. Specifically, we must consider opportunities for change and structural transformations at the individual and social levels, as well as at the institutional and political levels.

To incorporate safeguards that will protect citizens when they use digital technologies.

At the individual and social levels: how to «leave the lift»

In the 1960s, renowned social psychologist Solomon Asch[4] conducted an experiment that involved putting several professional actors inside a lift and an individual (the subject under study), who did not know that he was part of an experiment or that the lift was being filmed. During the experiment all the actors, in cahoots, changed positions at the same time and faced the rear of the lift, and the individual, although surprised by the situation, ended up turning around to join the group. This famous experiment sought to demonstrate how the group dilutes individuality and how people seek to conform to the norm. Asch showed how a person can lose her or his individuality so as not to look socially inept.

Why do we give so many privileges to digital service companies, which results in their control over our private lives?

Along the lines of this metaphor of social psychology, the challenge today lies in being able to «leave the lift». Stepping aside from the crowd is the best way to maintain independent thought. For this, it is essential to have proactive citizens who «choose to choose» and have tools to think and act critically.

In order to «leave the lift», it is necessary to learn to question everything, even if it sometimes leads to uncomfortable corners. Why do we give so many privileges to digital service companies, which results in their control over our private lives? How does one «leave the lift»? It is essential to develop a set of skills and new information, data-use and media literacies that will allow us to navigate in complex

4. Solomon Asch, «Studies of independence and conformity: I. A minority of one against a unanimous majority», *Psychological monographs: General and applied* 70, n.º 9 (1956).

and hybrid contexts that seem to pay tribute to «dataism», which we refer to as «critical digital literacy» here: the set of skills needed to comprehensively and critically understand digital media and their social, economic and political implications. In order to develop this perspective, it is necessary to continue advancing towards more complex digital skills in citizenship that stay away from magical or immediatist formulae.

While technology can be useful both in everyday work and in social activities, people should not lose sight of the significance of human connections as an end in itself. Today, there is growing consensus on the importance of addressing and promoting the development of a wide range of competences by means of different education and capacity-building approaches and spaces. This includes both cognitive abilities of a higher order and others of a socio-emotional nature such as empathy, teamwork, collaboration, problem solving, self-regulation, critical thinking and the ability to establish connections between different ways of accessing and creating knowledge. Developing technological, instrumental and cognitive capacities should not be considered without taking account of the social component described here.

In this age of hypercomplexity, false simplicity and reductionism seem the best shortcut. However, it is essential to stimulate new ways of thinking and acting. These capabilities not only play a critical role in distinguishing between different expressions of the digital divide today but also a form of counter-power that help to address the existing asymmetries. In order to understand that technology is not neutral, it is essential to adopt a more holistic and transdisciplinary perspective. This opening is necessary to analyse reality and its complexity but mainly to be able to take action towards it.

Among other things, it is essential to generate the conditions that will give more people the opportunity to develop a set of cognitive skills and knowledge, such as critical digital literacy, computational thinking, data literacy and network literacy. This would imply that formal education institutions would be able to leave behind disciplinary divorce, the departmental thinking

that disaggregates, disconnects and disassociates disciplines from each other, in order to move towards more complex ways of understanding reality. One example is no longer separating the humanities from the STEM disciplines (Science, Technology, Engineering and Mathematics). Solving the problems of this changing, complex world requires a kind of thinking that is much more sophisticated but also closer to reality. Knowledge of the social implications of technology is critical to understanding today's asymmetries and concentrations of power.

As we have seen, the asymmetries of the digital ecosystem erode and distort democratic life. The experts have suggested that media literacy is the «solution» to problems such as fake news or other forms of manipulation. However, a purely instrumental adoption of media literacy or digital culture could, in fact, make people more vulnerable to the manipulation and forms of power imposed by digital environments.[5]

Although it is an important skill, learning to access and filter information is not enough. After all, machines are capable of classifying data better than people can. Individuals have to go beyond being «curators» of content with the power to assess information, identify sources and/or measure their reliability in order to determine or reconstruct the truth in a rational and critical manner. Knowing where the information comes from may be as important as or more important than processing the information itself. In addition, we have to be able to read between the lines in an environment of digital tools, such as Facebook, that claim they want to «help people stay connected and bring us closer together with the people that matter to us»,[6] when in fact there is a business model based on manipulation that seeks to catch our attention, sell our data and, when possible, predict or influence our behaviour, all of it wrapped in a seductive pro-community ribbon.

What principles and strategies do citizens need in relation to

5. Ben Byford, «The Machine Ethics Podcast», Home, 2018, https://www.machine-ethics.net/podcast/20-luciano-floridi/.

algorithms that make decisions based on personal information? In a context of new asymmetries in which access to big data is presented as the source of truth (see dataism), it is necessary to think critically about how information is constructed, who is paying for it and what is left out. The challenge is to understand the many ways of making sense of the world. To prevent citizens from being absorbed by a digital ecosystem that segregates the population into scribes and data vassals, it is necessary to develop new skills. Recognising that information can be, is, and will be reconstructed in countless ways is the first step towards breaking the current information asymmetries.

Learning to be more human in the machine age is related to understanding that there are different ways to build knowledge. It is also related to being able to act and react on a network against the current digital ecosystem.[7,8,9]

Individuals have to go beyond being «curators» of content.

Institutional and alternative mechanisms – both regulated and social – are necessary to accommodate new ways of thinking in today's world. Different spaces for both formal and informal learning may become an opportunity to raise people's awareness of filters and biases when interpreting reality. It is necessary to understand that the various forms of manipulation and power can be apparently invisible

6. Adam Mosseri, «News Feed FYI: Bringing People Closer Together», News Feed FYI: Bringing People Closer Together | Facebook Media, 2018, https://www.facebook.com/facebookmedia/blog/news-feed-fyi-bringing-people-closer-together.
7. Jessica MacCall, «Danah Boyd to Keynote SXSW EDU 2018», *SXSW* (blog), 2017, https://www.sxsw.com/news/2017/danah-boyd-keynote-sxsw-edu/.
8. LSE, «I Do Want Media Literacy... and More. A Response to Danah Boyd», *Media Policy Project* (blog), 2018.
9. Danah Boyd, «A Few Responses to Criticism of My SXSW-Edu Keynote on Media Literacy», Medium, 2018, https://medium.com/@zephoria/a-few-responses-to-criticism-of-my-sxsw-edu-keynote-on-media-literacy-7eb2843fae22

The Internet comes across as a data factory, and sometimes we act as indoctrinated consumers that adhere to the rules imposed by a few influential digital intermediaries.

in digital spaces. The Internet comes across as a data factory, and sometimes we act as indoctrinated consumers that adhere to the rules imposed by a few influential digital intermediaries. Of course, one's awareness of being manipulated doesn't mean he or she can resist or break free. That is why it's not enough to emphasise the importance of citizens' development of new capacities; it's also necessary to train agents of change who are capable of intervening in the reality that surrounds us.

Critical thinking should encourage people to participate in a reflective and deliberate way, which doesn't mean the ambiguities of the reality in which we live cannot be explored. The role of education is critical to developing agents of change, and this is related to encouraging new ways of self-regulating our cognitive skills, our abilities and our behaviours. The institutions that promote learning should be able to answer this simple question: «How can individuals learn on their own and think critically when faced with these challenges?» This involves providing more compasses for exploration instead of so many maps. It also involves learning to self-regulate and self-manage learning processes regardless of the context in which they occur.

The future requires a different Internet

In the European summer of 2018, I had the honour of being invited to participate in the Global Solutions Summit in Berlin.[10,11] The event took place in the former State Council Building (Staatsratsgebäude), which is a relic of the years of the German Democratic Republic (GDR). It is ironic that German Chancellor Angela Merkel chose this flagship building of East German socialism to put forward the need to create a new data business model and thus rethink the Internet data factory.

Chancellor Merkel stated, «The pricing of data, especially that of consumers, will in my view be essential to ensure a fair world in the future». As she further explained, «Having a lot of data doesn't necessarily create value. What ultimately creates value is software and algorithms». Merkel added that a system in which citizens post their data on platforms for free only for technology giants to sell them and make a profit is unfair.

Merkel asked the researchers in attendance to develop concrete proposals on how to determine the value of the data and tax them as products that make it possible to transform the current traditional and digital business models.

The significance of the proposal is clear if seen in perspective. According to the European Commission, the value of European

The pricing of data, especially that of consumers, will in my view be essential to ensure a fair world in the future.

10. Dennis Snower, «The Digital Freedom Pass: Emancipation from digital slavery», 2018. https://voxeu.org/article/digital-freedom-pass-emancipation-digital-slavery
11. Global Solutions, GLOBAL SOLUTIONS 2018 - Q&A with *German Chancellor Angela Merkel*, 2018, https://www.youtube.com/watch?v=9YFV1QjC4FA.

citizens' personal data has the potential to grow to nearly €1 trillion annually by 2020, which is almost 8% of the EU's GDP.[12]

The idea of offering online users some form of financial compensation for their data, which is the key takeaway for social networking companies like Facebook, is nothing new. However, Merkel's comments in the former headquarters of the GDR marked the first time that a world leader had publicly taken up this cause.

12. European Commision: «Questions and Answers-Data Protection reform package». 2017, http://europa.eu/rapid/press-release_MEMO-17-1441_en.htm.

At the institutional and political level: Who watches those who watch us?

In August 2016, the Australian Government published a set of «anonymous» data that included medical records and all the prescriptions and surgical procedures of 2.9 million patients.

The names and other identifying features were removed from the records in an effort to protect the privacy of individuals. However, a research team at the University of Melbourne soon discovered that it was easy to re-identify people (re-identification) and review their complete medical record without their consent. The re-identification process was done without the need to decipher the data; it involved linking the unencrypted parts of the register with known information. They checked the data set against other publicly available information, such as celebrities' posts about their children's births (sharenting) and prominent athletes' comments to the press or on social networks about undergoing surgery.[13]

The Government decided to remove the data from its website, but not before they were downloaded 1,500 times.[14]

This example demonstrates how an initiative that was designed for a good purpose (it was an open government initiative)[15] was amplified by the digital technologies and ended up becoming a clear violation of people's right to privacy. That is why

13. Chris Culnane, Benjamin I. P. Rubinstein, and Vanessa Teague, «Health Data in an Open World», arXiv:1712.05627 [cs], 15 December 2017, http://arxiv.org/abs/1712.05627.
14. Olivia Solon, «Data Is a Fingerprint»: Why You Aren't as Anonymous as You Think Online», *The Guardian*, 13 July 2018, sec. World news, https://www.theguardian.com/world/2018/jul/13/anonymous-browsing-data-medical-records-identity-privacy.
15. Data gov au, «Welcome - data.gov.au», s/f, https://data.gov.au/.

it is necessary to move towards new ways of protecting the citizenry, not only reactively but proactively as well.

Today, we need more advanced knowledge society projects based on our weaknesses instead of on our strengths.[16] The protection of identity, privacy or anonymity, free will, the right to silence and the right to be forgotten are some of the dimensions that seem the most fragile today, especially for the more information-vulnerable («smartphone zombies», data vassals, etc.).

Many of the devices that collect our information and monitor our actions are so inextricably intertwined with our daily lives that we do not even realise that we are being watched and/or analysed.

Who watches those who watch us? In the absence of robust data protection rules (the current reality in many countries), special efforts and attention are needed to favour and promote dimensions, such as responsibility, transparency, auditability and incorruptibility of the information that exists on the Internet.[17] In short, certain criteria must be considered (or demanded) in any algorithm designed to replace human judgement and/or the human ability to make moral decisions.

One of the most urgent pending agendas is to reduce the control that the technological giants have over our personal data. The growing number and diversity of data generated must be followed by a call to reinforce existing ethical concerns about what happens within the digital ecosystem. We must never stop asking these questions: To whom do the data belong? Who can use them and for what purpose? Who is ultimately responsible?

16. Luciano Floridi, «thewebconf - Keynote - The Good web - some challenges and strategies to realise it», 2018, http://thewebconf.webcastor.tv/media/video/22.
17. Rose Luckin *et al.*, «Intelligence unleashed: An argument for AI in education», 2016.

Monitoring systems that «help» citizens

In 2018, the US Government began to consider the idea of requiring foreigners to state what social networks they used before granting them a visa. Specifically, this means that applicants must provide retroactive information (up to five years prior) on their social networks, phone numbers and email addresses,[18] including providing «your unique user name for any websites or applications you have used to create or share content (photos, videos, status updates, etc.) as part of a public profile within the last five years», as specified on form DS-5535 (Supplemental Questions for Visa Applicants).

Although the form indicates that providing the information is «voluntary» it does warn that failure to provide the information may delay or affect the application. The US government is also considering additional «security» measures.[19] The risks of abuses of power that this measure poses are numerous. It is clear that states confront a complex challenge when trying to ensure the security of their citizens while also keeping people's right to privacy in mind. However, generating forms of protection on a large scale should not result in mass data collection as if we are all potential suspects. Elsewhere in the world, other administrations are exploring alternative ways of implementing monitoring and control mechanisms that affect the autonomy of people.

Let's consider a different case that includes the Asian giant.

18. Brendan O'Brien, «U.S. Visa Applicants to Be Asked for Social Media History: State...», *Reuters*, 30 March 2018, https://www.reuters.com/article/us-usa-immigration-visa/u-s-visa-applicants-to-be-asked-for-social-media-history-state-department-idUSKBN1H611P.
19. Mitch Phillips, «France lifts second World Cup after classic final | Reuters», 2018, https://www.reuters.com/article/us-soccer-worldcup-final/france-lifts-second-world-cup-after-classic-final-idUSKBN1K50RG

Citizens lose social credit when driving badly, smoking in banned areas, buying too many video games or posting fake news online.

The Chinese state is establishing a classification system that will monitor the behaviour of its population. It will classify them according to their «social credit system» (SCS). Announced back in 2014, the SCS seeks to impose the idea that «maintaining trust is glorious and breaking trust is shameful», according to government documents.

The programme should be fully operational by the year 2020. This system has to define standards for social credit, including mechanisms to encourage trust (through rewards), and penalise any loss of trust (through sanctions). Today, the SCS is being tested on millions of people (participation is not voluntary). Like private credit scores, a person's social score can go up or down depending on her or his behaviour. The exact methodology behind this system is unknown.

The existing documentation indicates that citizens lose social credit when driving badly, smoking in banned areas, buying too many video games or posting fake news online. Fraud and embezzlement will also have a negative effect on such credit. Those who register low social credit may face travel restrictions or have their access to public services limited.

On the other hand, the Chinese Executive will publicly acknowledge people worthy of trust. Those who obtain social credits that qualify them as «good citizens» can enjoy free gym facilities, cheaper public transport and shorter waiting times in hospitals.

