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Abstract

In this historical and comparative effort, we will provide a holistic overview of the last technological transformations, packaged in what we refer to as the digital revolution, and their sociopolitical impacts on western democracies. Therefore first we will display the three phases of the rolling technical revolution, each one characterized by intertwined breakthroughs; after we'll expound why this is leading us toward a new paradigm, as occurred with the preceding agrarian and industrial revolutions. With this purpose, we'll deliver examples of how the portrayed innovations have direct and disruptive effects on virtually all human-related fields, paying particular attention to the digital economy.

Then, following the actor-network theory and the Neo-Schumpeterian school, we'll affirm that the digital revolution is a pivotal element that underpins the radical changes which are occurring among numerous democratic countries. More precisely, we will draw an imaginary line between the new global digital paradigm, its socioeconomic outcomes, i.e. the disruptive effects on people's identity and work, and the rise of right-wing populism in the European and American continent. We'll also venture on some comparisons among the different expressions of demagoguery, and we'll provoke the readers through a diachronic association with the industrial revolution, and two concomitant political ideologies: nationalism and fascism.

To summarize in a few questions, we will ask: Can identity puzzlement and economic unease help to explain the rise of right-wing populism? Are those insecurities caused by the ongoing digital revolution? Is, therefore, rightist populism a "side-effect" of the 3rd and 4th industrial revolutions? And if so, how we can act to address the digital revolution in a way that its disruptions are minimized and the benefits are amplified and shared equally among populations, building a pacific, sustainable and flourishing future?

The answer to the last question will be shortly addressed in the conclusions, presenting also an original idea.

Contents

Acronyms

AfD	Alternative for Germany
AI	Artificial Intelligence
AR	Augmented Reality
CDU	Christian Democratic Union of Germany
CPU	Central Processing Unit
CSO	Civil society organization
DNS	Domain Name System
DSM	Digital Single Market
ECR	European Conservatives and Reformists
EPP	European People's Party
FN	Front National
FPO	Freedom Party of Austria
GNI	Global Network Initiative
HoR	House of Representatives
HW	Hardware
IaaS	Infrastructure as a Service
ICANN	Internet Corporation for Assigned Names and Numbers
ICT	Information Communication Technologies
ID	Identity and Democracy
IERC	European Research Cluster on the IoT
IGF	Internet Governance Forum
ILO	International Labour Organization
IMF	International Monetary Found
IO	International Organization
IOs	International Organizations
IoT	Internet of Things
IP	Internet Protocol
ISOC	Internet Society
ISP	Internet Service Provider
IT	Information Technologies
ITU	International Telecommunications Union

LAN	Local Area Networks
M5S	Five Stars Movement
MR	Mixed Reality
NGO	Non-governmental organization
OBOR	One Belt One Road
OECD	Organization for Economic Co-operation and Development
OO	Online Outsourcing
OS	Operating System
P2P	peer-to-peer
PA	Public Affairs
POTUS	President of the United States of America
PT	Worker's Party
PSL	Social Liberal Party
PaaS	Product as a Service
PC	Personal Computer
PiS	Law and Justice Party
PVV	Party for Freedom
RIS	Revista Internacional de Sociología
S&D	Progressive Alliance of Socialists and Democrats
SaaS	Service as a Service
SME	Small and Medium Enterprise
SNS	Slovak National Party
SPD	Social Democratic Party of Germany
SW	Software
TCP	Transmission Control Protocol
UKIP	United Kingdom Independence Party
UN	United Nations
UNDP	United Nations Developed Program
VR	Virtual Reality
VVD	People's Party for Freedom and Democracy
W3C	World Wide Web Consortium
WB	World Bank
WEF	World Economic Forum

Abbreviations

Ch.	Chapter
Chs.	Chapters
Ed.	Edition
Eds.	Editions
I.	Issue
J.	Journal
N.	Number
Nn.	Numbers
P.	Page
Pp.	Pages
Vol.	Volume

Introduction

Technology matters. This is our simple but forceful starting point. The knowledge of artifacts[1] is something ancestral and recurrent along with all human history; as the physicist Freeman John Dyson stated:

> *"Technology is a gift of God. After the gift of life, it is perhaps the greatest of God's gifts. It is the mother of civilizations, of arts and of sciences"*[2].

But technology matters not only to the material condition of our lives and the physical environment but also to the way we live together in society. That is why the leitmotiv of this sociopolitical and historical work will be the appearance and development of a new technological phenomenon, the digitalization. Contrarywise, we are also conscious that explaining historical, political and social changes requires a set of variables much wider than technology alone. For this reason, we reject the theoretical framework of technology determinism[3] and we prefer to adopt what Judy Wajcman and Donald MacKenzie call Actor-Network Theory. Unlike the deterministic doctrine, which leads us to a passive adaptation to the technological changes, the actor-network theory gives us a deeper awareness of such changes in a context of multiple intertwined variables, revealing that it's also possible to shape, we suggest democratically, those changes and thus our future. In other words, the abovementioned theory stands that technology and society are not just separate spheres influencing each other, rather they are mutually constitutive. They are made of networks that link human beings with non-human entities (actors). We cannot neglect that artifacts are involved in most of the ways human beings relate to each other[4].

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[1] See the etymology of the word technology (from Greek: τέχνη, techne=art, skill + -λογία, -logia=knowledge)

[2] Brynjolfsson E., McAfee A. (2014), *The Second Machine Age. Work, Progress, and Prosperity in a Time of Brilliant Technologies*, W. W. Norton & Company, London and New York.

[3] Technological determinism stands on two hypotheses: that technological evolution and transformation is the single most important source of society's change, and that the technical arrangement of a society is the condition that affects all aspects of our existence. Anyhow, it is nearly impossible to seclude a specific factor as the primary explanation of all changes, and this is a common problem for any cultural or social science. The idea that technology or any other variable may be the main determinant is impossible to prove.

[4] See MacKenzie D. and Wajcman J., eds. (1999*)*. Introductory essay*: The social shaping of technology*. 2nd ed., Open University Press, Buckingham, UK.

Furthermore today, in the digital era, thanks to the Internet, relations are made more possible (always and everywhere) but more technical too: they stem out from the implementations of digital technology, the Internet indeed, and they require basic informatics knowledge. Now, the central focus of the present dissertation is the emergence and the socio-political effects of what we like to call "Digital Revolution". It is quite intuitive that our world changed significantly in the last thirty years, the numbers in 2019 of mobile phone unique subscribers (5,112 billion), internet users (4,388 billion) and social media "faithful" (3,484 billion) are impressive[5].

But before going further on its outcomes, let's clarify what we mean for the digital revolution. With this term, we want to indicate a phenomenon that ranges nearly all human activities, an epochal change of paradigm comparable with the other two major ones that occurred along with human history: the agrarian revolution and the industrial revolution. Actually, we could trace some striking similarities among them: The Agrarian Revolution (10.000 – 2.000 BC), better known as Neolithic Revolution, marked the transition from a nomadic lifestyle of hunting and gathering to a sedentary one built on agriculture and settlement, laying the foundations of human civilizations[6]; the Industrial Revolution (1st and 2nd / 1770 – 1950) also carried out a thoughtful change in human existence, it's the beginning of the industrial production, and consequently of the modern urbanization, a ceaseless and massive displacement of people from rural areas and small towns to the modern industrial cities, eventually turning in metropolis and megalopolis; similarly the Digital Revolution (1950 – today) is shaping radically a new way of life, opening the doors of a new virtual and timelessly interconnected world, marking the shift from a material system to a (partially) immaterial/virtual one, for the first time in human history[7].

Our definition is thus theoretically close to the notion of Cybernetic Revolution well designed by Leonid E. Grinin, Anton L. Grinin, and Andrey Korotayev, with some important distinctions: firstly we take in account only the social dimension of the

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[5] Kemp S. (31 January 2019). *Digital 2019: Global Digital Yearbook,* WeAreSocial and Hootsuite.
[6] Finlayson, B. (2013). *Imposing the Neolithic on the past.* Levant J., Vol. 45(2), pp.133–148.
[7] See my paper *Globalização e Homogeneização Cultural* written in December 2018, available on www.academia.edu.

theory, disregarding the biological sphere; second, we want to outline the historical process and we don't aspire to any futurologist speculation. Indeed, as reported by them, the ongoing revolution has its roots in the late 1950s which define an initial phase dominated by the new information technologies, and it enters in a new intermediary stage after the '90s, evolving in its digital declination; they go further, predicting a third final phase, the proper Cybernetic Age, which should start between the 2030 and 2040 and last until the end of the century.

In their theorization, there is a wide reference to the so-called Kondratiev waves, an important heterodox concept that describes long economic cycles brought about by technological innovation. Although there is not a wide agreement between the economist community, it gives instrumental basis to our study; inter alia, Kondratiev himself successfully forecasted on this basis the 1929 Great Depression[8]. Moreover, other Neo-Schumpeterian scholars as Christopher Freeman, Francisco Louçã and Carlota Perez recognize the validity of Kondratiev waves[9] linked with the industrial revolutions and the change of technical and socio-economic paradigms. As a matter of fact, we cannot fail to notice a fascinating match between the long economic waves and the four industrial revolutions starting from the last third of the eighteenth century.

So, based on the periodization presented in the cited WEF article[10], we affirm that the digital revolution starts at the dawn of the 3rd Industrial Revolution (also known as Information or Computer Revolution), and it's still rolling nowadays, evolving sharply in the last three decades. According to Klaus Schwab, we've already entered in another era, the 4th Industrial Revolution, which builds on the information and digital technologies, but it differs qualitatively: new emerging breakthroughs like artificial

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[8] Grinin, L.E., et al. (2016), *Forthcoming Kondratieff wave, Cybernetic Revolution, and global ageing*, Technological Forecasting & Social Change, Vol. 115, pp. 52-68.

[9] It is a theory, formulated by the homonymous Russian economist, according to which the capitalist economies experience cycles, lasting about 45 to 60 years, characterized by periods of evolution and self-correction, caused by technological innovation. The cycles see the alternance of intervals of high growth and prosperity and periods of slow growth and depression. This notion is relegated to the "heterodox economics," which does not conform to the widely accepted, orthodox theories. Other proposed economic waves, based on different variables and time frames, are: Kitchin cycle (3-5 years), Juglar cycle (7-11 years) and Kuznets swing (15-25 years).

[10] Davis N., *What is the fourth industrial revolution?*, in weforum.org, 19 January 2019, https://www.weforum.org/agenda/2016/01/what-is-the-fourth-industrial-revolution/, consulted on 5 August 2019.

intelligence (AI), robotics, the Internet of Things (IoT), 3-D printing, nanotechnology, biotechnology, and quantum computing, will be embedded within societies and even our human bodies. Also here, there is an intense discussion regarding cyber-physical systems, influenced by a sort of transhumanist thinking, but as we said before, our purpose is not to foresee future scenarios, so we'll just show how most of the listed advances – plus others such as blockchain, Big Data/Analytics, and VR – represent the third (mature) stage of the digital age.

Therefore, in the first part of the thesis, we will explain that the digital revolution can be decomposed in three phases: a first period divisible in "digital prehistory" (until 1970) and digital emergence (1970 -1990), a transitional interval which start with the diffusion of internet and encompass the end of the old millennium and the begin of the new one, and a mature/advanced stage that is where we are now, looking at the 2005-2007 triennium as a turning point[11]. With this respect, we adhere to the waves of digitization as expounded by Raul L. Katz in the frame of the discussions within the International Telecommunications Union (from now ITU). According to the expert the word "digitization" has two meanings: the conventional one of converting analog data and information to a digital format, and the social one, referring to the socio-economic transformation caused by the adoption of digital technologies, happening in waves driven by innovation. So, considering just the second meaning, we have a first wave of digitization characterized by mature technologies as computers, telecommunications and broadband (fixed and mobile), which start in the 50's and go on until the second wave (1990 – 2010); the latter entails the diffusion of the Internet and its spillover results (world wide web, search engines, e-commerce, and social networks); finally, the third wave is associated with the latest technologies that we already reported above, which promise to go further on data and information processing, automation of routine tasks and decision-making quality[12].

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[11] We will not focus on the global financial crisis, even if the parallelism with the Great Depression is tempting, as suggested by the admirable works of Carlota Perez. What is interesting for our dissertation is the technological and digital boom occurred in concomitance and after this triennium, as suggested by many authors, between others Thomas L. Friedman, Andrew McAfee and Erik Brynjolfsson.

[12] Raul L. Katz (2017), *Social and economic impact of digital transformation on the economy*, Discussion paper, ITU / GSR.

All the aforementioned authors have in common a unique belief: last technological innovations are changing drastically the world where we live and the way how we behave. That is why the first block of the present work will discuss also on the "Digital Paradigm", showing how digitalization is impacting all fields of our societies, starting from the economy.

The academic research on the topic is abundant and "old", starting from Daniel Bell and his "Post-Industrial Society" that heralded the huge growth of the service sector. Several scholars, journalists, and policymakers have introduced a large lot of notions to explain what was taking place under their eyes: knowledge economy, informational capitalism, cognitive capitalism, network economy, platform capitalism, sharing economy and so on. These and other ideas of recognized authors and economic stakeholders such as Yochai Benkler, Peter Drucker, Nick Srnicek, Hal R. Varian, Yann Moulier-Boutang, etc., supported by captivating data, provide us a solid grasp of how much the economy can be said digital today. As anticipation, just consider that the top ten firms by market value in 2019 are mostly IT companies (six of ten); the ranking is even more impressive if we see the first seven positions, respectively: Apple, Microsoft, Amazon.com, Alphabet (Google), Berkshire Hathaway, Facebook, and Alibaba[13]. The quasi-total domination of the IT sector is interrupted only by the holding of Warren Buffet. If 20 years ago someone had assured that data had more value than oil the great majority of us would have seen him as a foolish quack; today the shrill evidence says us the opposite, data are in effect the oil of the new millennium.

Experts from different areas have written many books around it, coining new terms as the "data capitalism" advanced by Viktor Mayer-Schönberger Big data/analytics are undoubtedly at the core of economy today (and likely, even more, tomorrow), however, telecommunications, computers, mobile devices, and the Internet ecosystem[14], all of them have played a major role in the transition from the industrial economy to the current digital economy. Now the technologies of the last digitization's wave are

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[13] Erin Duffin, *Top companies in the world by market value 2019,* Statista, 12 August 2019, https://www.statista.com/statistics/263264/top-companies-in-the-world-by-market-value/, consulted on 3 September 2019.

[14] Here, as Internet ecosystem we intend chiefly the web which entails e-commerce portals, search engines and social networks.

completing this transition, let us think to the new cryptocurrencies like Bitcoins and Ethereum that are posing serious threats to the global financial order. Maybe that is why Don and Alex Tapscott prophesy a "Blockchain[15] Revolution".

Turning to the sociologist perspective, Bell's analysis of post-industrialism is again a paramount starting point, but our benchmark is unquestionably the Catalan sociologist Manuel Castells and his monumental trilogy on the "Information Age" (updated and reedited in 2010). There are several points of contact between our idea of Digital Age and Castells vision of Information Age, and of course between what we mean for Digital Society and his formulation of Network Society: a global community entirely shaped and organized on timeless and ubiquitous networks stemming from ICT and more forcefully with the Internet. Castells comprehends well that the unprecedented properties of this new society, in terms of space and time, have keen consequences on people's identity and work.

First, the structural skewness between the logic of digital networks and the physical reality generate massive perturbations in people's culture and a common sense of uprootedness, pushing them to venture in disparate forms of identity reclaim, from religious radicalism to feminist or ecological movements. Most importantly, this mismatch accounts for the revival of nationalism and protectionist (sometimes racist) policies based on culture, territory, and ethnicity. Second, the described society make the workplace the most affected ground. The constitutive flexibility, embodied today by the so-called Gig Economy, bring increased precarity, insecurity, and stress in the working environment: if it is true that we have a much wider choice about when, where and which type of work to do, it is also true that we don't have the economic safety of a life-long contract and we don't have either the certainty to work in the same geographic area. It is not a case that is often used a term like "digital nomad".

