Boris Beaude

The Ends of the Internet

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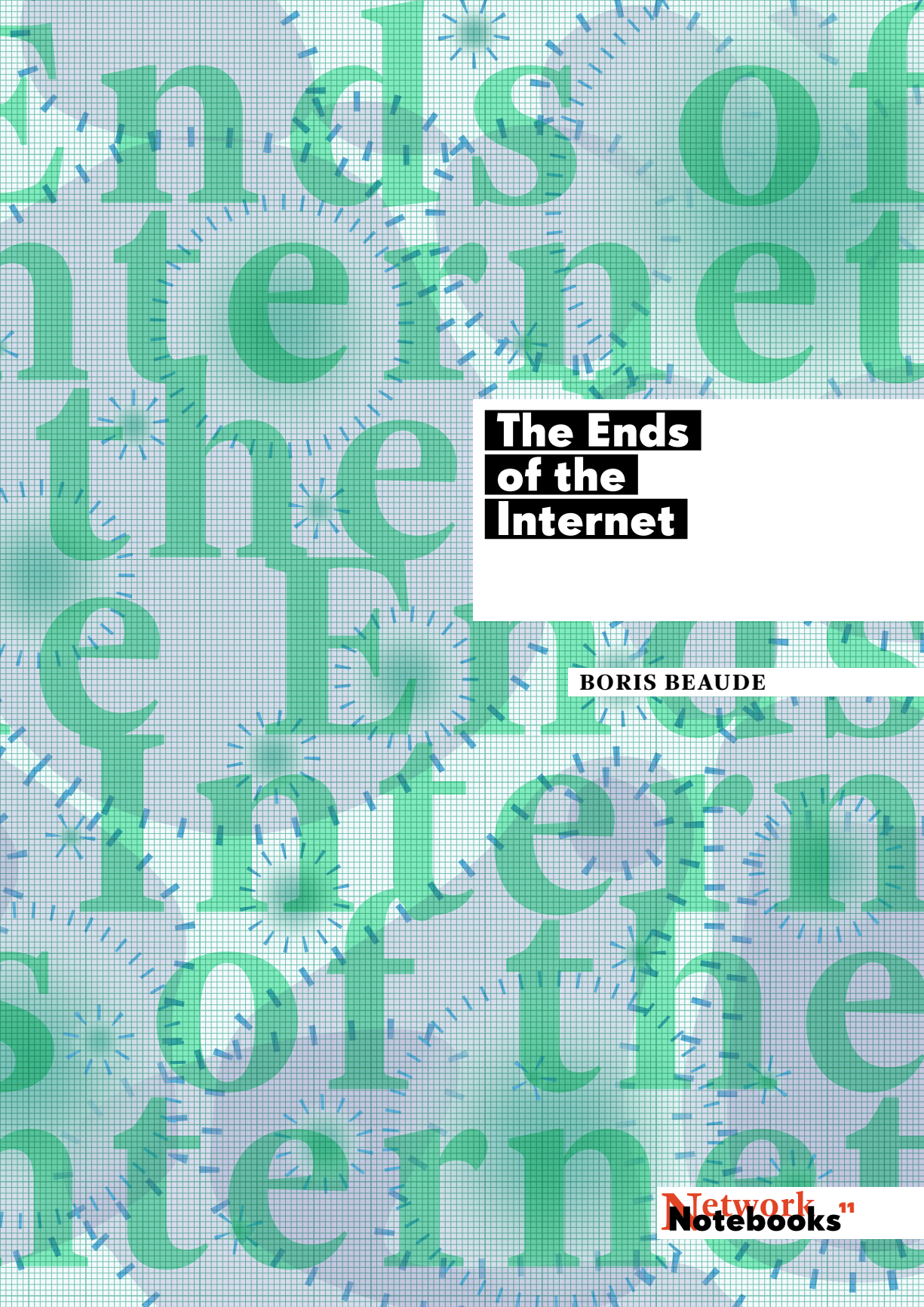

The Ends of the Internet

BORIS BEAUDE

Network Notebooks 11

The Ends of the Internet

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Introduction: The Abolition of Space

The Internet has been with us for scarcely more than thirty years and now it is on the verge of disappearing. Originating in the fifties with the first electronic communications between computers it became a political project during the sixties. The Internet's technical bases were already established in the seventies and deployed during the eighties as part of military and scientific research. But it was only in the nineties, when the US authorized its commercial use that the Internet evolved into how we know it today. By this point the Internet had become firmly grounded on a few elementary principles that ensured its effectiveness and worldwide success. The Internet had to function on all networks, be able to withstand the failure of an important node and be as decentralized as possible. In just a few years it evolved into a complex assemblage of fixed and portable computers, cellular phones, connected objects, routers, data centers, cables, antennae and satellites – and of services and information. Today's Internet represents the most vast and sophisticated communication system ever built.

At present, the growth and scope of the Internet appears limitless. Yet, little more than ten years ago, Skype, iTunes, Facebook, Google Maps, Flickr, YouTube, Twitter, WikiLeaks, Dropbox, Spotify, Reddit and Instagram did not exist. Earlier developments such as Google, Paypal, BitTorrent, Wikipedia, Amazon and eBay, and public access to the Internet are still less than twenty years old. In the Internet's early days bandwidth, contents and services were very limited, and the Internet was only accessible to a minority of people whose professional activities enabled them to make use of this new electronic tool. Nonetheless, the game-changing nature of the Internet for society had been widely predicted in the 1980s. Despite the many obstacles to the global spread of the Internet, numerous pioneers were deeply convinced that it would become a powerful medium for free expression and could revolutionize the sphere of individual freedom.

This ideology largely inherited from cybernetics emerged while the horrors of the Second World War together with the spread of communism were attributed to the inefficient state of communications in contemporary societies. According to Norbert Wiener, one of the major researchers in the Cybernetics movement, societies that had become seriously dysfunctional were lacking the effective 'feedback loops' required to maintain stability in the social system.[01] When confronted with dramatic developments such societies did not have adequate 'feedback' to sufficiently respond to the situation.

Wiener's conclusion was that any obstruction to the free circulation of information risked irreversible destabilization. Therefore the Internet came to be seen as a technical solution to the problem at hand since it makes it difficult to censure or control information.

A few elementary building blocks had already been placed in the renewal of one of society's major foundations: the social bond. Indeed, the Internet has effectively transformed the practical terms of interaction. The spatial distance remains, but its nature has changed. We are witnessing a radical rearrangement of the relative place of the realities

01 | Norbert Wiener, *The Human Use of Human Beings*, Cambridge, Massachusetts: The Riverside Press (Houghton Mifflin Co.), 1950.

that constitute our world. Now, everything that can be dematerialized will be dematerialized, everything that can be connected will be connected. We are now confronted with the emergence of a network so technically universal that it is 'naturally' inclined to create one vast space, progressively covering the planet as a whole.

As the Internet spread globally, so did its tenets. Many aspects of contemporary societies were profoundly altered by it as well. Freedom of speech was rarely so effective, offering unprecedented opportunities for communication. The ease of organizing small and responsive collectives spread over vast areas emphasized the Internet's ability to mobilize expertise scattered around particular issues, i.e. online encyclopedias, software development, discussion forums, funding drives, political mobilization, etc. The near-zero cost of transmission and reproduction of information has disrupted the economy of intangible resources. Free access has become the norm. The circulation of cultural goods has reached unparalleled levels.

The Internet is a powerful driver of innovation, fueled by its unique culture of openness. This openness is characterized by free access to the sources of its strategic tools and in the documentation of those components that are vital to its free usage. The Internet's decentralized structure has resulted in the proliferation of diverse public initiatives and associative, private, individual and collective enterprises. Any intermediary wishing to impose itself at the expense of more efficient forms of mediation runs the risk of either being bypassed or discarded altogether. Twenty years after its commercial development, the Internet appears to be at the peak of its potential. Its robustness has been proven as it has adapted a much higher growth than its developers had imagined.

But in recent years, the Internet's founding principles have been challenged in many ways, and the diversity and power of these threats are likely to put an end to what now increasingly appeared as a utopia. Freedom of expression is now subject to surveillance and control on an unprecedented scale. Formerly a space of freedom, the Internet has developed into the world's largest panopticon. The idealistic assumptions of a prospering collective intelligence have been shaken by the commercial exploitation of individual productions and their appropriation through increasingly sophisticated communication strategies. The 'gift economy' of the Internet is being challenged by the growing demands, not all illegitimate, of content producers. As the Internet's potential no longer needs to be demonstrated, very powerful actors are attempting to take control of it, by replacing the open and publicly documented standards with closed and proprietary ones.

The decentralization of the network becomes wishful thinking when the majority of communications passes through a limited number of data super-hubs and a small number of companies share the majority of online activities. Finally, the robustness of the Internet itself faces growing threats: vulnerabilities are increasing and many companies, governments and individuals have become exposed to cyber attacks aimed at compromising confidential and strategic information infrastructures.

In their desire to make the world a common space for all humanity, the early Internet pioneers underestimated both the fragility of societies and the strength of opposing forces. As societies hold diverse values certain parties are demanding that the Internet increasingly conforms to their own private interests. We now see this confrontation of public and

private, individual and collective claims steadily growing and we have to come to terms with the fact that the Internet will change profoundly. The Internet was largely built on the basis of North American values; today it will have to adjust to a far larger and more complex reality.

This is why we now witness both the globalization of politics and the 'nationalization' of the Internet happening simultaneously. Politics is a subtle art that involves sharing the world in a common way. Politics is supposed to organize a peaceful coexistence in order to render otherness acceptable. For this to occur politics requires the acceptance of different values within society and among societies. Space is precisely one of the dimensions of this otherness. In seeking to abolish space, the Internet runs the risk of being abolished by space itself, for the simple reason that space cannot be abolished. Individuals do indeed belong to multiple spaces, but politics is structured on the basis of territories that are the source of its legitimacy. The world as a whole may be an increasingly desirable political horizon for humanity, yet the world as such does not yet possess sufficient legitimacy to exercise governance over the Internet or to guide its growth and suitability for divergent interests. This is the reason why national reactions to the Internet's universalism may well turn ugly unless its political issues and consequences are better understood.

The Internet seeks to reduce the world to a 'point'. Free flows, abolition of distance, or transparency, are just utopias, or dystopias if you prefer, while their actual implementation reveals their contradictions. The diversity of the world is at the core of politics. We must constantly negotiate a range of political values such as liberty and equality, individuals and society, privacy and transparency, free access and property. These values are precariously balanced between competing options and their stability is merely temporary. This is why the Internet should always be written with a capital 'I'. In the midst of all this conflict, it is absolutely necessary to remember that there is one and only one Internet and that it has become so commonplace does not detract from its uniqueness. The Internet is not like a radio or furniture. The 'Internet' is a proper name, just like 'Norway' or 'The European Union'. Whatever we do to alter the Internet, however locally, affects the Internet as a whole. Moreover, the end of the Internet would not mean the emergence of 'micro internets'. Such a term would make no sense. There is a more sinister term to describe it: the 'intranet'. The 'intranet' is a generic term and there are many intranets already. Countries like Iran, for instance, would gladly replace the unique global Internet with national intranets over which they have strict control.

This is why it is so important to keep in mind that as our values change so will the Internet itself. Neglecting this dual dynamic obstructs clear thinking about the world and the future of the Internet. It prevents us from realizing that not only can the relative value of privacy or ownership change but the Internet itself continues to evolve, constantly readjusting to social, economic and political developments. The Internet is changing society and society is changing the Internet. Today it is essential that contemporary societies engage in a broad debate about what should be done in this renewed space and to establish the rules of coexistence that will make it possible to accommodate the numerous practices now emerging. A legitimate policy must arbitrate between the developing possibilities so as to make the Internet a legitimate space too. Failing this the Internet will be destroyed by conflicting claims. May this book help the Internet survive singular interests and contribute to it remaining a truly global space for humanity.

Chapter 1: From the Abolition of Space to the Emergence of Territory

The Internet presents a paradox that is difficult to understand and that has resulted in many misconceptions. The Internet is both abolishing space yet at the same time constituting a space itself. Common language betrays the close semantic proximity of the Internet and space: we speak of 'going on the Internet', of a 'navigator' (the technical term for a browser), we 'surf' the Internet, where there are 'sites', 'addresses', firewalls and paywalls, and we talk about 'virtual spaces' in general. Immediately from its beginnings the Internet was considered in utopian terms. Coming after the invention of the telegraph and the telephone, the Internet meets the growing expectations of being able to make contact over increasingly remote distances. The Internet may be explainable purely in terms of its technical, economic or social components but first and foremost it remains a spatial innovation that attempts to limit the relevance of distance.