The SCS will apply to individuals, legal entities and other organisations. The Party and the Chinese State Council attach great importance to the construction of the SCS. The goal is to have an algorithmic way of exercising government. Although Human Rights Watch termed it «chilling», Chinese citizens argue that SCS is already making them better people.[20,21,22,23]

While some of the examples presented here are not equally

applicable in all countries, the technology, data and power asymmetries resulting from the current digital ecosystem are much more ubiquitous than we would like them to be.

Technologies are not neutral. We have handed much of our decision-making power over to sophisticated machines and information systems. One of the problems we must address is that machines are not always as smart as some make them out to be. They also replicate stupidity.

After the «collective intelligence» boom[24] (depicted, for instance, on Wikipedia), we learned about «collective stupidity», such as when we try to understand the complexity of reality by surrounding ourselves exclusively with people who think the same way we do. Today, we talk about artificial intelligence, but it is also necessary to analyse how to act in the face of the emergence of «artificial stupidity». Although it is usually noted that access to valuable data (reliable, updated, legally obtained) is key to getting the most out of intelligent systems, the reality is that many processing models

The technology, data and power asymmetries resulting from the current digital ecosystem are much more ubiquitous than we would like them to be.

20. Meg Jing Zeng, «China's Social Credit System Puts Its People under Pressure to Be Model Citizens», *The Conversation*, 2018, https://theconversation.com/chinas-social-credit-system-puts-its-people-under-pressure-to-be-model-citizens-89963.
21. Alexandra Ma, «China has started ranking citizens with a creepy 'social credit' system-here's what you can do wrong, and the embarrasing, demeaning ways they can punish you», *Business Insider*, 2018, http://www.businessinsider.com/china-social-credit-system-punishments-and-rewards-explained-2018-4.
22. Charles Rollet, «The complicated truth about China's social credit system», Wired UK, 5 July 2018, https://www.wired.co.uk/article/china-social-credit.
23. State Council, «Planning Outline for the Construction of a Social Credit System (2014-2020)» *China Copyright and Media*, 2014, https://chinacopyrightandmedia.wordpress.com/2014/06/14/planning-outline-for-the-construction-of-a-social-credit-system-2014-2020/.
24. James Surowiecki, *The Wisdom of Crowds* (New York: Anchor Books, 2005).

BOX 1

The emergence of «artificial stupidity»: A solution or a problem?

The bias in the design of computer systems is nothing new, and it didn't emerge in the age of big data. The following are descriptions of some examples of computer tools that influence or determine important decision-making. These cases relate to clear biases ranging from design to data processing and include ways to interpret and apply the results:

1 DISCRIMINATION OF APPLICANTS ACCORDING TO GENDER AND ORIGIN

The UK Commission for Racial Equality found St. George's Hospital Medical School (London) guilty of practising racial and sexual discrimination in its admissions. For the selection of students, a computer system was used that assigned a score to decide which applicants should be interviewed. The commission identified that the software used for the selection of applicants applied a clear bias based on the sex (women) or the racial origin of the applicant. It unfairly discriminated against racial minorities and people with names that did not seem to be of European origin. This prevented some applicants from being admitted.[25]

2 A XENOPHOBIC BOT

In 2016, Microsoft carried out an experiment to learn more about the interaction between computers and humans. It was a computer program (a virtual robot or artificial intelligence bot called Tay) designed to hold an informal and entertaining conversation on social networks with an audience aged 18 to 24 years old. The bot was programmed to learn from its users and give personalised answers; it gathered information about each of them during the interaction. However, the result was not as expected. After 100,000 tweets, 155,000 followers and only 16 hours of life, Microsoft closed Tay's Twitter account. The racist, misogynistic and xenophobic messages of the bot did not go unnoticed. Microsoft said the company was «deeply sorry for the unintended offensive and hurtful tweets from Tay».[26,27]

3 BIASED CRIMINAL COUNSELLOR

Correctional Offender Management Profiling for Alternative Sanctions (COMPAS) is an algorithm used to predict how likely someone is to commit a crime. It is an algorithm that reviews 137 different parameters of convicts to determine the likelihood of them reoffending in the future. To date, it has reviewed the records of one million convicted individuals. Because the algorithm is kept secret, defence attorneys have little room to discuss the results offered by COMPAS. Although it is an extended tool in numerous courts in the United States, recent research has found that its algorithm has a racist bias that makes it judge African Americans especially unfavourably. Although COMPAS does not have access to racial information, it deduces it by other parameters and ends up showing a racist bias. The mistakes of tools such as COMPAS in influencing decision-making can significantly affect the lives and welfare of defendants.[28,29,30]

4 EDUCATIONAL TOOL THAT AFFECTS NON-NATIVE SPEAKERS

One of the main plagiarism detection services used in our days is Turnitin. This tool compares texts written by students with information found online and indicates the likelihood that the document is the result of plagiarism. More than 30 million users in 15,000 institutions in 150 countries use Turnitin. Because the software compares text strings, it is more likely to identify non-native speakers more easily than native speakers. This is because it is more feasible for native speakers to be more skilful at adapting individual words and dividing excerpts from a plagiarised text or hiding them through synonyms. Turnitin may be creating unfair distinctions that qualify some students as «plagiarists» versus others under unequal conditions. Unfortunately, most teachers are unaware of how this tool works.[31]

BOX 1

5 PUBLIC ADMINISTRATION AND UNSURE SOCIAL INSURANCE

In her book *Automating Inequality* [32,33,34] Virginia Eubanks analysed a considerable number of cases in which social services in the United States automate decisions on social assistance applications. The system, according to the author, creates an electronic register for the homeless. These algorithms can make it harder for citizens to obtain services while forcing them to deal with an invasive personal data collection process. The conclusions are very bleak, since these new systems show clear discrimination against the most vulnerable communities.

Although only some cases are included here for illustrative purposes, it should be remembered that this has become an important type of tool in various daily practices, such as banking systems that analyse purchasing patterns and the ability to pay a credit, websites that suggest a rapport with a person as a potential partner, automatic translators with gender-based biases, systems that assist medical insurance companies to determine the risk that a client may be a drug user, and surveillance cameras to detect lawbreakers, among others.

There is no shortage of «solutionists» who have suggested that a quick fix involves algorithms monitoring algorithms.

Specialists and organisations emphasise the seriousness of having (and especially trusting) «smart machines» that come with stereotypes and social prejudices. This is especially critical when the «decisions» made by the algorithms can have serious negative repercussions on people's lives. There is no shortage of «solutionists» who have suggested that a quick fix involves algorithms monitoring algorithms. Other voices have expressed that it is necessary to ensure that companies that use algorithms do so more

transparently and offer more information to those who require it.

Understanding the existence of this type of bias and the possible causes of these problems is the first step towards preventing or correcting them. It is also necessary to create the conditions so that citizen watch organisations – such as AlgorithmWatch, in Berlin, academic communities such as AI Now Institute, of the University of New York, as well as public entities – ensure the oversight and control of these automated decision-making tools. All the risks and conflicts arising from these expressions of «artificial stupidity» make it necessary to have new accountability mechanisms (see EU General Data Protection Regulation).[35]

25. Stella Lowry y Gordon Macpherson, «A blott on the profession», *British Medical Journal* 296, n.º 6623 (1988): 2, http://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC2545288&blobtype=pdf.
26. Anibal Malvar, «¿Qué fue de Tay, la robot de Microsoft que se volvió nazi y machista?», 2017, https://www.publico.es/ciencias/inteligencia-artificial-internet-tay-robot-microsoft-nazi-machista.html.
27. BBC Mundo, «Tay, la robot racista y xenófoba de Microsoft», BBC News Mundo, 2016, https://www.bbc.com/mundo/noticias/2016/03/160325_tecnologia_microsoft_tay_bot_adolescente_inteligencia_artificial_racista_xenofoba_lb
28. Julia Dressel y Hany Farid, «The Accuracy, Fairness, and Limits of Predicting Recidivism», *Science Advances* 4, n.º 1 (1 de enero de 2018): eaao5580, https://doi.org/10.1126/sciadv.aao5580.
29. Julia Angwin y Jeff Larson, «Machine Bias», text/html, *ProPublica*, 23 de mayo de 2016, https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing.
30. Julia Angwin y Jeff Larson, «Bias in Criminal Risk Scores Is Mathematically...», text/html, *ProPublica*, 2016, https://www.propublica.org/article/bias-in-criminal-risk-scores-is-mathematically-inevitable-researchers-say
31. Lucas D. Introna, «Maintaining the Reversibility of Foldings: Making the Ethics (Politics) of Information Technology Visible», *Ethics and Information Technology* 9, n.º 1 (1 de marzo de 2007): 11-25, https://doi.org/10.1007/s10676-006-9133-z.
32. Virginia Eubanks, *Automating inequality: How high-tech tools profile, police, and punish the poor* (St. Martin's Press, 2018).
33. Virginia Eubanks, «A Child Abuse Prediction Model Fails Poor Families», *Wired*, 15 de enero de 2018, https://www.wired.com/story/excerpt-from-automating-inequality/.
34. Jackie Snow, «Los algoritmos sesgados hacen que la desigualdad sea muy evidente», *MIT Technology Review*, 2018, https://www.technologyreview.es/s/9958/los-algoritmos-sesgados-hacen-que-la-desigualdad-sea-muy-evidente.
35. Comisión Europea, «Reforma de 2018 de las normas de protección de datos de la UE», Text, Comisión Europea - European Commission, 2018, https://ec.europa.eu/commission/priorities/justice-and-fundamental-rights/data-protection/2018-reform-eu-data-protection-rules_es.

encode aspects such as human prejudice, a lack of understanding or bias that are incorporated into software tools that impact countless aspects of our lives.

Algorithms that operationalise a biased outlook on reality (usually with a commercial, ideological or political interest) have an influence on what decisions we make. At what point do we relinquish our ability to decide? And, at what cost do we stop thinking?

Today, automated systems, algorithms for classification and control of predictive models affect the selection, assignment or rejection of visas, credits, jobs, scholarships and social subsidies, among others. In this regard, Cathy O'Neil[36] has questioned blind trust in the prophecy of «dataism», arguing that the models are opinions incorporated into mathematics. Many of the models behind the algorithms that we use on a daily basis encode human prejudices, misconceptions and biases. An abuse of power or a privileged position by a particular digital service, or set of algorithms, is basically a human abuse hiding under a technological guise.[37]

As indicated above, algorithms are often designed with a reductionist view that simplifies or ignores contexts (where information is generated or transformed), thus standardising a set of data to fit other systems. Today, we are more aware of how hard it is to ensure that artificial intelligence systems work properly for everyone. The «expert» systems that process big data, as well as recommendation algorithms, are not free from prejudice and bias. The more important the role these tools play for science and public policies, the more critical it is to understand their limitations in order to take action towards them.

In the new data-based surveillance, massive amounts of information

36. Cathy O'Neil, «Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy, by Cathy O'Neil, 2016 National Book Award Longlist, Nonfiction», 2016, http://www.nationalbook.org/nba2016_nf_oneil-weapons-of-math-destruction.html#.W1HttNIzaM8.
37. Martínez-Pradales, «Necesitamos más filósofos para analizar el uso de los algoritmos», Nobbot, 10 September 2018, https://www.nobbot.com/destacados/etica-algoritmos-lorena-jaume-palasi/.

are collected on a wide range of individuals and groups. Eubanks[38] has warned that new asymmetries also emerge from how states control and regulate the lives of their citizens. From this perspective, the new digital divide assigns a privileged position to the caste of scribes (engineers, data scientists, algorithm programmers or designers) who are becoming the editors of modern life, with considerable influence on politics, education, culture, health, food, transport and any other dimension with which we interact through our digital devices.

It is necessary to develop the bases to create new forms and architectures that will decentralise the asymmetries of information and power that exist today. By doing so, they'll be less exclusive and can take care of those who are more information-vulnerable.

Although Vint Cerf (known as «the father of the Internet») and Tim Berners-Lee (the inventor of the World Wide Web) consciously designed the Internet without a central power, the distributed architecture they had dreamed of did not spread as expected. The irony is that the responsibilities are distributed, but the powers are increasingly concentrated. A handful of companies have become enormously powerful, making current asymmetries more obvious.[39]

Algorithms are often designed with a reductionist view that simplifies or ignores contexts.

The Internet has a clear political dimension and, at the same time, it's a huge amplifier of some forms of power. Therefore, there is no exclusively technical conversation that does not alter, affect or benefit the political dimensions, whether to strengthen the traditional spaces of the exercise of power or

38. Virginia Eubanks, *Automating inequality: How high-tech tools profile, police, and punish the poor* (St. Martin's Press, 2018).

39. Andrew Keen, *The Internet is not the answer.* Atlantic Books Ltd., 2015.

to consolidate alternative forms of control, such as the above dimensions of surveillance and monitoring, influence, loss of self-control and cognitive overload.

Digital products generate or produce social effects. Technologies come with political weight, and it is important to take that into account.

Digital products generate or produce social effects. Technologies come with political weight, and it is important to take that into account. Watters[40] indicated that it is usually claimed that technology is agnostic to any ideology and is presented as if it were absolutely neutral and value-free. This is very convenient when one wants to promote the idea of a post-ideological vision, but, as we have seen, the lack of a critical use of technologies – especially information and communication technologies – paves the way for the emergence of asymmetries that benefit some over others.

In this context, the concentration of power reaffirms a way of understanding reality associated with prolonging and legitimising specific power and control groups.

Defending and taking care of people's data ultimately means defending people.[41] Today's best brains are focused on making the population click on the contents of their digital services and then exploiting the information that this generates.[42] It is necessary to change the centre of gravity and look for incentives to make the best talents of today's and tomorrow's generations also contribute to creating the foundations of a new, more inclusive and less unequal digital ecosystem. All this should encourage us to consider the necessity of implementing ways that contribute to the devolution of digital power.

Reducing the current asymmetries will be related to, among other

40. A. Watters, *The ideology of the blockchain (for education)* (Hack Education, 2016).
41. Neill, Carrie. «Leveraging "Thick Data" in User Research | People Nerds». dscout, 2018. https://dscout.com/people-nerds/people-are-your-data-tricia-wang.

aspects, thinking creatively about how to make the «surplus value»[43] produced by user-generated data stay in the hands of its creators and not just in those of the intermediaries. In 2018, according to Forbes,[44] five of the 10 most powerful businesspeople in the world were directly linked to the world of digital technologies. If there is an agreement that data have become a valuable asset in the digital age, then there must be an economic counterpart for the users who produce it. Why do the data generated by users belong to digital companies? Is it feasible to explore alternative ways that will reduce today's asymmetries of power?