Moreover, we would add, the massive automation process carried out by ITC technologies and with the promise of going further along with the third wave of digitization risk to worsen the *anomie* emerged in this millennium, once several works, especially the medium and lower-skilled ones, will become machine's realm. We should

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[15] Blockchain is the technology, used as digital ledger, that made possible the surge of cryptocurrencies.

remember that the occupational group, the profession, was identified by Durkheim as the most suited body to give a new ethic for society during the Industrial age, even more than political groups. It is maybe today the turn of parties and movements?

With this, we step in the second section. In short, we affirm that, following the actor-network theory and the Neo-Schumpeterian school, the digital revolution is a pivotal element that underpins the radical changes which are occurring among the political systems of numerous democratic countries and over. Or, to be more precise, we will draw an imaginary line between the new global digital paradigm, its socioeconomic outcomes, i.e. the disruptive effects on people's identity and work, and the rise of right-wing populism in the European and American continent.

Eva Selenko (Loughborough University) carried out noteworthy studies that show the first empirical shreds of evidence. Charles Dumas, macroeconomic forecaster and chief economist at TS Lombard, sees populism phenomenon as "a collective neo-Luddite revolt against recent radical transformations of western market economies"[16], somehow related to globalization, the subsequent flows of immigration and the hi-tech breakthroughs. Other studies connect political backlash with the new digital (global) economy, resulting in economic insecurity and polarization, fought by protectionist and nationalist policies (embodied by demagogical characters). Dani Rodrik, reputed economist, and professor of J.F. Kennedy School of Government (Harvard University), marries these ideas, as well as Barry Eichengreen, professor of economics and political science at UC Berkeley. They both, however, espouse more traditionalist accounts that detect in the economic globalization the primary cause. Alongside, other scholars put more the emphasis on the identity and cultural bewilderment, such as Lars Rensmann, political expert and professor at the University of Groningen, who paints European populism as an "anti-cosmopolitan counter-revolution in defense of traditional cultural identity"[17], not to mention the admirable work of Peppa Norris and Ronald Inglehart.

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[16] Dumas, C. (2018), *Populism and Economics*, Profile Books, London, p. 12.
[17] Resmann L. (2017), *The Noisy Counter-Revolution: Understanding the Cultural Conditions and Dynamics of Populist Politics in Europe in the Digital Age,* Cogitatio, Politics and Governance, Vol. 5, I. 4, p. 123.

To be sure, the digital revolution is a global phenomenon that is impacting societies in every corner of the world, with various effects determinates by dissimilar conditions. In fact, we should have well fixed in mind that globalization and digitalization influence and boost each other mutually, being technology one of the main drivers of the globalization process and vice versa. Withal, it is commonly recognized that the leading role in addressing the new technological paradigm in no longer an exclusiveness of western countries and classical powers (Japan[18]), as happened with the previous industrial revolutions. There are other key global players, especially in the Asian continent. China[19] and India stand out, but we should not forget the futuristic Seoul, or the Russian hackers, just to name a few others. Anyhow, because of the complexity and relevance of these realities, they need to be studied case by case.

Therefore, it results blatant that the present dissertation has a western-centric approach; accordingly, the literature and studies that we use are also. We will retrace mostly the political facts of EU countries (chiefly Italy), the United States and over; so, the success of controversial figures as Trump, Salvini, and Bolsonaro, among others. Naturally, we are conscious of the dissonant characteristics of these realities, which describe acute differences in their economic and social development; nevertheless, these countries and continents are significantly bounded by profound historical and cultural linkages, starting from language and religion, and also similar political systems. Another aspect that has to be noticed is that we are looking at the dynamics of societies at large. This means that the different conditions and histories of women and minorities will not receive the special emphasis that they deserve. We clearly recognize the relevance of these issues, but in choosing our matter of study we need to cut off them, leaving the duty of analysis to others.

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[18] After the two centuries of isolation under the Tokugawa Shogunate, Japan became rapidly an industrial power, thanks to the state intervention in key technologies, especially true for electricity and communications. Being the only non-western industrial power, the technological paradigms established here have their own specificity and endogenous creations arose. Today it continues to be a vanguard: the Henn na Hotels, a group of hotels where the personal is composed by (almost) only robots, is a knocking and dystopic example.

[19] China was the most technological advanced reality in the world until the XV century, according to Mokyr. For a bunch of reasons that we can't explain here, the history changed, and the West mastered the Industrial Revolution. However, in the last 50 years China recovered from such a disastrous deviation of its historical trajectory, and today is seriously undermining the superpower status of the United States echoing the ancient glory, e.g. see the OBOR project. The battle is played on all grounds, and the digital one is a key field: the current international debates on Huawei and the new 5G networks exhibit clearly it.

In doing so, we will excite the reader's minds by doing a provocative comparison. On the one side the Industrial Revolution (the first and particularly the second): the shift from an agricultural society to an industrial one, observable in the movement of a large number of families from the quiet land to the frenetic city, with serious consequences on identity and the profound transformation of job's categories. Thus, the economic, cultural and social environment of that time which somehow helped the flourish of European rigid nationalism and fascism that, as we all know, had the miserable end of the two world wars. On the other, the Digital Revolution and the transition from an industrial organization to the current society, a post-modern world well described by the new virtual and digital dimensions. Again, identity disorientation and job insecurity look to have subtle political outcomes; the rampant wave of right-wing populism reminds us of the dark period of one century ago.

Surprisingly, the similarities continue. For instance, the economic prosperity, the spread of technological and scientific innovations and the climate of optimism distinctive of the *Belle Époque* (1870 - 1914) is not so far from the general optimism covering the space of the '80s, '90s, until the early 2000's: come to mind the significant economic growth led by neoliberal policies, coupled with shallow positive forecasts about its cascade effects on population, or the rise of personal computers and Internet and their original naïve promise to democratize the world. Likewise, the spirit of *Fin de siècle*, its cultural hallmarks and political influence, which paved the way of modernism, could be associated with the zeitgeist of the last decades, at the millennium-turning, and the intellectual debate on postmodernism. Certainly, the differences between the two historical periods are countless and there is no scientific evidence of cyclical patterns. However, based on the Neo-Schumpeterian theories, and considered the international turbulences, this parallelism can result in stimulating and worthy of interest.

To sum up in a few questions what was said above, we would ask: Can disorientation of identity and economic/job uncertainty alike help to explain the achievements of rightist populism? Are those insecurities caused by the ongoing digital revolution? Is, therefore, right-wing populism a "side-effect" of the 3rd and 4th industrial revolutions? And if so,

how we can act to address the digital revolution in a way that its disruptions are minimized and the benefits are amplified and shared equally among populations, building a pacific, sustainable and flourishing future?

In order to reply to the last question, we'll show in the conclusions which kind of actions could bring societies to improve democratically and equally on the path of technological advance. Someone would advocate for the universal access on internet services or more "techno-digital alphabetization", others would talk about new types of social rights: maybe is the time of a universal basic income, as fiercely proposed by Nick Srnicek and other leftist accelerationists[20] ? Likewise, we will see the possibility to enhance the new opportunities as prospected by prominent international stakeholders, especially the OECD, the ILO, the WEF, and the WB. We will also briefly discuss of required measures for a deeper intercultural understanding, and eventually, we will put forward an original idea-project: *Radix.*

To conclude, it must be reminded that the present work uses multidisciplinary sources, does not follow a strict methodology and its claim is not to show any empiric evidence. Consequently, it does not fall properly in the academic domains of social science or political science. Instead, it must be intended as a comparative and historical effort, a vivid suggestion with the aim to foster a more intense academic research on these topics, and why not, also an attempt to expand the critical political thinking of the welcomed readers. Maybe not alone, but a holistic approach as such can provide useful cognitive tools for every person interested in the treated themes.

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[20] Accelerationism is a political theory which argues that Capitalism, and its processes, should be accelerated instead of overcame in order to generate radical social change. In its leftist declination Nick Srnicek and Alex Williams are the main proponents.

SECTION I
The Digital Revolution

Chapter 1. A Digital History

Often, when we think of a revolution, we imagine that in an exact date, spontaneous and furious forces move our souls and radically transform society, changing the course of history; so, for example, the French Revolution is associated with 1789. Surely a revolution is a moment of sharp rupture with the past, however, beyond the conventional dates that reassure us by providing time-orientation, each of these moments is anything but sudden: every great change has deep roots in history, describing a general continuity which contains exceptional discontinuities. This rule obviously applies to the digital revolution too. Surely for many, the advent of the digital age is a rather recent phenomenon, associated with the entry of the new millennium, and due to the spread of devices such as personal computers, smartphones, tablets and, above all, thanks to the development of the Internet. Actually, in this statement, there is more than one truth. Nonetheless, in our opinion, the first "digital seeds" can be traced back to unsuspected years, exactly the twenty years (or slightly more) after the WWII, a phase that we will label digital prehistory.

1.1 Digital Prehistory

These are the "hot years" of the Cold War – let us pass the oxymoron – and, as we well know, every war is fertile ground for technological development. With these premises born the core technology of the digital revolution, its infrastructure: the Internet. In 1958[21] US President Dwight D. Eisenhower and the Department of Defense alike present the mythical ARPA (Advanced Research Projects Agency, then DARPA) in response to Sputnik 1, the first artificial Earth satellite launched by Soviet scientist one year earlier. The mission was to prevent the total crash of American communications in a gloomy atomic scenario, frightened by the Soviet technological power. After 10 years of grueling researches, and mostly thanks to the packet-switching technology[22] developed by Paul Baran at the RAND Corporation, the American tech-fighters finally

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[21] In the same year a computers' system went "online". We refer to SAGE, an American military project to intercept soviet bombers, which connected 23 computers between USA and Canada. It is believed to be the first large-scale computers' network.

[22] It permits data to break themselves into small pieces, or packets. Each one of them can follow distinct itineraries and reach the same destination. Once there, the fragments reassemble to create the original data. The term, to be precise, was coined by the British Donald Davies, who created the same technology in the same period without knowing Baran's advances. The discovery is thus credited to both.

reached their objective. They created ARPANET, a network communication architecture that does not have any centralized point of control, based on thousands and thousands of computer networks that have countless ways to connect each other in order to bypass electronic barriers. This architecture will become the foundation, together with the numerous implementations of the next 30 years, of the current global network known as the Internet. The reported case is a brightening example to understand how military interests have been always crucial to foster the research and development of new technologies, in particular to overcame economic constraints otherwise insurmountable according to the simple market logic. Virtually all the primary technological improvements of the last century had this kind of impulses: nuclear power, air transport, the Space race, and electronics. All these mind-blowing results were reached thanks to the efforts of engineers, scientists and theorists hired and supported by the governments of the major war competitors, especially the United States, Britain, Germany, Japan, and the Soviet Union, funding constantly expensive experiments with the aim to reach a technological supremacy and gain a decisive military advantage. The computer industry rose in such a warlike and competitive environment.

In truth, the computer has another history too, in fact in the XIX century and in the early years of the XX century, it was a job title rather than a machine's label. Back then, the so-called human computers, mostly women, were exploited by doing endless arithmetic counts and tabulations[23]. So, various inventors aimed to create machines that could perform the same tasks more quickly and without errors. One of the first attempts was the "Analytic Engine" (XIX century) of the English polymath Charles Babbage, a sort of ancestor of modern computers. At the dawn of 1900, numerous mechanical and electro-mechanical machines were already available, convincing bold pioneers to found companies such as the Italian Olivetti (1908) and the International Business Machines, better known as IBM (1911). During the inter-war period more advanced electro-mechanical machines were created by both German Nazis, see the Z1 and Z2 made by Konrad Zuse, and Americans with the Harvard-IBM Automatic Sequence Controlled

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[23]Brynjolfsson E., McAfee A. (2014), *The Second Machine Age. Work, Progress, and Prosperity in a Time of Brilliant Technologies*, W. W. Norton & Company, London and New York, Ch.2.

Calculator. As the war progressed, Nazi Germany neglected electronics, judged not strictly suitable for war applications. Nonetheless, the German engineer created Z3, the first fully automatic and programmable digital computer, able to calculate the airplane's wings oscillation through a binary code of zeros and ones. It was destroyed just two years later in an air raid. On the side of the allies, it was followed another path, betting more on this field, especially in Great Britain, where the brilliant mathematician Alan Turing found a favorable environment for developing his models. By the end of the war the British efforts were repaid, resulting in the first fully functioning electronic digital computer, "Colossus", which allowed the Bletchley Park cryptanalysts to crack successfully the German military code "Enigma". The computer Colossus, name well suited also considering the size, was able to perform incredibly advanced tasks for that time, some of them overcame only in the late 1970s. On the other side of the ocean, the Hungarian-American scientist John von Neumann was another leading figure of this digital prehistory phase. It is thanks to him if, during the 1940s, it was built the University of Pennsylvania's Electronic Numerator Integrator And Computer (ENIAC) and its predecessors, the EDVAC and the UNIVAC. The latter, back in 1952, predicted the victory of Eisenhower at the expense of Stevenson, in stark contrast to the opinion polls. UNIVAC I hosted also the first program (A-0) that allows giving computer instructions with English words instead of numbers, developed by Grace Hopper.

From this point onwards the United States, also due to the technological competition with the rival Soviet Union, will turn into the world's leading player in the computer industry. In the following years, although the range of computer's applications was extended significantly out of academia and warfare, from office-type applications to industrial control systems, they evolved at a slower rate for multiple reasons: 1) the cumbersome size and the elevate costs, due to the old and inefficient components, made computers a niche market; 2) IBM, the world's largest firm in this field, was in a monopoly-like position and didn't recognize the enormous computers' potential that was still dormant. Additionally, IBM enormous success encouraged many to venture in imitations, but without remarkable achievements, if not in specialist sectors. Inside the American market, General Electrics and RCA failed even doing heavy investments and renounced to their shares in the early 1970s. In Europe, jointly efforts of governments

and major companies in France, Britain, Italy, Germany, and Sweden had only limited results in their correlative national markets[24].

Notwithstanding, some isolated exceptions emerged. It is the case of Olivetti's "Programma 101", the first commercial programmable desktop computer, or possibly the first personal computer, projected by the Italian engineer Pier Giorgio Perotto (from whom it took the nickname "Perottina") that was presented in 1965 at the New York World's Fair, starting the production the same year[25]. Of course, all these devices, even if revolutionary for that time, are today considered technological fossils belonging to another era. However, the mathematical logic behind their functions has forged gradually the new digital age.

Another key invention, like those abovementioned, has an even longer history, the telecommunication. It is acknowledged that, together with transportation, telecommunications were the driving technologies of the industrial revolution, especially of the second one. It was then that Wheatstone in UK and Morse in the USA designed the electric telegraph (1830-1840), providing a very long distances communication system. Years later it was the turn of the telephone, invented by Alexander Graham Bell and decisively empowered by AT&T in the early 1900s. These innovations were so radical that they forced early real universal attempts of international cooperation as witnessed by the first international organization, the ITU, founded in Geneva in 1865, inducing also many historians to talk of the first wave of globalization. What matters here, rather, is the birth of modern digital telecommunications, built on the intensive use of electronic components, and which can be traced back to the second decade of the postwar. The first electronic exchange with the use of transistors was installed in the United State in 1960. Five years later telecommunications became

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[24]What reported so far has been extracted from: Freeman C., Louçã F. (2001), *As Time Goes By. From the Industrial Revolutions to the Information Revolution*, Oxford University Press, New York, Ch. 9, pp. 309 -318; Ramge T. (2019), *Who's Afraid of AI? Fear and Promise in the Age of Thinking Machines,* The Experiment, LLC., New York, Ch. 2, p. 33; Popular Culture, Timeline of Computer history, Computer History Museum, https://www.computerhistory.org/timeline/popular-culture/, consulted on 15 September 2019

[25] 2008/107/1 Computer, Programma 101, and documents (3), plastic / metal / paper / electronic components, hardware architect Pier Giorgio Perotto, designed by Mario Bellini, made by Olivetti, Italy, 1965-1971. Retrieved from http://www.powerhousemuseum.com/collection/database/?irn=378406, consulted on 12 September 2019.

digital, owing to the adoption of Stored Programme Control (SPC) and the Pulse Code Modulation (PCM) in AT&Ts Electronic Switching System N. 1, increasing remarkably flexibility and speed[26]. Consequently, in the sixties, we can find out an important process of technological convergence, merging properties and components of computers and telecommunications and laying out what are nowadays commonly known as ICTs.