THE INTERNET IS A REAL SPACE

It is essential to make a distinction between the societal origins of the Internet's emergence and the consequences of its deployment on society. Overall, the causes can be attributed to the widespread aspirations to maximize social interaction whereas the consequences are the outcome of the realization of this aspiration. A near perfect analogy for this distinction is the automobile: a specific car is produced in response to a recognizable demand for individual mobility whereas the long-term consequences of the cars for society in general are much more complex.

The cognitive dissonance that arises from this confusion of causality with long-term consequences has created an ideological shift in expectations about the Internet. This confusion is detrimental to a proper understanding of the real relationship between the Internet and its social environment. When the Internet developed, it was not only the abolition of space and distances that was suggested but also an implied opposition between 'real' and 'virtual' life and 'real' and 'virtual' spaces. This opposition triggered many questions regarding the Internet's unique spatiality. When 'we go on the Internet', where are we actually going? What does a site's URL and 'address' mean in such a context? What is the nature of the virtuality of the Internet? Where is the Internet? These questions emphasize that in order to understand the Internet, a better understanding of space is essential.

My hypothesis is that the difficulty we encounter in understanding the influence of the Internet on today's world largely stems from an erroneous conception of space. Space is usually considered as a material reality and is often equated to the territory on which other realities, such as individual people, resources, dwellings and vehicles, are located. This weakness in the conception of space, even though it is widely held, can easily be addressed by asking a relatively simple question: if space is a thing, where is that thing called space located? This question indicates the contradiction inherent to a conception of space as a material support for action. It also underlines the confusion surrounding this word 'space': between what locates and what is located. Space, however, is not material and neither is it a support. Certainly, a space can be located but always in relationship to another space.

The philosophies of Leibniz and Kant in the 17th and 18th century and later natural physics in the nineteenth and early twentieth century, demonstrate that space is an *a priori* condition for understanding how objects are situated in relation to each other. Space is not some specific thing, but rather the specific arrangement of things in their respective relationships. This shift in conceptualization has markedly transformed both philosophy and natural physics already, but we have not experienced its full effects yet.

The consequences of what we could term 'spatial materialism' have been substantial. This materialist approach to space does not allow us to fully understand what constitutes the Internet's reality. The opposition between 'real' and 'virtual' life is certainly the most absurd outcome of this misunderstanding since it denies the reality of an increasing number of relations, situations and actions. Ultimately this confusion between 'real' and 'virtual' obscures another even more insidious distinction, between the real and the material. To be more exact, it is the immateriality of the relations generated through the mediation of the Internet that lies at the heart of an enormous misunderstanding. This misunderstanding arises from thinking in terms of the traditional materialist conception of space. It is not enough to assert that data centers and cable networks form the reality of the Internet. The reality of the Internet is far more considerable in scope. It includes both the total quantity of data being circulated and all the practices taking place on the Internet. These immaterial mediations constitute real and effective interactions which feature prominently in contemporary life.

Territory, as a continuous arrangement of relatively stable material realities, whose extent can be assessed, is nothing more than a specific space. The advantage of this space is that it accommodates our bodies and is an important marker for organizing coexistence. But territory does not hold a monopoly on spatial interaction. Mobility-organizing networks create discontinuities and rearrange the relative loci of the realities that shape a territory. Roads and railways constitute preferential links between places with a kind of material stability – e.g. schools, hospitals, housing estates – which demands mobility to be organized according to what may be mobilized – such as bodies, food, books, materials, etc.

Despite the fact that material realities remain an important component in our daily lives, today our societies are becoming increasingly structured by immaterial resources. This is especially the case with what has become a major resource: information. The management, storage and dissemination of information has become the basis of many of our economic activities. To date, we devote a quarter of our lifespan to education, i.e. to the transmission of the information we deem to be useful for our development. Our free time also is influenced by the dematerialization of music, films and games. Money has increasingly become abstract information and no longer needs to take a material form in order to be exchanged.

THE INTERNET AS A PLACE

Today we must learn to understand the mechanisms operating between the material and the immaterial, between networks and territories, and between the Internet and the other spaces that preceded it. It is worthwhile to stress again that in itself the Internet does not abolish space anymore than it abolishes distance. The Internet merely diminishes the relevance of distance within certain configurations and in response to specific interac-

tions. For this to occur, the Internet forms a new type of space, it creates new relationships between numerous material actualities, new places that morph into mediations and become increasingly crucial to an increasing number of practices. Wikipedia, Facebook and YouTube are all among the many specific spaces meeting particular demands with remarkable effectiveness. Such spaces are not inferior or 'virtual' but very real and actual spaces. The immaterial character of the activities taking place within them does not reduce their reality. On the contrary, this quality enhances their capacity to fully respond to specific needs. These spaces emerge precisely because they meet demands that other territorial spaces are not able cater to with the same degree of effectiveness.

It is pointless to stress the virtuality of relationships on Facebook for the same reason as it is pointless to compare Wikipedia with the Encyclopædia Britannica. It makes more sense to ask what are Facebook and Wikipedia spaces for and to adopt a more balanced approach, where territorial spaces are studied through the same questions. Which territorial space allows people all over the globe to collaborate on the production of an encyclopedia that is freely accessible to all? Which territorial space would make sharing at any time possible, with contacts we choose, and independent of location? Which territorial space would allow us to view or listen to the archive of all audio-visual resources?

Matter is difficult to shift around because of its mass. Displacing matter demands an amount of energy exponentially proportional to its mass. But light and electricity, the primary carriers of information over the Internet, are composed of energy circulating in electromagnetic form. They are waves flowing, ideally at the speed of light. By channeling this energy into continuums we are able to establish these high-speed connections at a planetary scale. Thus we are witnessing the emergence of new spaces that restructure the relative loci of things. These spaces are not simple transpositions of already existing spaces like libraries, shops, kiosks, schools or cafes. They are particular spaces with their own specific characteristics. They are spaces that are making a remarkably efficient use of the properties of the immaterial. That is the reason why they allow extremely high transmission speeds over long distances.

THE CONTINUING RELEVANCE OF TERRITORIES

The limitations of the Internet are many. Unlike light, the speed of transmission of relevant information within the context of social practices can be slow. This happens for instance when a very high definition film is sent from one side of the world to the other: the transfer time can be longer than the film itself. Latency time may also be unsatisfactory. The delay, usually expressed in milliseconds, might prove too long for the synchronicity demanded by some videogames or by tele-surgery. The amount of information transmitted within a given timeframe, or bandwidth, and the basic connection time (ping or round-trip time) lie at the core of the digital divide. Besides discriminating against people and territories according to their access to connectivity, the digital divide is also exemplified in the unequal distribution of connection quality.

The Internet is not an answer to the numerous material challenges we encounter in our lives. Our bodies partake in a complex spatiality entailing concrete matter. Sensors measuring and monitoring our activities do of course enhance the interlinking of our bodies with an ever-greater number of technical devices. The digital may help us gain a more

exact understanding of our practices and their evolution, through feedback that helps us make informed decisions and alter our habits. This is something that is captured in the term 'the quantified self'. But the digital is limited to organizing information and this does not cover all the demands of our body. Our body requires food to nourish itself, clothing for warmth and medicines. Multi-sensorial interaction is also a need, whereas the Internet in its current state is confined to the two immaterial senses, sight and hearing, and cannot convey textures, tastes or smells. Our body itself is matter, which greatly limits its mobility.

The Internet does not abolish space at all, but recomposes it and augments its potentialities and therefore as a consequence continually alters the value of 'situated goods' – i.e. goods whose worth is largely dependent on their locality – and of those resources whose materiality represents either a constraint or a resource. Thus, the Internet constantly reminds us that territories, the dwelling spaces of our bodies, are plural.

SHARING SPACE, SHARING THE INTERNET

The ideal of digital ubiquity is faced with the challenge of established territories, which remain the basic spaces of our existence. These territorial spaces come together with the institutions organizing coexistence and possessing the legitimacy required to define which interactions are appropriate. Now the Internet attempts to impose a common space on top of this division of the world into separate territories organized according to different, and often contentious, social contracts. Therefore, when the quality of connectivity rises, space is not annulled, but on the contrary the disjunction between the Internet and the various territorial spaces organizing the world becomes greater in consequence.

In this disjunction, the Internet becomes part of a complex type of spatiality articulating places and areas on different scales. Now the formerly accepted tenets of self-regulation and free circulation of information characteristic of the Internet are being questioned and challenged by societies reclaiming their sovereignty and demanding that the laws operating in their territories are obeyed. This disjunction between the plurality of political territories and the unicity of the Internet creates in itself a forceful dynamic that favors sharing. We are witnessing ever more sharing on the Internet based on common values. In concrete terms this means the merging of common ideals within the common space of the Internet. But at the same time we can see more sharing on the basis of specific values, in other words: a divergence of distinct ideals within distinct spaces.

More generally speaking, we can postulate a confrontation between an emerging 'world society' aspiring to a globalization of politics and societies grounded in territories whose divergent values encourages the fragmentation of the Internet. Long-term typical features of the Internet such as freedom of expression, collective intelligence, costlessness, openness, decentralization and net neutrality constitute just as many challenges and provocations for political organizations that do not identify with these principles. Understanding the possible ends of the Internet requires a deeper appreciation of its original aims and purpose in the context of their incompatibility with the present day political order.

Chapter 2: From the Freedom of Speech to the Global Panopticon

In order to understand the difficulties of upholding the Internet's global consistency and coherence, we should start by considering what makes up the core of its development. Long before it became the complex and multi-purpose tool of today, the Internet's primary function was to support a more reliable and efficient means of communication between research labs. The Internet was meant to withstand major infrastructural disruptions in order to safeguard communication in situations of crisis. These underlying objectives go a long way towards explaining the convergence of interests between the United States Department of Defense (DoD), which financed the project, and the numerous North American and European researchers who contributed to its ongoing development.

THE INTERNET AS A SPACE OF FREEDOM

During the 1960s communism was still perceived as a threat and many engineers were convinced that society should apply the principles of cybernetics. Ideas such as feedback and auto-regulation had taken on a particular significance during this era, although the premises were already being formulated in the end of the eighteenth century by Henri de Saint-Simon. Norbert Wiener further developed these concepts after the Second World War.[02] At stake was the need to ensure a fluidity of flows within society, not only of goods, but also of information. In such a context, obstacles that obstructed the free circulation of information created the risk of destabilizing social organizations.

This line of thought converges with the basic tenets of American democracy where freedom of expression is a guiding principal. The Internet therefore seemed poised to become a powerful engine of democracy and liberty. Since it simplified individual expression and frustrated attempts at censorship, the Internet came to be seen as the only mode of communication able to communicate individual information at considerable speed and via vast distances at a near zero cost. After the era of the printing press, radio and television, the Internet stimulated a far-reaching renewal of the public sphere, giving citizens the opportunity to discuss their past, present and future.

In these early days the Internet was considered as a continuation of the Enlightenment tradition, since it enabled individuals to form their own opinions and to participate in discussions about the best ways to set up the social contract framing their actions. The Internet was seen as possessing the potential to enlighten the world by criticizing despots, revealing unjustified privileges, spreading knowledge of political abuse, exposing conflicts of interests, and in general watching the people watching us. Politics could rise to higher standards as a renewed and more transparent debate took place, ensuring a government with interests aligned to the majority of the population rather than catering to a small elite that retained power through controlling the circulation of information.

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02 | Norbert Wiener, *The Human Use of Human Beings*.

Though the Internet was primarily conceived as a weapon against communism and authoritarian regimes in general, it was just as often seen as the safeguard of freedom within western democracies themselves. Distrust towards politics, and more significantly, towards the nation-state, was already prevalent as the Internet was emerging. One of the most representative texts of this tendency is the famous *A Declaration of the Independence of Cyberspace* written in 1996 by John Perry Barlow, co-founder of the Electronic Frontier Foundation and one of the most vocal defenders of freedom of expression on the Internet. The declaration stated:

> *We are creating a world that all may enter without privilege or prejudice accorded by race, economic power, military force, or station of birth. We are creating a world where anyone, anywhere may express his or her beliefs, no matter how singular, without fear of being coerced into silence or conformity. Your legal concepts of property, expression, identity, movement, and context do not apply to us. They are all based on matter. There is no matter here.*[03]

This excerpt highlights the opposition between the Internet and nation-states. It provides an incisive critique of the then existing political order as being inimical to democratic freedom. The remainder of the declaration reiterates that states harbor a tendency to threaten the liberties on the Internet. This spawned a fierce debate and many people held up the Internet's singularity in opposition to the territorial entities that attempt to regulate coexistence.

Yet such an approach to the Internet suggests an equivalent legitimacy between spaces of a different nature. In his introduction, John Perry Barlow also mentions the fact that the Internet does not possess an elected government, a statement that is emblematic for the belief in its self-regulating character. This presupposes a capacity of the Internet to confront problems it may face in terms of an internal logic which is indifferent to the existence of legitimate institutions permitted to regulate individual behavior.