It would obviously be a mistake to assume that all companies misuse data or that this reality cannot be remedied. The risks are such that it is essential to understand the complexities of the issue, act directly and/or demand that the necessary interlocutors take the necessary action.

It is usually claimed that technology is agnostic to any ideology and is presented as if it were absolutely neutral.

It is fairly clear that we don't have all the answers to the current challenges. However, the genie has already come out of the bottle and now it's time to act. Security, privacy, anonymity, the protection of people's privacy, the right to silence and be forgotten are examples of the topical issues that cannot be left in the hands of technicians and lawyers alone. Both transparency and trust have now become central to thinking about the Internet. The asymmetries of power are no longer only in the unseen part of the iceberg (code, algorithms and regulations); they are also on the surface and moving higher and higher on the daily

42. Sandra González-Bailón, *Decoding the Social World: Data Science and the Unintended Consequences of Communication* (MIT Press, 2017).
43. *La Diaria*, «Inteligencia artificial y grandes datos: algunos apuntes», *La Diaria*, 28 March 2018, https://ladiaria.com.uy/articulo/2018/3/inteligencia-artificial-y-grandes-datos-algunos-apuntes/.
44. *Forbes*, «The World's Billionaires 2018», *Forbes*, 2018, https://www.forbes.com/billionaires/.

agenda of citizens inhabiting the digital ecosystem.

One of the great challenges facing states in today's society is that their role is not limited to simply favouring digital innovation and generating the conditions for it. They are also required (together with their respective supranational alliances) to lead and promote the governance of digital technologies in order to address the reconfigurations of power and control while ensuring that this is for the benefit of the citizens rather than at their expense. Has the symbolic, but also real, power of states in the face of these new challenges been reduced?

Conclusions: People versus machines: Who watches the algorithms?

According to Williamson, «Whether you like it or not, a data-based version of yourself exists out there, scattered among different databases as data points in massive torrents of big data. Data mining, algorithms and analytics are increasingly being put to work to know and understand you».[45] When I first read this quotation, I thought that perhaps it was applicable to specific cases or that there was a hint of dystopia in its warning. However, in the wake of the case of Cambridge Analytica and Facebook, I concluded that Williamson was merely describing the surface of the digital iceberg.

In 2018, Facebook CEO Mark Zuckerberg faced 10 hours of questions in front of nearly 100 US lawmakers. Zuckerberg was summoned to the Capitol to answer questions about a case that affected 87 million people whose personal information was unduly shared (and without any notification) with the political consulting firm Cambridge Analytica.[46]

The questioning was a kind of master class in new forms of power. The meeting provided insights into the clear mismatch between Facebook's powerful collection and manipulation capacity (with more than two billion users) and a group of legislators with clearly limited knowledge of how the digital world has evolved. The following is an extract from the exchange during questioning between Ben Luján and Mark Zuckerberg:[47]

45. Ben Williamson, *Big Data in Education: The digital future of learning, policy and practice* (University of Stirling, 2017).
46. Dustin Volz and David Ingram, «Zuckerberg sale indemne tras interrogatorio en Congreso EE UU.», Reuters, 12 April 2018, https://lta.reuters.com/article/internetNews/idLTAKBN1HI2IJ-OUSLI.
47. Ben Ray Luján, https://lujan.house.gov/media-center/press-releases/luj-and-aacuten-questions-facebook-ceo-mark-zuckerberg.

- Zuckerberg: Congressman, in general, we collect data on people who are not signed up for Facebook for security purposes (...).

- Congressman Ben Luján: So these are called shadow profiles?

- Zuckerberg: Congressman, I'm not familiar with that.

To understand shadow profiles, it is important to know that all the information that Facebook compiles on an individual, regardless of whether or not one posts on Facebook, is what is known as a shadow profile. When people upload their contact lists or address books on Facebook, those data are linked to other people's contact information to generate friend recommendations. Through these proactive data collection processes, Facebook builds up information on a person (including family members and other people, such as friends and coworkers), even if one is not a user of this social network.

When accessing the page, «I don't have an active Facebook account. How can I request my personal data stored by Facebook?», an individual will certainly have a moment of surprise when directed to a form that requests her or his registration on Facebook in order to view one's data.[48] Shadow profiles have existed on Facebook for years, but most users don't know about their scope and power. Because shadow profile connections occur within Facebook's algorithmic black box, people cannot see how deep the extraction of data on their lives is.

There are usually no simple solutions to complex problems. Asymmetries and abuses of power are not solved with a single click. Similarly, the way out of current problems is not as simple as the enforcement of more regulations. Though an increased number of regulations cannot ensure the absence of abuse, citizens can at least demand higher levels of transparency and a state with a regulatory framework that is more

48. Facebook, «Servicio de ayuda», accessed on 20 July 2018, https://m.facebook.com/help/226281544049399.

in tune with the sociotechnical changes of the current digital ecosystem.

States must play a greater, more dynamic role when legislating by ensuring that the protection of citizens in the digital age is a priority. For this, it is necessary to move from the reactive paradigm focused on legislation on the events that have already taken place and moving towards a more proactive approach that establishes security controls, criteria and guidelines that ensure privacy and protection for users from the design of the platforms of the digital services, as suggested by Bárbara Muracciole.[49]

In addition to storing data on their users, the digital giants tend to use their information by marketing it to third parties in unilaterally defined practices. The existence of loopholes in the law does not mean that there are no rules;

It is necessary to move from the reactive paradigm focused on legislation on the events that have already taken place and moving towards a more proactive approach that establishes security controls.

rather, it means that the rules are not enough or that they have been designed to benefit GAFAM and other large Internet companies. It would be naive to try to ignore how the digital giants lobby policy-makers. Although some call it «soft power», this is a clear way to ensure the perpetuation of its dominant position, influencing decisions through donations to leading think tanks, funding the creation of research centres in universities, and covering the costs of political campaigns or rallies, among others. According to the *Washington Post*,[50] which investigated the

49. No Toquen Nada, «Una nueva ética digital para cuidar a los usuarios más allá de lo que las tecnologías permitan», 2018, https://delsol.uy/notoquennada/ronda/una-nueva-etica-digital-para-cuidar-a-los-usuarios-mas-alla-de-lo-que-las-tecnologias-permitan

50. Shaban, Hamza. 2017. «Google Spent the Most It Ever Has Trying to Influence Washington: $6 Million». Washington Post. 2017. https://www.washingtonpost.com/news/the-switch/wp/2017/07/21/google-spent-the-most-it-ever-has-trying-to-influence-washington-6-million/

It is clear we need to move towards a digital ethics that is not limited to legislation.

astronomical lobbying strategies, the combined lobbying efforts of some of the most influential technology companies – Google, Facebook, Amazon, Apple and Microsoft – totalled more than 15 million dollars in 2017 (plenty of money for lobbying, but certainly a trifle amount considering their combined annual profits). Google's «father», Alphabet, spent more money on lobbying in 2017 than any other corporation in the United States.[51,52,53,54]

It is necessary to create mechanisms and interlocutors that make it possible to see how companies act and use the data. Similarly, it's time to move towards governments with more transparent data that users or their representatives can understand. This will ensure that information and regulation on the use of data are not only available but also comprehensible to the layperson, i.e. with higher levels of clarity and usability.

In the light of the above, it is clear we need to move towards a digital ethics that is not limited to legislation. Public as well as civil society agencies will have to participate in an active debate that explores limits to the power that companies have over people as well

51. Nicholas Confessore, «The Unlikely Activists Who Took On Silicon Valley and Won», *The New York Times*, 14 August 2018, sec. Magazine, https://www.nytimes.com/2018/08/14/magazine/facebook-google-privacy-data.html
52. Nitasha Tiku, «The Hard Consequence of Google's Soft Power», *Wired*, 1 September 2017, https://www.wired.com/story/google-new-america-open-markets/.
53. Olivia Solon and Sabrina Siddiqui, «Forget Wall Street - Silicon Valley is the new political power in Washington», *The Guardian*, 2017, https://www.theguardian.com/technology/2017/sep/03/silicon-valley-politics-lobbying-washington
54. *The Economist*, «The New America Foundation falls into a familiar trap», The Economist, 7 September 2017, https://www.economist.com/united-states/2017/09/07/the-new-america-foundation-falls-into-a-familiar-trap.

as the privacy protection minimums that should be guaranteed by each of the digital services and devices offered to the public.

We have already seen that machine learning can work by adopting discrimination criteria (Box 1).[55] Optimising tools that may lead to unfair decisions can do more harm than good. Crawford argued that artificial intelligence can be used as a tool to justify certain technical or political decisions. Therefore, these tools have to be designed, used and analysed within a framework of ethical considerations.[56]

There must be a close relationship between digital codes of ethics and sound data governance. This interdependence has to be close and subject to regular review. Otherwise, the risk of seducing society with the promises of artificial intelligence and tools that think for us without offering the instruments for their audit, regulation and accountability would be irresponsible and would also open up new opportunities for asymmetry, abuses of power, control and dependence.

This field puts forward an objective in motion. The limits are in the process of on-going redefinition. The roles of nation states today are less significant than in the past. An indication of this is their hesitancy towards taking prompt action when encountering challenges posed by the digital ecosystem. In addition, states are supposed to act jointly or at least in an articulated manner. The Internet and dataflows generate transactions that are spread across much of the globe. Therefore, geographic borders and jurisdictions only have a limited scope, and the actions taken will have to take account of the ubiquity of the problem. Otherwise, there is the risk of generating pockets or territories without law or regulation from which they continue to replicate forms of abuse or manipulation.

55. Gina Neff and Peter Nagy, «Automation, Algorithms, and Politics| Talking to Bots: Symbiotic Agency and the Case of Tay», *International Journal of Communication* 10, n.º 0 (12 October 2016): 17, http://ijoc.org/index.php/ijoc/article/view/6277.

56. The Royal Society, «You and AI - Machine learning, bias and implications for inequality - Royal Society», 2018, https://royalsociety.org/science-events-and-lectures/2018/07/you-and-ai-equality/.

BOX 2

Excerpt from the report «Towards a digital ethics»

(Original document prepared by the European Ethics Advisory Group)[57]

Guidelines for the future:

Data markets are not a new phenomenon, but they have achieved new significance in the digital age. However, as we can see, a new digital landscape is emerging: big data generated by a variety of sources; public administrations and private companies; social networks and other online platforms; the Internet of things and networked sensors; cloud computing; and artificial intelligence, particularly machine learning.

Data protection faces three interrelated crises of trust:

1 INDIVIDUAL TRUST

Trust in people, institutions and organisations that deal with personal data is low.

3 SOCIAL TRUST

Trust in other members of social groups used to be anchored in personal proximity and physical interaction, which are being increasingly replaced by digital connections.

2 INSTITUTIONAL TRUST

Transparency and accountability as a condition for keeping track of the reputations of individuals and organisations and trust-building in a society that requires access to personal data.

57. EDPS Ethics Advisory Group, «Towards a digital ethics» (European Data Protection Supervision, 2018).

3. RETHINKING FORMS OF INCLUSION

1. The dignity of the person remains inviolable in the digital age.
2. Personhood and personal data are inseparable from one another.
3. Digital technologies risk weakening the foundation of democratic governance.
4. Digitised data processing risks fostering new forms of discrimination.
5. Data commoditisation risks shifting value from persons to personal data.

The networked society is currently characterised by significant inequalities. Access to and participation in digital innovation are concentrated in a few digital giants. This invites a new ethical evaluation and a new interpretation of some of the fundamental notions in ethics, such as dignity, freedom, autonomy, solidarity, equality, justice and trust. This requires a conversation between legislators and data protection experts as well as society at large. After all, the issues identified in this report concern us all, not only as citizens but also as individuals.

The new digital age generates new ethical questions about what it means to be human in relation to data, about human knowledge and about the nature of human experience. A responsive digital ethics will need to provide solutions to unprecedented challenges.

Any digital ethics should also raise our awareness of the changing relationship between digital and human realities. The purpose is to reassess our understanding of fundamental values for the wellbeing of individuals, which in a data-based society seem to be at risk.

Mr Floridi,[58] president of the Data Ethics Group of the Alan Turing Institute in the United Kingdom, analyses the latest European data protection legislation. The risk of the new legislation on data protection is overlegislating, which involves incorporating more and more rules that can even clash with aspects that, until now, have so far been regarded as fundamental rights. On the other hand, this exercise can bring clarity. Defining new rules will help to focus on and contextualise a field that has been full of ambiguities to date. If it becomes apparent that this does not work or is not enough, there will have to be amendments.

This legislation of the European Parliament that Floridi refers to is the «General Data Protection Regulation» (GDPR),[59] which regulates individuals, companies or organisations' treatment of personal data related to individuals in the European Union (EU).[60] It is considered an ambitious and influential regulation with far-reaching consequences and impacts how companies handle data and privacy within Europe and even outside of it (extraterritoriality). It's not enough, but it's a step in the right direction.