Convergence is a cardinal phenomenon, or better tendency, of the digital revolution in all its phases, which enable the incremental integration and also the unification of technologies once unrelated. The realm where this trend is more blatant is surely software computing. Who would have thought that the model developed by Ted Nelson back in 1963 to create and use linked content, named by himself Hypertext, will be the basis of user-friendly interfaces of PCs and all other digital devices, embracing in some sense the same principles of the World Wide Web? It's thanks to his ideas that we can write our thesis on a computer without burdensome informatics skills.

To grasp better the concept of convergence it is maybe more suitable the mother of the electronic industry: integrated circuits and semiconductors. After decades of linear scientific improvement, the first integrated circuits appeared in the 1950s. Within the technical communities, there was enough enthusiasm to lead to a boom of advances and discoveries of additional electronic components in the 1960s. In those years, Gordon Moore first enunciated the homonymous law[27], then founded Intel ("Integrated Electronics") with Robert Doyle and Andy Groove. Just three years after the foundation, they invented the microprocessor, which boosted the semiconductor industry and even more decisively computer history. These new microchips, that could look a mere technical advance, meant that the cost of computer production dropped sharply and at the same time the scale broadened steeply, making possible the fabrication and spread of the personal computers. This is a turning point in our history because from now onwards digital PCs will shape the behavior of large sections of society, not only restricted groups of scientists, academics, and businessmen.

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[26] Freeman C., Louçã F. (2001), *As Time Goes By. From the Industrial Revolutions to the Information Revolution*, Oxford University Press, New York, Ch. 9, pp. 318 -324.

[27] The Moore's Law is the observance that the number of transistors in a dense integrated circuit doubles about every 18 months. It is considered the basic explanation of the exponential growth of the computational power. Moreover, it is also the foundation of the technological singularity theory.

1.2 Digital Emergence

The digitalization of the economy, society, and the world all it starts here, in the twenty years between 1970 and 1990, and it rests on three pillars-technologies that we have already introduced: computer, telecommunication, Internet, converging gradually all together. At a macroeconomic level, the first 1970s experienced first a sudden economic growth, coincidentally overlapping with the diffusion of microchips in the computer industry, and then the Oil crises of 1973 and 1979. All this persuaded political leaders, with Reagan and Thatcher at the forefront, to abandon the welfare state and embrace the new neoliberal recipe, digging up Von Hayek's studies. In parallel, the Fordist business model entered a deep crisis, foreshadowing the new management style based on the emerging ICT compartment, matching better with neoliberal policies[28].

But before proceeding to recount the salient steps of the ICT, we want to point out that in the first phase of digitization they reside also the primary archaic specimens of two absolute protagonists of the current revolutionary digitization's wave: artificial intelligence and robotics. The latter has always been a human aspiration: everyone would like to have a robot that follows the orders and do what we don't have the appetite to do. In the previous centuries, several inventors tried their hand in building mechanical automatons with this end or others. Then, with the advance of electronics, arrived the proper robots: already in 1939 Westinghouse had built and presented Elektro, a humanoid robot of 2.10 metros that could move its head and arms, "smoke cigarettes", and perform with witticisms pre-recorded on 78 rpm records, in response to vocal commands; and in the 1950s appeared other cutting-edge examples as Squee (the robot squirrel). Again, the Cold war and the Space race spurred extraordinary signs of progress, so between the sixties and the eighties showed up the first robots for health applications and mass production: the Rancho arm robot, General Motor's UNIMATE, the Victor Scheinman´s Stanford Arm, and the Takeo Kanade's Direct Drive (DD) arm, used as prototype of modern DD arms, are the most notable ones. Robots extended substantially their application range when started to merge with early forms of AI,

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[28] Rennen W. and Martens P. (2003), *The Globalization Timeline,* University of Maastricht (ICIS), Integrated Assessment, Vol. 4, N. 3, pp. 137 – 144; Freeman C., Louçã F. (2001), *As Time Goes By. From the Industrial Revolutons to the Information Revolution*, Oxford University Press, New York, Ch. 9, pp. 318 -324.

covering entertainment and education domains, among others. Shakey (1970) was a precursor of this merging process[29].

We outlined before the genius of Turing regarding the computer's rise: already in 1936, he described an abstract digital machine (a mathematical model) that relies on the same principles of modern computers. Similarly, the visionary mathematician foresight the actual AI in the early fifties, arguing that theoretically, a machine could compete with human intellect on equal terms and possibly go further. He also settled the homonymous test to answer the question "if a machine can think": according to Turing, a computer can be said intelligent only if, when interacting with people, the same don't perceive that the counterpart is not a human being.

The term "Artificial Intelligence", however, was officially coined after Turing's death, at Dartmouth, in the summer of 1956. There, scientists, psychologists, cyberneticists, electronic engineers and economists met and agreed that it is possible to recreate an electronic brain able to think on its own once the secrets of the human neural nets will be revealed. Three of the participants were Herbert A. Simon, Allen Newell and J.C. Shaw who developed one year before Logic Theorist, the first computer program capable of process symbols and signs, beyond numbers. They also introduced core concepts of AI: list processing, search reasoning, and heuristics, above all. Another notorious participant of the conference was John McCarthy, the architect in 1958 of the LISP (abbreviation for "list processing") programming language, used in many AI applications. In 1959 it was born also the machine learning approach, exactly when Arthur Samuel taught an IBM CPU to play draughts against itself and to record the chance's probabilities in particular contexts. Back then a mainframe could compete with very good human players. In 1966 arrived ELIZA, a chatbot prototype that could read the human language, just one year after DENDRAL, a forerunner of the modern expert system programs. In the 70s, MYCIN, another expert system, was used by doctors to diagnose blood disease and recommend treatments. Then the so-called AI-winter: theorizations and models were too advanced, and the promises too pretentious for the

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[29] AI & Robotics, Timeline of Computer history, Computer History Museum, https://www.computerhistory.org/timeline/ai-robotics/, consulted on 15 September 2019

materials and resources available at the time. Therefore, governments, universities, and companies turned their attention toward more concrete and usable technologies[30].

Telecommunications, the gravity-center of public interests for one century yet, were evolving linearly. Pushed by the rockets and satellites that USSR and the US were flinging out at an impressive pace, wireless communications systems began to be established worldwide, widening considerably the bandwidth data transmission. Thus, Telecommunication became broadband[31], also because of the wired connections ameliorated with the employment of optical cables. The first cellular phones debuted (Motorola, Ericsson, and others), and was possible connect themselves thanks to the wireless connection: many countries, primarily the Scandinavian ones and Japan, launched the first generation of commercial cellular networks (1G). Furthermore, in 1988 loomed the DSL, then ADSL (Asymmetric Digital Subscriber Line), which provides still today broadband on phone lines[32].

However, the real technological blast of these years was in another electronic branch: computers. Silicon Valley became quickly the incubator of new digital technologies; so, as an example, Xerox PARC unveiled the Alto in 1973, the first workstation with a mouse and a Graphical User Interface. The new Intel's microprocessors constituted the material basis of the computer's boom. From the mid-1970s we behold a massive spread of PC, impacting horizontally manufacture, service industry, offices and most importantly the houses of millions of people. First Microsoft, founded in 1975 by Bill Gates and Paul Allen, then Apple, raised a year later from the visionary ideas of Steve Jobs and the genius of Steve Wozniak, marked the commercial breakthrough and erode unceasingly the IMB's monopoly from both sides of hardware and software. That explains why IBM built up a massive partnership whit Microsoft in 1981, implanting on its computers the newly released MS-DOS (Microsoft Disk Operating System). The

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[30] AI & Robotics, Timeline of Computer history, Computer History Museum, https://www.computerhistory.org/timeline/ai-robotics/, consulted on 15 September 2019; Ramge T. (2019), *Who's Afraid of AI? Fear and Promise in the Age of Thinking Machines,* The Experiment, LLC., New York, Ch. 2, pp. 33-39.

[31] According to the Cambridge dictionary, the term broadband, in telecommunications, refers to a system that makes possible for many messages or large amounts of information to be sent at the same time and very quickly between electronic devices.

[32] Credits to Wikipedia: https://en.wikipedia.org/wiki/1G; https://it.wikipedia.org/wiki/ADSL.

concerns of the "Big Brother" (IBM) derived mainly by the overpowering success of Apple II, the first real user-friendly PC which bewitched consumers with its color graphic and captivating shape.

Besides the business world, state institutions were still mere spectators of the ongoing revolution. Before 1978 neither the White House had yet installed its own computers. This demonstrates the alarming technological lag, compared to the academic or business world, that still today distinguishes political institutions. In contrast, technical bodies and organizations were proven to be in line with the time: let us remind the first annual conference in 1974 of the SIGGRAPH (instituted five years before), a special interest panel on computer graphics, which will turn one of the most influential groups in computing. Indeed, in that period digital drawing systems were emerging kickstarted by SuperPaint; the arcade games, such as Spacewar! or Atari's Pong, were reaching more and more people, and geek communities were sprawling around the American university campus.

Nothing compared with the '80s anyway. They start with the iconic cover of TIME when in 1982 named the computer "Machine of the Year". Apple and Microsoft went public, both with excellent results, bringing out the profound techno-economic shift that was occurring under our feet. The computer capabilities were encompassing an incredible range of human activities, and the progress was proceeding fast pushed by many sides. New programming languages were thriving, such as C++, developed in AT&T Bell Labs, or Perl, written by Larry Wall. The first versions of Microsoft's Windows and Word (anticipating the future Office suite) were on the market. Philips and Sony invented the CD-ROM for the mass distribution of music, which in change replaced the older floppy disks as the main tool for the storage and transfer of data. The computer's memory capacity and reliability were further enhanced with the debut of the Flash Memory, a key invention made in Japan (Toshiba), and the HDD (Hard Disk Driver). The MIDI (Musical Instrumental Digital Interface) was linking computers with electronic musical instruments. Adobe was creating the desktop publishing with its Portable Document Format (PDF). Cisco Systems Inc. was founded by a group of Stanford students. At MIT, Professor Nicholas Negroponte established the Media Lab,

fostering researches on the digital revolution across many fields. Graphic and digital gaming alike were making strides: in 1982 Disney release "Tron", prelude of the computer-generated graphics movies, in 1984 it was born PIXAR, while Nintendo was launching its first Console. Above all, the same year can also be remembered as the definitive consecration (and commercialization) of the PC, when Apple's Macintosh commercial spot "1984" is aired during the Superbowl[33].

If by then computers were already part of the pop culture, Internet popularization was still "in process"; or better, the networks were evolving at an even faster rate, but they were relegated mostly to scientific and academic environments, and to some extents at the business and industry. At the dawn of the seventies, the inauguration of ARPAnet fostered an international competition on general-purpose networks: the British NPL network and the French CYCLADES proved to be the main antagonists. In the meanwhile, Roy Tomlinson invented the modern email sending free messages between computer users, soon embedded in ARPAnet with the @ symbol. Besides computers, another net information system rose in this period: Teletext. It was set up directly on the displays of European's televisions, taking advantage of an unexploited portion of the TV signal. The most popular will be the French Minitel, which will last until the mid-nineties as the largest online community, surpassed by the unstoppable Internet progress[34].

Back in the computing world, we know that in 1973 primary types of networks were already settled among the US and Europe, so the next step was to build a network of networks. In the old continent, the EIN (European Informatics Network) was the solution proposed, putting together CYCLADES and NPL. But history tells us that didn't work. The American environment was much more favorable for this kind of challenge: military sector, excellent academic centers, scientific and technological labs, and the corporates world, sustained by substantial governmental funds, made the difference between the two continents. Other determinant factors were the US political

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[33] What reported so far has been extracted from: Timeline of Computer history, Computer History Museum, https://www.computerhistory.org/timeline/search/, consulted on 15 September 2019; Freeman C., Louçã F. (2001), *As Time Goes By. From the Industrial Revolutions to the Information Revolution*, Oxford University Press, New York, Ch. 9, pp. 318 -324.
[34] Ibid.

union and the contribution of the countercultural movement arose out of the Summer of Love in San Francisco. The birth of PC itself (bending later to capitalist market logics) mirrors the ethos that was sprawling in large segments of society, and mostly among programmers and software engineers. Richard Stallman is probably the most genuine personification: he was the architect of the GNU project, that was supposed to be the free OS version of the commercial UNIX; with this philosophy he founded the Free Software Foundation in 1985, anticipating the "Open movement"; likewise, he was also a trailblazer of the copyleft concept, launching the GNU General Public License in 1989. The Net's decentralized architecture embodied this spirit, but it's not that simple.

The complex and intertwined Internet's history is doubtlessly an amazing example of the actor-network theory in practice: a multitude of distinct social spheres was molding the looming global network, and at the same time the latter was changing and shaping their behaviors. To grasp better the Net multi-personality, we can see at its technical design and development. The current bicephalic logic, based on a horizontal data transmission protocol and the vertical system of domains, was formed in these two decades (the 70s-80s).

If from one side the LAN (Local Area Networks) were blooming among civil offices via the Ethernet connection, from the other side the US Department of Defense wanted to reach the internetworking final stage, putting together ARPAnet and two newcomers: PRNET and SATNET. The solution arrived soon from the academic world: in 1977 Vint Cerf and Bob Kahn effectuated successfully the first test of the TCP/IP (Transmission Control Protocol/Internet Protocol). A few years later the protocol was operative, enabling the peer-to-peer transmission of digital information between computers, those with a pay UNIX OS. It was 1983, and Arpanet was rechristened the Internet. NSFNET gave the final blow, convincing more and more regional and educational networks to converge all on the Internet. In the same period compared the other head of the net technical structure: The Domain Name System (DNS), invented by Paul Mockapetris in 1984. This represents the hierarchical flank, which empowered

state control by giving an order to the users' activities[35], especially through the action of regulatory bodies that manage Internet addresses and names.

In this regard, the principal regulator was established in 1988 in Los Angeles, under the Reagan Administration. Initially, it was the only IANA (Internet Assigned Numbers Authority), which was incorporated ten years later in the most unabridged ICANN (Internet Corporation for Assigned Names and Numbers), a nonprofit private organization with a strong multi-stakeholder approach, claiming that only in this way it is possible to maintain the "holy net neutrality". Anyhow, critics always saw this body as an American tool of power, because of its alleged proximity with US tech companies. The intrinsic contradictions entrenched in the Internet infrastructure will continue to be an object of confrontation between the many actors that in a way or other contributed to the global widespread. From now ahead the new global network will be the cement of all digital technologies, from computer to mobile phones, from AI to robotics, from drones to cloud computing, and so on. It will be also the molding force at stake of a new human course, changing world economies, societies, politics, cultures, and thoughts; it's not so random the surfacing of new philosophies like Transhumanism and Singularity.

1.3 The Network Age

From the title, it is quite intuitive that the Net blast and the outflow of its ecosystem will capture our attention in this paragraph: Internet as the essence of the second wave of digitization. Yet, it is still today the essence of the digital paradigm, its basic infrastructure, the essential mode that makes possible this new world. It is no coincidence that already in 1992 Vint Cerf, the architect of the protocol that allows the operation of the network itself, inaugurates the Internet Society (ISOC), a non-governmental organization aimed at representing the stances and concerns of the technical community. Nevertheless, the 1990s and the early 2000s are spectators of a stunning process of digital evolution and convergence that encompass virtually all the other representative technologies.

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[35] Timeline of Computer history, CHM, https://www.computerhistory.org/timeline/search/, consulted on 15 September 2019; Galloway, A.R. (2004), *Protocol, How Control Exists after Decentralization,* MIT Press, Cambridge (MA), foreword and introduction.