THE POLITICS OF FREEDOM

A detail John Perry Barlow might underestimate in his particular demand for the independence of cyberspace is that there is no such thing as a legitimate social contract on the Internet. There are certain rules guiding what is appropriate but these are either dated and no longer taken seriously, such as 'netiquette', or they have increasingly taken the form of bilateral agreements with private, corporate parties, such as Google or Facebook. States and governments intervene to protect their citizens' interest in matters of privacy, dignity, property, etc., yet private companies seize every opportunity to one-sidedly decide on what is allowed or prohibited.

Despite their effectiveness, the major government organizations of the Internet cannot pretend to be representative of all parties concerned. They lagged behind in recognizing non-latin script, they did not propose any serious alternatives to the emergence of Google, Facebook or Twitter, and have done nothing to confront the mass surveillance of the Internet by the NSA and the intelligence services of many governments. On the other hand,

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03 | John Perry Barlow, *A Declaration of the Independence of Cyberspace*, 8 February 1996, https://projects.eff.org/~barlow/Declaration-Final.html.

John Perry Barlow has probably underestimated the differences between the various norms that rule what is acceptable or not. A shared space between the whole of humanity is clearly not enough to create a shared set of values.

Social contracts, however, lie at the core of politics. Social contracts are about restraining some individual liberties in the name of the collective freedom deemed to be more fundamental and these contracts are backed by an authority that is appointed by the community for that specific purpose. Politics involve the method of allowing potentially opposing individual liberties to coexist. One of the inescapable limits to individual freedom has already been formulated in the French 'Universal Declaration of the Rights of Man and of the Citizen' of 1789: 'Liberty consists in the freedom to do everything which injures no one else; hence the exercise of the natural rights of each man has no limits except those which assure to the other members of the society the enjoyment of the same rights.'[04] As John Stuart Mill was believed to say: 'the right to swing my arms in any direction ends where your nose begins'. The French Universal Declaration, in its legalistic wording, and John Stuart Mill's assertion in a more pragmatic fashion both illustrate a fundamental issue with respect to coexistence.

Philosophers such as Thomas Hobbes, John Locke and Jean-Jacques Rousseau have aptly described the principles that encourage the creation of a social contract between individuals. However opposed their views may be in regard to the reasons motivating the establishment of rules to govern life in society these three people were remarkable thinkers on the emergence of democratic societies. Whereas John Locke wanted society to preserve a virtuous natural state, Thomas Hobbes wished on the contrary to protect society against a bellicose natural state. But all agreed on the importance of building up an environment where the public interest prevailed over private interest. All three thinkers thought that since any given individual's interests were at odds with another's conflicting interests, they could not be protected without a common social contract.

The Internet surely constitutes an opportunity to reconsider modes of coexistence in today's world as well as the rules guiding collective and individual action because it offers a renewed form of the public space, this time at a global scale. But nonetheless, the Internet 'occurs' in a complex political environment which to a large extent had already been structured before its advent. The basic units of regulation within this environment are numerous and sometimes at odds with each other on such fundamental issues as human rights, the rights of women, freedom of expression and intellectual property. How could the Internet ever decide for the world as a whole 'what is appropriate' without imposing the values of one particular society? How could it be possible to arrive at a common shared space without any regard for the particular social contracts individuals have obeyed? The Internet appears as a yet unheard-of space of liberty allowing individuals to remove themselves from a society they do not feel at home in. But the Internet also appears as a lawless place, where people attempt to impose values and practices on each other.

THE LIMITS OF FREE SPEECH

Freedom of expression is the issue that brings the various political organizations structuring our world into sharp conflict. Certainly, some nation-states such as North Korea and

04 | *Universal Declaration of the Rights of Man and of the Citizen,* 26 August 1789.

until recently Burma, do not place any value on free speech. Other nations, like the US, have made it the cornerstone of their deliberative political system and consider it among their most fundamental values. But in exercising these freedoms, numerous restrictions always apply when other values such as safeguarding the security of the state or protecting property rights are considered to be at stake.

In our present age, no matter which principles are upheld or which rights are enshrined in law, no society in the world grants an absolute freedom of expression. Even the US, despite the First Amendment to the Constitution stipulating that 'Congress shall make no law (…) abridging the freedom of speech', largely limits its reach with security-related policies and protection of copyright.[05] In Europe, besides security and copyright, respect for human dignity is also usually considered to take precedence over freedom of expression. Even though the EU and the United Nations defend freedom of expression worldwide as a precondition for democracy, they also have set limits to this freedom. In order to understand the problems facing the Internet today, we must seriously consider the fact that freedom of expression is not fully applied and we must recognize the reasons for this restraining of liberty in favor of other rights that are considered more fundamental.

The Internet is often seen as dangerous when the right to freedom of expression is not framed within a strict remit. This also explains why, over the past few years, authoritarian regimes have gone out of their way to significantly attack the integrity of the Internet, restricting access, filtering contents and putting users under constant surveillance. Reporters Without Borders has repeatedly denounced such practices in Bahrain, Vietnam, Syria, Iran and China. Moreover the Arab revolutions turned out to be less ideal than commentators originally suggested. It appeared that the Internet had indeed largely contributed to mass mobilization but also that it had been extensively used to spy on opponents, identify them, arrest them and in some cases torture them.

As these revolutions were taking place, such spying practices were denounced and this brought the existence of sophisticated telecommunication surveillance technologies to light. At this stage a kind of paradigm shift took place, emphasizing the banality of spying in every society, only later to be confronted with the fact that the technologies these regimes were deploying were exclusively developed in Western democracies and more specifically in the US, the UK, Germany, France and Italy. Companies like Amesys, Blue Coat, Gamma International, Hacking Team or Trevicor were identified as major players in this 'game' of surveillance. A number of investigative journalists have stressed the risks such activities pose, not only for the people living under an authoritarian regime but also for citizens residing in the most democratic countries. The latter are now witnessing a complete upheaval of the balance between privacy and security, the two essential components of individual freedom. Finally it became clear during debates about IP piracy, that American and Chinese surveillance technologies were precisely the same, albeit with a difference in the official purpose for such surveillance.

The debate on privacy versus security is one entirely about trust and the social contract since the latter might justify the sacrifice of a little privacy in order to safeguard liberty.

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05 | 'Transcription of the 1789 Joint Resolution of Congress Proposing 12 Amendments to the U.S. Constitution', *National Archives,* http://www.archives.gov/exhibits/charters/bill_of_rights_transcript.html.

Yet, when exactly the same technology that is used to protect intellectual property is also being deployed to engage in economic espionage and power politics, the real purpose and future role of surveillance technologies remains uncertain. In the aftermath of WikiLeaks and Edward Snowden's revelations, we have witnessed a very substantial shift in the perception of how this balance should work out. It is now obvious that neither the Internet, nor societies as a whole, will emerge unchanged after these events.

At first WikiLeaks disrupted the control of information on more sensitive issues by highlighting the Internet's ability to distribute massive amounts of data, while at the same time exposing the tendency of the media to keep classified information under wraps if that appeared necessary. But after the disclosure of documents on the wars in Afghanistan and Iraq, WikiLeaks have openly launched an attack on actual surveillance practices, exposing the complicity of many Western companies. Remarkably with a few exceptions the leaks were not circulated in the mainstream media. It was only after Edward Snowden exposed the true extent of electronic surveillance to the public that the media picked up the story.

The active role taken by the NSA and the involvement of nearly all the major corporate players on the Internet raises some very important questions that lack any obvious answer. Google, Facebook, Yahoo, Microsoft and Apple argue that they had no choice in the matter and that they are legally bound to cooperate with the NSA, while being prohibited to say anything about the nature of this collaboration. Yet this whole affair jeopardizes the social contract Americans are supposed to have with their government. Even more importantly, the relationship between the citizens of the world in general and the Internet is tainted by such revelations.

Is it possible to reach a point of equilibrium between for example Iran's stance of setting up a national intranet and the NSA's plan to keep global communication under surveillance? In both cases the Internet is facing an obvious danger as well as a direct attack on its integrity. It is therefore urgent to engage in a political debate about the rules that should apply to the Internet space. This process has already begun largely through the recent disclosures about surveillance. But how can we organize such a debate? How can we prevent all parties concerned from retreating into their national borders? How can we avoid distrusting the major, international Internet companies when ultimately they are far more 'national' than they pretend to be? How can we conceive of the protection of privacy and security in a space where the rule of law cannot be strictly enforced? Since there is no worldwide consensus on which degree of freedom of expression is appropriate, instances of censorship are increasing and we are witnessing the eventual end of the Internet. This also applies to cases where the Internet is hijacked for undesirable purposes. Today, the confusion around freedom of expression is embodied in the names of Chelsea Manning, Julian Assange and Edward Snowden. For some they are heroes of democracy and for others they are national traitors. Chelsea Manning, an American citizen, has been condemned to 35 years in jail by her own government, while Julian Assange and Edward Snowden have take refuge in the limbo of international law.

One of the 'end of the Internet' scenarios takes place in the midst of the fight for freedom of expression and the developing capacity for surveillance and censorship. This end-game scenario pits businesses, governments and citizens against each other among growing

opportunities both to convey information and to keep a close watch over the exchange of information. The distinction to be made between the US and China is not their technological means, which are essentially the same, but rather the ends motivating their surveillance practices. Vinton Cerf, one of the Internet's founders, reminded us recently that Internet freedom is facing the same threat as publishing and broadcasting did in their time.[06] The end of the Internet, as far as the freedom of expression is concerned, may be considered as one of the many motives of nation-states, in order to conform the Internet to their own values.

We have to face the relatively simple dilemma, either the Internet follows existing national social contracts or it becomes in danger of being even further partitioned in the near future. Today only states are able to legislate within their borders against the leaking of military secrets, child-pornography, libel or so-called 'involuntary porn'. This is especially the case with the US where the government issues direct orders to providers in order to take down sites that do not comply with what they deem to be fundamental standards.

Contrary to John Perry Barlow's aspirations, the Internet in itself does not possess the capacity to address and regulate illegitimate practices and conflicts of interest – just as the international political system is unable to self-regulate. Rather the opposite is the case: civil peace and the respect of human dignity is something that has been developed in most modern democracies through a complex process of regulation for the common good. It is precisely because freedom of expression is such an essential part of this regulation that it is itself being regulated. As valuable as freedom of expression may be, it does not in itself subsume all the necessary conditions of coexistence.

In order to transcend this contradiction it is necessary to move beyond the legitimate framework of nation-states, which are increasingly in denial about their own internal discrepancies and which obstruct their citizens' bond with humankind at large. Nation-states are also unable to cope with the fact that their operating scale is no longer appropriate for the vexingly complex problems of the world today. Yet the globalization of the Internet does not in itself bring about the globalization of values, let alone that of politics. The Internet does facilitate the emergence of a political space at the scale of the planet but that space still has to be invented. By the time this has actually happened there is a real chance that the Internet will cease to exist.

06 | Vinton Cerf, 'Father of the Internet: Why We Must Fight for its Freedom', *CNN*, 30 November 2012, http://edition.cnn.com/2012/11/29/business/opinion-cerf-google-internet-freedom/.

Chapter 3: From Collective Intelligence to Distributed Capability

The reason why freedom of expression takes on such importance as an issue is because it lies at the very core of the collective organization of coexistence. Free speech is what enables us to question the existing order and is one of the pragmatic conditions for the exercise of democracy. It not only allows us to cast doubt on the prevalent ideas at a given time but also to challenge the actors involved in governance and the enforcement of rules and laws. Individual freedom of expression allows for an informed debate among citizens; without this basis it is impossible to arrive at our own critical opinion. But this consideration was overlooked for a long time and was restated only towards the end of the seventeenth century. The acknowledgement of the individual as a basic unit of collective intelligence appeared at that moment as the necessary condition for the emergence of a common, non-transcendental body of thought leading to the establishment of modern democracies. The difficulties encountered in assessing the potential of individually organized groups is probably due to the common confusion between the frailty of individual intelligence and the power of collective intelligence. To believe in the potential of individuals as a collective means exactly the opposite of believing in the potential of a sole individual; i.e. it means acknowledging individual fallibility while at the same time recognizing the power of insight residing in each one of us.