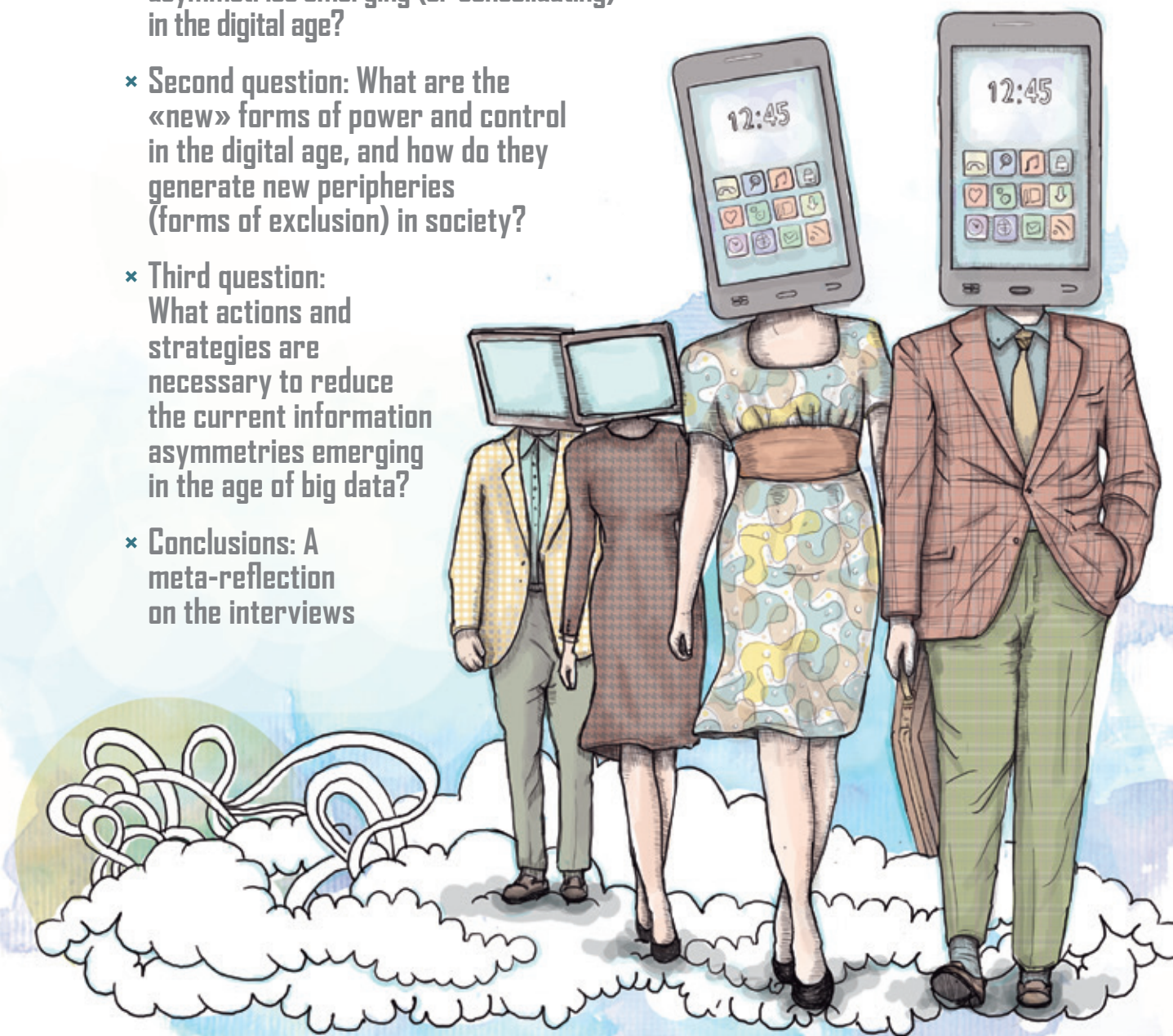
58. Free Speech Debate, «Luciano Floridi: What contribution can the philosophy of information make to our understanding of free speech? Free Speech Debate», 2018, http://freespeechdebate.com/media/luciano-floridi-on-the-philosophy-of-information/.

59. European Commission, «Data Protection», Text, European Commission - European Commission, 2018, https://ec.europa.eu/info/law/law-topic/data-protection_en. Europe is now covered by the strongest data protection regulation in the world. This General Data Protection Regulation (GDPR) regulates the use and processing of personal data about individuals and organizations in the EU. There are new rights for individuals to have easier access to the data that companies hold about them, a new fines regime and a clear responsibility for organizations to obtain the consent of people they collect information about. The new regulation increases the rights of holders of personal data and, therefore, the obligations of organizations that offer services to citizens. The EU wants to give companies a simpler and clearer legal environment to operate.

60. Comisión Europea, «¿Qué rige el Reglamento General de Protección de Datos (RGPD)?», Text, Comisión Europea - European Commission, accessed on 20 July 2018, https://ec.europa.eu/info/law/law-topic/data-protection/reform/what-does-general-data-protection-regulation-gdpr-govern_es

4. LEAVING THE AGE OF NAIVETY

- First question: What are the new gaps and asymmetries emerging (or consolidating) in the digital age?
- Second question: What are the «new» forms of power and control in the digital age, and how do they generate new peripheries (forms of exclusion) in society?
- Third question: What actions and strategies are necessary to reduce the current information asymmetries emerging in the age of big data?
- Conclusions: A meta-reflection on the interviews



> By the term «Panoptism,» I have in mind an ensemble of mechanisms brought into play in all the clusters of procedures used by power. Panoptism was a technological invention in the order of power, comparable with the steam engine in the order of production. This invention had the peculiarity of being utilized first of all on a local level, in schools, barracks, and hospitals. This was where the experiment of integral surveillance was carried out.
>
> Michel Foucault; 1980[1]

Throughout the last 10 or so years, I have dedicated a great deal of my professional life to research, specifically to understanding and promoting projects that combine the development of capacities and their intersection with digital technologies, especially in the world of education (at all its levels). I have had the privilege of working with representatives of governments and major international organisations, as well as with teachers and students from the most underprivileged, far-flung places. That was back in the day when inclusive discourses about open online knowledge and licences, reducing gaps and creating new forms of citizenship in the different digital spaces were taking shape. The same excitement we see today about the emergence of artificial intelligence and the Internet of things was apparent years prior with the creation of the first personal websites, along with Web 2.0.

Each technological innovation follows a similar cycle: namely, adoption by a frenzied few, followed by a boom, and finally disenchantment or phagocytosis at the hands of a superior or more powerful technology. This cycle repeats itself (and is likely to keep repeating itself) as an endless déjà vu in technological spaces. Since I have participated in countless meetings and talks in different parts of Asia, Europe and throughout America, today I wonder whether I have unwittingly played at being a double agent. As part of a generation that wanted

to contribute to reducing digital gaps, didn´t we end up paying to favour the consolidation of new asymmetries? The answer, I suppose, is not simple. What I do know is that the seriousness of the abuses of power and control that we know today were not so evident a few years ago, or at least we couldn't interpret them in time.

Similar to others' warnings about both the risks and the emergence of new asymmetries, we hope that the voices presented in this chapter will help us to understand the current turning point and the possible paths to take. Therefore, instead of yearning for the future that did not come, it may be better not to forget that the present that we have at hand needs reinventing.

Many of the challenges presented in this book are both global and local in nature. That's why it seems appropriate to start sharing opinions and perspectives from different latitudes in a range of fields of knowledge. Next, we present a number of experts who have conducted research or are working on the asymmetries discussed here. The answers revolved around three key questions that form the structure of this multilateral conversation.[2] The experts participating in this discussion were as follows:

- Daniela Trucco, social affairs officer of the Social Development area, Economic Commission for Latin America and the Caribbean (ECLAC, United Nations), Chile.
- Ian Brown, Principal Scientist of the UK Government's Department for Digital Media, Culture, Media and Sport.
- John Moravec, founder of Education Futures, United States.
- Jonathan Bright, research fellow at the Oxford Internet Institute, University of Oxford, United Kingdom.

1. Michel Foucault, *Power/Knowledge: Selected Interviews and Other Writings 1972-1977* (Londres: Harvester Press, 1972).
2. The transcripts of the interviews are excerpts of some of the answers collected. The answers of some of the participants were translated. Some of them were edited and abridged for the sake of clarity.

- Jordi Adell, professor at the Department of Education of Universitat Jaume I, Spain.
- Luci Pangrazio, researcher at the Faculty of Arts and Education, Deakin University, Australia.
- Martin Hilbert, professor at the University of California, Davis, California, United States.
- Miguel Brechner, president of Plan Ceibal, Uruguay.
- Monica Bulger, senior fellow of the Future of Privacy Forum, United States.
- Neil Selwyn, professor at the Faculty of Education, Monash University, Australia.
- Taha Yasseri, research fellow at the Oxford Internet Institute, University of Oxford, United Kingdom.

FIRST QUESTION:
What are the new gaps and asymmetries emerging (or consolidating) in the digital age?

Luci Pangrazio: To me, there are two inequities in the digital age that are of most concern. The first is what Mark Andrejevic (2014)[3] calls the «big data divide»; a divide that is not only between individuals and their data but also involves the individual's ability to access and leverage those data. Digital platforms are now interwoven in everyday life – from education and healthcare to transportation, hospitality and social communication. The functioning of these digital platforms is dependent upon personal data. Despite the ubiquity of personal data in contemporary life, it is increasingly difficult for non-specialists to define and understand. More theoretical and empirical work needs to be done to address these «information asymmetries» (Brunton & Nissenbaum, 2015)[4] so that everyday people can understand the implications of their personal data and therefore make informed decisions about their digital practices.

The second is what could be called «fake news», which includes how the term can be used to cast doubt over the opinion of others. For example, if someone presents an opinion that you do not agree with, declaring it «fake news» automatically undermines that opinion. This is a clear indication that we are in the post-truth era, as individuals argue over the rhetoric and framing of an opinion rather than the substance of it. But research tells us that individuals who actively seek news and who consult multiple sources are more critically aware of the information they encounter (Dubois & Blank, 2018).[5] Typically, these are more educated, middle class people. But what of those who don't actively seek news and only

3. Mark Andrejevic, «The Big Data Divide», *International Journal of Communication* 8 (2014): 1673-1689.
4. Finn Brunton and Helen Nissenbaum, *Obfuscation. A User's Guide for Privacy and Protest* (Cambridge: The MIT Press), accessed on 27 August 2018, https://mitpress.mit.edu/books/obfuscation

We talk a lot about algorithm biases, but I think that most of these biases are rooted in the bias that we have on the data.

hear about politics and other world issues through social media? More and more people each year receive their news only through social media (Gottfried & Shearer, 2016).[6] On social media, the news 'hits' the individual as part of their Newsfeed. These people are potentially the most vulnerable to mis- and disinformation, and they are the very people who are being targeted. What emerges is an inequity brought about through social class and education, but greatly accelerated through social media platforms.

Jonathan Bright: I think the inequity that is probably the most relevant from my work is in the area of predictive analytics. Predictive algorithms are already massively important for deciding people's life chances (e.g. how much your car insurance costs, whether you get a mortgage and at what cost, etc.). But this is going to come in further as more areas start to make use of these techniques in their decision-making. What is the inequality? Well, basically if you are statistically similar to groups that perform poorly in these algorithms, then you will also perform poorly. For example, if you are a young man, you'll do worse for car insurance than a young woman. One important question is whether it is getting worse or better with new technology. So you could look at car insurance companies that are now using apps that monitor how well you are driving. This is more surveillance and arguably invasive. But it might contribute to giving you a more realistic risk score (e.g. if you are a young man who drives really safely, then you will be better off).

Taha Yasseri: I like to think of this question at three different levels: data generation, data consumption and access to data are the three layers:

5. Elizabeth Dubois and Grant Blank, «The echo chamber is overstated: the moderating effect of political interest and diverse media», *Information, Communication & Society* 21, n.º 5 (4 May 2018): 729-45, https://doi.org/10.1080/1369118X.2018.1428656.
6. Jeffrey Gottfried and Elisa Shearer, «News Use Across Social Media Platforms 2016», Pew Research Center's Journalism Project, 26 May 2016, http://www.journalism.org/2016/05/26/news-use-across-social-media-platforms-2016/.

At the *data generation level*, while we all use and produce data and these data are used at different places, a lot of these data are not being generated equally. There are certain people who are more represented than others. There are more data about the typical White, Western industrialised countries than data on people from other parts of the world, and that adds to existing inequalities because these data are being used to train algorithms to study people. Moreover, these studies and technologies based on these data would be biased towards the type of people that are overrepresented, and that's something we are not aware of, but it's good to think about it more as a data generation problem rather than consumption or training or any other sort of problem. We talk a lot about algorithm biases, but I think that most of these biases are rooted in the bias that we have on the data.

Data accessibility level. Data are generated, but while some people and organisations have access to those data, others don't. That is inequality in access. There may be data generated on people in less advanced countries who have no access to their own data, while there are people and large companies based in developed countries who not only have access to their own data but also have access to the data of developing countries. This amplifies the existing inequality.

Now, about *data accessibility*, data are generated and some people and organizations have access to these data and some others do not. That is an inequality in the access. There may be data generated on people in low-development countries, but they don't have access to their own generated data, whereas there are people and big companies based in developed countries that not only have access to their own data but also to the data of less advanced countries. And that is what amplifies the existing inequality, as big companies have ownership of these data generated around the world.

Data consumption level. And then of course there are products and services based on these data. These companies are more oriented to providing services to certain people who can afford these services as well as to certain people who have control over these services. In each of these three layers, there are inequalities that amplify those coming from the previous layer, and we can easily see how the existing gaps could grow exponentially in the future.

Neil Selwyn: Regardless of the technology, the distinction I most like to draw is between those that get to 'do' digital technology and those to whom digital technology is 'done' to. So that's a thing, I think, that recurs through a lot of the research I'm doing at the moment on information inequalities. The ability to do technology reflects the ability to engage with digital technologies in an informed, «agentic» manner, for purposes that are meaningful and useful to the individual and their communities and that lead to outcomes that can be said to be beneficial and/or empowering. So if you think about it, the people who benefit from engaging with digital technology are those who own the technology that they access, those who have the capacity to opt in or opt out of using technology, those who can understand the processes behind the technologies they're using and make choices accordingly, and those who can engage with digital technology on their own terms and in ways that work for them. The rest simply has technology done to them. This distinction will define next decade's capabilities and gaps.

Monica Bulger: Large platforms like Google, Facebook, and Amazon collect, analyze, and sell several data points for a growing majority of the world's population. There are several implications for information inequality here. First, those companies who can afford to purchase these data and employ staff and analytics to make use of them will have an advantage over those who cannot. Second, the Cambridge Analytica scandal raises serious questions about how these data can be used to identify vulnerabilities in particular populations and exploit them.

Most users are unaware of the private and personal insights platforms can gain from the information they share. In terms of individual control of the data collected, it seems that private schools and schools in higher income areas are more likely to safeguard student privacy, so privacy becomes a luxury, rather than an individual right.

Jordi Adell: The new gaps are based on old asymmetries, such as the access gap and the training gap. The new balances emerging on the Internet and in the world of technologies consolidate old gaps that benefit

power groups. The new data-related gaps, with data understood as a new raw material and a new object of exploitation, divide the world into two kinds of people: those who have access to data and are able to extract and use them, and those who are the subjects of the data—that is, individuals who are passive in regard to these data (their information is extracted, measured and assessed by the other group). This results in new asymmetries that are based on the previous ones.

John Moravec: What scares me the most is that I simply do not to know who has what information, especially about me. You know, last month I went to get an oil change at a car service station. While checking me in, they asked for my phone number, and with just that tiny bit of information they pull up all sorts of data about me, my home and, of course, the service history of my car. But the really frightening thing is that I've never used that service station before. They obviously use some sort of information service provided by some company that collects and sells very detailed information about individuals. And this information is collected without my express consent. I don't know what company they use; I don't know how they are getting all the information; I never gave anybody permission to log my car service history into a database. I'm really worried about the scale of information that's being collected—all the data points. There are these companies out there that know way more about us than we really know about ourselves. And... I really have to question, at what point will all this information be used against us? Will this information be used to control us, or to blackmail us into doing certain things or behaving in certain ways?