After the storm there is always the sun: this is exactly what occurred in the delicate AI field. Already interlaced with robotics advance, which followed a more linear evolutionary trajectory, the AI comes out from its cold winter curiously at the same time as the war – also this Cold – between the two US and USSR blocs ends. In fact, in 1989 something happens that, probably due to the unfortunate timing, astonishes, but not too much. After more than twenty years of unsuccessful attempts, a computer managed to beat a master chess human player, David Levy was defeated by the Deep Thought program. But this is not enough; 8 years later (in 1997), IBM's Deep Blue excelled against the then world champion Garry Kasparov. This time the performance astonishes the whole world, becoming a landmark in AI studies and applications: for the first time, a machine proved to be better than the best human brain, even if only in a specific strategic game. Meanwhile, new types of robots were conquering people and they were rattling all around the world and over. Already in 1995, the US Air Force jointly with CIA put in action the MQ-1 Predator drone, deployed years later in the "War on Terror", especially for reconnaissance missions in the remote areas between Afghanistan and Pakistan. Let consider it as an anticipation of future commercialization.

The innovation pace speeded up with the start of the new millennium: first, the Honda's ASIMO humanoid robot, marking an important advance in robotic mobility, then the similar-dystopic DARPA's project of Centibots, showing the capacity of robotic coordination, eventually the iRobot Roomba, a very efficient autonomous robotic vacuum cleaner which since its introduction made milder the life of millions of housewives. In 2004 robots exceeded the Earth limits and became "space explorers": Opportunity and Spirit Mars Rovers landed successfully on Martian soil. Beyond drones, another foretaste of the breakthrough of the last years is the DARPA Grand Challenge which hastened interest in the area of self-driving cars[36].

In the meantime, most mature technologies continued to improve at an accelerated pace, namely computers and phones (mobile). In this 15-years-span Microsoft incarnated the role of computer's master developer, by launching operating systems and applications

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[36] AI & Robotics, Timeline of Computer history, Computer History Museum, https://www.computerhistory.org/timeline/ai-robotics/, consulted on 15 September 2019.

that will dominate in their respective fields. First of all, Bill Gates slipped away from IBM, far from its ancient splendor, commercializing Windows 3.0 and the first Office Suite package (from then an indispensable tool for the great majority of computer's clients). In 1995 Windows 3.0 was replaced by Windows 95, bundled with MSN online service and Internet Explorer, one of the first browsers. In 2001 was the time of Windows XP. The same year the Redmond's company will break into the gaming sector too, undermining the Sony-Nintendo duopoly through the presentation of XBOX. As a result of these smart moves, Microsoft stole the scepter of computer master to Apple, which was experiencing a disastrous decline mainly caused by the wretched ouster of Jobs. Only after 1997, with the reintegration of its founder, the Cupertino's front company will recover, until to become the first 1-trillion company by market capitalization in human history. This astonishing backfire was the result of the marketing genius of Steve Jobs who was a foolproof innovator with the various iBook (a critical benchmark in laptop computers rising), iTunes, iPod and finally iPhone. Apple's second life, however, was built on the last advances reached during the 90s in the computer field: primarily the MP3 standard format, the JAVA programming language, the DVD player (by Toshiba), and the USB (Universal Serial Bus) introduced by Intel[37].

The latter had become the world's larger supplier of microprocessors, having surpassed the Japanese competitors of Toshiba and NEC. Moreover, it was known, in pair with Microsoft, for its aggressive tactics in defense of its privileged market position, which led to lengthy legal disputes with the regulators of more countries involved. Notwithstanding, beyond legal and moral judgments, Intel microchips played a leading role in improving computer performance and efficiency, allowing also the proliferation of portable PCs, popularly called laptops or notebooks, and a large array of mobile computing. Among them, it is worth remembering the tablet and the handheld PC, also known as personal digital assistant (PDA), somehow an ancestor of modern smartphones.

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[37] Allan, Roy A. (2001), *A History of the Personal Computer: The people and the technology*, Allan Publishing, London (Ontario, Canada); Terrel E., Richardson A. (April 2008), *Apple Computer Inc., Company History,* This Month in Business History, Library of Congress. Retrieved from: https://www.loc.gov/rr/business/businesshistory/April/apple.html, consulted on 15 September 2019.

The mobile trend, anyhow, is more manifest in the phone industry advancements. Much more than any curious story, empirical data show us vividly this tendency; just take into consideration the number of fixed telephone subscriptions compared with the number of mobile phones in a temporal span of 30 years. In 1975 the 6% of world population had a fixed telephone line, with deep differences according to countries and regions: so in the US, the telephone's owners were 37% of the entire population, in EU the 16% (Italy 17%), in Latin America roughly the 3% (Brazil 2%). Over the years there was a more or less linear increase of subscriptions reaching the peak in 2005 when more than 19 out of 100 people worldwide had a fixed-line, followed by a steady diminishing; again, with outstanding variations not only in numbers but also in development patterns. Thus, if the apex of the American landlines touched in the year 2000 (67% of the citizens had one) is followed by a subsequent sharp shrinkage, the top registrations achieved in Europe and Italy (respectively 49% and 47%) in the same period saw a much milder decrease; both regions experienced a linear growth before the decline, while in Latin America, the 1990s showcased an important acceleration, especially in Brazil where in 10 years telephone's owners tripled. The new millennium, in this case, is characterized by a kind of stagnation of the fixed lines, not increasing nor decreasing until a few years ago. However, despite the outlined distinctions, we can notice a common trend with the entry of the third millennium, landlines do not raise any more.

The tendency in cellular phones looks completely different, and the rise from the 1990s is impressive. Here, the development patterns are much more similar across the countries, for instance until the dawn of the nineties mobile phones were almost absent everywhere. Nevertheless, in less than 20 years (1994-2013) the registrations skyrocketed on a global scale, passing from 1% over the world's population to more than 90%. In Europe, and more remarkably in Italy, yet in 2006 there were more mobile phones than inhabitants. In the American continent, were reached similar levels a few years later. As the United Nations highlighted in 2013, there are more people in the world with access to a mobile phone than basic sanitation. Today there are more cellular phones than human beings[38].

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[38] Ritchie H. and Roser M. (2019), *Technology Adoption*. Published online at OurWorldInData.org. Retrieved from: https://ourworldindata.org/technology-adoption, consulted on 16 September 2019, (data source: ITU).

All this was seen by someone as an irrefutable sign of the new globalization's wave (the third one), facilitated by favorable international conjunctions, such as the political unipolar momentum, after the collapse of the Soviet bloc, the constant economic and financial growth, the strengthening of the European project, etc.

In any case, these impressive data are also the results of several factors related to technological progress. On the one hand, the electronic components were evolving at glance: the microchips, in line with Moore's Law, improved exponentially and other innovations, above all lithium battery, made their entrance. On the other hand, new generations of cellular networks were making mobile phones more and more appetizing and useful. In fact, at the beginning of the 1990s 2G connection was released, greatly improving the quality of services and introducing new focal additions, including text messages (SMS) and multimedia messages (MMS), all digitally encrypted. Ten years later it was the turn of the 3G connection, even more revolutionary than the previous one. This, used widely to this day, made mobile broadband possible, and paved the way for the "internet in your pocket"[39].

The last year of the old millennium also witnessed the egress of two cardinal innovative networking channels that permit today's hyper-connectivity or, using the words of Mark Weiser, the ubiquitous computing; we are referring to the WiFi and the Bluetooth. The latter is a Scandinavian product developed by Ericsson throughout the nineties. Initially known as short-link radio technology, the Bluetooth echoes the Viking sagas: the name derives from the king Harald Bluetooth who unified politically the belligerent Danish tribes, similarly, the new standard allows the "unification", or better the communication, between millions and millions of different devices, indifferently online or offline; the logo, instead, is the merging of two runes, the initials of the epic king. Today it is managed by the Bluetooth Special Interest Group. Another multi-stakeholder body is in charge for the adoption of the other standard introduced at the end of the millennium, the WiFi Alliance. WiFi is another crucial step forward in the spread of the Internet,

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[39] For further info consult the ITU website: https://www.itu.int/osg/spu/ni/3G/technology/index.html

allowing high-speed wireless LAN through businesses, homes and public hotspots[40]. In the light of all this, therefore, the title of this paragraph should not be surprising.

However, as already anticipated, the true essence of the network age must be traced elsewhere, that is in the Internet's outburst. So, for instance, while the Berlin Wall was falling down, heralding the end of the Cold War and the exaltation of Western-Capitalism supremacy, in Boston was being activated the first Internet Service Provider, with a humble name: "The World". We can easily state that this moment represents the emergence of the commercial spirit of the global Net. Contrarywise, Tim Berners-Lee and its creature, the Web, embody the free and naïve thrust. So, in the same year as the first ISP, the English scientist was already working on an enlightening project at the CERN of Geneva: the World Wide Web. Partially inspired by the "Enquire" program, designed ten years earlier by Berners-Lee himself with the purpose of creating a networked hypertext system accessible to ordinary people, the nascent Web popularized the Internet globally, bringing drastic changes in everyday life. The WWW was comprising the HTML (HyperText Markup Language), a system of URLs (Uniform Resource Locators) and a browser, initially working as an editor too, reflecting the original noncommercial vision. The first website (the CERN's site, still in operation) and the first browser didn't run yet on the common OS and PCs – they were built on rare lab computers – and because the Swiss laboratory decided not to fund further applications, the Web team had to seek volunteer programming skills to already existing online communities.

With this respect, we should remind that since the seventies these communities were expanding in American academics and geek environments, as the most famous Usenet (still active today) which was providing topic-oriented "newsgroups" for collaborative discussion, envisioning the modern blogs and social networks. With this zeitgeist, in 1993 the first popular browser (Mosaic) was released, and the Web became public and free of charge. One year later was established the W3C, which until now develops and

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[40] Kardach J. (5 March 2008), *Tech History: How Bluetooth got its name*, EE Times, https://www.eetimes.com/tech-history-how-bluetooth-got-its-name/, consulted on 16 September 2019; WiFi Alliance: Organization, https://web.archive.org/web/20090903004711/http://www.wi-fi.org/organization.php, consulted on 16 September 2019.

manages the common protocols like HTML and CSS. Simultaneously Al Gore believed in the powerful impact of this network and ordered to set up the White House's website, demonstrating the American foresight, in opposition to the European short-sightedness. Perhaps due more to the Silicon Valley commercial insights, the Web momentum shifted definitely from Europe to the US. Our American friends were right as rain: nothing had proliferated so fast, so globally and so capillary in human history before. The prior twenty years online users had raised from few thousands of Arpanet's scientists, militaries and geeks to two million and a half internet amateurs in 1990. Interesting facts, but nothing compared with the upcoming ones. With the web advent, internet active users – those who have accessed from any device and location at least once in the last three months – skyrocketed at an astonishing ratio of x159 becoming in just a decade 412 million (year: 2000); the 1-billion threshold was crossed in 2005; today more than half of world population is online, multiplying the number of users by four times compared to fifteen years ago[41].

This dramatic acceleration in the digitalization of our world was (and is) driven by many actors and initiatives from many sides; they overall mirror an old dialectic, that one between classicist and romanticist, establishment and counterculture, so as a political struggle: control of technology, conceived as mean of production, versus universal distribution of knowledge. The second is contained in Internet's architecture itself – as already depicted with the TCP/IP and the WWW – but also in Linux, the free and open-source OS developed by the Finnish software engineer Linus Torvalds at the web's birth, absorbing Stallman's GNU project. Other notable exemplifications of this kind surfaced in those years are the 1998's Open Source Initiative, the Creative Commons licenses ("some rights reserved"), apart from other more proper copyleft practices[42], and the biggest and most complete encyclopedia ever created: Wikipedia.

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[41] Roser M., Ritchie H. and Ortiz-Ospina E. (2019), *Internet*. Published online at OurWorldInData.org. Retrieved from: https://ourworldindata.org/internet, consulted on 22 September 2019; Networking and the Web, Timeline of Computer history, Computer History Museum, https://www.computerhistory.org/timeline/networking-the-web/, consulted on 22 September 2019.
[42] For a general understanding we want to point out two definitions here. 1) the concept of "Openess" is summed up by the website opendefinition.org in such a way: "Open means anyone can freely access, use, modify, and share for any purpose (subject, at most, to requirements that preserve provenance and openness)". 2) Copyleft, as opposite to Copyright, refers to the right of people to distribute and modify freely a work, but with the obligation to keep the same kind of rights in the derivative versions of the same work.

Other similar experiences occurred worldwide, and most of these ideas are now followed and professed by the hackers' movements; come to mind BitTorrent which allows P2P file sharing, or the most recent Wikileaks ideated by the Australian hacktivist Julian Assange.

However, despite the impact and resonance of these initiatives, the commercial offer that was being formed during this period has to be considered as the main engine of the worldwide popularization of the Internet, and the digital life in general. In this case, the evolutionary epicenter is all American, or rather, all Californian, bringing Silicon Valley to the world's headlines. This is where all the major startups are launched, which will then turn into what they are today, technological monoliths very close to real monopolies. Besides computer hardware, software and operating systems dominated until today by the two historical horsemen Apple and Microsoft, digital commercial development took place on three main lines over the Internet: search engines (or browsers), e-commerce portals and social networks. Curiously, the contemporary winners of these web services, respectively Google, Amazon and Facebook, are often labeled, together with Apple, as the "Big Four" due to their huge weight that exceeds the economy's realm, influencing political institutions and societies at large. But before talking about how they mold our lives today let try to understand where they come from and how they did so.

The first commercial tug-of-war, and probably also the fiercest, at least in the early stages, concerns search engines. As we wrote previously, Mosaic was the first exemplary. It spread like wildfire thanks to its easy installation process, its reliability, and the graphics added in the webpages. But it had a "butterfly life". Only one year later was overwhelmed by Netscape, which in turn opened the doors for the business web practices. Another year, another browser: in 1995 the giant Bill Gates' company released Internet Explorer, for free and bundled with every copy of its Windows operating systems. The same year saw also the birth of another browser, Yahoo. As a result, at the end of the century, Netscape's business model collapsed and its code was transformed in open source, becoming the foundation of today's Mozilla Firefox. At

that moment, by dint of its aggressive commercial strategies, Internet Explorer was looking having complete control, but the history changed again.

In 1997, the Stanford students and friends Sergey Brin and Larry Page, register the domain Google.com. At the beginning, it is just one of the thousands of domains registered daily, as it happens today and as used to happen even then, perhaps in a somewhat premature way. In point of fact, in the years following the success of the WWW, enthusiasm about the new possibilities that were granting the Internet literally sent on a binge thousands if not millions of ordinary citizens (mainly American) who believed they could become millionaires or solve any problem in the world by launching a website. Not randomly that period is known in finance environments as the "dot-com bubble". As always, speculation went beyond sustainable and the bubble exploded at the turn of the millennium; as a result, trillions of dollars in capitalization were burned and many internet-based companies were wiped out, but approximately half of them survived even though suffering the hard blow.

However, as they say, "what does not kill fortifies" – words that fully reflect the chronicles of Google. Its fortune and strength stem from the intuitions and the combined mathematical and business skills of the founders. By far outpacing Netscape and all other browsers, they, on the one hand, became able to fully satisfy the user because of research suggestions based on advanced algorithms, on the other hand, they managed to find an elegant solution to the problem that plagued all previous search engines, i.e. how to create profit from the search itself. Their ploy seems to be a discreet advertisement that appears in the first results (sponsored) of every search carried out by the user. So, Google Search, after crossing over splendidly the stormy years of the NASDAQ' meltdown, stood out as a proud example of the ultimate development of the global digital network, becoming one of its main protagonists. The challenges that its founders started to pursue transcend by far normality, such as that of digitizing all the books (in all languages) ever written. In addition to the marvelous challenges, which, as we will see below, will touch several fields of hi-tech, also the billionaire acquisitions did not hesitate to arrive; among the many, we want to remember that of YouTube only after a year since its launch in 2005. The aspirations of the two CEO were looking to be

limitless, and with the passing of time and constant growth, new services were made available to people, often with worldwide success, just think of Google Maps, Gmail or Google Earth. The spirit of quasi-divinity that originates from the ethics of its founders, can be found also in the name of the Mountain View's titan, knowing that it is derived from Googol, a number (1 followed by 100 zeros) that mathematicians use to indicate measures immeasurably large[43].