DEMOCRACY AS COLLECTIVE INTELLIGENCE IN ACTION

Democracy is certainly one of the most powerful manifestations of the potential discussed above. Democracy literally constitutes a political choice for the organization of particular interests in the service of a common good. It encapsulates Abraham Lincoln's famous dictum that democracy is 'the government of the people, by the people, and for the people'. Such a statement presupposes first and foremost that individuals are those best placed to know what is good for them. It has by now become obvious that societies that choose to organize their government along these lines have witnessed economic growth far in excess of those that pursued a different route. These societies have in particular fostered the emergence of the individual human being as the basic unit of the social contract and endowed her with a new degree of acceptance, freedom and protection. The intrinsic superiority of democracy over an oligarchic system, let alone a dictatorship, was nonetheless far from obvious in the beginning. It required the development of a complex architecture of representation and delegation. This is because democracies need an effective freedom of speech to function, but must also safeguard the autonomy of what is its ultimate affirmation: the ballot box.

Misgivings about the democratic order of societies are bound to remain, but they mostly convey the difficulties of coordinating what is common with what is individual. Many have pointed out the shortcomings of democracies but many also share Winston Churchill's view that 'democracy is the worst form of government, except for all those other forms that have been tried from time to time'. The philosopher Karl Popper noted in his opposition to the many enemies of democracy that even though democracies might choose to

elect future tyrants they are still preferable to already established tyrannies.[07] Democracies may well hold the instruments of their own destruction but they also possess those of their preservation.

THE PRACTICAL REQUIREMENTS FOR COLLECTIVE INTELLIGENCE

Democracy as a large-scale experience of collective intelligence perfectly illustrates the difficulties encountered in fostering the emergence of meaning from the gathering of single persons. The limits of this process may be summed up according to the following elementary principles:

1. The degree of participation should be large enough in order to correctly represent the population concerned.

2. Individual intentions should be voiced independently from each other.

3. The tallying up of individual intentions should be done in a fully transparent manner in order to ensure clarity in the translation of individual preference into collective decisions.

The difficulties encountered in conforming to all these conditions explain why the emergence of democracies remains tricky and awkward. It also explains how the Internet came to be seen as a powerful medium to foster collective intelligence. From Pierre Levy's *Collective Intelligence* to Pisani and Piotet's *The Alchemy of Multitude* and Surowiecki's *The Wisdom of Crowds*, there have been numerous writings which portrayed the Internet's capacity to reformat the practical modalities of coordination and coproduction of knowledge and understanding.[08] Collective intelligence, in order to emerge, presupposes an effective *synchorization*[09] of individual intelligences, meaning the process by which we produce together the space we need in order to be and to act or interact. The Internet appeared to be offering a new opportunity to produce space at the global scale and to give intelligences worldwide a chance to converge into a common space. But now, after two decades of existence, it would seem that this potential to achieve confluence is reaching the same limits as the democratic process regularly encounters.

THE LIMITS TO PARTICIPATION

As of today, almost one third of the world's population is connected to the Internet. Historically, the Internet is probably the mode of communication that developed the fastest, reaching out to virtually all corners of the world in just a few decades. But this remarkable diffusion went together with just as many remarkable disparities. For example, a full eighty percent of Americans are connected, whereas ninety-eight percent of Nigerians

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07 | Karl Popper, *The Open Society and Its Enemies*, London: Routledge, 1945.

08 | See: Pierre Levy, *Collective Intelligence: Mankind's Emerging World in Cyberspace*, trans. Robert Bononno, New York: Perseus Books, 1999; Francis Pisani and Dominique Piotet, *L'alchimie des Multitudes*, Paris: Pearson, 2008; and James Surowiecki, *The Wisdom of Crowds,* New York: Doubleday, 2004.

09 | *Synchorization*, derived analogously to 'synchronization', is the process where we create together a common space of life, just as synchronization creates shared time. See: Boris Beaude, *Internet, changer l'espace, changer la société: les logiques contemporaines de synchorisation*, Limoges: FYP Éditions, 2012.

and Somalis are not, as stated in the 'Internet World Stats' of June 2012.[10] Moreover, considered alone the word 'connection' incorporates but also distorts substantial qualitative inequalities. This starts with the connectivity's technical performance itself, but is even more apparent in the socio-economic conditions pertaining to the usage that is made of it.

Connection to the Internet is one form of participation but actually contributing to its content is an entirely different task. Wikipedia, one of the most representative examples of collective intelligence presents a massive disparity between users who merely consult it and users who contribute to its content. In September 2013, a miniscule 0,0002% of users of the French language version of Wikipedia were active contributors, i.e. users having edited at least five entries during the past month.[11] The number of users having edited fr.wikipedia.org three times a day is only 713 per 20 million visitors. This is still a far greater number than the amount of editors of the French encyclopedia Universalis.fr and may explain the relatively high quality of Wikipedia articles. Nonetheless it represents only a tiny minority of the general population. This phenomenon can be observed with the majority of the Internet's content production mechanisms, whether blogs, users' valuation/assessment sites, or comments on news articles.

Not that participation on these platforms is modest; on the contrary, it is considerable. But it is still relatively limited when compared to the sum total of Internet users. When considered relative to the whole world population, it is absolutely marginal. Recognizing this does not detract from the fact that there is a high quality content collectively produced on the Internet but some caution is necessary when assessing this state of affairs.

INDEPENDENCE

Delegating production without *a priori* is surely the main characteristic of *crowdsourcing*. Providing the opportunity for everyone to contribute to the common good according to her availability and interests improves interactions and enables more open forms of innovation. Developed platforms like Wikipedia do not screen contributors but opt for a model of *a posteriori* evaluation and strictly limit this to what has actually been achieved within the framework of the encyclopedia.

This practice has been inspired by the way open source software was developed and how it disrupted the previously held assumptions about expertise. The Apache server used by the majority of Internet sites, the PHP scripting language and also the Linux operating system were developed along lines of 'delegation' that are quite similar to those applied by Wikipedia. These approaches show the potential of decentralized production formats which now compete with increasing success against more hierarchical models.

Yet the success of the concept of collective intelligence turns into a disadvantage when significant interests come into play. Its inadequate representation, despite the large number of participants involved, leads to burgeoning conflicts of interests between those who profit individually from valuable modifications and those who take care of the over-

10 | See: *Internet World Stats: Usage and Population Statistics*, http://www.internetworldstats.com/stats.htm.

11 | For recent English and French Wikipedia statistics see respectively https://stats.wikimedia.org/EN/TablesWikipediaEN.htm and https://stats.wikimedia.org/EN/TablesWikipediaFR.htm.

all quality of the contributions. This phenomenon, already commonplace in IT development, is even more pronounced in the case of Wikipedia. It has now become clear that the current troubles with Wikipedia are not about amateurism but are caused by creeping professionalization, where some users have both a personal interest and the expertise to contribute to the encyclopedia's content. This is particularly the case with businesses and celebrities who are increasingly attempting to manipulate Wikipedia's content in their favor and they do not hesitate to hire specialized firms in order to carry this out.[12]

Collective intelligence is now compromised by the growing power of individual intelligences that knowingly intervene in the distribution, valorization, coordination and promotion of specific content.[13] In addition to the case of Wikipedia discussed above, it would appear that an increasing number of specialized firms try to manipulate the open delegation process in their favor. For example, TripAdvisor and the many other equivalent sites encouraging user advice, comments or feedback are subjected to continuous attempts of manipulation and product placement, spin or bashing competitors.

For a long time this phenomenon was largely marginal and also often considered vaguely absurd but it has gradually become entrenched over the past few years. Specialized agencies now resort to increasingly sophisticated methods where they mask their intervention within in a far larger set of contributions with the sole purpose of generating fake credibility for their client.

The French competition, consumers and trade practices watchdog (DGCCRF) has repeatedly condemned such behavior while the standardization body AFNOR has put forward normative guidelines on how online public notices should be formatted. The Internet has now reached a dead-end of sorts as privacy can no longer be strictly regulated and anonymity increasingly appears to be both a source of liberty and of manipulation. This contradiction is handled by democracies by identifying individuals when they come to the polling station but in such a way that no link can be made with their vote. This basic principle is essential to coproduction processes as it vouches for the integrity of collective creation while verifying the legitimacy of the individual contribution. The limits to anonymity are becoming more evident by the day, whereas the Internet's potential to allow for individual expression is usurped for the benefit of those who have the greatest mastery.

AGGREGATION

Collective intelligence increasingly depends on the use of algorithms that exploit the digital traces of a number of individual actions in order to make sense of them. Google's search engine is surely the most remarkable example.[14] The outcome of this development is a web hierarchy that is considerably more productive than previous classification attempts but which also comes at the cost of a growing functional opacity and unprecedent-

12 | For example the firm Wiki-PR: http://www.wiki-pr.com/.

13 | Distribution, valorization, coordination and promotion are the four characteristics of collective intelligence postulated by Pierre Levy.

14 | Google exploits all hypertext links but also the users' reaction on search results in addition to a number of other indicators that the company does not disclose for evident strategic reasons.

ed breaches of privacy. Now that Google is the search engine of choice for the majority of people, we should surely examine the consequences of this unprecedented capacity to process individual and collective information.[15] The regulation of such an opaque information classification and hierarchization process presents an obvious problem.

By now the potential of collective intelligence has reached such a high level that digital data traces form a strategic issue of vital importance. The vast majority of the most visited websites in the world are dependent upon the exploitation of personal data. Google and Facebook, to name the most well known, finance themselves almost exclusively through customized ads by exploiting private data.[16] The current standoff between the European Union and Google about the cross-referencing of data and the duration of data retention is symptomatic of the problems encountered in regulating privacy in a digital environment where considerable profits are at stake. Between developing a 'soft consensus', averaging out differences and extreme customization with the concomitant risk of seeing privacy destroyed, stands the opacity of algorithms whose role is increasingly decisive.

SHARED MEANING AS A POLITICAL ISSUE

'Collective intelligence' is an attractive turn of phrase but is nonetheless deeply problematic, starting with the very terms 'intelligence' and 'collective'. The limited degree of representation of its authors should make us cautious. Nor is the emergence of collective intelligence a given. The aggregation of individual practices may make this happen but to achieve this requires a large amount of manipulation, which takes place in a completely opaque and obscurantist manner.[17] This is how we witness the slow mutation of 'collective intelligence' into 'distributed capability', which has no other outcome than to increase the power of those who already possess it. This may result in an increase in the general power of understanding but it may be wise not to harbor too many illusions about what kind of intelligence and collective this implies.

The current controversies about privacy, non-transparency of algorithms, the rights and compensations relating to work produced collectively and the identification of their respective authors have morphed into as many political issues. The Internet is not by itself able to handle such contradictions and neither are states able to impose their divergent values and interests on a space that is shared. The fact that states are unable to enforce compliance with principles they deem fundamental or critical has become a major source of contention and by now presents a considerable risk to the very integrity of the Internet. Some online services demand a strict proof of identity from their users, whereas others allow total anonymity. Some companies cross-reference enormous amounts of private data, retained for years on end, and find this perfectly legitimate, whereas others deliberately desist from engaging in such practices.

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15 | Baidu and Yandex, China and Russia's favorite search engines respectively, may be the exception here but their methods are the same as Google.

16 | In 2013 Google's revenue was in excess of US $50 billion, mainly due to advertising income. See: 'Google's Income Statement Information', *Investor Relations,* http://investor.google.com/financial/tables.html.

17 | For example see Google's flu epidemics prediction engine based on trends in users searches on the illness (which was later critiqued as not being accurate at all). See: Jeremy Ginsberg and Matt Mohebbi, *Google Official Blog,* 11 November 2008, https://googleblog.blogspot.co.il/2008/11/tracking-flu-trends.html.

The issue is not just about the exercise of individual freedoms. What are such freedoms worth when firms enjoying a monopoly position are able to impose rules of their own choosing, invalidating democratic laws whose diversity is intended to manage a shared world? If, as Lawrence Lessig emphasized ten years ago, 'code is law', then it becomes urgent to understand that citizens no longer collectively decide on certain laws that rule their life-world. What will become of the Internet when firms are able to implement national legislation in their own way, while individuals have no such power? These problems once more underscore how important it is that the world emerges as one common political space for humanity. But it also underlines the Internet's precarious position in a world that is not yet one society.

Chapter 4:
From Free to Proprietary

Both freedom of expression and collective intelligence have much to do with the Internet's characteristic spatiality. By simplifying the global transmission of information, the Internet is part of a deep reconfiguration of society. This change also alters the economy. The practical arrangements of transactions are no longer the same. The mass practices typical of today's Internet are due to the radical transformation of space it brings about which have substantially increased the potential for contact and interaction over remote distances, while at the same time considerably reducing their costs. Such dynamics disrupt existing economic models, which are being challenged every time the choice is made to conduct a transaction over the Internet.

The Internet's development also went together with the spread of the principle of 'free'. Access to many goods and services that previously carried a substantial price tag effectively became gratis. By altering space, we found ourselves in a different economy. The Internet has now become a highly desirable space where increasingly powerful actors vie for more visibility, centrality and profits. But the transition from a propriety-based economy to one based on access is not essential, especially when creators' rights are trampled and privacy is sacrificed for the sake of dubious benefits.