Daniela Trucco: Technologies are double-edged swords; they bring opportunities but also risks. In Latin America, this process occurs in contexts of historical and persistent inequality that shapes the different fields of action and life experiences. Technological innovation, with mature digital technologies, such as the Internet, smartphones, etc., have resulted in digital gaps that exacerbate pre-existing inequalities in terms of access to information and knowledge, hindering the social integration of part of the population by limiting their abilities to develop basic skills, such as searching for, selecting, analysing, sharing and contributing information in digital environments for full participation in current societies.

It's not only about the differences in access to technologies in the field of personal activities; it's also about understanding the impact of, for instance, not knowing how to protect personal information and privacy, or recognise reliable, quality sources of information to make decisions that affect your path in life, such as those related to health issues or political representation. Experience shows that guaranteeing access to technologies, although important, is far from enough for a significant impact on people's lives.

Miguel Brechner: Another existing gap is the generation gap. What I see is that in younger generations, there is an aspect of privacy that they don´t mind. I find it hard to understand, but people post whatever they want. It worries me that nobody thinks that private details are important, but I believe it's more of a generational issue. As a result, there is much less pressure on governments.

A new technological dependence gap is also emerging between countries—for instance, between those that can have their own «cloud» (virtual data storage) and those that depend on «clouds» managed by third parties. How many countries can say, «In my country, the 'cloud' will be homegrown«? How many will be able to make the investment for their «cloud» to be homegrown? Europe? Yes. The US? Yes. Korea and Japan? Yes ..., but what about countries like Vietnam, Laos, Cambodia or Malaysia?

Ian Brown: I think we have yet to see the impact of the very large-scale investment by a small number of companies into building data-gathering and machine learning systems on a planetary scale – and this is even before the Internet of things, connected cars, smart cities and other manifestations of surveillance capitalism on steroids become mainstream. Evgeny Morozov[7] is right to point to the risk of whole industry and government sectors around the world becoming highly dependent on services built on these tools....

7. Evgeny Morozov, «Who's the True Enemy of Internet Freedom - China, Russia, or the US?», *The Guardian*, 2015, Opinion sec., https://www.theguardian.com/commentisfree/2015/jan/04/internet-freedom-china-russia-us-google-microsoft-digital-sovereignty

SECOND QUESTION:

What are the «new» forms of power and control in the digital age, and how do they generate new peripheries (forms of exclusion) in society?

Luci Pangrazio: New forms of power and control have emerged as a result of the automated, algorithmic processing of personal data. Platform operators determine who will have access to users' personal data, whether that is data brokers, third party advertisers or those with more nefarious purposes, such as the British consulting firm Cambridge Analytica, who were able to use people's personal data to manipulate their political opinions. This power enables platform operators and these other third parties to not only profile and categorise individuals but also to allow or deny access to particular goods and services.

As the work of Cathy O'Neil (2016) has shown, this can have a profound impact on people's lives. It can affect an individual's chances of securing a job, taking out a loan or even her or his eligibility for parole. But what is of most concern is that these new forms of power and control are largely obscured from view because algorithmic processing is «black boxed» (Pasquale, 2015),[8] which means we have no way of knowing whether these processes are fair. For example, a customer might be denied a loan from a bank, but finding out exactly why this decision has been made is virtually impossible.

Martin Hilbert: The commonest way to manipulate a political campaign is what is called «filter bubbles» (when websites use algorithms to selectively guess what information a user would like to see). This is especially easy in politics. For instance, if I identify 60 promises that each politician has on his or her' agenda, and I conclude that you agree with two

8. Frank Pasquale, «The Black Box Society. The Secret Algorithms That Control Money and Information», 2015, https://www.hup.harvard.edu/catalog.php?isbn=9780674970847

of these promises, I'll never show you the other 58, and you won't know. These «filter bubbles» are well encapsulated; you only see what should come to you, and then you think, «Wow, what a cool candidate. I couldn´t agree more with everything I see», but you see only two out of 60, and you end up voting for them.

What Facebook does is create these «filter bubbles» for companies, and, as a person, you can use them. You log onto Facebook and request a specific profile of a person. That's the advertising business nowadays. Politicians do the same. «I have this message, and I want it to reach this specific person»— that is what Facebook does. The same goes for the Trump campaign; he spent $ 70 million on something that is totally legal. This is personalisation in marketing. We give you exactly what you need. For private trade and for companies, this is very good, but for democracy, I'm not so sure.

Ian Brown: A huge amount of power will be in the hands of Google, Amazon, Microsoft and Facebook. How they use this power, and how far it can be constrained, by states and civil society, will be a key question of this century. The evidence we have seen so far is mixed. Corporate social responsibility has received much lip service and some worthwhile actions, such as the Global Network Initiative. But corporate behaviour such as Google's apparent plans to offer censored services in China and Facebook's weak response to Russian disinformation campaigns targeting elections do not give much cause for optimism.

States are making increasingly strong statements about the need for regulation, but outside the EU, I am not sure how effectively they are yet going about this. I think this is partly a question of the slow development of knowledge and understanding amongst policy makers and regulators, and partly that very profitable tech companies have learned how to lobby and gain political power much more quickly.

Monica Bulger: Attention seems one of the most powerful forms of power and control in the digital age. Tristan Harris, an advocate for more ethical tech design, describes courses offered at Stanford's Persuasive Technology Lab as formative and influential for development of social media. Essentially, developers learned the psychology of attention. They learned how to use positive social feedback and incentives to

keep people on their platforms. Facebook's likes, Google's top search engine ranking, Snapchat's count of how many consecutive days online, Twitter's followers, likes, and retweets all reflect this psychological strategy. The problem of course is that manipulating people's need for acceptance, validation, and attention creates a fertile space for manipulating beyond simply using tech, extending to voting, trust, purchasing, and other decision-making.

The problem of course is that manipulating people's need for acceptance, validation, and attention creates a fertile space for manipulating.

Jordi Adell: Gaps are manifestations of power. Power, for instance, to design and popularise applications or make us use certain Internet services. It creates, on the one hand, a way of monetising and turning information and data into money, and, on the other hand, a way to politically influence people. The Facebook-Cambridge Analytica scandal and the forms of misinformation adopted to manipulate the opinion of people is a clear example of this. Contrary to the naive notion «the advertisers have my data so they can offer me products that interest me», what we actually see is that this paves the way for different forms of manipulation.

Taha Yasseri: Power and control are very central concepts in human societies, but it has been historically related to geography. To have power and control over societies, you had to conquer, physically be there and colonise. In this digital age, what is fundamentally new and interesting is the lack of necessity for physical presence. You can exploit and control from a distance without needing to take the risk of being there. It's some sort of battle and new type of war that's happening over the geographical boundaries. The equations of power that included having access to channels and water or the power to navigate around the globe—well, those equations should be revised because those factors are not that important anymore. What matters is your bandwidth, your computational power, and the number of people that can help you code or run bots. These are the main factors these days, rather than the number of ships that you have or where your forces are based.

You can make the argument that it's the same old forms and patterns of power and control as ever have been.

John Moravec: I really like Douglas Rushkoff's work on... I think that's Program or Be Programmed: *Ten Commands for a Digital Age*[9] that's what he wrote almost a decade ago. But the thing is that now we're a programming culture. I think, at the same time, it's also important to note that people are more welcoming of building a world that is not connected to reality very much. People seem to be OK living in social media echo chambers, and I think people really seek out the comfort that these social media echo chambers provide. You talk about fake news... I think that being able to dismiss facts as fake news is a very convenient way to prevent oneself from the challenges of thinking or from the challenges of self-assessment. I think a critical question we need to ask ourselves is, «Is it more convenient for us to be programmed, to be told what to think, than to think ourselves?» As we're being swamped with more and more information, I think that people can feel a bit overwhelmed. I think that a lot of people might welcome the idea of being controlled.

Daniela Trucco: Díaz Anadon et al (2015)[10] point out that innovation systems managed by markets are characterised by problems in the distribution of power which are reflected in the fact that the needs of the most marginalised and future generations are usually ignored.

Process automation, robotics and artificial intelligence have the potential to affect at least some productive sectors, which implies uncertainty regarding what will happen to the most menial workers in those sectors that will be worst hit by these changes, which will result in unemployment and/or

9. Douglas Rushkoff, *Program or Be programmed: Ten Commands for a Digital Age*, Or Books (New York: Or Books, 2010).

10. Laura Diaz Anadon *et al.*, «Making Technological Innovation Work for Sustainable Development» (US: Harvard Kennedy School, 1 December 2015), https://doi.org/10.13140/RG.2.1.3796.7122.

job insecurity.[11] On the other hand, the advent of the new business models of the so-called platform companies and the «uberization» of the economy pose new challenges not only for competition policies but also for labour policies. It is agreed that this is a trend towards insecure employment due to the loss of labour rights and benefits as a result of the replacement of the relationship between an employer and a traditional and formal employee with another more flexible and ambiguous relationship.

Neil Selwyn: In some ways you can make the argument that it's the same old forms and patterns of power and control as ever have been. We still have a capitalist mode of production... but there are distinctions, I guess. We've seen the rise of the transnational corporation, the decline of the state, the rise of the technical classes over the traditional elites, if you look at the power hub in Silicon Valley you could argue that it's a very different constellation of actors, but in some way it's the same old interests and same old agendas. If you're going to point to three new aspects in the way that power is exercised you could talk about the rise of the platform and the platformisation of society, and the idea of platforms being kind of central intermediaries... the amplification of power and control, I mean, these are huge networks, and any effects are almost instantaneous and on a very large scale. And also the implicit nature of control, I think there's a lot to be said for reading Deleuze's[12] very short paper «Societies of Control» where he argues and sets a kind of very persuasive agenda for how control is exercised in the 2020s. He talks about infrastructural rather than architectural forms of discipline and control. So in comparison to Foucault's idea of the panopticon, Deleuze describes this kind of infrastructural data-based, data-driven form of control where people are not necessarily surveilled or feel that they're surveilled and feel the need to self-regulate but are constantly coming up against checks and barriers and the very important way that they are recorded on data profiles.

11. Amalia Palma, «Impacto social de la cuarta revolución tecnológica» (2017).
12. Gilles Deleuze, «Postscript on the Societies of Control», The MIT Press, 1992.

THIRD QUESTION:
What actions and strategies are necessary to reduce the current information asymmetries emerging in the age of big data?

Martin Hilbert: If you sell fruit, someday they will steal your apples. If it is illegal, the police will intervene. Today, the police themselves have to have hackers and understand these kinds of digital offences.

Miguel Brechner: Today, there is an ever-widening gap between governments (regulatory structures) and technology companies. The speed of technological changes is very high. As a result, governments try to regulate, but they always have trouble keeping up. How many years will it be before states understand things at the same level as companies? Because that´s where the asymmetry lies. The speed of change today is so high that governments, however much they want to adjust some things, find it impossible at this rate of speed. As a result, a gap emerges between those that produce and those that don't produce (data, content, technologies, etc.).

This is a technological and control issue. I have my doubts about states today being in a position to enforce the rules. Today, it is necessary to have a technologically sophisticated state to verify all these conflicts, because if they tell you «these are my algorithms», how does the state verify what is behind these algorithms? Just imagine how many people you would need working in the state to address these problems. You don't necessarily have the ability to do so unless you hire the world's greatest ethical hackers. This way, the state could monitor whether the multinationals comply with the policies.

John Moravec: Policy-wise, I don't think that there's going to be any simple solutions on any of these. I think that from a starting point, we need a shift of perspectives. I think we need to stop looking at data and information inequities through classic lenses. When I talk about classic lenses, I really mean that... the ones that are largely built

on Adam Smith-style economics of . . . constricted supply and varying levels of demand. I think it´s completely the opposite; the supply of information is practically endless, but demand is really constrained. I'm really inspired by the work of James Ettema in the 1980s who looked into a prototype of a specific system and found that information inequities are created when systems are designed to serve only specific people. I think we need to look at creating strategies for individuals and communities to make the most of the purposive use of information and data as possible. We need to find ways for people to build apps, for people to build platforms, and for people to build systems rather than becoming consumers of other people's systems. And so we're looking at policy approaches, I think, that are really looking into how we empower people to build things, and giving them tools that they need is a great way to break down some of these inequities.

Neil Selwyn: If I'm being positive I would argue there's a clear need for state and government regulation. The EU's General Data Protection Regulation (GDPR) is a really interesting move and seems to be having some positive outcomes, at least in the short term. I think there is an appetite for state regulation. We have moved to a kind of third phase, but even some of the transnational corporations and big tech companies are acknowledging the fact that there needs to be some form of regulation.

If I'm negative – and I'm increasingly feeling negative – I don't think that there's anything meaningful that can be done at the moment beyond raising collective consciousness of these issues. I've just been recently reading John Urry's final book on the future, and his idea that these digital futures are part of these very complex systems. So the problems that we can kind of identify are not really issues that can be recognized, planned for and acted upon by the government or states. Neither are these issues that can be addressed and 'solved' by powerful commercial actors. These are incredibly complex issues which go beyond twentieth century ideas of structure and agency and governments by nations and societies.

The first thing we really need to do is simply provoke and sustain common conversations, common recognition of the issues, commonly agreed things that we need to tackle. So, in some ways I might duck the argument that we can actually change anything and just say that we just need to first of all try and get people talking about the

problems, talking about the issues, and talking about digital technology in more nuanced, balanced, critical, ways. The trouble here is that I don't think there's much public will for this to happen at the moment, particularly amongst the middle classes and those that actually benefit. I mean, you can argue that privileged classes are benefiting immensely from the technologies that we're using on an individual basis. Speaking as a middle-class, privilidged academic, my life is entwined with platforms and systems and digital media. So I'm benefiting individually and its also very convenient for me to accept that I am powerless to effect change at the collective level. So you could argue we need a radical and collective awakening to these issues, a bit like climate change in a way. And as we know from climate change, it's been incredibly slow and there've been lots of vested interests to fight against to even get these issues onto the table.

Luci Pangrazio: Digital platforms must come under greater scrutiny from the government. Many of the new forms of power and control emerge as a result of convoluted, complex processes that operate at a system level, which are difficult for the individual to understand, let alone do anything about. Governments should hold these big companies to account to ensure they fulfil their corporate responsibility to protect the privacy and security of their customers.

But we also need greater transparency of the ways in which data are processed. Why can't everyday people scrutinise the data and algorithms that are used to make decisions about them? Greater public understanding of how data are generated, captured and reused is essential if we are to ever redress this power imbalance. This starts with education in schools through programmes designed to develop data literacies, but these issues need to be brought into public consciousness. We need to raise awareness and increase critical understanding through more public discussions and programmes about

13. Julia Angwin and Surya Mattu, «Breaking the Black Box: What Facebook Knows About You», text/html, ProPublica, 28 September 2016, https://www.propublica.org/article/breaking-the-black-box-what-facebook-knows-about-you.
14. Project wync, «Privacy Paradox from the Note to Self Podcast», Privacy Paradox, 2018, http://privacyparadox.com.
15. My Data, «MyData Hubs», MyData.org, 2018, https://mydata.org/hubs/.

these issues. ProPublica's 'Breaking the Blackbox',[13] Note to Self's 'The Privacy Paradox'[14] and the MyData Local Hubs[15] are all good examples of the kind of consciousness raising that needs to take place.