The same can be said for the global e-commerce giant, Amazon. In effect, echoing the most voluminous river in the world, it has a logo that points from A to Z, as if to say that encompass everything. By the way, it is no mystery the greatness' aspirations of Jeff Bezos, the richest man in the world by now, so much so that at the launch of his company he wanted to give her a rather high-sounding name, the "Earth's Largest Bookstore". Yes, just a bookstore, because at the beginning it was that, an online bookstore. In fact, after meticulous studies, Jeff himself came to the conclusion that books were the most easily marketable goods online; this was due to the fact that a buyer would hardly give them back by claiming faults, and also because the books do not risk major damage during transportation. Sure, as well as in the case of Google, Amazon, two years older, had to face lusty competitors: on all, we remember eBay, founded in 1995 too and widely used until now. However, Bezos' foresight and capabilities, together with the confidence and patience of investors, have allowed Amazon to surpass any of its direct rivals in the long run. The winning strategies can be traced to an impeccable, almost obsessive, customer service, low product prices, a tip system driven by cutting-edge algorithms, and flash deliveries. In addition, as well as other "Bigs", Bezos has ventured over the years in online services that go far beyond its initial core business[44]. Among all of them, we must certainly mention cloud computing, which, right from the launch of Amazon's Elastic Compute Cloud in 2006, will become an essential technological service for the digital paradigm in which we are today.

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[43] For this brief Google's timeline we referred do: Franklin F. (2017), *World without mind: the existential threat of big tech*, Penguin Random House LLC, New York; Galloway S. (2017), *The Four: the hidden DNA of Amazon, Apple, Facebook and Google*, Penguin Random House LLC, New York; Networking and the Web, Timeline of Computer history, Computer History Museum, https://www.computerhistory.org/timeline/networking-the-web/, consulted on 22 September 2019.
[44] Galloway S. (2017), *The Four: the hidden DNA of Amazon, Apple, Facebook and Google*, Penguin Random House LLC, New York

A paradigm that, as we will see in the next chapter, is partly conveyed by the great technological conglomerates, and among these, a special seat is reserved for Facebook, also because of its social essence. The social network's revolution, inaugurated with the Zuckerberg's creation, it has implications that definitely surmount the computer's domain, but we will display it later. Yet you have to assume that this is a very recent story, certainly the most recent of the Big Four. In fact, Facebook, as many people know, was only born in 2004, in the dorm room of a young Mark Zuckerberg, at the Harvard campus. Despite the revolutionary scope, this was not a completely new idea. In reality, it took inspiration from realities emerged in the late nineties, such as SixDegrees, MySpace or MSN Messanger, improving some aspects and integrating other new. Initially limited to American and European universities, in 2006 Facebook will be extended to anyone with a valid email address and an age of no less than 13. This simple decision, together with the release of Steve Jobs' last clairvoyant product, will be two crucial events that will determine the entry into the ultimate phase of the digital revolution. A phase that entails innovations that promise to extend the applicability of IT mature instruments and go way further.

Chapter 2. The Digital Paradigm

And here we are, writing our graduation's thesis typing on a convertible PC, searching periodicals and academic articles, strictly in pdf format, on Google Chrome or Microsoft Edge, and then downloading them to our desktop; for books and monographs, instead, we turn to Amazon that allows us to shop them at convenient prices and read them comfortably on our kindle in e-book format. To find the right concentration we are often forced to activate the plane mode of our smartphone, in a way that we eschew to be distracted by the manifold notifications of Facebook and Instagram, or by the friends' messages on WhatsApp and Messenger. To achieve even better our focus, we put wireless earbuds and we play our favorite playlist on Spotify. Obviously, we make sure that the thesis file is always shared and saved on Dropbox so as not to risk damaging data loss. It could seem shocking, but fifteen years ago, almost all of what we wrote did not even exist; yes, it was already a frequent activity to write on the PC, you could buy books on Amazon – but not read them with a kindle – and you could download academic articles in pdf format, but all this was possible in a very smaller proportion compared to today. This little wedge of reality should make us reflect on how much and how the world has changed under our feet in a blink of a beat.

2.1 The Current Stage

As anticipated, among the many events that have so radically accelerated the digitization of our society, we put at the forefront two of them: the advent and the extraordinary spread of social networks and smartphones. They have made virtual/digital society no longer just a theoretical abstraction of visionary sociologists, but to the contrary, the reality in which we all mirror ourselves today. The writer Thomas Friedman recognizes Steve Jobs' iPhone as an important benchmark in the recent acceleration of technological progress. In a chapter named *"What the Hell Happened in 2007?"* the New York Times' columnist holds: "*not just the iPhone emerged in 2007—a whole group of companies emerged in and around that year. Together, these new companies and innovations have reshaped how people and machines communicate, create, collaborate, and think*"[45].

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[45] Friedman, T. (2016), *Thank You for Being Late: An Optimist's Guide to Thriving in the Age of Accelerations*, Farrar, Straus and Giroux, New York, p. 23

Indeed, within five years we entered abruptly into the Web 2.0 era (also called Social Web) – a term popularized by Tim O'Reilly in 2004– where interactivity, participation, interoperability, and ease of use are the watchwords. Besides the extension of Facebook outside academic and business circles in 2006, these years (2005-2010) witness the entry of great novelties such as YouTube, Google Maps, Twitter, which popularizes the activity of micro-blogging especially among celebrities; but also the prominent messaging app WhatsApp, or Instagram, which inaugurates new professional figures, the influencers, no to forget Change.org, the current most popular social mobilization website; and more Amazon's kindle, which will make common e-books worldwide, Spotify, the most popular app for music reproduction, and also two pioneering companies of the platform economy like Airbnb and Uber.

This profound change owes much to Apple and its founder, as the launch of the first iPhone opened the smartphones' season, devices that include, in the words of Jobs himself, "*the world's best media player, world's best telephone, and world's best way to get to the Web - all three in one*"[46], reinventing entirely the mobile phone industry and also the computing business as such. Of course, the current global penetration of these digital technologies follows a more complex trajectory; in practice, it is an extraordinary history of interdependence. In the market, the initial monopoly of the iPhone is soon opposed by the Korean Samsung, due to the marriage with Google and its Android mobile operating system, released in 2007 as an alternative to Apple's iOS. This makes that prices drop, especially those of Samsung smartphones and other competitors – today principally the Chinese Huawei and Xiaomi – and they are now accessible to large portions of the population not only in developed but also in developing countries. In addition, if on the one hand the new digital device, the smartphone, replaces the computer as the main carrier for the spread of the Internet and the Web (2.0 now), and it triggers the social networks' outbreak, on the other hand, the same Net infrastructure and the new features of Web 2.0 – first of all the social networks – showcased on app stores, turn smartphones so appealing for any consumer category, despite not having any kind of computer skills.

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[46] Ibid.

We could tell thousands of compelling stories about these years, but nothing like statistics give better the idea of the extent of such novelties. Take for instance the steady growth of Internet users. In the previous chapter we had seen that, following the brilliant creation of Tim Berners-Lee, the Internet exploded definitively from a handful of millions to more than a billion users in just 15 years. Once such a diffusion was reached, it was thought that the growth trend would slow or stabilize, mainly because, after the boom in personal computer sales of the previous twenty years, the market began to show signs of saturation. This was affecting directly the spread of the Internet as the computer was the only mean of accessing the web.

Well, all this was true, but they had not reckoned with the new device that will make our online activities part of our daily life, regardless if you are an athlete, a housewife, a rock star, a successful entrepreneur, a peddler, a high school student, a Muslim or a Christian. Subsequently, internet users doubled in the span of five years, reaching 2 billion in 2010; in 2015 are already 3.18 billion, and in early 2019 more than 50% of the world's population is connected - to be exact 57% - reaching 4.39 billion wearers. In projection, already towards the end of this year, we should exceed the 5-billion threshold since 2018 has seen about a million new users every day. Obviously, the penetration rate varies a lot according to geographical areas, seeing countries like Iceland, U.A.E or Norway with nearly their whole populations online and other realities, specially in Sub-Saharan Africa, where less than 10% of people have access to the Net. As for our area of interest, there are certainly differences, but at least 70% of the people are connected to the Network, from Brazil to Italy, from Europe to the United States. Going back to the internet-mobile relationship, it should be noted that out of 4.388 billion active online users, almost 4 billion are also mobile; this is to demonstrate the current bedspread of smartphones.

We have already shown in the preceding chapter that in 2006 the mobile phone subscriptions in Europe and Italy exceeded the number of their inhabitants, after 2010 this became true in Latin America and Brazil, and three years later in the United States too. Another impressive fact that exhibits the extraordinary upsurge of smartphones is their worldwide sale: in 2013 it outstripped for the first time a billion units, while in the

three years 2015-2017 the annual average rose to 1,4 billion units. So, today we count 5,112 of unique mobile subscribers. Spectacular numbers telling a story of technological progress and overwhelming digitalization.

In addition to geographical stretch, the last few years have seen an increase in the average time we spend online every day. Also in this case, mobile computing plays a key role. Indeed, while it is true that overall time spent on the Internet has increased from 6 hours and 10 minutes in one day in 2014 to 6 hours and 40 minutes in 2019, it is also true that in the same period it has decreased by about one hour – by 4,5 to 3.5 hours– the time that we are connected through computers and tablets, while through mobile devices today we spend on average 3 hours a quarter, compared to an hour and 40 minutes in 2014. In percentage terms, over the past five years, the mobile's share of total internet time has increased from 26% to 48%.

To fully understand the reasons behind these proportions there is a last fundamental element to observe: Social Media. For instance, it can be ascertained that in 2008 in the United States, adult users were surfing digital media mainly via desktop/laptop, spending 2.2 hours per day, while only 0.3 hours through mobile. Over the course of 10 years, desktop browsing has declined slightly, falling to 2 hours, while mobile navigation has soared to 3.6 hours a day. Social media are younger than the Internet, the web, and mobile phones, but in a really short time, as never seen before, they have reached numbers that equal the extraordinary diffusion of these technologies and partly explain their success. Today there are 3,484 active social media accounts (of which 3,256 mobile) reaching a global penetration rate of 45%; if we consider only the 13 years old people the rate jumps to 58%.

Among the various socials, the undisputed king is definitely Facebook, sure of its 2.271 billion "faithful". And to think that in 2008 Zuckerberg was celebrating enthusiastically the goal achieved of 100 million members. Effectively this figure was a record at the time: the direct competitor was MySpace, the first social platform to reach 1 million profiles (2004), and that in 2008, when it counted 72 million, it was overstepped just by the Menlo Park's colossus. In 2013 another milestone is added to the "Social Epic" when both Facebook and YouTube outshined the astounding one-billion barrier. A few

years before two other social platforms were launched which soon reached and surpassed the same threshold, we are talking about WhatsApp and Instagram. They arose respectively in 2009 and 2010 and were purchased for staggering numbers a few years later by "Big F". In less than a decade they attained these amazing results: WhatsApp, which now counts 1.5 billion chatters, joined the 1-billion group in 2016, while Instagram more recently, in 2018. The reign of Facebook, which in aggregate skim 4 billion profiles, is today mainly threatened by Chinese rivals, above all WeChat (1.08 billion accounts), QQ (800 million) and TikTok (500 million). Other social platforms of global breath like Twitter, LinkedIn, Snapchat or Skype, have instead stabilized on figures that gravitate around quota 300 million.

Another aspect to highlight when we talk about Socials revolution is the time that we spend on them every day: of the 6 hours and 40 minutes that on average we are online, we spend about a third on social networks, that is 2 hours and a quarter per day, and the trend is growing, especially among the younger age group. In fact, if we look at young people between the ages of 16 and 24, we will discover that more than 90% of them – in OECD countries – are engaged in social network activities. This presages that in the coming years the growth of this new form of socialization, information, sharing and all the rest, will continue to expand. In any case, it must surely make you reflect what happened until now: fifteen years ago the social platforms practically did not exist, today if we add the active accounts of the first five social media (Facebook, YouTube, WhatsApp, WeChat, Instagram) we reach a number more or less equal to the world population (7,7 billion); just add the profiles of TikTok, Twitter, and LinkedIn and the virtual identities exceeds of one billion the real ones[47]. As Nicholas Negroponte would say, the world is digital now.

These few data, compared for example, with the rate of urbanization – a phenomenon derived from the Industrial Revolution and which took almost two centuries to hit a global penetration rate of more than 50% – illustrate in short how fast and widespread

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[47] All the data displayed so far are extracted from: Simon Kemp (31 January 2019), *Digital 2019, Global Digital Yearbook,* WeAreSocial and Hootsuite; *Rapporto sul Digitale, una panoramica completa e i dati più rilevanti sullo stato del digitale nel mondo e il Italia*, Anno 2018, Centro Economia Digitale (CED), Roma; Roser M., Ritchie H. and Ortiz-Ospina E. (2019), *Internet*. Published online at OurWorldInData.org. Retrieved from: https://ourworldindata.org/internet, accessed: 26 September 2019.

the digital revolution is. Obviously, this has no scientific value. It is much more preferable referring to indices structured by international experts, which measure with scientific rigor the digitization of a country, a region or the whole world; like the European DESI (Digital Economy and Society Index) or the UN-ITU's IDI (ICT Development Index). However, these numbers remain of considerable interest and they are points certainly in favor of the process of digitalization – we remember always interconnected with that of globalization. Numbers and phenomena which, as we shall see in the second section, have important economic, social and political repercussions.

The infrastructure underneath the new digital paradigm, the Internet, has surely sprawled thanks to the various technologies of which we have shown some characters and evolutionary patterns. These, all together, are the principles that have contributed to the technological earthquake in recent decades. However, new disruptive technologies promise to make the world even more digital, blending with the current ones, in a continuous converging movement. Perhaps it is from this inexorable process that the American sociologist Benjamin H. Bratton inspires his concept of "The Stack". We are still at the dawn of the third wave of digitization, but the effects already appear decisive more than ever. The recent innovations of this ultimate phase still have a very limited array of applications – a bit like the first computers fifty years ago - but they are about to blossom in all their potency.

Take for instance the Internet of Things (IoT). The term was coined by Kevin Ashton twenty years ago (1999), but its applications have begun to surface only in the last decade. Several experts define it as the latest step of the Internet's development, succeeding and implementing the previous Web and Web 2.0 versions. After all, we are facing something that promises to connect literally everything. For a better grasp let's borrow the IERC's definition, under which the IoT refers to: "*A dynamic global network infrastructure with self-configuring capabilities based on standard and interoperable communication protocols where physical and virtual "things" have identities, physical attributes, and virtual personalities and use intelligent interfaces, and are seamlessly integrated into the information network*"[48]. In other words, it is a new core online infrastructure that not only it will enable to link physical and virtual

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[48] http://www.internet-of-things-research.eu/about_iot.htm

objects together, making possible an extremely wide set of remote controls and commands, but it will also provide the ground for a real-time data gathering, process, and transmission through the active sensors. We are spectators of a new benchmark in the ubiquitous digitalization that will entail keen socioeconomic and industrial impacts. It is no accident that some researchers refer to it as "internetization", a process comparable with the electrification occurred a century ago.

As a matter of fact, the IoT applications will not be limited to just the sectors where it already operates with discreet results (i.e. manufacturing and production), rather it will hit the whole society horizontally on both local and global scale, enabled by the diffusion of 5G new connection. We can also see it as the prophet of a real smart[49] revolution: from the smart homes, which it means a wide range of automation and remote-control solutions (e.g. control of lighting, temperature, doors locking, smart appliances and advanced security systems), to the smart cities, where the distinct domains of a modern city will merge into an interconnected support system, thus smart energy, mobility, and waste collection; but also more personal wearables, like smart watches or glasses, and then more smart farming or healthcare, until even Earth and Ocean observation systems that could enhance our ability to cope with the pressing climate threats. It seems a bright future full of opportunities, so that tech giants like Cisco, Legrand, IBM, and Microsoft have already made major investments in solutions of this type, and countries like the US, China, and Japan are in open conflict to win the global market leadership.