THE SPATIAL ASPECTS OF ECONOMIC TRANSACTIONS

Since every economic transaction is also a form of communication, it is not surprising that the economy is influenced by the expansion of the Internet. In order to take place, a transaction is shaped by two distinct spatial features: visibility and exchange. The Internet has a significant influence on these two elements of a transaction.

Visibility is a vital component of the economy since its absence would make a transaction impossible. It represents the initial condition for demand and supply to come together. Advertisement, recommendations and visual merchandising all contribute to visibility. The actual exchange constitutes the other component of a transaction. Once a level of visibility has been attained, finalizing the transaction demands a contact between demand and supply. Such contact is obvious in the case of a physical display in a shop, but less so when the demand appears on ads or from a friend's recommendation. The object of the future transaction needs to be communicated between the party desiring it and the one able to provide it.

From classified ads to auctions, from flat swapping to accessing music, project funding to stock trading, the Internet has changed the economy in its most fundamental aspect: the practical modalities of exchange. This is especially the case where non-material resources are at stake, but it actually impacts on all things that may become an object of an economic transaction: e.g. the hospitality trade, financial institutions, publishing houses, etc. By enhancing visibility and simplifying transactions, the Internet has significant consequences for the economy as a whole. In this sense Amazon might well be the most striking example of the complex coupling of the material and the immaterial in the service of economic transactions.

THE LOGIC OF FREE

The generalization of 'free' remains puzzling. Visibility and contact may have been greatly simplified but does this justify that most exchanges are free of charge despite the fact that many of these shared resources involve a monetary value? Does music, film or journalism simply lose monetary value when they become accessible on the Internet?

In order to understand how the notion of a gift economy could spread so fast and to assess its limits, it is necessary to review a few fundamentals about the gift economy itself. Free is something that actually does occur in economic transactions; in this case it serves as a means and not an end. It represents an option where revenue is generated at a later point and involves diverse practical modalities. These range from advertised discounts to gifts and merchandise.[18] That free handouts, despite their efficacy, are not even more commonplace comes from the fact that they still represent a non-negligible risk to the merchant: i.e. not being able to recoup the cost of making the resource available for free. Therefore, the higher the price of the resource involved, the greater the risk. However the Internet has considerably reduced the risk of loss by lowering the costs of visibility, contact and production. 'Free' therefore can include many more trade practices, shrewdly profiting on its symbolic appeal. This is because a price tag, however small, immediately puts a clear restraint on the chance of an exchange occurring.

FROM ECONOMIES OF SCALE TO NETWORK EFFECTS

The ubiquity of 'free' on the Internet is the outcome of many factors nurturing the emergence of a gift economy. Considering the cost of communication and reproduction is essential in order to understand the parallel rise of a firm the size of Google, the legitimate circulation of journalistic articles free of charge and the illegal pirating of music and film on a vast scale. The concept that all these 'free' resources, legitimate or not, share in common is economy of scale pushed to its limits. This is already an overriding principle in the sphere of material production. The higher the quantity of goods produced, the less their unitary costs, as the marginal cost of every unit produced after the first one dwindles. In the case of production and editing of music or film, economies of scale are very substantial but conversely so are the costs of their materialization as books, CDs and DVDs in terms of production, storage and distribution.

The convergence between digital production and the development of the Internet has now resulted in near zero marginal cost of production. Once it has already been produced the cost of an additional digital copy of an article, song or film is almost nothing. This tendency to introduce such large economies of scale has reshaped the economy of 'free' by radically cutting down the distribution cost of creative works.

WE ARE THE PRODUCT

Our service economy is also transformed when encountering such opportunities. The advertising industry is the most demonstrative in this respect, as advertisements can now be very precisely targeted. With data mining techniques it is now possible to identify previously vague targets much more accurately and develop specially customized ads. Google's

18 | Razor giant Gillette is widely acknowledged as the pioneer of this approach, introducing the first disposable blades in 1903.

immense market cap value, one of the highest in the world, is based on a free service and provides a perfect example of the new digital economy. This is only possible because while the service may be free for users, it is certainly not for advertisers. In 2009, the journalist Mike Elgan devised a knowing expression for this phenomenon by suggesting that when a firm creates a remarkable product and then makes its free to use, the actual product is not the one everybody believes it to be.[19] What Google ultimately sells to us are our practices, our own gaze. What Google also sells, is advertisement space along with the audience who will be exposed to it. The real product is the user and the true customers are the advertisers. Google and Facebook have every reason to offer their services for free to the highest possible number of users, in order to increase the visibility of ad-space it sells to companies.

Economies of scale also create a virtuous circle for these firms as their appeal and market value grow in tandem. With more users Google is able to sell its ad-space at a higher price, while at the same time improving the quality of its services. By exploiting personal data, Google not only increases its value for advertisers but it can also improve the ranking of Internet sites, improve the information on Google maps, provide better suggestions on YouTube, enhance the anti-spam package on Gmail and in general improve the performance of all its related services.

Facebook's model is even more straightforward: it simply utilizes what is called 'the network effect', that is the increase in value derived from the increase in the number of users. An Internet site whose returns are dependent on its running costs being offset by ad revenues has every interest in making the network effect work for it as soon as possible. If it is successful, new competitors are at a notable disadvantage because the revenue from current users increases while the marginal costs of the service dwindles to zero.

In concrete terms, Google has generated 50 billion US$ in revenue for the financial year in 2012 while incurring only 37 billion US$ in expenses. This amounts to a cost of 37 US$ per user. In this context 'free' can only be understood as a means and not as an end. It is the ultimate ends of these exchanges that really need to be understood.

FREE AND RIVAL GOODS

The principle of 'free' on the Internet is supported by a large number of people who believe it represents the ultimate expression of freedom together with a massive opportunity for economic growth. The support for gratis, therefore, goes further than considerations about reduced transaction and production costs. Gratis disrupts the previously prevailing obstacles to the dissemination of non-rival goods. The economic notion of rivalry lies at the core of the debate about gratis, now that the *modus operandi* of digital resources is no longer aligned with conventional interpretations of rivalry.

Unlike material resources, intangible resources may be used by several parties simultaneously without conflict arising.[20] Material goods, on the other hand, are 'situated', and

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19 | Mike Elgan, 'Google's Business Model: YOU Are the Product', *Datamation,* 5 February 2009, http://www.datamation.com/columns/executive_tech/article.php/3801006/Googles-Business-Model-YOU-Are-the-Product.htm.

20 | There are rare exceptions, for example when a site happens to have a high amount of traffic at one given time and a server overload results in a form of rivalry. But this example underlines the fact that rivalry is not so much about the resource being transmitted as about the capacity of the vector of transmission.

therefore cannot be the object of multiple transactions. 'Displacing' means precisely the end of 'placement' at a specific space in favor of placement in another space. But transmission does not involve displacement. Intangible goods, once transmitted, still remain available to the original transmitter and other parties. This difference lies at the heart of the disruption of the traditional notion of ownership, as it was developed at a time where intangible goods were limited purely to ideas.

Numerous proposals have been put forward to address the particular characteristics of intellectual works whose usage is non-rivalrous. One of the more prominent representatives of this debate is Richard M. Stallman, a noted computer scientist and advocate of Free Software. As founder of the eponymous foundation, he is also the foremost promoter of the notion of *copyleft,* originally put forward by the artist and computer engineer Don Hopkins. *Copyleft* constitutes the most radical alternative to copyright licenses. It authorizes unlimited use, modification and diffusion of a work, provided the same conditions apply to any subsequent derivative work.

The antagonistic radicalism of copyleft versus copyright as the only available options inspired legal expert Lawrence Lessig, another prominent advocate in the cause of 'free', to develop a legal framework that is more adapted to the categorical diversity of exchanges. He became the originator of the *Creative Commons* licenses, which offer a modular legal tool box, which can be made to conform to national legislations and is much more flexible than the traditional intellectual property systems.

Creative Commons licenses protect the authorship of works, while at the same time making their usage, circulation and modification much more straightforward. Creative Commons licenses assigned copyleft and copyright to opposite ends of the spectrum of intellectual property rights and allowed the creators to specify permission for quoting, commercial use and adapting or modifying their works depending on their wishes.

In 2008, former *Wired* editor-in-chief Chris Anderson emphasized the link between gratis and freedom. He predicted the generalization of 'free' to an increasing number of sectors in the economy. Anderson was much less liberal in applying the principle to the book he published the following year on the subject. He allowed himself to 'borrow' numerous excerpts from Wikipedia without any reference.[21] When his book became an editorial block-buster, he simply shut down the free downloading option. This debacle is indicative of the prevailing confusion between freedom of use and gratis. Gratis facilitates a much more liberal freedom of use but on the other hand, it can easily amount to misappropriation or simple theft. It appears as if Chris Anderson had a bad experience with both sides of that same coin.

Intellectual property rights are facing a major crisis and more works are disseminated without any consideration for their original creators. So what is the value of a resource whose marginal cost is infinitesimal? What is the right price for a news article, a song or a film, when its transmission carries a near-zero cost? How should the sharing of what is not our own be defined? Who really owns the data produced by the users of social media and crowd-sourcing platforms? Do patents on software actually foster innovation? Finally, what does the ownership of a non-rival resource actually imply?

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21 | Chris Anderson, *Free: The Future of Radical Price,* New York: Hyperion, 2009. Also see: Waldo Jaquith, 'Chris Anderson's Free Contains what Is Apparently Plagiarized Text', *Waldo Jaquith Blog,* 23 June 2009, https://waldo.jaquith.org/blog/2009/06/chris-anderson-free/.

WHAT IS THE PRICE OF 'FREE'?

The ambiguous nature of gratis is due to the way it can be both a vector of freedom and one of dispossession. When talking about 'free' it is always important that we ask who is paying and for what. The prevalence of gratis on the Internet covers many different realities and the only thing they have in common is the Internet's potential to reduce the per-unit cost of transmission and reproduction to a negligible amount. But even when a resource is non-rivalrous and its marginal production cost zero, the initial cost of production still remains an unresolved issue. Furthermore, everything digital requires an array of hardware infrastructures that may involve substantial running costs.

Wikipedia, the paragon of gratis and openness, is no exception. The Wikimedia Foundation relies entirely on donations and could not sustain the notable Wikipedia project without them, despite the fact that all content is user-generated by volunteers. The Foundation has firmly rejected any financing through adverts, citing independence, transparency and user privacy as motives. This ethical stance necessitates increasing levels of fundraising while the success of the encyclopedia repeatedly raises its operating costs.

Despite the fact that it gets the benefit of almost 30 million people contributing for free and several thousand volunteer workers, the Wikimedia Foundation still maintains a staff of 200, mostly on engineering, programming, legal work and fundraising for projects. Server hosting charges also involve substantial costs. For the financial year of 2012 Wikimedia's expenses were almost 50 million US$. This was paid with funding through several foundations such as Stanton and Alfred P. Sloan, major IT corporations – Apple, Google, Microsoft – and an increasing volume of user donations. This particular form of gratis remains an exception on the Internet. Although its approach shares much in common with the ones practiced by many Free and Open Source Software (FOSS) initiatives, Wikipedia's immense popularity demands far more financial resources. FOSS and Wikipedia nevertheless remain exceptional examples of the potential of gratis, provided funding can be secured.

The Mozilla Foundation, the 'mother' of the Firefox web browser, is a good example of the weaknesses of this type of funding. Originally funded by AOL after Microsoft anti-trust convictions, the Foundation presently derives most of its funding from Google, which wanted its search engine to be the default on Firefox. But Google, tired of paying Microsoft for Internet Explorer, Apple for Safari, or the Mozilla Foundation for Firefox, launched its own browser, Chrome. Now Mozilla not only directly competes with all the major IT corporations but also with its primary funder. Firefox's market share is already dwindling and it will be increasingly difficult for it to continue competing with transparency, open access to the source code and respect for the privacy of user data. The deep pockets of Google and Microsoft in the battle for dominance over one of the key components of digital practices means that Mozilla, despite its remarkable initiatives and the quality of Firefox, will probably become the next big casualty in the brave new world of free.

The psychologist and economist Dan Ariely makes the same point when he argues that we are paying far too much every time we get something for free.[22] This was also the point of Milton Friedman's adage 'there is no such thing as a free lunch'. Therefore in order to

22 | Dan Ariely, Kristina Shampanier and Nina Mazar, 'Zero as a Special Price: The True Value of Free Products', *Marketing Science,* (November, 2007): 742-757.

understand the price of gratis, it is necessary to always keep the product in mind. What Facebook, Google, YouTube, Wikipedia and Twitter all have in common is that they all are mediation platforms where content is produced not by the companies themselves but by their users.