Daniela Trucco: Taking advantage of the benefits of the digital age is a social policy challenge that makes it necessary to put people at the centre, especially those who have been left behind in terms of technological advances that have proliferated in recent decades.

Thinking about the necessary skills and training is key to not leaving anyone behind, in consideration of life cycle, ethnicity and gender characteristics. All these dimensions tend to combine and generate pockets of exclusion in relation to technologies that are not only solved with mass access policies or the conception of «vulnerable groups». We have to work on inclusion policies. The role of education and training systems throughout life is fundamental.

In very broad terms, it can be affirmed that the process of taking ownership of technologies involves (i) people having the necessary motivation to access and use them for certain meaningful purposes in their lives; (ii) having the material possibility of accessing the technological devices and services; (iii) having the necessary skills to make meaningful use of them; and, finally, (iv) using them in a way that results in tangible effects on their lives.[17]

Ian Brown: I think we need stronger, coordinated state action. The EU's steps on data protection and competition law are a good start. The Council of Europe's modernised data protection convention and its increasing popularity in non-European states is another positive signal. For me, the benefit of the outrageous Russian online meddling in recent US, European and other elections is that the need for urgent reforms of electoral and campaign law has become apparent, and I hope this will be a less difficult issue to tackle than broader concerns of human rights and power. I hope that international civil society coalitions such as EDRi (European Digital Rights) will strengthen and become fully mainstreamed political campaigns around the globe.

Taha Yasseri: At a very high level, and not going into detail, we think

16. Ignacio Jara, «Informe de Cooperación Técnica a la Estrategia de Inclusión Digital de Costa Rica», Informe de Cooperación. Unpublished, 2017.

about global regulations like GDPR, which I am very sceptical about. It's ridiculous to come up with a national or international regulation if no one actually knows what it does. I'm sure that for 99% of the people, GDPR translates into a bunch of pop-up boxes when using the Internet. But I think we need to bring the power back to individuals so they can decide what they want to do with the data, ... both at the technical and infrastructure level as well as at the policy level and with the concepts. I think a change is needed in the way we think about data. We are thinking of centralised and globalised services and systems, but we need to think of an infrastructure that allows individuals to share their data the way they want at different levels and give different access to different organisations as they wish in a more individual level system, rather than national or international levels. I think a shift is needed in the way we think of data. The most important step here is education: letting people know what all these conversations mean, what it means to show your data, what it means to give access to the data to different sectors, how we can prevent abuse, and how we can trust.

Monica Bulger: I do think digital literacy/media literacy/critical literacy/information literacy have a role in combatting information inequality. However, in their present forms, skills training is not matching the powerful potential for manipulation when platforms serve exactly the information we want based on data analysis and an understanding of our psychological vulnerabilities.

Jordi Adell: It's an uneven fight between many very weak individuals and a very powerful few. The action should be structured on several fronts, at the individual and collective levels from education. If people aren't aware they're being manipulated, they can hardly counterprogram and break loose from that manipulation. It is necessary to redefine digital competence. It's necessary to forget the old plan of reducing instrumental competences to the management of technology and to extend ethical-legal competences (for example, piracy) to social, economic and political aspects. Besides, it's the policy makers' duty to provide accurate information and protect citizens from the immense power of technology companies. It's necessary to broaden our understanding of technology in general—not just digital technology. In short, we must understand the power that technology has over us and see that such power can be fought with more information, more training and political action.

Conclusions: A meta-reflection on the interviews

In today's society, we can see different forms of power and control. Some of these expressions are not necessarily new, while in other cases they are updates or evolutions of traditional ways of imposing or aiming the influence of some over others. Many of the old forms of power and control continue to manifest themselves today, but in a different way. As the interviewees pointed out, these expressions are observed at different levels, some of which are more evident than others.

During the interviews, the experts mentioned the implications of the current information asymmetries but also asymmetries regarding the capacities we need in order to function in a context of an increasing concentration of power. We analysed phenomena such as the control of information, disinformation, post-truth and algorithm bias. The emergence of these scenarios should lead us to understand that different sectors of society are confronting each other in an uneven manner, therefore generating different dynamics of inclusion and exclusion.

On the one hand, we identify sectors that are in a privileged position because they have a direct impact on the mechanisms of control, collection, sale and processing of a large number of data. On the other hand, we see a broad sector of society that is in a position of clear disadvantage. The big difference today compared to the previous decades is that this situation of vulnerability is no longer limited to the level of access to technological tools; this «new» gap is more closely related to being able to act in a conscious and critical way in the face of today´s asymmetry and digital manipulation scenarios.

Technological innovation offers opportunities: the use of algorithms can be very useful in assisting in routine and some non-routine activities. However, this does not prevent the creation of new spaces of periphery and exclusion – for example, the case of privacy. If it is not considered valuable to

everybody, there is the risk of it becoming a privilege for a few who understand its significance and take the necessary action, which more information-vulnerable sectors seem to find more difficult to do. Similarly, the current problems of digital sovereignty mean that the government sector is in a relationship of pseudo-dependence on (or at least vulnerability with) those who act as providers of the new digital public spaces (data brokers).

All these aspects have profound impacts on people's lives. In many cases, the consequences can be of a global scale. Prediction analytics, manipulation algorithms, information hyper-segmentation, filter bubbles or algorithms that decide for (or instead of) people seem to be gaining more and more ground in the current digital ecosystem.

When identifying actions and strategies, the experts took different positions. Some came across as more optimistic than others, and the recommendations also point to different levels. The actions and suggestions put forward could be divided into two major levels:

- At the regulation level: It is important to work towards actions that will help states better understand the extent and complexity of today's challenges. Although different experts mentioned the significance of greater and better regulation, stress was also laid on the need to implement more relevant regulations (transparent, comprehensible, practical, etc.) that are in tune with the problems affecting citizens. While states are working towards actions along these lines, the technology industry is capable of implementing changes and transforming at a faster speed and with much greater dynamism. This will mean that the relevant regulatory bodies must be able to develop the technical and human capacities to anticipate and pre-empt the risks the digital horizon poses. Some interviewees argued that it is necessary for the representatives and the different

Alertness and demanding more accurate strategies from representatives to ensure people's welfare and protection.

public/regulatory bodies to act in a more articulated and coordinated manner, taking a national and supranational approach so as to ensure that the regulations that are implemented are in accordance with the global and complex nature of the problem analysed.

- At the people level: In this regard, the interviewees stressed the importance of incorporating these issues on the citizen agenda. Before thinking of any change in practices or behaviour, the experts agreed on the importance of generating spaces for dialogue and exchange, which are necessary for promoting public interest and understanding in the face of these new challenges. Among the aspects mentioned, the following stand out: how to achieve greater understanding and raising citizen awareness of these issues, together with alertness and demanding more accurate strategies from representatives to ensure people's welfare and protection. Instead of the platforms being the administrators of people's privacy (and data), it is necessary to redefine the relationships of authority so that citizens can reflect and decide what they want to do with their data and their time online. For these changes to be possible, it is essential that education – as well as other informal learning spaces – address this issue in depth. The development of critical digital literacy, together with data and media literacy among other related competences, is identified as a fundamental aspect, not only in order to increase people's understanding but also to offer them tools and capabilities that will allow them to know how to act in situations of manipulation or an abuse of power.

One of the most distinctive features of digital technology is that it not only serves as a source of information or updates but also offers an ecosystem of opportunities for the learner. The structures of formal and informal learning must evolve to respond to the needs of a society in transition, where digital technologies play an unprecedented role. Many of the skills, abilities and attitudes demanded by the current context are difficult to teach, especially when the intention is to have an impact on a large number of people. To face the challenges

described here, it seems necessary to go beyond the formal education environments. For instance, if we analyse many of the changes observed in our societies in the face of issues such as environmental protection, respect for ethnic and sexual minorities and the gender perspective, we see that they are the result of a combination of formal and informal learning methods that bring about conscious changes and behaviours in the population. To respond to the challenges the current technological landscape poses, it is necessary to respond in a crosscutting, inclusive and open manner to this question: How is society preparing to act in the context of a changing technological landscape?

5. THIS IS NOT THE END

- The end of the digital honeymoon
- Opening the black boxes
- Digital feudalism
- Choosing to choose

> **Digital feudal lords like Facebook give us land and tell us: Plough it, and you can have it for free. And we plough this land like mad. Eventually, the feudal lords come and take the harvest. This is exploitation of communication. We communicate with each other, and we feel free. The feudal lords make money from this communication, as the secret services monitor it. This system is extremely efficient. There is no protest against that, because we're living in a system that exploits freedom.**
>
> Byung-Chul Han, 2014[1]

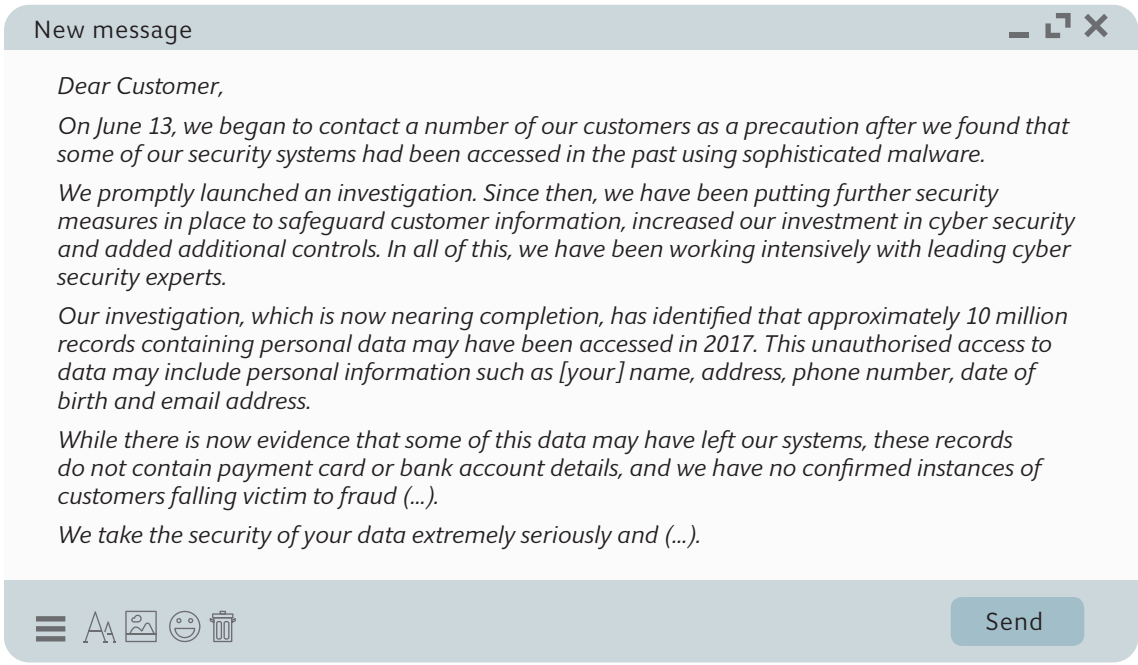
As I was about to write this last chapter, I received an email from a well-known company that sells technology products. I used to go to this company's store when I was living in the United Kingdom. (The excerpt of the email here discussed is illustrated in the following page).

This email prompted my thinking about many things. For instance, although I'm not living in the United Kingdom anymore, my data are still there, alive and circulating (changing hands more than I would have imagined). I don't remember authorising a transfer of my personal information to this company, and I probably signed something without reading the small print. But, beyond that, could I have any degree of influence on what was done with my data? Should I be happy that my personal information doesn´t include my bank account details, although those who stole my data can phone me, write to me or visit me on my birthday? Wouldn't it have been wise for this company to make the investments in cybersecurity earlier? If this happens to a shop that sells technological products, I dread to think what can happen to a less sophisticated business sector.

Unfortunately, we have become accustomed to this kind of incident, which is evidence of the power and control asymmetries. The worst part is that we've become used to resigning ourselves. There is no compensation for the use of our data or damages for their misuse. It's also not quite clear how this scenario may change in the near future.

1. Niels Boeing and Andreas «Lebert, Byung-Chul Han: Tut mir leid, aber das sind Tatsachen», Zeit Online, 2014, https://www.zeit.de/zeit-wissen/2014/05/byung-chul-han-philosophie-neoliberalismus

The topics discussed in this book are not limited to the ideas described here at all. On the contrary, this is offered as just another point of exchange for discussions that have to go deeper and deeper in the face of complex debates that cut across social, technical, ethical, legal, political and other dimensions. By way of (in)conclusions, the following is a proposed set of condensed ideas that summarise many of the main arguments collected for the preparation of this book. It presents a compilation of ideas selected and gathered during the documentary review and during the interviews with the experts. The best format to organise these ideas would be the hypertext structure, which would make it possible to link some ideas with others, but as paper and ink still prioritise the linear sequence of ideas, it seemed a good idea to organise them into four fields: the end of the digital honeymoon, opening the black boxes, digital feudalism and choosing to choose. The ideas are organised in numbered paragraphs to facilitate reading and/or subsequent discussion.



FIRST (IN)CONCLUSION

The end of the digital honeymoon

1 In contexts of technological abundance, the traditional forms of power are amplified and diversified. As we've seen, **technologies are not neutral** about issues such as gender, ethnicity, social class and background. **Surveillance and monitoring, influence, loss of self-control and cognitive overload** are among the dimensions we explored above. One of the ways to break the different asymmetries described here (for instance, between digital giants and individuals, scribes and data vassals, GAFAM (Google, Apple, Facebook, Amazon and Microsoft) and regulatory bodies, etc.) is by expanding the spaces of technological disobedience, which move from ideas to action. **Thinking autonomously and critically** is perhaps the first step to stop becoming a double agent who ends up working for the benefit of GAFAM or other similar companies.

2 While something has broken on the Internet after the scandals concerning the **abuse of power and manipulation**, a new possibility also emerges. Perhaps today we are in a better position to **put digital naivety behind us** and reflect on the leading role that these technological tools have taken on. Having a more active citizenry is key to breaking the attitudes of conformism or indifference and demand new forms of transparency and accountability.