The growing tendencies of this technology are for sure exponential. For example, the European Commission has calculated that such connections within the Union should increase from the 1.8 million registered in 2013 to around 6 billion by the end of this year, leading the European IoT market to more than a trillion euros. It is therefore not surprising that in 2015 the Commission decided to set up, together with key players from the industrial landscape, the AIOTI (Alliance for the Internet of Things), a multi-stakeholder body with the aim to build a dynamic European IoT framework. Other studies show instead global trends, such as that conducted by HIS Markit, according to

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[49] Smart it could be defined as the stylish term which comprise the meanings of intelligence, efficiency and sustainability.

which in 2025 more than 75 billion IoT devices are expected in the world[50]. Owing to this ubiquity of sensors the world will change again, creating a Net fabric between things and humans: we will be integrated into a sort of symbiosis with the digital environment. All this is likely to yield puzzlement about the cut-off point between the physic world and the virtual one, with disruptive consequences on social behaviors and collective identity.

But the IoT is not alone in doing so, Virtual Reality keeps him company. VR and its attenuate versions – AR (Augmented Reality) and MR (Mixed Reality) – are not new ideas: imagine that an eclectic computer scientist, Ivan Sutherland, coined the term back in 1968, trying to explain the rudimental system he had created then. It was too early, but the military interest promoted further developments. Simulations are an essential part of every training program, especially for the air forces, and virtual reality was fully suitable for this purpose: in effect, drone pilots and special forces use frequently VR systems today. After about half a century of exponential growth of the computational power coupled with the decreasing cost of materials, all this has become accessible to a larger public, and the application range is likely to explode soon. Castells was perceiving it yet in the nineties when he was prophesizing the coming of a new culture of virtual reality. Now, think of a history class that brings us virtually to the ancient Rome, or to a virtual classroom, conference, meeting and so on. We could become world travelers without really travel, we could visit our old parents without being physically there. Moreover, we can do all this in an interactive fashion, changing the background and also our own identity according to the need.

Without flying too much with imagination, we can find that already many of us make daily use of it, just think of the effects of the stories on Instagram and Snapchat, classic examples of MR (realistic virtual things added in the physic world). A few years ago, a game for smartphones – Pokémon Go – showed better the potential of these technologies, spreading like wildfire and becoming suddenly a social phenomenon. Actually, the gaming world is at the forefront of the virtual revolution as, among other

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[50] For IoT's info and data we've used: Schwab K., et al. (2018), *Shaping the Future of the Fourth Industrial Revolution,* World Economic Fund, Geneva, Switzerland, Ch. 7; *Advancing the Internet of Things in Europe,* Staff Working Document, European Commission, Brussels, 19.04.2016.

things, it represents an important leap forward in the interaction man-machine, promising interfaces integrated with gestures, voice, and movements (the console Nintendo Wii is an early manifestation of this). As we said, the applications outshine by far the videogames, and obviously, the tech giants do not want to miss this opportunity. So, Google Glass and Microsoft HoloLens battle against each other in the AR sector (visible information about the real surroundings), and Facebook invests $2 billion to buy a young VR startup, Oculus, believing that this will radically change the way we interact socially. These rapid advances seem to realize the intuitions of novels and sci-fi films, such as the computer holographic interfaces in *Minority Report*, today really possible, and they prophesy an ever-deeper digitalization[51].

In this sense, we cannot fail to report the last achievements of the queen of this technological momentum: the AI. We've already seen in the previous chapter where the idea was born and how it evolved throughout the second half of the past century: from the first chatbots to the expert systems, from the computer that beats the world chess champion to the early self-driving cars experiments. But before browsing the latest wondrous developments in the past decade, it must be clear that AI is not just a matter of labs, awkward scientists and conspiracy theories announcing techno-doomsday.

Artificial intelligence is among us much more than we usually realize. Therefore, if we estimate that about 2.5 billion surfers use Google to carry out their searches[52], we will have that almost a third of the world's population engages with artificial intelligence, many without even knowing it. Yes, because behind every query that we type into the "magic box" there are advanced algorithms projected to "think" like us and even better, so as to understand what we are really looking for. This is the "secret" of Google's greatness. Its AI proficiency is so elevated that it's able to guess our question often before that we finish typing. That's a dazzling result, that however is part of our normality. Others notorious sites that are part of our daily life also use similar techniques, with multiple purposes: Amazon tries to sell us the most appropriate items

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[51] VR's highlights are extracted from: Schwab K., et al. (2018), *Shaping the Future of the Fourth Industrial Revolution,* World Economic Fund, Geneva, Switzerland, Ch. 13.
[52] Shanhong Liu, *Global number of internet browser users 2014-2018, by browser,* Statista, 20 November 2019, https://www.statista.com/statistics/543218/worldwide-internet-users-by-browser/, consulted on 22 November 2019.

following our consumer trajectory, Netflix built its modern success with similar systems creating hyper customized entertainments offers, Facebook induces us in networking more and more, suggesting likely new "friends". All of them use algorithms, as well as Google ones, programmed to learn deeper and better after each use, drawing on all the data collected over time.

The same logic underlies the operation of the personal assistants (or smart speakers). In this branch of AI, which arose in the last decade, Apple was the innovator, integrating Siri into its devices as early as 2011. However, today it is Amazon's Alexa the market leader, while Google Assistant turns out to be the most accurate, thanks to the huge amount of data at disposal. Microsoft has also joined in, installing Cortana on all its operating systems for the past six years[53].

In these terms, AI could seem an interesting novelty, like many others. And yet it is not so at all, it is not by chance that we have apostrophe as the queen of new technologies. Its enormous yet undetonated potential can be so destructive that it can be compared to nuclear power. In fact, many of the scientific and academic community have expressed fears of this kind, and not only that, even illustrious public figures such as Elon Musk and Bill Gates have shown patent signs of concern, not to mention the savant physicist Stephen Hawking, who, shortly before his death, admonished as follows:

"Success in creating AI could be the biggest event in the history of our civilization. [It will be] either the best, or the worst thing, ever to happen to humanity. We do not yet know which."[54]

In a sense the concerns around modern AI stem from a very ancient tradition, often religious, taking up myths such as those of Prometheus or Frankenstein, thus frightening people by telling of the dangers of trying to imitate (or improve upon) nature, as created by God, with technology.

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[53] *Rapporto sul Digitale, una panoramica completa e i dati più rilevanti sullo stato del digitale nel mondo e il Italia*, Anno 2018, Centro Economia Digitale (CED), Roma
[54]https://www.cam.ac.uk/research/news/the-best-or-worst-thing-to-happen-to-humanity-stephen-hawking-launches-centre-for-the-future-of

I'm sure Larry Page wasn't impressed by these warnings. Inspired by the dogmas of Kurzweil[55], he gave a unique imprint to his creature, Google/Alphabet, so much so that today it is from here that emerge some of the most sensational goals. So, no longer after that in 2011 IBM's Watson supercomputer was beating two historical champions of the American TV show *Jeopardy!,* moving the bar of AI much higher, a new project developed by DeepMind – a Google London-based company specialized in Machine Learning – was shaking again the international community: it was named AlphaGo. This is a computer program that can play Go. Saying so doesn't sound like a big revolution. Let's explain: Go is a game of pure strategy invented in China around the V century B.C. Considered the most complicated game of ever, it is so complex that many do not explain how it could have been thought by men. To better understand this complexity it is necessary to know that 2×10^{170} moves are possible on a standard Go board, a number so big that if every atom in the universe was itself a universe full of atoms, the number of possible moves on a Go board will be still bigger. For this reason, no human being can fully explain the reason for a certain strategy, they usually build it according to the situation, upon a memorized set of heuristics. This condition made impossible to write a program with the best Go strategies. The solution was found in machine learning, so the DeepMind team gave access to the software at something like 30 million moves, and they gave the input to figure out how to excel from there. After a few years of Deep learning, AlphaGo was ready and in 2016 won against the best human player, the Korean Lee Sedol[56]. What does that mean? As a matter of fact, today a machine is better than the smartest human brain in strategy-related fields. Now the words of Stephen Hawking make more sense.

Alongside this project, Google is also the leader in the autonomous cars' realm, another expected breakthrough, this time in mobility. In fact, Waymo, a subsidiary company of Alphabet Inc., is the first firm in this sector for distance traveled with successful results,

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[55] Ray Kurzweil, defined by Wikipedia as an American inventor and futurist, is a leading figure in hi-tech ambientes and in Silicon Valley. He's a strong believer of the technological acceleration (Law of Accelerating Returns), and of the Singularity, which in his vision is when AI becomes all-powerful, when computers are capable of designing and building other computers. At that point, which he estimates will be reached in 2045, we will finally shed our limited human bodies and brains, what he calls our "version 1.0 biological", and it will be possible a fully merging with machines; our brains, our existence will be uploaded.
[56] Brynjolfsson E., McAfee A. (2017), *Machine, Platform, Crowd. Harnessing Our Digital Future*, W. W. Norton & Company, London and New York, Ch. 1.

but it is not alone: traditional companies in the automotive sector like BMW, Nissan, GM, Ford and cutting-edge ones like Tesla and Uber are coming over.

However, is when AI meets robotics that the most stunning events happen. This is the case of Sophia, a social robot using AI software, created by Hansen Robotics in 2016. She is the world's first robot citizen and the first robot Innovation Ambassador for the UNDP. She implements facial recognition, conversational and emotional sensors, and she is able to gather and process in real-time these data using them to converse with people. Hence she's participated yet to numerous TV shows, giving interviews to multiple media outlets, and also singing in a concert. Last but not least she has also appeared as a panel member in high-level conferences, covering how robotics and AI will become a prevalent part of people's lives[57].

Again, we are just in a primordial stage, but these leading-edge examples forewarn about the next challenges we'll face. For this reason, graduate programs and dedicated curricula on these topics are surfacing, meanwhile, at the national, regional, and global levels, specialized bodies and organizations are taking shape in order to tackle the economic, sociopolitical and ethical outcomes that will surge. For example, the routine tasks automation, strongly enhanced by AI technologies, risks to worsen the labor conditions for the great majority of lower and medium-skilled workers, but on this, which is largely agreed among the most important IOs (ITU, OECD, IMF, WEF, etc.), we will return later.

What we want to disclose here is basically the age where we live now, and how this digital earthquake impacts society and politics. Of course, not everyone agreed upon these positions, and amid many detractors, Evgeny Morozov occupies a special seat. His main critique is about the solutionist paradigm that sprawls around many hi-tech landscapes, with a particular reference to the Silicon Valley, i.e. that techno-deterministic positions which believe that technology is the answer to any challenge. He is exceptionally critic of what he dubs "Internet-centrism", which tends to mislead from the big picture. We agree with him: that is why in the introduction we took the distance from deterministic stands, adhering to the actor-network theory. Additionally, the

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[57] See the dedicated website: https://www.hansonrobotics.com/sophia/

Belarusian native political writer doesn't deny the implications of current innovations in everything from sport to travels to politics; he writes that "*the shifts triggered by the proliferation of digital technologies must be investigated through a careful empirical and historical analysis*"[58]. Well in our small is just what we're trying to do.

2.2 One World, One Digit

To seize up better the meaning of today's digital paradigm, we now explore really briefly some of its concrete manifestations (and promises) in various areas and disciplines, such as communication, education, finance, and democracy. But even before that, we want to show a special hint that demonstrates the truth of what has been said so far, we are referring to the international institutionalization process. We had, and we continue to criticize the institutions for their distinctive delay in seizing the current zeitgeist and the resulting social demands. However, we cannot fail to note that, apart from national or local initiatives, efforts have been made to this end at the regional and international levels.

We have already seen that with the explosion of the Internet important realities, such as ISOC, W3C, and ICANN, were inaugurated. However, these were and continue to be mainly technical bodies with the role of representing those communities, and above all to manage and give an order to the expanding global infrastructure. During this millennium the collective awareness about the relevance of the Network has matured, and so the IGF is established in 2005, as a result of the work begun two years earlier and thanks to the joint effort of the UN and ITU. The Internet Governance Forum can be defined as a global multi-stakeholder conference where governments and IOs have a prominent voice, a forum that facilitates the debate of public policy issues around the internet. It is today an important reference point and its deliberations, even if not binding, inspire policymakers of both private and public sectors worldwide. The last meeting, for example, hosted by the German government in Berlin from 25 to 29 November 2019, was centered on the urgent issue of digital inclusion[59].

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[58] Morozov E. (2013), *To Save Everything Click Here. The Folly of Technological Solutionism,* PublicAffairs, Perseus Books Group, New York, p. 50.
[59] https://www.intgovforum.org/multilingual/tags/about

Another multi-stakeholder organization inaugurated not long ago is the Global Network Initiative, headquartered in Washington DC since 2008. The GNI is an NGO composed of multinational corporations, including big tech ones like Google, Facebook and Microsoft, universities and CSOs. Its activities gravitate around a dual pledge: 1) protect individual privacy rights, ensuring the correct behavior of the tech giants, and 2) safeguard the freedom of expression by preventing Internet censorship by authoritarian governments, in compliance with internationally recognize documents such as the Universal Declaration of Human Rights. Vows that result being hot topics in a historical moment when Russia declares to have conducted successful tests for disconnect RuNet (their national intranet) from the world DNS, setting a thorny precedent for other authoritarianism with digital sovereignism aspirations – know that to date the only example of digital sovereignism is North Korea, where the entire population is cut off from internet access, replaced by the "walled garden" intranet Kwangmyong[60].

By contrast, several critics have been recently moved against the GNI as some of its members were the protagonist of starling scandals regarding data breach and privacy violation: how to forget the link between Facebook and Cambridge Analytics in the context of the global outrage that uncovered the illegal use of data for electoral purposes on multiple occasions, some even assuming an involvement in the American presidential elections that saw Donald Trump triumphant in 2016. The cognizance of these and other risks related to cyberspace security has moved other noteworthy processes, such as the Global Commission on the Stability of Cyberspace (GCSC), promoted initially by the UK government in 2011.

At the regional level, the European Union is presumably the most advanced landscape, where arise ambitious and forethought projects such as the Digital Single Market (DSM), the EuroDIG (European Dialogue on Internet Governance), and the European Digital Rights Initiative. In Latin America too, the 2000's have seen the formation of similar plans, among which it is right to mention the Latin American and Caribbean TLD Association (LACTLD), the Latin America and Caribbean Network Information

[60] Roser M., Ritchie H. and Ortiz-Ospina E. (2019), *Internet*. Published online at OurWorldInData.org. Retrieved from: https://ourworldindata.org/internet; *Russia, riuscito il primo test di disconnessione dalla rete Internet,* SkyTg24, 24 December 2019, https://tg24.sky.it/tecnologia/internet/2019/12/24/russia-test-disconnessione internet.html?social=facebook_skytg24_link_null; Morozov E. (2011), *The Net Delusion. The Dark Side of Internet Freedom,* PublicAffairs, Perseus Books Group, New York, pp. 22-23.

Centre (LACNIC), and the Net Mundial; the latter organized by ICANN and the Brazilian government of Dilma Rousseff in 2014 to affirm Brazil's role as the head of emerging countries in Internet governance. The list is much longer, but for the moment we stop here, just to give an idea of the institutional movement in this direction.

We said that the effects of the ongoing digital revolution are well visible in all areas, among which the welfare is no exception. Take education; in the last twenty years university organization has been radically revolutionized: e-learning platforms are today essential tools for every student around the world, didactic materials are always more digitalized, paper handbooks and workbooks are rare and of prehistoric feeling, webinars allow live sessions with international professors regardless their geographic position, etc. The actions undertaken in this direction are increasing and we lose the count. A pioneer in this sense is the MIT that in 2001 announced the project OpenCourseWare, a web-based publication of the vast majority of its course content, accessible freely to everyone with a digital device connected to the Net. It basically paved the way for today's MOOCs (massive open online courses), which have turned out to be an important tool for achieving the Sustainable Development Goal n. 4. Amongst them, the best known are Udacity, edX, and Coursera. The latter gives also the possibility to obtain real digital degrees, mode that in recent times has taken hold among many traditional universities, starting from the most prestigious ones.