The preference for crowdsourcing by Google, Wikipedia, Twitter and Facebook does not embody all possible production formats. In fact, the confusion between mediation and production is such that many sites actually consist of illegally obtained content. In some cases the transmission, while nearly costs-free, comes with a fee, whereas the production costs are not covered at all. The least important consideration in these transactions is the actual value of the property changing hands. This should not detract from the fact that gratis is still a crucial factor for spreading the idea of free use. It also encourages a spatial fluidity whose value is still not fully understood. Unfortunately this fluidity translates into a concentration of power in the hands of a small number of firms that are now becoming mere intermediaries. As intermediaries these firms derive all of their profit from content they do not produce themselves. This is the reason why gratis threatens those creations, which cannot always be accommodated in this mediation-based business model.

This is particularly true in the case of investigative journalism and the creation of audio-visual content. Investigative journalism is a long-term project requiring a high level of expertise and sometimes involves gaining specific rights. Producing a film requires an investment that can cost millions of Euros. Recording a music album also demands a lot of time. A society that does not appreciate the costs of production runs the risk of creating a crisis in the creative industries where only those who are financially independent or able to derive adequate revenues from ads are successful. This is a possible option of course but one that will impoverish the diversity and the quality of creative work for the benefit of intermediaries who are not particularly concerned with the actual content. Since those who want to produce without expecting remuneration are already free to do so, why should we impose this model on all creative workers?

The Internet makes a simplification and remodeling of the traditional modes of funding possible. But these new modes demand a design that is adapted to interaction and that has a fair balance between liberty and property. Lawrence Lessig has shown how changes in the general circumstances of society can help those who had a good grasp of the former circumstances to protect themselves and fight back against novelty, like in the case of the railways in the 19th century and the radio in the 20th century.[23] Nowadays we might say that the ruling powers will change the Internet rather than be changed by the Internet.

It is not useful to see something illegitimate in this attitude. The digital economy is still in its developmental stage and its evolution should respect the wishes of those who produce necessary resources. The future digital economy should also acknowledge all the resources that have already been produced and favor access above property, adjust to ever more demanding practices, accept globalization and encourage micropayments.[24]

23 | Lawrence Lessig, *Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity,* New York: Penguin Press, 2004.

24 | Piracy also gets a boost from the lag between cinema release and video-on-demand access.

William J. Mitchell, long time architecture professor at the MIT, has already foreseen these developments in 1995 and has proposed a system where access would be charged but not the goods or services.[25] He also recommends revising the system of property rights while at the same time advancing respect for intellectual ownership. These proposals have lost none of their appeal but the film and music industry majors declined to adopt any of them. They still value ownership over access, adhere to a rigid copyright law and are generally despised by their own customers. Yet the success of Netflix and Spotify shows the efficiency of an offer that is far better matched to the present digital practices. Piracy has declined sharply, encouraging the development of platforms based on access instead of ownership and offering a greater selection of content.[26] Still both Netflix and Spotify are subjected to constant pressure by the film and music industries which view them as competitors and not as mere distributors.

In the end, the many political initiatives intended to enforce compliance with property rights more than anything else demonstrate a fundamental lack of respect for the actual producers of the shared music and films. Recognizing that some producers are happy with the free dissemination of their work does not make this stance mandatory for all intangible goods and their producers. At this stage the political stakes are high and many-faceted. States must now respect privacy, protect authorship, facilitate the funding of tomorrow's production, ensure correct taxation while at the same time not obstruct the potential of gratis.

But this will lead to online behavior being subjected to an even higher level of surveillance. It will be deployed to finance free services and to supervise the crackdown on piracy. The new surveillance devices that have been developed over the last few years are indicative of this new trend. Since values regarding liberty, privacy and ownership are unequally shared, we will witness a further partitioning of the Internet. The current national restrictions on the distribution of Netflix and iTunes are only the first symptoms of this new future.

The main political issue of today in this regard is to uphold the potential of gratis while at the same time safeguarding authorship and intellectual property rights. Such a challenge almost certainly entails more interventions in the basic components of the Internet. The Internet Society (ISOC) is very aware of these issues in its role as policies, technicalities and development watchdog with a particular concern for the Internet's enduring openness and transparency. But at the same time, the most powerful nations of the world, notably the US but also the UK and France, are actively pursuing a recovery of their national sovereignty and the Internet will not remain unaffected.

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25 | William J. Mitchell, *City of Bits: Space, Place and the Infobahn,* Cambridge, Massachusetts: MIT Press, 1995.

26 | In Norway, piracy dropped from a high of 75% in 2008-2012, with 50% of Norwegians now having a Netflix and/or Spotify account and 25% using a paid account.

Chapter 5: From Decentralization to Hypercentrality

Scarcely twenty years after its commercial development and expansion, the Internet's aspiration to be a forerunner of diversity, plurality and liberty has been severely curtailed. Its potential for decentralization and disintermediation is now pitted against new tendencies towards centralization. An apt term for this phenomenon is hypercentrality. Hypercentrality results in the near-infinite concentration of online activity among a very limited number of spaces. Google, Facebook, Twitter, Amazon, Wikipedia, Yahoo and Skype, all possess an unprecedented degree of centrality and have hundreds of millions of users worldwide.

Gratis, or offering services to users for free, is the business model these platforms have in common and it is the most effective way to achieve such a degree of centrality. Once a sufficient level of network effect has been reached selling ad-space becomes easy and a range of business approaches can be tested, such as the sale of merchandise and additional services. The potential for value extraction in such economic spaces may then become enormous.

With more than one billion users Facebook undeniably exerts a considerable influence on today's society. It is therefore crucial to understand the rationale of such concentration before analyzing its political consequences. This is perhaps even more necessary when firms like Facebook run their business transnationally. Facebook shrewdly works around various legal and financial frameworks to their advantage and avoids the potentially less favorable national, economic and political influences.

THE TENETS OF DECENTRALIZATION

The functional centrality we now witness in the Internet is completely at odds with the original features of the project as it was envisaged in the 1970s. At that time the Internet was considered to be the most decentralized communication device possible. The TCP/IP protocols and the majority of protocols for email and file transfers were devised in order to be shared by all Internet service providers (ISP) and site hosting services, without any need to maintain any particular centrality. Even the extremely strategic Domain Name System (DNS) permanently redistributes information, despite being based on a limited number of key servers.[27] The original World Wide Web protocol, HTTP (Hyper Text Transfer Protocol) is also completely open and decentralized, allowing for the creation of websites on any computer as long as it is connected to the Internet.

Previous file sharing sites like Napster, which ran on a central server to connect users to each other or MegaUpload, which hosted files directly, have been replaced by more decentralized platforms. These sites benefit more from the Internet's potential, for example BitTorrent not only allows for the sharing of files among users but also of the resources, computers and connections.

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27 | The best known of such services are OpenDNS and Google. They offer an alternative to other local access providers.

Yet the development of social networks, the spread of blogs, and the popularity of BitTorrent have created new centralities. Personal homepages are being replaced by blogs on platforms such as Wordpress and Tumblr. Facebook and Twitter are replacing forums and email. This is how potential decentralization reconfigures into functional centralization; largely for the benefit of those actors who are able to take advantage of these new forms of centralities. Occupying a central place is a major asset, since such a key position can only be challenged by severe disruptions of existing technologies and practices.

THE POWER OF DEFAULT CHOICE AND STATUS QUO

One of the simplest methods to achieve centrality was used in the beginning of the 1990s by many access providers. This was at the dawn of commerce on the Internet and AOL, Wanadoo and many other companies used their homepage to promote their own services, often against the best interest of their customers. Yahoo, for instance, built its centrality on its homepage far before the rise of Google. Microsoft acted more insidiously, by bundling its own 'Internet Explorer' with the Windows operating system, at the expense of the Netscape web-navigator, its superior competitor at the time. Even Google has resorted to such methods, despite its effectiveness, by offering large sums of money to become the default search engine on Firefox and Safari.

Manipulating customers' choice by activating a service 'by default' is common practice and it has been vigorously condemned by behavioral economists, such as Richard Thaler and Case Sunstein in their work on 'choice architecture'.[28] Thaler and Sunstein demonstrated that the options that were offered by default were almost always chosen over alternative ones when this involved some additional action. This was even the case when crucial decisions had to be made, for example the choice of a pension plan.

The issue of *default choice* is the more pressing because of its connection with another empirical observation: once made, a choice is rarely altered. This has been further demonstrated by many legal measures against the deceptive use of the default option, the most famous example being the European Union's ruling on the bundling of Explorer with Windows. There is a real need to crack down on default options, especially when made by quasi-monopolies and when such default choices are usually long term.

William Samuelson and Richard Zeckhauser had already described this phenomenon, known as 'status quo bias', in 1988, before it was repeatedly demonstrated by further research.[29] It is nevertheless becoming an increasingly common practice by many IT firms which tend to reinforce the bias by creating a captive user environment. Personalized experience and the imposition of proprietary formats with little or no compatibility with other platforms make switching online environments even more difficult. This partitioning by service providers contributes to increased centralization against the customers' interests, as is the case with iOS or Android for mobile phones, Windows and Mac OS for operating systems, Firefox or Chrome for navigators, etc.

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28 | Richard H. Thaler and Cass R. Sunstein, *Nudge: Improving Decisions About Health, Wealth, and Happiness,* New Haven, Conn.: Yale University Press, 2008.

29 | William Samuelson and Richard Zeckhauser, 'Status Quo Bias in Decision Making', *Journal of Risk and Uncertainty*, (1988): 7-59.

CENTRALITY AND NETWORK EFFECTS

The most powerful element to achieving centrality comes from the network effect. Through default choice, status quo and gratis, the number of users expand and often to a high enough level to substantially enhance usage value. This is why the common criticism that we cannot have more than a 120 meaningful friendships on Facebook confuses several distinct issues and ultimately prevents us from understanding what is really at stake. On the one hand Facebook is a social media platform that supports a large number of relationships of a diverse nature, not all of which are close or everyday. Facebook is a good example of so-called 'weak links'. Its features make it possible to maintain relationships at a distance but which would be wearisome to keep active through other mediums such as telephone, mail or face-to-face. On the other hand a critique of social media based on the work by the British anthropologist and evolutionary psychologist Robin Dunbar, suggests that the highest number of relationships a human being can maintain is somewhere around 150. This theory is based on a comparative analysis of the relative size of the neocortex and is corroborated by the remarkably consistent average group size of 148.4 individuals in modern hunter-gather societies.[30]

To infer an analogy between this hypothesis and the optimal number of Facebook friends however is dubious. If this were the case how can we explain Facebook's success and the growth of modern cities? In both cases, the appeal of the urban environment or of the most frequented social media space is based on the opportunities they offer the individual to find what they desire even if not all possible opportunities will ever be realized. What is important is the potentiality of relationships, the fact that they may occur. This is why the network effect is so crucial to any service operating on the Internet. It is a space with a near-unlimited potential for centrality; an idea some corporate actors have understood all too well.

FROM THE MULTIPLICITY OF TERRITORIAL PLACES TO THE SINGULARITY OF NETWORKED PLACES

Understanding the rationale of hypercentrality demands a good grasp of the particular properties of networked spaces. The concentration of more and more digital practices in a growing number of spaces cannot simply be translated into a notion of territorial places. Territorial places are based on contiguity whereas networked places are based on connexity.

The multiplicity of territorial places is unavoidable because matter takes up space and its relocation takes time. This is why we have seen a proliferation of similar places, responding to a number of very basic spatial needs, like the need to stay dry, to pass on knowledge, to seek medical care, etc. Therefore, a flat, a primary school or a local shop cannot be 'globalized', not only because they have a limited capacity but also because the distance in relation to other spaces would become too great. The reason why territorial places can be in excess of what is required despite their distinctiveness is because territorial distance still remains relevant in many circumstances. It becomes crucial when the body is a key element in the interaction. Economies of scale are not an exclusive preserve of the Internet and hence monopolies may also emerge in the case of territory-based activities but

30 | R.A. Hill and R.I.M. Dunbar, 'Social Network Size in Humans', *Human Nature,* (March, 2003): 53-72.

the process will take much more time. Such monopolies will face local constraints that are more difficult to handle and territorial domination is also more complex and costly.

The Internet is composed of networked places whose spatiality is based on the movement of intangible items. The near instant connectivity of the Internet gives it an edge which when optimized may have distinct consequences. That any given place on the Internet may be reached by a single mouse-click does not result in a plurality of spaces, but on the contrary, it gives a strong advantage to the most efficient spaces. This is exactly what hypercentrality is about. It represents a centrality endowed with so much power that it has the potential to force itself upon space in general, absorbing the periphery into one single point of total, boundless intensity.