3 **There is no such thing as something for free.** The cost is always borne by a third party. On today´s Internet, «free» has evolved into a complex system of subsidies for services in exchange for data exploitation, which is producing profound asymmetries and new forms of dependence and abuse. Technologies have become almost irresistible tools that are accompanied by designs and features with effects and impacts that are hardly desirable for users.

4 The different **forms of power and control described can be transformed or inhibited** if we recalibrate both the ways in which we use the technologies and the frameworks within which they

operate. The challenge seems to be to **transform the tools** before they transform us.

5 Life in an age with no downtime takes its toll. Not stopping a moment to think about the world we live in causes us **act automatically**, thus relying on systems and agents, such as Siri, Alexa, Cortana and Google Assistant, which often decide with or for us.

6 Artificial intelligence ceased to be a theoretical concept and has stormed into our lives and our phones. It is no longer reserved for Hollywood movies and is gaining ground in everyday life. Abuses of power and the risk of data triangulation between an email account, a credit card and information collected by sensors or cameras combined with other data of analogue origin are usually promoted as a form of progress. It is important to understand the consequences that this may have. **Technologies have evolved faster than regulatory structures and social patterns.** Without clear, meaningful rules, there is a risk of living in a sort of «every man for himself» world. A clear example of this is when a team of Microsoft[2] scientists – mindful of the power of these new technologies – publicly asked regulatory bodies to pass laws to regulate tools and the use of devices with facial recognition capabilities. **Shouldn't it be the other way around?** At what point did states fall behind the curve?

2. Brad Smith, «Facial Recognition Technology: The Need for Public Regulation and Corporate Responsibility», *Microsoft on the Issues* (blog), 13 July 2018, https://blogs.microsoft.com/on-the-issues/2018/07/13/facial-recognition-technology-the-need-for-public-regulation-and-corporate-responsibility/

SECOND (IN)CONCLUSION

Opening the black boxes

1 There is no shortage of voices announcing that this is the beginning of the twilight; that another bubble is about to burst; and that power concentrated in a few digital giants will come to an end. We don't know that. What we do know is that **the age of naivety must end**. It is important to put the stage of ignorance behind us. Thinking that all these devices are neutral at the social, commercial or ethical level brings with it a heavy load of naivety that benefits others. While the digital world offers many opportunities, it should also be understood that artificial intelligence and big data, as raw material, the Internet of things, and especially the proliferation of sensors everywhere, **are usually articulated according to a dataist vision**. Until now, this vision has benefited certain expert communities, which are usually in an economically and technologically privileged position.

2 In different totalitarian states throughout history, complex forms of control were implemented that involved mechanisms and systems for spying on others. Perhaps the difference is that today we can see the convergence of two significant techno-social phenomena. One is the proliferation of smartphones and other «smart» devices, and the other is the major role of social networks in the construction of an identity and relationships with others.[3] The combination of both phenomena has led to a strange oxymoron that's a sign of the times. **People place their private lives in a «glass box» (their fingerprint is visible to all), while the technologies that support these digital practices work on the basis of «black boxes»** (obscure algorithms known only to a few).

3 Although **algorithms seem to be the new oracle** of truth, the reality is that they are often instruments that manipulate our perception and cause us to have a biased understanding of information. The challenge lies in how the results arising from the processing of these data are interpreted. That is why it is so critical to **understand their**

limitations and take account of the fact that artificial stupidity (the automatic processing of biased or mistaken data that can lead to equivocal decisions) can be more dangerous than the absence of timely information.

4 These systems can often be **opaque**. This is why many people find algorithms intimidating. The people targeted by these algorithms, usually through scoring systems, have limited power and, in general, do not have the tools to understand or question their scores. **There is no ethically neutral algorithm**. Algorithms are trained with case series and/or historical patterns that can amplify pre-existing cultural prejudices and asymmetries. That is why **data scientists should not make ethical decisions on behalf of society**; they should instead serve as translators of ethical decisions in their codes.

5 «Neural networks» are a type of artificial intelligence that, among other features, mimics brain models. These networks can be as opaque as the brain. **Deciphering «black boxes» is becoming increasingly urgent and exponentially more difficult.** The technologies themselves have exploded in complexity. When one looks at a neural network, a logical flow understandable to a human being may not be easily identified. In other words, **it can look opaque even to those developing an artificial intelligence application.** Jeff Clune, a computer scientist at the University of Wyoming, admitted that «even though we make these networks, we are no closer to understanding them than we are a human brain».[4] We use our brains all the time and we rely on them all the time, but we have no idea how they work. **Although these networks may be as opaque as the brain itself, it will be increasingly critical to step up efforts to make these tools more transparent.**

6 It is evident that not everybody who works directly with technology has an interest in manipulation on his or her agenda, but it's important to take account of the associated commitments

3. Keen, *The Internet is not the answer*, Atlantic Books Ltd.
4. Davide Castelvecchi, «Can We Open the Black Box of AI?», *Nature News* 538, nº. 7623 (6 October 2016): 20, https://doi.org/10.1038/538020a.

that lie behind the creation, use and adoption of the different digital environments and devices. That's why stating that «**I'm just an engineer**, and I have nothing to do with this» is to ignore the responsibilities associated with the use of technologies. As has been the case throughout history, a privileged position also demands an understanding of the associated implications and obligations that any form of power brings with it. An algorithm can only dictate to third parties what those who created the algorithm have defined. If all those who build or have a direct link with creating, selling or adopting technology turn a blind eye, we simply **«choose not to choose» so that someone else makes the decisions.** In other words, if something is technically feasible, it doesn´t mean that it necessarily has to be done that way, especially when it has ethical implications.

7 We see a noticeable asymmetry between the accelerated change in the digital world of technology companies and the regulatory bodies' ability to stay on pace with these changes. **There is a remarkable distance between the ways of collecting, using and editing people's data and the citizens' understanding of what their fingerprint** is, not to mention the advanced ability of these new systems to edit news and messages, thus creating false information and manipulating people's perception of reality.

8 Acknowledging that subjectivity describes us as a species, perhaps we could ask ourselves this question: Which is preferable, a human error or an error committed by a machine (algorithm, software or any information management system)? That is precisely the crux of the conflict, because if a person or organisation commits an error or makes a biased decision that affects others, there is a possibility – although that's not always the case – that the affected parties will hold the person who made the failed decision accountable for her or his mistakes. **However, this reality is much more uncertain when the resolutions are automatic** (i.e. if they involve the intensive use of data and digital technologies) and when the decisions are outsourced, constant, large-scale, impersonal, behind closed doors and so forth. Is it possible to move towards new ways of identifying the different levels of responsibility of those

who are behind the development, sale, application or manipulation of the algorithms? Today, algorithms are gaining ground in social life. For instance, we grant algorithms the ability (and power) to tell us what restaurant to go to and which flight is the most convenient. If the algorithms influence our decisions and actions, should they also have legal responsibilities or duties? And if the answer is yes, who would be responsible? Would the responsibility fall on the individual who developed, marketed, applied or manipulated a certain algorithm? **Could an individual demand to be dealt with by a person rather than an algorithm?** In the first place, people who have been affected by a certain process that includes algorithmic data systems should be able to demand that a person review their situation when there are signs of irregularity, abuse or bias. How could this be implemented, though?[5] What we do know is that transparency and accountability will also continue to evolve into new forms.

5. A case in point in Uruguay is Section 16 of Act 18331, of August 11, 2008, which regulates people's right not to be subject to a legally binding decision that significantly affects them. This provision ensures the protection of people against automated data processing aimed at assessing personal aspects such as work and credit performance, reliability and behaviour, among others. In this scenario, the affected party may challenge decisions that imply an assessment of their behaviour, and they may obtain information on both the assessment criteria and the program used to make the decision. A similar solution can be found in Article 22 of the General Regulation of Data Protection 2016/679 of the European Union (Official Journal of the European Union, 2016). Under these provisions, any use of algorithms for the processing of personal data must, at the very least, indicate the criteria and logical processes used to adopt the solutions suggested and thus allow an external assessment of their operation, as well as of conditions that cannot be met in the current state.

THIRD (IN)CONCLUSION

Digital feudalism

1 In what some call «digital feudalism», there is a clear (if not obvious) **asymmetry between digital scribes and the rest of the data vassals.** Reducing this asymmetry would involve the data vassals having a more proactive role in the current context, whether by learning to write code or program (as was the case in the Middle Ages) or at least **developing skills to read between the lines (interpret, decipher, decode) the corresponding «manuscripts» of the digital age.** Is it possible to overturn the current scenario? What are the best ways to watch those who watch us? Although this question seems tautological, transparency still looks like the best formula to reduce the current asymmetries and abuses of power.

2 Does technology always lead to social progress? We have seen that many of the side effects associated with the use of digital technologies are not chance events. They respond to **sophisticated corporate strategies and designs that seek to reinforce the role of some at the expense of others in a position of dependence or submission.**

Does technology always lead to social progress?

3 The technical, political, democratic and power systems are strongly linked. Putting more power in the hands of those with the most influence will only exacerbate existing information asymmetries. **Today, understanding the ethical implications of the uses of information and communication technologies is a crusade that must be aimed at different sectors of society.** It is necessary to make progress in the development of **codes of conduct that will make computational methods more transparent**, address the ethical dimension in the collection, processing and exchange of data and ensure that users can decide how and when their data may be used in a reliable, safe, private and non-discriminatory environment.

4 The new economy looks suspiciously similar to the economy that existed before the Internet. **Distributed technologies did not necessarily result in more distributed forms of power.** The concentration of power is something inherent in the history of humankind regardless of the technology of the moment. However, during the emergence of the digital economy, the techno-utopian rhetoric spoke of devolving, disintermediating, democratising and offering decentralised exchange flows based on distributed networks. The promise of a decentralized architecture was just that: a promise. The asymmetries of power in today´s digital environments are, in some cases, a mimesis of feudal structures. Digitisation doesn't require a huge number of workers. A limited number of people with the necessary technical knowledge can reach a significant portion of the population. As an example, Kodak had almost 50,000 employees before closure, while Instagram, with more than 250 million followers, requires fewer than 300 employees.

5 In a context where the rules of the game seem to change, can states be trusted? This question not only alludes to reducing the technological lag of many regulatory bodies that have been falling behind but also to the evident conflict of interests. Just as Facebook and other social networks benefit from the traffic generated by fake news, states can activate all the surveillance and monitoring devices for their own benefit whenever necessary. **As a result, today it is much more feasible to obtain information than trust.** Surveillance and excessive concentration of power do not contribute to building trust.

6 Although there are still surveillance, control and espionage systems that come from both states and companies, the great contradiction is that now there is no need for a totalitarian system that steals information from people's lives, since it's the users themselves who now feel the need to make their lives known to others. Senseless as it may seem, **perhaps we have become double agents who end up spying on ourselves for the benefit of third parties.** In addition, the great differences between current reality and the abuses of power of former times are scale and scope. Today, there is no social class, creed or ethnic group that is spared the excesses of

control and power that are behind the Internet.

7 On today's centralised Web, **the data are kept in silos (digital fiefs) and controlled by the companies that build them, such as Facebook and Google.** In the (still hypothetical) idea of an effectively decentralised website, there are no silos. **Would it be possible to retrieve the power of the web from corporations by changing the power dynamics towards a web of individuals?** States should set limits on the data extraction industry of the large technology companies. Could states implement mechanisms so that the extracted data can be used for improving the interests of the community and/or its environment? In such a scenario, the digital giants would not be expected to give up their great share of control and power without a fight. Are states in a position to protect and prioritise the interests and welfare of citizens?[6]

6. Katrina Brooker, «Exclusive: Tim Berners-Lee Tells Us His Radical New Plan to Upend the World Wide Web», *Fast Company*, 29 September 2018, https://www.fastcompany.com/90243936/exclusive-tim-berners-lee-tells-us-his-radical-new-plan-to-upend-the-world-wide-web.

FOURTH (IN)CONCLUSION

Choosing to choose

1 These new scenarios call for complex thinking. This involves moving away from reductionisms and attractive magic formulae. First of all, it is essential to recognise that **people make biased decisions.**[7] Our desires, frustrations and fears, as well as our context and the community that surrounds us, directly influence the decisions we make. Moreover, we know that many of our decisions are not even the result of a rational act.[8] Whether due to lack or excess of information, many of the decisions we make both individually and collectively are irrational, excessive or simply respond to different expressions of discrimination based on gender, ethnicity, age, social level or appearance, among others.

2 We have seen different examples of how algorithms can become **machines that automate discrimination**, the abuse of power or excessive control. Different examples have been presented that show how artificial intelligence can become a powerful political and, in some cases, manipulation tool. Automating the biases and the consequences resulting from it is not only a technological problem; it is also an ethical, political and social issue that cannot be discussed behind closed doors among experts. All this suggests that **today's societies will have to build new legal and ethical frameworks to recover lost trust**. But this will happen when new expressions of power transform the current (im)balance, thereby **reducing the existing asymmetries**. As long as the fines states impose on the abusive practices of digital giants remain a small fraction of their profits, we are unlikely to see any structural changes. However, the solution lies not in the fines but in adopting **a new digital ethic**. With this ethic, the «right thing» involves not only acting to avoid fines or court action

7. Alex P. Miller, «Want Less-Biased Decisions? Use Algorithms», *Harvard Business Review*, 26 July 2018, https://hbr.org/2018/07/want-less-biased-decisions-use-algorithms.
8. D. Kahneman and P. Egan, *Thinking, fast and slow*, vol. 1 (New York: Farrar, Straus and Giroux, 2011).

but also ensuring that one's own well-being is not at the expense of others.

3 **We look like data addicts rather than technology addicts**. A good start is to stop acting like a «smartphone zombie» and to develop the ability to overcome dependences and the loss of self-control. It's important not to limit public and social life to what happens on digital platforms only, but it must also be made clear that **besides protecting our rights, we will also have to make progress with the idea that our data have value**. Therefore, they cannot be at the mercy of third parties—in the hands of others who market or handle them without our knowledge. New ways of generating value will have to emerge once we've managed to create a paradigm different from the David versus Digital Goliath we see today, where individuals are reduced to their lowest term as data consumers and providers. We must analyse these conflicts from a critical perspective and at the same time demand results from policy makers. **It is necessary to create mechanisms so that users have the power to protect themselves against unwanted digital intrusion** and technological giants can be held to account when required.

4 As a society, we have to create **new forms of accountability to see through the «black boxes» that darken the Internet**. Just as we expect citizens to learn to self-regulate their consumption and online exposure, we must also come up with new mechanisms for greater transparency. One of the actions is the adoption of open standards (in terms of both code and data used) that will contribute to transparency in the understanding of how systems work and the ability to make informed decisions. This is key to overturning the crisis of trust prevailing in digital environments today.