All levels of school education have been bumped by these shifts, albeit with more laggard responses in compulsory schooling. Here we return to the criticisms leveled at the institutions (in this case national ones) that are struggling to keep up with the times. Classical teaching is outdated and not effective anymore as we are flooded by enormous amounts of information: the same MOOCs, global social initiatives such as the Khan Academy, Wikipedia and even the TED talks are evidence of that. For this and other reasons, many solicit profound changes by suggesting new didactic models such as the so-called "four Cs" (critical thinking, communication, collaboration, and creativity)[61]. In addition, the most recent innovations, those of the third wave of digitization, promise to exacerbate these changes, think of AI, VR or IoT. Already today, an important novelty of which we have not yet analyzed the salient features – we'll do it below –

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[61] Harari Y. N. (2018), *21 Lessons for the 21st Century*, Penguin Random House, London, p. 253.

namely Big Data and Analytics, is proving to be a useful tool for encouraging steps forward. For example, professors of online courses such as those abovementioned may note that a high percentage of students have reread a segment of a reading, which would indicate its lack of clarity, recommending interventions aimed at a better explanation of the concepts. In future, this kind of *modus operandi* is likely to be adopted massively[62].

In healthcare, the promises of advancement and change are even higher. In truth, it is a sector with a high technological concentration, lending itself to ultramodern experiments that often go hand in hand with the military ones. Many innovations that we will not discuss in this thesis, but which are of similar importance to those of the digital set – we are making reference to the biotechnologies' cluster – have first and foremost medical applications. Moreover, the same digital technologies are widely used in hospitals, among these AI projects healthcare towards an unimaginable future until a few years ago, with consequent demographic fallout of epic scale. Time will tell.

Another technology that we have only tapped in the introduction threatens a takeover of the entire financial sector: the blockchain. According to Joichi Ito, former director of the MIT Media Lab, "*The blockchain is to trust as the Internet is to information*"[63]. But why the Japanese entrepreneur makes such a statement? In 2008, in the midst of the global financial crisis, whose wounds we still cherish, a person or a team under the alias Satoshi Nakamoto invented a new protocol for a P2P electronic cash system using the cryptocurrency Bitcoin. The digital currencies (or cryptocurrencies) are exceptional because they are not centralized and no government or central bank controls them; they are not created by any of the traditional financial institutions, on the contrary, they emanate from the internet and reside on cryptography. However, to gain value they needed trust, and this new protocol procured it. Without getting into technicalities, just know that it secures the integrity of the bits (data) exchanged between billions of devices through the settlement of rigid rules in a form of distributed computations. The "trust protocol" thus generated the blossoming of global distributed ledgers called blockchains. Something like this never happened before: reliable transactions between

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[62] Mayer-Schönberger V., Cukier K. (2013), *Big Data. A Revolution That Will Transform How We Live, Work, and Think*, Eamon Dolan Book, Houghton Mifflin Harcourt, Boston, p. 116.
[63] Tapscott D., Tapscott A. (2016), *Blockchain Revolution. How the Technology Behind Bitcoin and Other Cryptocurrencies Is Changing the World*, Penguin Random House LLC, New York.

two or more parties, authenticated by mass cooperation and collective interests, rather than by the intermediation of large driven-profit banks and institutes.

If it is still not clear why so much trust in this technology, the definitive explanation can be traced in its compound name: block + chain. Let's explain it better: every few minutes all the transactions made are verified, cleared, and stockpiled in a block that is bounded to another one, thereby creating a chain. Each block is valid only if it's correctly linked to the preceding one, previously verified: this means that if someone wants to steal a bitcoin (or a unit of another cryptocurrency), you should rewrite the history of all the transactions conducted on that blockchain in no more than ten minutes. Virtually impossible, at least for humans. In this perspective the blockchain can be labeled as the "world-wide ledger of value", recalling the Ito's sentence.

Thus, by its very nature, blockchain and its monetary applications, like bitcoin, clearly undermine the need for financial markets as they are structured today. The global financial system is by far the biggest and more powerful industry in the word, moving trillions of dollars like Ping-Pong balls. It's the foundation of modern capitalism, but it's also a matrix of seemingly unexplainable contradictions. In the digital paradigm where we are embedded today, transactions of money, themselves virtual, takes seconds to clear but days to settle; or when we use our credit card, the money before reaching the bank account of the pizzeria where we are eating, pass through more than four intermediaries. The situation is much worst for international transactions, e.g. for transfers between banks of countries with different currencies, cases in which fees and waiting times are insane: sometimes it's easier and faster to send a box of cash. This backwardness is explained by the economist Paul David as a usual feature during a shift of the technological paradigm, in the same fashion that happened one century ago with manufactures and electrification. Moreover, others believe that financial institutes, because of their monopolistic positions, have no interest in improving products and efficiency in order to ameliorate customer conditions, contrariwise, they are inclined to maintain their transaction fees in number and high cost[64].

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[64] Our discourse on blockchain is derived from: Tapscott D., Tapscott A. (2016), *Blockchain Revolution. How the Technology Behind Bitcoin and Other Cryptocurrencies Is Changing the World,* Penguin Random House LLC, New York, Chs, 1 and 3.

Yes, most of the documents are now digitalized, and various systems of internet banking and mobile banking have been granted, even with the use of biometrics; but for the sector with more resources than any other (including states and IOs) that is not enough. Blockchain technology can do much more and it is an opportunity for individuals and organizations to choose how to create and manage value. Nonetheless, its modes of use are manifold and go far beyond finance; Don Tapscott and his son Alex point out it exhaustively in their book "Blockchain Revolution", where one chapter is dedicated to government and democracy.

The themes of e-gov, digital democracy, and digital citizenship are hot topics for years amongst European countries. There is no doubt that Estonia is the standard-bearer. In 2012, 90% of its citizens – who in total do not exceed one and a half million – had their digital identity, namely an electronic ID / mobile-ID to access government and banking services, and to travel across Europe. Since 2005 Estonians have been using e-voting for domestic elections, and thanks to their digital ID they can vote from anywhere in the world in a blink of eyes. These are the main reasons why Estonia is deemed as the world's first digital country. In this wake, other examples have emerged, such as Iceland, which after the terrifying financial crisis, initiated a new constituent process online and open to the entire population, through the use of crowdsourcing. This is a unique case in history, but it has been subsequently stranded in parliament. Here too the small number of people (just over 300.000) has certainly facilitated the experimentation[65].

For these purposes and for many others, blockchain technology can certainly provide more security and transparency at the same time. However, besides blockchain, the advent of the digital age is a phenomenon that fully invests democracy in its essence. Parties such as the Pirate Party, founded in 2006 in Sweden and later scaled up globally, are the concrete evidence of this. Their program focuses precisely on the new forms that democracy can take thanks to digital technologies, and of these, they promote what is defined as liquid democracy: this is a kind of intermediate road between representative democracy and direct democracy where the citizen freely chooses whether to delegate his political power or whether to exercise it himself.

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[65] Ibid, Ch. 8.

The debate on the crisis in representative democracy and the demands for forms of direct democracy are on the agenda today. In Italy, for example, the first ruling party, the Five Star Movement, uses an online platform, Rousseau, precisely to encourage direct consultations, recalling the philosophical roots of the modern concept of direct democracy. With regard to this platform several misgivings have arisen: considered by many less advanced and less transparent than LiquidFeedback, platform instead used by the Pirate Party, it has often been portrayed as a party propaganda tool rather than an experiment in direct democracy; indeed, as we shall see later, The Five Star Movement has all the cards in place to fall under the category of techno-populism.

It should be said that the relationship between the Internet and democracy is not the happiest one. Web-related problems such as fragmentation of public discourse, functional illiteracy, and simplification of complicated issues – aspects that, as we'll see, explain the inexorable advance of current populisms – have definitely polluted democratic quality, questioning its representative system.

The Italian Prime Minister Giuseppe Conte, during a meeting with the LUISS students on 20 March 2019, answered my question about the relationship between the digital revolution and the democratic crisis by affirming that the representative system is certainly going through a critical period; and this is due to a rift between the elite and the people, who perceived representation as an unnecessary artifice. However, he continues, the new digital tools can help in the formation of an "info telematic Agora", even though it should be limited to grafts of direct participation rather than to a real reversal of the representative system since otherwise there would be a risk of losing the role of mediation, intended as dialogue and political confrontation, which is a paramount element for a functioning democracy[66]. On the other side, democracy is increasingly jeopardized by forms of online censorship, drawing on the Chinese net-authoritarian model, which seems to be gaining a foothold in many states around the

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[66] Il Presidente del Consiglio Giuseppe Conte incontra gli studenti, LUISS, 20 march 2019, Facebook Video: Con gli studenti della Luiss Guido Carli per parlare di Europa e futuro, min. 38-43, https://www.facebook.com/GiuseppeConte64/videos/527089307816183/

globe. The data of Freedom House of 2019 on this issue are worrying[67]. That said, net of the turbulence described, the democratic model *per se* holds up for the time being; moreover, from the postwar to the present day its architecture has remained almost unchanged, despite exceptional changes like in Estonia.

One field, on the other hand, that if we turn back thirty years we do not even recognize, is that of communication and the media. To tell the truth, this sector is where the digital revolution itself emanates. In fact, the Internet, the central hub of new digital realities, is first and foremost information and communication. Mountains of studies and books have been written on the subject, insightful texts which explain this transformation much better than what we can do in a few lines. Amidst the many authors who have spent their careers in disseminating these themes, we want to advise Eli M. Noam, professor at the Columbia University and director of the CITI (Columbia Institute for Tele-Information), whom we have had the honor of meeting on the sidelines of his lecture regarding the mixing process between TVs and digital media (cloud-TV), on occasion of the Inauguration of the LUISS School of Government International Masters, last October 14th. His latest book, published in 2016, illuminates the media concentration around the world. The Jerusalem-born professor's traditionalist approach is counterbalanced by other authors who focus their analysis predominantly on social digital media: think to Christian Fuchs and Daniel Trottier correlate their usage with recent international political movements (Arab springs, Occupy Wall Street, Indignados, etc.); or to the Microsoft researcher Tarleton Gillespie, who investigates the individual and public responsibility on them[68].

The quantity and quality of books and research of this kind are empirical evidence of a media industry revolutionized at its roots by the rise of social media. This awareness is embedded at every layer and level of society: from the ordinary citizen to the personnel

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[67] For a better grasp see: *The crisis of social media. Freedom on the Net 2019*, Freedom House, from: https://www.freedomonthenet.org/report/freedom-on-the-net/2019/the-crisis-of-social-media

[68] With reference to the themes and authors mentioned we suggest the following readings: Eli M. Noam and The International Media Concentration Collaboration (2016), *Who Owns the World's Media? Media Concentration and Ownership around the World,* Oxford University Press, New York; Trottier D., Fuchs C. (2015), *Social Media, Politics and the State. Protests, Revolutions, Riots, Crime and Policing in the Age of Facebook, Twitter and Youtube*, Routledge, New York; Gillespie T. (2018), *Custodians of the Internet. Platforms, content moderation and the hidden decisions that shape social media,* Yale University Press, New Haven & London.

of diplomatic missions. I am a direct witness to this, having served as note-taker for the Public Affairs Digital Communication Workshop at the US Embassy to Italy, held in Rome on 30 and 31 October 2019. On that occasion, it was discussed precisely the communication strategies that the American Embassy and the Consulates, present in the Italian territory, will have to pursue in order to have an effective presence on social platforms. The workshop was attended by various guests, like the PA staff of the British and German Embassy and of the EU Commission representation, summoned there to share their best practices, and then the Italian journalists Alessio Sgherza and Dino Amenduini, respectively from La Repubblica and L'Epresso/ProForma. They, through enlightening presentations, showcased the state-of-art of the world of journalism and media. Amid the several data pitted, the following resulted being particularly illustrative: 1) the closing pace of newsstands in Italy, a quite profitable business thirty years ago, when in 1992 they reached the apogee of 36,000 points of sale, and which today it has less than 15,000, with a rate of two closed daily; 2) the share of advertising market, once fragmented among thousands of newspapers, and now monopolized by Google and Facebook, through which the same newspapers, in their digital version, try to survive by sponsoring themselves; 3) The amount of information available online and the growing confusion with misinformation, phenomenon known today as fake news, a recurring theme in the political agendas of half the world and lethal weapon of populist movements and parties[69].

Actually, a big cultural difference, looking at history, is that if during the industrial revolution the masses were often and willingly cut off from the world of knowledge, today, in the digital paradigm, whoever is connected to the Net has the opposite problem, too much knowledge; an immeasurable ocean of information in which it is extremely difficult to navigate, the post-truth era. Conversely, those who have the capacity to discern the correct information from the phony one have enormous possibilities, unimaginable until recently; and those few who can capture a part and use it to their advantage are able to enrich not only culturally but also economically. It is precisely this situation that explains another recent technological pattern: Big Data & Analytics.

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[69] Hand notes from: "Public Affairs Italy Digital Communication Workshop", US Embassy to Italy, 30-31 October 2019

2.3 Digital Economy

At the heart of the current economy are the information (data), an intangible asset that is worth more than gold, diamonds and every precious stone. Paradoxically, if the economic logic that values precious stones and metals is their scarcity, as far as data is concerned it is exactly the opposite: their enormous quantity, precisely Big Data. But let's do a step back.

The actual state of the economy stems from a decades-long transition, supported by the technological revolution of which we have retraced some salient stages, so much so that at the end of the old millennium some luminaries anticipated today's hallmarks. Manuel Castells, for example, was making us aware of "*the process of capitalist restructuring undertaken since the 1980s, so that the new techno-economic system can be adequately characterized as informational capitalism*"[70]. His theory should tribute to some extent the Japanese Yoneji Masuda and his clairvoyant masterpiece "The Information Society as post-industrial Society", published in 1980, which served in a certain way as a bridge between Daniel Bell and the Catalan sociologist himself. In point of fact, Masuda was forecasting that information, as backbone of the socio-economic development, will increase, produced mainly by the same users through a computer-based infrastructure, and that it will be first accumulated and then expanded via its shared usage, envisioning a new synergetic economy, way different from the old exchange economy[71].

Back to the West, and with another lens – the business/managerial one – Peter Drucker was describing how knowledge was the quintessential resource in our times, more central than labor and capital, vulgarizing the notion of "knowledge economy". Concerning this point, we can agree that consensus is now virtually unanimous. Even the French heterodox economist Yann-Moulier Boutang assumes that the present economic system, which he calls cognitive capitalism, is "*a mode of accumulation in which the object of accumulation consists mainly of knowledge, which becomes the basic source of value, as well as the principal location of the process of valorisation*"[72].

[70] Castells M. (2009). *The Information Age. Economy, Society and Culture*, Vol. I: *The Rise of the Network Society*, 2nd ed., Wiley-Blackwell, Singapore, p. 18.

[71] Kalantzis M., Cope B., *Yoneji Masuda on the Information Society,* Works & Days, retrieved from https://newlearningonline.com/new-learning/chapter-3/yoneji-masuda-on-the-information-society

[72] Moulier-Boutang Y. (2011*), Cognitive Capitalism*, Polity Press, Cambridge & Malden, p. 57.

Over time, the substance has not changed, but the appellatives are. Terms like "knowledge" or "information" look outdated now, they are been replaced by the more engrossing "data". In reality, the terminological change is not simply a matter of sound, but rather a definition that better captures the economy that has developed in recent years.

Actually, with data - or better Big Data - we mean the huge quantity of digital information created by each of our simple actions, every day, second after second. Their tangible value is given by the process' capacity of the current statistical and computational instruments much more advanced than those of twenty years ago. In this sense, Big Data & Analytics represents the realization of the dreams of every entrepreneur or marketing agent. In fact, in the private sector, the analysis of extremely large data sets enables to identify patterns of relationships which can be used in detecting market trends, consumer behavior and preferences. If we extend this operation to the public sector, and in particular to politics, the benefits are sometimes eclipsed by the risks; their utilization can easily degenerate into Orwellian scenarios and antidemocratic drifts: the Cambridge Analytics scandal is still an open wound, and many people across the planet wonder whether electoral processes still make sense. About these perils, which are not really limited to the political-electoral arena, but they rather cover every public and social domain, Viktor Mayer-Schönberger is certainly informed so much so that he proposes new regulatory instruments such as "*a progressive data-sharing mandate… the antitrust measure of the data age*"[73].