This rule applies to all domains: most notably Wikipedia and Facebook but also to instant messaging services like WhatsApp and Viber, to crowdfunding platforms like Kickstarter, to flat-share sites such as Airbnb and Couchsurfing.com, to dating sites like Match.com and Tinder, and finally to evaluation sites such as Yelp, TripAdvisor or IMDB. All these sites are spaces whose effectiveness grows with the number of their users. The higher performing sites only further increase their centrality by benefiting from a positive feedback loop that is extremely detrimental to other competing sites lagging behind in network effect, visibility and centrality accretion.

THE RATIONALE OF RETICULAR COALESCENCE

What makes hypercentrality such a noteworthy factor is that it intensifies the features of centrality to an extreme degree. Once hypercentrality has been achieved in one domain, the visibility gained makes it much easier to buy out the remaining local sites. InterActiveCorp, the owners of the Match.com dating site and the ads site eBay, did exactly that in order to enhance their centrality in cultural spaces where other sites had already attained a considerable centrality. Hypercentrality then makes it possible to start new services by benefiting from a phenomenon best described as reticular coalescence. This is why we witness a growing diversity in the more central spaces that aim to broaden their activities to other services in order to achieve the same degree of centrality with this new service.

Thus hypercentrality has a tendency to reduce the number of spaces devoted to a particular issue and the dynamics of reticular coalescence make these few remaining spaces vie with each other for total centrality. Yet, network effects are sometimes so powerful that even the holders of longstanding, sweeping centralities still cannot overcome them. This is the case with Facebook, whose hypercentrality appears to be entirely immune to attacks by its competitors. Facebook's domination becomes exasperating when we hear its founder Mark Zuckerberg claim that his expansionist policies are justified due to fact that the service he provides is analogous to a public electricity supplier. But electricity is a physical good and its production and distribution involves a large range of private companies. We would never want to depend on a single monopolistic corporation to provide all our electricity at a global scale.

Google was not able to develop its own large-scale social network despite its remarkable degree of hypercentrality. The usual strategy of buying up spaces with an established strong centrality is more of a struggle as such spaces are already overvalued in most cases.

Yet more corporate actors are tempted to take advantage of their prominent position in order to buy out potential competitors or to offer additional services. This allows them to take full advantage of economies of scale, network effects and hypercentrality, and ultimately to extend their domination. Recent examples are when Facebook bought out Instagram and WhatsApp whose growing success was perceived as a threat.

Today, Internet space is divided up between a small number of big companies that increasingly compete against each other and considerably reduce the potential for difference. Google has managed to extend its activities to nearly all the services available on the Internet: from email, videoconferencing and web browsers to DNS servers, mobile phones and translation. Google's expansion into operating systems and web browsers must be seen as an active strategy of total Internet domination. If we understand the Internet as a space, it is easy to also understand why Google offers both an operating system and a web browser for free. Both systems are core components of Google's 'mastering Internet space' strategy. All online activities are dependent on these two software packages, giving Google a massive lead on today's Internet life. Google's position not only allows it to constantly improve its services but also to continually valorize them, making its hypercentrality potentially limitless. Never before the advent of the Internet did one single company possess such a pervasive influence over the daily activities and private life of so many people.

This is why hypercentrality is one of the more understated ends of the Internet. It explains the growing tendency of a handful of vast corporations to distort the basic tenets of the Internet in their favor, creating increasingly closed and extensively interconnected proprietary environments. This approach completely overturns the openness that for years had been the Internet's most distinctive feature. Facebook and Twitter lead the trend in forcing their users into ever more impenetrable protocols and appropriating user content.

The current problems associated with hypercentrality are just the early symptoms of a far worse crisis to come, since these vast corporations aim for total global dominance and possess a growing number of resources. Facebook increasingly sets the norm for what is acceptable or not, both in terms of user privacy and freedom of expression in general. The moment that Facebook has the power to decide that showing a beheaded women is less shocking than nudity, some serious questions arise. Once Google can independently decide on the appropriate data retention period and go against the position held by many governments including the EU, the legitimacy of its decisions becomes highly questionable. Finally, how can the world remain indifferent when these companies continuously pass on private information on all their users to US government agencies?

Major political problems arise when for profit enterprises acquire such a degree of hypercentrality that they can evade the legislation and taxation systems of most democratic nation-states. These developments call for a new, global political order that is able to provide a countervailing force against this concentration of private, corporate power. If we do not manage to face up to this task these firms will be able to force their own values and interests upon the world at large and those are not the same as their users'. The alternative is implementing the rights and policies pertaining to each territorial space and will result in a fragmentation of these services, ending their globality.

Hypercentrality foregrounds particularly complex 'ends' of the Internet, where openness and decentralization of services clash with its segmentation into separate arrangements conforming to the range of regulations actually in force. There is a growing belief that such services should be the elementary building blocks of the Internet and that they should be based on open and transparent standards, as all previous Internet standards were, e.g. email and the World Wide Web. Otherwise a radical partitioning will be unavoidable as hypercentrality leads up to a breaking point.

Chapter 6: From Resilience to Vulnerability

Ultimately we are witnessing the end of the Internet's resilience as its nodes become ever more vulnerable. The Internet was developed with a particular focus on the decentralization of its most strategic resources and on the dynamic management of its connections according to the conditions of the supporting infrastructure in each area. Despite a few localized glitches, this proved to be a very successful approach and the Internet has demonstrated its ability to withstand attacks on several of its integral parts.

However, we can now see the emergence of two specific vulnerabilities which both require complex resolutions. Firstly, attacks on strategic resources are increasingly destructive, not only compromising data and infrastructure but also endangering individuals. Secondly, it appears that network intrusion expertise is very unevenly distributed, revealing the existence of ever more blatant, imperialist strategies.

NETWORK STRENGTH AND NODE VULNERABILITY

The success of the Internet makes its resources increasingly attractive for exploitation. As more of our activities take place online where they leave digital traces and depend upon services, access to this data becomes an ever more high-stakes game. A non-exhaustive list would include: cyber attacks into the Élysée Palace's communication system and the French finance ministry, the US Defense department's plan for advanced strategic weapons, Patriot missiles, theft of the design data for the F18 jetfighter and prototype F35 plane, the Stuxnet malware targeting Iran's nuclear centrifuges, electric grids compromised by IT attacks, 30,000 desktops at a major oil corporation hacked to the point of disabling its operations; malware that uses the camera on a personal computer for spying, Adobe discovering that a number of its apps' code had been stolen, hackers breaking into the servers of *The New York Times*, *The Washington Post* and *The Wall Street Journal* in order to identify individual journalists, Gmail compromised by authoritarian regimes who hunt for political dissent, and finally the realization, even before Snowden, that all our communications are under surveillance and recorded.

Considering these well-documented examples we may conclude that our world has changed a lot, with privacy no longer protected and security even less so. The ubiquity of the Internet has enhanced our capacity to communicate, coordinate and coproduce but at the same time this blanket connectivity exposes us to new vulnerabilities. Individuals, businesses and governments are now carefully exploiting these vulnerabilities to an extent that we can only guess at.

Remarkably, once their novelty has disappeared, these vulnerabilities tend to be seen as unexceptional. But this means that we might not have understood where their real significance lies. The situation now is still so new and removed from what we once understood as spying that we don't really have a proper frame of reference to interpret it. But we should not fool ourselves about the extent to which we are exposed to these vulnerabilities. Today no government, company or individual can be entirely sure if they have complete control over the information in their possession. Banning mobile phones and tablets during confidential meetings where the stakes are high is a good illustration of this state of affairs. Spies must now either resort to more conventional and onerous techniques or develop more sophisticated cyber methods.

RETICULAR IMPERIALISM

This situation is disturbing because hackers are far from the only groups to exploit these vulnerabilities. On the contrary, many hackers strive to identify and report them, in order to highlight the system's vulnerabilities. Over the past several years, the ongoing involvement of nation-states in cyber attacks has become undeniable. Unsurprisingly China, Russia and Iran are accused of espionage by the US, which has even prohibited the use of certain Chinese hardware. But the US appears to be the most powerful actor in this surveillance game with hardware manipulation, malware development and techniques to destabilize networks, all easy feats due to their hegemonic position in the global Internet hierarchy.

The US has achieved an unprecedented level of control over information by exploiting their privileged access to Google, Facebook, Yahoo, Cisco, Microsoft, Apple and all other critical network infrastructures. Edward Snowden's disclosures are only the tip of the iceberg. Since the end of World War II and later augmented in partnership with the United Kingdom, Canada, Australia and New Zealand, the US has been continuously developing a vast surveillance infrastructure. ECHELON and PRISM merely represent the 'visible' part of the growing infrastructure of surveillance designed for strategic purposes.[31]

Political complications are likely to rise when it turns out that surveillance measures overstep their strictly military purpose and are used for economic, industrial and political espionage. In the early 2000s, ECHELON was denounced for its idiosyncratic spying on Kofi Annan but also on corporate entities like Airbus, Thompson and Toyota.[32] Today, this time on the grounds of fighting corruption and terrorism, the US' determination to uphold its 'national security interests' appears stronger than ever.

The full-scale development of surveillance techniques took place in successive steps, each stage demanding a further step in the interconnectivity of networks. Since 9/11 the legal framework regulating the power of surveillance in terms of scope, retrieval and data use has been greatly enhanced with the US taking the lead. Article 215 of the Patriot Act is typical in this respect as it authorizes the seizure of any 'tangible' personal material, even without the need for the individuals concerned to be suspected of terrorism. This article was further amended to permit digital data collection without warrant. In 2008, article 708 of the Foreign Intelligence Surveillance Act (FISA) made this act applicable for all form of foreign intelligence gathering.[33]

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31 | ECHELON is part of a worldwide telecommunication surveillance system set up by the US in collaboration with the four other aforementioned countries (the United Kingdom, Canada, Australia and New Zealand referred to together as 'The Five Eyes') from the early 1960s. This system was heavily criticized in the 1990s when critics suspected that its main purpose was for industrial espionage. For an overview of the postwar development of US 'strategic' electronic surveillance see: John Bellamy Foster and Robert W. McChesney, 'Surveillance Capitalism: Monopoly-Finance Capital, the Military-Industrial Complex, and the Digital Age', *Monthly Review,* Vol. 66, Issue 3, 2014, http://monthlyreview.org/2014/07/01/surveillance-capitalism/.

32 | In March 2000, James Woolsey, CIA's former director, told the press that spying on allies was justified by their tendency to engage in corrupt practices to the detriment of more honest American firms. See: James R. Woolsey, 'Why We Spy on Our Allies', *Wall Street Journal,* 17 March 2000, http://www.wsj.com/articles/SB95326824311657269.

33 | See: Elizabeth B. Bazan. 'The Foreign Intelligence Surveillance Act: An Overview of Selected Issues', *Congressional Research Service,* 7 July 2008, https://fas.org/sgp/crs/intel/RL34279.pdf.

These expanded surveillance laws have landed the US in a situation where they find themselves at odds with their most fundamental values, in particular with the Fourth Amendment to the Constitution, which prohibits unreasonable searches or seizures and requires any warrant to be judicially sanctioned by probable cause.[34] Drafted at the close of the 18th century, the US Constitution might no longer be fully suited to our contemporary world, yet it still constitutes the core of the American legal system. It is therefore not surprising that it is being invoked to question the constitutional legitimacy of NSA's ongoing surveillance operations.

THE VULNERABILITY OF THE NET AND THE PRECARITY OF INDIVIDUALS

The vulnerability of the Net now also means the vulnerability of the individual. Debates about striking a balance between security and privacy have become largely distorted, since privacy is itself an element of security. Privacy is a fundamental value within democratic societies because it underwrites the free exercise of individual activities which have their ultimate expression in the vote. This is the reason why totalitarian regimes actively suppress privacy. Though every social contract implies some relinquishment of privacy for the sake of the common good, the terms of such a contract must be thoroughly negotiated. In our present circumstances, it absolutely needs to be renegotiated in view of the evolution of the means and methods of surveillance.

The urgency of a broad, public debate on the issue of surveillance becomes obvious when senior political personnel in the US, the country that maintains the most extensive intelligence apparatus, need to read *The Guardian* in order to learn about the range of their own problems. Or when the world hears the President of the United States tell the American people that they need not worry, because they are not under surveillance, only the rest of the world is. What should 'the rest of the world' make of such a message? This is an even more pressing issue since the Internet has rendered the distinction between US and non-US citizens extremely problematic. Google, Facebook, Twitter and many other platforms do not make any distinction according to the nationality of their users, since the networked nature of their services demands an overarching aggregation of all users.

The space that surrounds us is also no longer the same as we continuously expose our daily life and geographic location online. The numerous loopholes, whether purposely designed or simple glitches, are all the more worrying in that they are not properly understood. They expose us to any group or individual savvy enough to understand the weaknesses of the system. Less than one century of history should be a good enough reason to worry about the danger such possibilities represent.