5 Independent authorities or reliable intermediaries capable of identifying abuse against citizens will be necessary. It is advisable to closely monitor efforts to perform **ethical audits of algorithms**.[9] Although not everybody will agree to share his or her code with a third party (intellectual property protection, among others), this opens up the possibility of adopting new **honest algorithm validation** mechanisms. This type of audit

examines everything from the people who programmed the software and the data used to train the algorithms to their results, checking for any bias in the process. The analysis includes, for instance: accuracy, impartiality, uniformity, transparency and equity. This can be an opportunity to give a seal of honesty and transparency to tools that are likely to be subject to increasing scrutiny in terms of, among others, allocation bias, manipulation or unequal treatment based on ethnicity, gender, skills, etc.

6 All these asymmetries require a different way of thinking, more advanced skills, a more zealous society that will uphold the basic principles of democracy and respect for people without constraining changes and innovations. **It is essential to create the conditions for citizens to have the means to protect themselves from unwanted invasions, surveillance, manipulation or privacy breach, or loss of the freedom to think autonomously**. Education can be part of the solution (see examples such as 5Rights Foundation[10] or Common Sense[11]). The educational systems need to adopt these new languages, explore new formats and generate spaces to develop critical knowledge and skills (e.g. critical digital literacy, computational thinking, data literacy and network literacy).

7 Just as intellectual property rights became necessary during the Industrial Revolution, in the digital revolution it is a priority to create new property rights over data.[12] One of the great political, legal and philosophical challenges of our time will have to do with how to regulate data ownership. Data must be treated as a good or remunerable service. Today, legal systems do not sufficiently recognise the ownership of personal data. However, the idea is gaining momentum all over the world.

9. Katharine Schwab, «This logo is like an «organic» sticker for algorithms», Fast Company, 2018, https://www.fastcompany.com/90172734/this-logo-is-like-an-organic-sticker-for-algorithms-that-arent-evil.
10. 5Rights Foundation, «5Rights», 5Rights Foundation, 2018, https://5rightsframework.com/.
11. Common Sense, «Common Sense Media», 2018, https://www.commonsensemedia.org/.
12. Christopher Rees, «Who owns our data?», *Computer Law & Security Review* 30, n.º 1 (1 February 2014): 75-79, https://doi.org/10.1016/j.clsr.2013.12.004.

Instead of controlling people's data, it is time for people to regain control over their data. What the digital revolution must bring is the new right to ownership of personal data. That means «usus» (I use my data as I wish), «abusus» (I destroy my data as I wish, no third party required) and «fructus» (I sell my data for profit if I wish)[13].

Although these pages have referred to specific technologies and companies, it doesn´t really matter whether these technological corporations disappear or mutate and new ones emerge. We feel that the principles and conflicts put forward here will have an impact on future challenges that we will probably see in very different interfaces and contexts. It is to be expected that, in the coming years, more objects and devices will be connected to each other, so the number of incidents disrupting traditional structures of power and control will continue to increase. Fortunately, not everything is bound to become obsolete. To paraphrase Kate Crawford, we have to ask ourselves the difficult questions that will never be outdated: **Who benefits or will benefit from the system we are building? And, who may be affected?** Before finding the best answers, there is still room for better questions.

13. Gaspard Koenig, «Leaving the Data Dark Ages by Gaspard Koenig», Project Syndicate, 19 July 2018, https://www.project-syndicate.org/commentary/tech-companies-facebook-data-ownership-by-gaspard-koenig-2018-07?barrier=accesspaylog.

GLOSSARY

> **I sold my users' privacy to a larger benefit.**
>
> Brian Acton, WhatsApp founder, who sold his company (US$ 22 billion) to Facebook in 2016[1]

ALGORITHM: Finite sequence of instructions to solve a problem or achieve some purpose, usually done through a computational system.[2]

ARTIFICIAL INTELLIGENCE (AI): The field of computer science that emphasises the creation of intelligent machines that work and react like humans. Research in AI is articulated with tasks such as robotics, control systems, programming, data extraction, voice recognition and facial recognition. The computer or computer-controlled robot has the ability to perform tasks commonly associated with intelligent beings. Such tasks include intellectual processes, such as the ability to reason, participate in natural dialogues with people, the discovery of meanings, understanding complex content, generalising, learning, solving problems, recognising patterns, self-knowledge and making corrections. AI can be used to improve human cognitive performance or to replace people in the performance of non-routine tasks (such as driving autonomous vehicles or automatic voice recognition). Despite the continuous advances, there are still no programs that can match human flexibility in larger domains or in tasks that require plenty of day-to-day knowledge. On the other hand, some programs have reached the performance levels of human experts.

BIG DATA: A concept that refers to such a complex set of data, due to its volume, variety (it combines different kinds of data, such as text, images, audio, etc.) or velocity at which the data are generated, that it cannot be dealt with using the classic techniques of data management and processing. More recent definitions incorporate the complexity of the data given by their veracity (their quality can vary a lot) as well as the fact that valuable information should be able to be extracted from the analysis of them. These aspects define

1. Parmy Olson, Exclusive: WhatsApp Cofounder Brian Acton Gives The Inside Story On #DeleteFacebook And Why He Left $850 Million Behind, *Forbes Media*, 2018, https://www.forbes.com/sites/parmyolson/2018/09/26/exclusive-whatsapp-cofounder-brian-acton-gives-the-inside-story-on-deletefacebook-and-why-he-left-850-million-behind/#49dd2efc3f20.
2. Merrian Webster, «Definition of ALGORITHM». Michel Sipser, *Introduction to the Theory of Computation,* Third Edition (Boston: Cengage learning, 2012).

the 5 «Vs» that characterise big data: volume, variety, velocity, veracity and value. The exploitation of large volumes of data is seen as an opportunity to enhance the understanding of the relationships between different factors and discover hitherto unknown patterns.

COMPUTATIONAL THINKING: A set of skills and knowledge that enable the exploration of different ways to solve problems with an analytical approach (including abstraction, decomposition, logical thinking, pattern identification, simulation, evaluation and generalisation) through algorithms or representations of data that help to design systems, solve problems or understand human behaviours. From this perspective, computational thinking can be applied with or without a computer.[3]

CRITICAL DIGITAL LITERACY[4]: The ability to comprehensively and critically understand digital media and their social, economic and political implications. It goes beyond the instrumental and informational use of the devices and raises questions about the role and effects of the proliferation of digital devices in today's society. It's a set of skills that make it possible to question the purported neutrality of technologies, analyse the problems derived from the leading role that digital media have taken on, and seek to identify alternative courses of action. It is associated with the critical thinking that analyses, synthesises and assesses with a rigorous evidence-based approach the power and control relations, as well as the new forms of inclusion and exclusion resulting from the use of digital technologies. This ability steers clear of snap judgment and recognises the limitations of the claims we can make. It develops healthy scepticism about some of the techno-utopian (geek) approaches typical of the Silicon Valley culture regarding the relationship between digital media and current society, particularly about the power of these media and the effects they have at the individual and social levels. It's an ability to question, rethink and problematise the techno-enthusiasm exhibited today by the «solutionist», «post-humanistic» and «dataist» discourses, among others.

DATA LITERACY[5]: The ability to understand and use data, particularly in the context of the Internet. It covers a set of cognitive skills (collecting, selecting, cleaning, analysing, interpreting, evaluating, contextualising, questioning, applying, representing and sharing) and social skills (knowing their uses and implications)

3. Cristóbal Cobo, «Nuevos Alfabetismos y Pensamiento Computacional en el Plan Ceibal en Uruguay», *World Education Blog*, 8 September 2017, https://educacionmundialblog.wordpress.com/2017/09/08/nuevos-alfabetismos-y-pensamiento-computacional-en-el-plan-ceibal-en-uruguay/.
4. Luci Pangrazio, «Reconceptualising critical digital literacy», *Discourse: Studies in the Cultural Politics of Education 37* (6 December 2014): 1-12, https://doi.org/10.1080/01596306.2014.942836 ; David Buckingham, Medienkritik im digitalen Zeitalter, ed. Horst Niesyto y Heinz Moser (München: kopaed, 2018).
5. Mark Frank *et al.*, «Data Literacy-What is it and how can we make it happen?», *The Journal of Community Informatics* 12, n.º 3 (2016).

associated with the use of data from a critical perspective. It includes different kinds of data uses for different situations, such as those involving data producers, data specialists or non-specialised users. This literacy also contemplates knowing the legal and ethical implications associated with the use of data. In addition to the abilities to combine, reinterpret or transfer the data to third parties, it includes understanding the risks associated with the privacy of individuals and other derived responsibilities. This capacity makes it possible not only to work with data but also to critically question the main stereotypes that define a datified society.

DATAISM: A philosophical approach or ideology, metatheory (general theory) or macro-discipline that suggests that the universe consists of dataflows and the value of any phenomenon or entity is determined by its contribution to data processing. The human race can also be viewed as a data processing system. This approach proposes that people are information. We produce, record, share and consume information all the time. Organisms could be viewed as biochemical algorithms. Dataism posits the idea that with enough biometric data and computing power, we could understand humans much better than we do today. The dataism approach expands and is perfected as the dataflow (a term popularized by Yuval Noah Harari)[6] is maximised.

FINGERPRINT: A data trail that the user creates while using a digital system or device. This print is a result of the set of different digital activities, communications and interactions that leave a trail of the data generated on the Internet or on a digital device and can identify a particular user or device. A «passive fingerprint» is a trail of data that is left online unintentionally. Even if users do not consciously share their details, they leave them in their digital interactions (e.g. cookies, IP address, search history, browsing websites, online shopping, etc.), and they can be used to track their activities. An «active fingerprint» includes data that the user intentionally shares online. An email is an example, since one expects the data to be viewed and/or saved by somebody else. Emails are stored and messages are saved for an undetermined period of time. In addition to transactions with credit cards, calling smartphones or posting a profile on a social network creates a fingerprint that can be used to track a person. This information is widely used to guide advertisements to consumers. The data can lead to security vulnerabilities, such as identity theft. The user has limited control over the data that are posted on them through third parties. Everyone who uses the Internet has a fingerprint, but platforms like Facebook can also create a shadow profile of someone even if they've never accessed the Internet. People's digital fingerprints are probably more substantial than they think.

KNOWLEDGE SOCIETY: Although there are many conceptualisations to analyse the role that knowledge and digital technologies play in the politics, economy and culture of modern society, two prevailing discourses

6. Renowned writer, author of books such as *Sapiens, Homo Deus* or 21 Lessons for the 21st Century.

are identified: a) a techno-scientific-economic discourse, largely proposed by governments of developed countries, and b) a more pluralist-participatory discourse, championed by academic communities, UNESCO and other organisations.

> *A society where the key social structures and activities are organised around digitally processed information networks.* According to this vision, society is connected by omnipresent information and communication technologies and is defined by its capacity to exploit digital information. The techno-scientific-economic discourse focuses on the knowledge-based economy, with an emphasis on the symbolic power of socioeconomic development based on the exploitation of knowledge. Exogenous development is embodied in the economic instrumentalism of knowledge, technological determinism (information and communication technologies, big data, the Internet of things, etc.). This uniform approach attaches limited importance to the value of local knowledge and lacks any cultural or linguistic diversity.
>
> *A pluralist-participatory knowledge society that seeks to reduce the fragmentation of efforts to address global problems* and sustainable development that adopts different models of knowledge transfer. Tackling and solving complex problems requires collective thinking, pluralism and knowledge as a public good but also a global understanding of societies. Although the (old and new) technologies play a major role, the key point is to understand that societies have a broad knowledge base that they use and share regularly through different means, practices and tools. The emphasis is on digital solidarity rather than technological determinism. This digital solidarity entails the creation of innovative partnerships that bring together and favour dialogue between representatives of states, regions, cities, governmental and non-governmental organisations, the private sector and civil society.[7]

MACHINE LEARNING: An area of computer science whose objective is to develop algorithms capable of generalising behaviours from information provided in the form of examples. It is claimed that these techniques allow computers to «learn» since they enable them to complete tasks for which they were not explicitly programmed. They follow an inductive process, in which the repeated observation of elements of the same type leads to a general conclusion for all the elements of that nature. These techniques

7. Sarah Cummings *et al.*, «Critical Discourse Analysis of Perspectives on Knowledge and the Knowledge Society within the Sustainable Development Goals», *Development Policy Review* 0, n.º ja, accessed on 9 August 2018, https://onlinelibrary.wiley.com/doi/abs/10.1111/dpr.12296.
8. Naughton, «Magical Thinking about Machine Learning Won't Bring the Reality of AI Any Closer | John Naughton».
9. Hiroki Sayama *et al.*, «What Are Essential Concepts about Networks?», *Journal of Complex Networks* 4, n.º 3 (1 September 2016): 457-74, https://doi.org/10.1093/comnet/cnv028.

require large numbers of data, since their performance at a specific task improves progressively as the number of examples increases. Today, it can be regarded as a ubiquitous field: practically all the interactions we have with Google, Amazon, Facebook, Netflix, Spotify and others are mediated by systems that use machine learning.[8]

NETWORK LITERACY[9]: Knowledge about how networks can be used as tools for discovery and decision-making. A network is a set of elements organised for a specific purpose. Networks vary widely in their nature and operation, depending on the stakeholders involved, their relationships and the level and scope at which they operate. Certain network properties commonly appear in many seemingly unrelated systems. This implies that there exist some general principles about their structure that apply to multiple domains. Understanding the structure or hierarchy within a network, the degrees of connection or its nodes are some of the aspects that help to understand both the strengths and the weaknesses of a given network. Networks can help cross disciplinary boundaries and achieve a holistic and more complete understanding of the world. Despite the importance and ubiquity of networks, their study is not yet present in the current educational systems (with the exception of the disciplines directly linked to this subject, mainly in higher education).

PRIVACY: The right to be left alone.[10] The state of being free from public attention or unauthorised intrusions. Information privacy is the right to have some control over how personal information is collected and used. It's a broad concept that refers to a variety of factors, techniques and technologies used to protect confidential and private data, communications and preferences. The level of protection and the security of personal data posted on the Internet determine Internet privacy. All the personal data that are shared on the Internet are subject to privacy problems. Sharing information online means that people lose control over how others will interpret it.

RIGHT TO THE PROTECTION OF PERSONAL DATA: It refers to the power of disposal that people have over their personal information before the state and private individuals. It is a right that emerges from and goes beyond other related rights with which it is usually associated (privacy). It is based on the concept of «informational self-determination».[11]

10. Samuel D. Warren and Louis D. Brandeis, «The Right to Privacy», Harvard Law Review 4, n.o 5 (1890): 193-220.
11. According to the German Federal Court's ruling of 15 September 1983, by virtue of which some provisions of the 1982 Census Act are declared unconstitutional.