A consequence of these vulnerabilities becoming more apparent is the growing tendency of online activities to be reorganized at the national level, while at the same time politics also takes a more nationalist turn as the global economy declines. Russia and China are

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34 | 'The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized.' See: 'Transcription of the 1789 Joint Resolution of Congress Proposing 12 Amendments to the U.S. Constitution', *National Archives*, http://www.archives.gov/exhibits/charters/bill_of_rights_transcript.html.

developing operating systems of their own; the US no longer wants to see its strategic institutions utilizing Chinese hardware and many European countries want to abolish cloud computing if hosting is facilitated by US-based firms.

To affirm Eric Schmidt's slogan: 'If you have something that you don't want anyone to know, maybe you shouldn't be doing it in the first place' means assenting to the convergence between Facebook, WikiLeaks, Google and the NSA.[35] All these actors claim unfettered access to user information makes the world a better place. Which raises the question: which world are we talking about?

35 | See Eric Schmidt interview with Maria Bartiromo on CNBC, 'Inside the Mind of Google', 7 December 2009, http://www.huffingtonpost.com/2009/12/07/google-ceo-on-privacy-if_n_383105.html.

Conclusion: From Net Neutrality to the Neutralization of the Internet

The Internet was supposed to abolish distances, advance freedom of expression, enhance collective intelligence, foster the potential for gratis, decentralize power and resist any attempt at taking control of the Internet itself. Regrettably, we must come to the conclusion that these ideals are rapidly fading away. Seemingly abolished barriers are being re-erected again. Freedom of speech is subject to a number of restrictions. Engagements and capabilities are still unequally distributed. Power has never been so centralized. We are clearly witnessing the end of the Internet as we formerly knew it. By altering the nature of space, the Internet has changed humanity's social configuration; but humanity is so diverse that it will not allow the Internet to remain unaltered.

New boundaries tend to emerge everywhere. By now, the United States, the United Kingdom and France, among other countries, are forcing search engines to suppress URLs and ISPs that lead to spaces which are in breach of their respective legislations.[36] The outcome is different search results to conform to cultural norms and local regulations. The content available on iTunes, Netflix, YouTube or Spotify varies from one country to the next and in some cases is not available at all. To avoid violations of the Internet's integrity an increasing number of individuals use techniques similar to those of the Chinese and Iranian Intranet users in order to gain access to Facebook or Twitter.

Freedom of expression has come increasingly under threat. Anonymity is becoming impossible in many countries and immense machineries of surveillance allow authoritarian regimes to identify and eliminate opponents. Mass media is also coming under increasing pressure, despite the fact that access to confidential documents is far easier. WikiLeaks is a great example of the precarious nature of confidentiality on the Internet and the coercive environment we find ourselves in when trying to question it. Journalists working for *The Washington Post* and *The Guardian* have already expressed concerns about being urged not to publish too extensively on certain issues, notably surveillance. Companies like Lavabit, an email service offering advanced security to its subscribers, including Snowden, had to close down when they were issued an order by US Government agencies to allow access to their data.

Meanwhile the potential of 'collective intelligence' remains skewed towards particular purposes. While a small number of communities contribute to the common good, such as the Wikipedia community, this minority must take an increasing number of actions to prevent attempts at manipulation and disinformation. Moreover, online activity increasingly takes place within privatized environments. Facebook and Twitter in particular constitute vast information resources that tend to be the preserve of the true customers, i.e. advertising companies. The ongoing privatization of socially produced content runs against the idea of open standards that were used to full satisfaction for years, until now. Such openness could have been beneficial to the development of social networks and instant messaging if only their aim had been to unambiguously support the real interest of their users.

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36 | See Google's 'Transparency Report', http://www.google.com/transparencyreport/.

'Collective intelligence' is increasingly exploited by a few privileged intermediaries who are allowed to freely handle and aggregate data produced by everyone else. The immense potential of this information of course does not directly benefit those who produce it when those producers are controlled by a restrictive environment where the owners of the platform determine the degree of confidentiality. Under close analysis it becomes blatantly obvious that advertisers are the real customers of these services and the users are merely the products.

The infringements on both freedom of expression and collective intelligence more generally illustrate a new concentration of powers, to an extent never seen in recent history. Facebook and Google, with their exhaustively detailed knowledge of actual online behavior, possess an unmatched power over contemporary society. The United States and to a smaller extent, China, France and the United Kingdom, have obtained a wealth of information on communications, relationships, reading habits and geographical positions of millions of citizens including heads of states and CEOs.

Through taking advantage of the standardization of communication devices, even amateur hackers can engage in spying, e.g. by using the webcams of naive users without them ever noticing. These rearrangements in the power of surveillance and manipulation take place with a total lack of transparency, both in terms of the quantity and the quality of the data collected, never mind the ways this data is put to use.

The violation of the original ideals of the Internet appears to have no limits. Even access providers have joined the game of increasingly meddling with exchanges by selectively altering the bandwidth allocated to the most popular services, compressing images without notifying customers, or by not deducting connection charges when customers access their services through their own flat rate mobile phone. Such practices openly contravene the principle of 'net neutrality', a concept that emerged in 2003, when some access providers were exploiting their strategic advantage to increase profits at the expense of their clients. These practices introduced an aspect of discrimination to the flow of Internet traffic, depending on location or the basis of content. Doing this openly impinges on one of the Internet's most fundamental values, not only infringing on the freedom of expression but also on the freedom to do business. These types of practices also create a different Internet experience according to which service we use.

Finally, because the Internet has extended into a large number of contemporary social practices, its efficiency turns into an additional vulnerability as security flaws become ever more numerous and critical. Today, no governments, corporations or individuals no matter how powerful they may be, could claim that they are fully in control inside this new environment. No institution of users is free from the threat of surveillance or the destruction of a cyber attack. These new vulnerabilities condemn society to a new kind of transparency and new risks that threaten everyone from the most inconsequential individual to the most mediatized celebrity. Is it not time to ask what the Internet does to us and what we do for the Internet?

After twenty years of public use of the Internet, the conflicts of interest have become too serious and too constraining to continue on in this vein. We are truly seeing the end of a project whose initial aim was to be a global space of free interaction for humanity as

a whole. We now see the Internet's neutrality compromised by a range of actors with conflicting interests. Originally intended to make space simply vanish, the Internet has on the contrary contributed to making the richness, the power and the multiplicity of the world's spaces more tangible. By embracing an ever-larger number of people, the Internet has intensified what humanity has in common but at the same time it has deepened the divide between societies based on essentially different values.

The Internet's dynamics involve exactly this movement of the individual towards the world, where division should be interpreted in the light of basic cohesion and uniqueness. The Internet offers humanity an opportunity to lift itself up into a unified society. In that sense the Internet can be considered as an opportunity to manage coexistence on a global scale and to truly recognize the legitimacy of individuals as the primary constituents of politics. By opening itself to all individuals at the same time, the Internet heightens the fragility of nation-states and supports the emergence of the world as one unified and single political horizon for humanity.

Terrorism, the environment and joblessness are among the problems developing at the global scale which typify the challenges nation-states face in justifying their enduring sovereignty and their claim to provide solutions to problems which are clearly too large to solve at the national level. For too long, we have underestimated the Internet's capacity to change societies and the capacity of societies to change the Internet. By altering the nature of space, repositioning the relative place of things and modifying the practical modalities of social interaction, the Internet has shaken up values, which may often work as laws. The transformation has been so radical that all previous notions about what is fair and appropriate are practically invalidated and subject to new negotiations.

The extension of free individual expression to the world as a whole, the free sharing of cultural goods and generalized surveillance all perfectly demonstrate the radicalism of the changes brought about by the Internet. We are gradually becoming aware that the asymmetry between today's digital practices and our current regulative apparatus is unsustainable. The extension of Internet usage to other major parts of the world is a great political challenge. At this stage, the many values that play a role in regulating societies are actuated: conflicts between individuals, states and businesses demonstrate that while freedom of expression, privacy and property may be fundamental principles, they are open to very different interpretations. The problems arising from the changes produced by the Internet revitalizes the contradictions between these values. It should be self-evident that security and privacy, intellectual property rights and gratis, freedom of expression and defamation laws are in opposition to each other. Generally speaking net neutrality is not a sufficient policy. Today it should be more apparent that the enduring existence of social values is not arbitrary and that they are often relevant and essential. Sometimes the Internet allows us to forget the long and perilous development of the laws that govern our society and the original reasons for establishing these rules.

The Internet has profoundly transformed the nature of our actions to such an extent that it compels us to develop new effective responses that undoubtedly will expose us to new vulnerabilities but also to new opportunities to commence an in-depth renewal of coexistence. This debate should not be restricted to experts but is a challenge involving

all of society and it should mobilize political organizations in their most essential function: the task of critically thinking about the conditions of our existence.

The Internet's ultimate ends express specific values that do include many of the issues faced by society today. Most societies depend upon politics to revolve conflicts of interests and to achieve coexistence. Politics involves taking a stand when there is imbalanced representation of different points of view. What is new with the advent of the Internet is certainly not the clash of values between distinct individuals but the complexity in reaching a balanced representation of opinions on a global scale. This is occurring at the same time as nation-states are becoming less able to achieve a non-partisan perspective themselves.

Net neutrality and self-organization are an aspect of the libertarian principles expressed by a substantial constituency that emerged alongside the development of the Internet. These libertarian notions however are in direct contradiction with the politics of coexistence which is founded on the basis of social contracts. Net neutrality and self-organization are not in themselves sufficient to effectively prevent all forms of predatory practices like pedophilia, terrorism and totalitarianism. Nor do these libertarian principles safeguard privacy, as confidential information can easily be revealed for the sake of 'transparency' or commercial gain. Finally, net neutrality and self-organization are not alone sufficient to manage the various proprietary systems; even the *Creative Commons* license presupposes some degree of enforced compliance.

Societies are organized with the assumption that not all activities are legitimate and that in order to restrain those activities that are illegitimate some form of regulation is necessary. Until now the Internet has been able to support a remarkably varied range of practices. However, like any other space, the Internet leaves open opportunities for violence, extortion, theft, bias, manipulation, defamation, hostility and other contemptible activities. To act as if these activities did not occur, or to take a neutral stance towards them by appealing to freedom is a morally indefensible position. When conflicts of interest arise between individuals it is always advisable to consider which party profits from such a conflict and which party is subjected to supposed neutrality.

It is also misguided not to recognize the potential for liberation and innovation on the Internet. Society must take this opportunity to openly debate what is truly essential. We must accept that the world has changed, that we have changed and therefore reconsidering the rules of our coexistence is not a bad proposition. We are now facing a challenge of uncommon complexity. We have reached a point that demands us to be uncompromising when addressing the abuses every political society is prone to committing and the manipulation of the Internet.

What the world really needs is a major political debate centering on the future of the only place that the whole of humanity shares in common. There is no doubt that a choice will have to be made, between a globalization of politics or the end of the Internet as we know it. We will have to make the Internet the central issue of a debate which given the environmental crisis, the threat of global terrorism and the state of the world economy, obliges us to realize that what unites us is more important than what divides us. In the absence of such a radical shift in politics, we will not only witness a much more dras-

tic partitioning of the Internet but even more worrying, a further fragmentation of our world. We will risk the collapse of globalization and nationalist insurgencies everywhere, which will render nation-states more powerless and vulnerable.

The Internet is in clear danger of disappearing and part of our very humanity threatens to disappear with it. As the bearer of a form of globalization actively empowering individuals, the very existence of the Internet suggests that the time has come for humanity to consider a change in scale towards its final destiny: the World. The Internet is the perfect public place to rise to this challenge; it is an ideal but also fragile space that we must never cease to cherish, share and protect together.

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The Ends of the Internet is an investigation into all the reasons why the Internet, which has been with us for over thirty years, is now on the verge of disappearing. Originally conceived as a space of freedom, the Internet has become the world's largest panopticon and freedom of expression is subject to surveillance and supervision on an unprecedented scale. The utopian theories of collective intelligence have been undermined by a growing tendency towards commercial exploitation. A small group of companies profit from the majority of online activities. Even the robustness of the Internet itself is now at stake, with vulnerabilities increasing and many organizations, governments and individuals targeted by malicious cyber attacks.

Drawing upon critical insights on a range of current issues such as surveillance, NSA and privacy, Boris Beaude demonstrates that the Internet should no longer be considered a neutral or secure support. Beaude also formulates new proposals for enabling the Internet to survive the clash of special interest groups and remain a truly global space of freedom.

Boris Beaude is a senior research fellow with the Chôros research lab at the École Polytechnique Fédérale de Lausanne. His research focuses on the spatial dimensions of telecommunication and the spatial context for social interaction. He is particularly interested in the Internet as a space of production, collaboration and coexistence.

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