Anyhow, the information, or data, *per se* would have no value if it were not for the global digital channels that make them flows in constant movement, and therefore possible "prey" to be caught, processed and analyzed. That is why to understand today's economy another critical element to keep in mind is that of the network. Regarding that, a milestone, published in 1999, is the "Strategic Guide" coauthored by two leading figures of the modern economy like Carl Shapiro & Hal R Varian. Amid several

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[73] Mayer-Schönberger V., Ramge T. (2018), *Reinventing Capitalism in the Age of Big Data,* Basic Books, New York, p. 15.

precious insights, the authors shed light exactly on the passage from economies of scale to economies of networks and feedbacks[74].

An enthusiastic and perhaps naïve version of the network economy is that proposed by Yochai Benkler, Professor of Entrepreneurial Legal Studies at the Harvard Law School. The Israeli American professor, an ardent proponent of the open-source movement, saw in experiences like Wikipedia and Linux the path to follow for the sake of building a new social economy. He named it the "networked information economy", a new system based on nonproprietary commons-based peer production, where the exchange of knowledge and other immaterial goods are a central aspect, foreshadowing few years before the global financial crisis what will be then labeled as sharing economy, and the mechanisms like those of crowdsourcing or crowdfunding[75].

But before going further on these kinds of explanations, let's change register and see in numbers what does mean that economy is digital now. In the introduction, we anticipated that the first seven firms in the world by market value are all - except one - digital conglomerates. We can better understand the magnitude of this change if we look back to 2006 when four of the top 5 companies for market capitalization were related to oil, finance or traditional conglomerates and only one (Microsoft) was from the IT sector. However, it must be clear that the economic shift is not concluded at all; as evidence of that, the assets most profitable are still those typical of the Industrial Age. Indeed, according to the survey *Fortune Global 500* published by the Financial Times in July 2019, among the top ten largest firms ranked by revenue, there is no space for those multinationals which dominate the digital economy. The scepter of the king of the scrooges belongs to the America giant of retail (offline) Walmart. On the other hand, Amazon is catching up, while its founder Jeff Bezos has yet become the richest man on Earth: a consequence of e-commerce's steady growing trend. In 2014, retail e-commerce sales worldwide amounted to 1,336 billion dollars; after five years they scaled up to 3,535 and by 2023 are expected to reach more than 6,5 billion dollars. Another enthralling economic statistic is that in 2018 Apple was the second-largest

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[74] Here we are doing reference to the book "*Information Rules: A Strategic Guide to the Network Economy*".

[75] The book where he articulates his theory is "*The Wealth of Networks: How Social Production Transforms Markets and Freedom*".

company by net income (59,5 billion dollars), behind just the Saudi oil giants, while Samsung was occupying the fourth position and Alphabet the seventh[76]. We could go on for pages and pages with other data that captures the digital momentum of the current economy, but this is not our aim.

Hence, let us stress out another key concept of today's economy: the platforms. They are a sort of intermediate body strategically positioned in order to match different users (customers, producers, advertisers, suppliers, net-surfers, etc.) creating value by enabling participants to exchange services and goods, which can be covered my micro-fees. In addition, their privileged position empowers them more and more by gathering the immense flows of information that travel on the digital rails of the web. In other words, they can be identified as informatic hubs that provide services (free of charge or not, externals or produced in-house) in a way that capture the interest and attention of users, who in return, often unknowingly, provide data (personal, technical, usage and so on). The latter can be seen metaphorically as many grains of sand that, once put together, they go to form huge expanses from which you can derive all kinds of statistics useful to your business.

The current configuration of platforms, however, have evolved with the pervasive spread of smartphones. These have made sporadic online activities become something normal on a daily base, so the marginal need for digital providers of services has turned to be essential. This led to massive changes in the business world, so bombastic that someone talked of "platform revolution". We believe that is better to call it "platform evolution". In fact, many of those multinationals which are now categorized as platforms come from a glorious past, mutating lately in this new business model; even whether many others are much younger or completely new. The strategist Tom Goodwin describes the change concisely: *"Uber, the world's largest taxi company, owns no vehicles. Facebook, the world's most popular media owner, creates no content.*

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[76] All the data are extracted from: Taplin J., *Is It Time to Break Up Google?,* The New York Times, 22th April 2017, retrieved from https://www.nytimes.com/2017/04/22/opinion/sunday/is-it-time-to-break-up-google.html; Erin Duffin, *Largest companies in the world by revenue 2018,* Statista, 31 July 2019, https://www.statista.com/statistics/263265/top-companies-in-the-world-by-revenue/; Clement J., *Global retail e-commerce sales 2014-2023,* Statista, 30 August 2019, https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/; Erin Duffin, *Ranking of the 50 most profitable companies worldwide 2018,* Statista, 9 August 2019, https://www.statista.com/statistics/269857/most-profitable-companies-worldwide/

Alibaba, the most valuable retailer, has no inventory. And Airbnb, the world's largest accommodation provider, owns no real estate."[77] The first and the last are the two most unequivocal examples of what Nick Srnicek calls "lean platforms", which together with "product platforms" (like the Eni's Enjoy) are the most modern version of this new business form, diverging only on the fact that the latter owns its assets. By the way, the elder outline of platforms is the advertising one embodied primarily by Google and Facebook: it's not a secret that the ads insertions are their main source of revenues[78].

Let us clarify another time that at the foundation of these new forms of business there are the last digital innovations. We've already outlined the smartphones' relevance, but also the IoT is having consequences, likely to deepen in the next future. Just think to the rising industry 4.0, as well-represented by the transformations occurring in General Electrics, an industrial platform we would say.

Another digital pattern that enabled the emergence of platforms, as the new business model of the digital age, is the Cloud. Beyond creating a real category based exclusively on this kind of services – see Salesforce or Dropbox – this technology has allowed the launch of numerous startup companies with little capital but many ideas that have quickly become transnational realities, under the platform's mode, thanks to the fact that it was no longer necessary to produce internally SW or HW that required long times, big investments and the recruitment of highly specialized staff. As proof of its relevance in today's economy, the entire cloud computing compartment (IaaS, SaaS and PaaS) is constantly growing: in 2008, at the dawn of the cloud blow-up, the total size of the public cloud market was of less than six billion dollars, eight years after, in 2016, it exceeded one hundred billion, this year it should reach 230 billion dollars[79].

Uber and Airbnb, being non-asset owners, are themselves in existence thanks to cloud services. The two are the most chit-chatted platforms because they have created new digital markets. The first one, started in San Francisco in March 2009, in less than five

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[77] Tom Goodwin, The Battle Is for the Customer Interface, TechCrunch, 3 March 2015, http://techcrunch.com/2015/03/03/in-the-age-of-disintermediation-the-battle-is-all-for-the-customer-interface/.

[78] Srnicek N. (2017), *Platform Capitalism,* Polity Press, Cambridge & Malden, Ch. 2.

[79] Shanhong Liu, *Global public cloud computing market 2008-2020,* Statista, 9 August 2019, https://www.statista.com/statistics/510350/worldwide-public-cloud-computing/

years scaled on more than 200 cities worldwide, and was valued at 50 billion dollars, without owning a single car. It led the digitalization of an industry that until that time was basically offline. The subsequent impact on workers' category has been very sharp, and taxi drivers' protests speeded up across several nations. Almost everywhere public authorities were blindsided, and they had to intervene to regulate Uber's activities, sometimes banning or restricting it, like in Italy where you can reserve just the high-level and more expansive cars. It was a new digital challenge that urged national realities and taxi drivers to respond jointly with the creation of local app' solutions, like "Free Now" in Italy or "99" in Brazil, where Uber was left free to impose lower prices. Today Uber operates in almost 800 metropolitan areas, across 63 countries, and it has extended its activities to food delivery (Uber Eats) and electric micro-mobility (JUMP's scooters and bikes) [80].

Likewise, the one-year younger Airbnb has had a similar outstanding evolution, revolutionizing – together with TripAdvisor – the whole travel sector. The San Francisco-based company has passed from 20.000 travelers hosted to roughly 100 million in less than a decade, offering an incredibly varied multitude of accommodation solutions in almost every corner of the world: from apartments to castles, from island's huts to treehouses, from boats to igloos[81].

If we see this "platform capitalism" (paraphrasing Srnicek) more with the eyes of consumers, we would then talk of sharing economy. We've seen that Benkler was one of the first to capture its attributes, back in the mid of the 2000s when this specific term wasn't even invented. Another author that in that period understand prematurely the basic traits of today's sharing economy is Don Tapscott with his bestseller "Wikinomics". There the Canadian entrepreneur was outlining the passage from traditional commercial hierarchies to new styles of community-based platforms, P2P project-working, mass collaboration, self-organization, the "prosumers", and so on[82].

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[80] Parker G.G. et al. (2019), *Platform Revolution: How Networked Markets Are Transforming the Economy, And How to Make Them Work for You*, W. W. Norton & Company, New York, Ch. 1, integrated with Uber's Wikipedia page: https://en.wikipedia.org/wiki/Uber
[81] *Rapporto sul Digitale, una panoramica completa e i dati più rilevanti sullo stato del digitale nel mondo e il Italia*, Anno 2018, Centro Economia Digitale (CED), Roma, pp. 66/68.
[82] Tapscott D., Williams A. D. (2006), *Wikinomics: How Mass Collaboration Changes Everything,* Portfolio, New York.

He was right, but maybe he was too positive. Nonetheless, if we contextualize historically the books of these two authors, we understand why all those optimistic feelings: in the first half of the 2000s really important open initiatives were launched, and scaled up globally really fast and really well: Wikipedia, Skype, Flickr, without forgetting the relevance of the elder Linux.

By now, the sharing economy is a more articulated ecosystem, with different forms of relationships between consumers and producers/providers: from examples of "gift economy" like Couchsurfing to ways of crowdfunding as Kickstarter, passing though the well-known ridesharing Blablacar. In a certain way, these particular expressions can also be seen as a technology-based revival of the person-to-person or peer-to-peer transactions that dominated economic activity before the Industrial Revolution. Notwithstanding, the abovementioned lean/product platforms are also evidence of sharing economy in practice, and their movements toward centralization and control of information, services, and resources have stimulated more gloomy visions regarding the actual state of the economy. Some prefer to label it as an "access economy", others, criticizing bitterly the corporate's use of algorithms and Big Data, talks of "surveillance capitalism" – with this regard see the work of the social psychologist Shoshana Zuboff[83]. We believe that the truth lies in the middle.

However, this radical change of the economic environment has obviously changed profoundly the employment schemes: Gig economy, online outsourcing (OO) and crowdworking are all modern labels that account for it. When we talk of Gig economy we intend a labor market characterized by the prevalence of short-term contracts or freelance work as opposed to permanent jobs, where workers could be easily subjected to last-minute scheduling: just think at the Uber's drivers, or the delivery guys contracted by the food companies like Deliveroo or Glovo, but also to the thousands of seasonal Amazon's workers.

At the same time, we don't neglect the chances arisen thanks to the diffusion and pervasiveness of the digital economy's actors; the OO, as depicted by the WB, is a brightening example of new opportunities, for both low-skilled and high-skilled

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[83] Zuboff S. (2019), *The age of surveillance capitalism: the fight for a human future at the new frontier of power*, Public Affairs, New York.

workers: numerous forms of microwork (or crowdworking), where employers broken projects in small and easy tasks that can be carried out even in minutes or seconds, such as data entry, transcribing recordings or image tagging, give the possibility to a vast multitude of people with very basic skills to earn good money; meanwhile, professionals with specialized skills can gain contracts, regardless their geographical position, through activities of online freelancing like web development, design or report writings[84].

This is all true, but our point is another: the exasperated fluidity of the current labor market, fluidity proper to the digital paradigm, usually results negative for the masses' feelings on employment, thus it generates economic uncertainty, despite real or just perceived. An indefinite contract or a permanent job in one's hometown are often utopias, aspirations that seem to belong to an ancient era. The chapter *"The Transformation of Work and Employment: Networkers, Jobless, and Flextimers"* written by Manuel Castells in the first volume of his trilogy *"The Information Society"* is illuminating on this point.

Furthermore, we have to add that the main economic stakeholders and IOs today are almost unanimous in reporting that the imminent wave of automation driven by the AI improvements – which differs from the previous ones because, apart from classical routine tasks, promise to automize more and more cognitive tasks - will painfully affect most of the lower and medium-skilled workers if it's not managed wisely and promptly by public institutions and organizations. Imagine those individuals that found economic relief in microwork's activities, they could be left with a fistful of flies overnight. Tons of books and studies have been published in recent times warning about these risks. We will return on this spinous topic in the wake of the next chapter because we assert that it is one (i.e. the economic insecurity) of the two radical reasons that are behind the current political atmosphere.

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[84] See: Siou Chew Kuek, et al. (June 2015), *The Global Opportunity in Online Outsourcing,* World Bank Group, Report Number: ACS14228.

SECTION II

Political Reactions: A New Old History

Chapter 3. Deep Roots & Notes

After having presented a comprehensive panoramic about the change of technical and socio-economic paradigm begun in the postwar and still underway – recently entered in its third phase – in this section we will first dissect two consequences of the digital revolution which, in our opinion, explain for the most part the political moment of different countries in Europe and America. Then we will show the state of the democracies under exam through appropriate chronicles and statistics. Finally, we will propose a historical parallelism - suggestive but surely questionable – with the political atmosphere straddling between the nineteenth and twentieth centuries, filtered by a Eurocentric angle.

Before we begin, however, it is worth to remind that since the first pages of the introduction we have espoused the so-called actor-network theory, rejecting other deterministic positions. So, we repeat here that behind the great success of the right-wing populist parties there are also other reasons which have little to do with the digital revolution, or which in turn influence its course: come to mind the international and regional trade agreements or the rising inequality, without forgetting that every national and local reality has specific physiognomies that explain precisely the uneven evolution of the various populisms, despite the fact that they share a common trend. Likewise, the two causes which we have identified as explanatory factors of the Euro-Atlantic political landscape, namely economic insecurity and a lack of direction (identity disorientation), are affected by other phenomena that are not properly attributable to the current shift in the technical paradigm, such as migratory flows generated by wars, famine, and lack of basic goods. Moreover, even focusing only on the digital revolution and its outcomes, the economic and identity ones are not the only which are linked with the rise of populism.

Let's take for instance the role of digital media and communication. So many studies have been conducted seeking to explain relationships of cause and effect between new digital media and surging demagoguery. For example, looking at the critical moment of democracy, the British lecturer Alec Charles writes *"The internet has not generated a new public sphere (a renaissance of democracy through an electronic arena for the*

development of popular consensus); it has instead, under the guise of populism, reinforced unaccountable and virtually anonymous structures of corporate and demagogic power, and opened the door to resurgent forms of political extremism."[85]. Someone could fully agree on this statement, others less - see above what the Italian Prime Minister Giuseppe Conte said about the usefulness of digital tools for democracy – but what we want to remark is that in our vision media are just a tool, surely really powerful, but always a tool and not the original cause, the "deep root".

Consider 2016's Trump elections: the fake news, sprawled on Facebook and other social media with the alleged support of Russian bots, and, more in general, the American right-wing media ecosystem[86], have constituted a fundamental contribution to disseminate Trump's propaganda. But he started from folk fears that were yet rooted, even whether publicly hidden, in the American society. In fact, populist parties or, as in this case, leaders need to build a narrative upon seeds of true problems; then the media industry, today digitalized and more powerful than ever, help the diffusion of that narrative together with storytelling cleverly constructed by spin doctors, which paints tailored folk epics. Narratives and storytelling, media and propaganda: nothing new. Totalitarianism and ideologies of the previous centuries have largely made use of them, as Hanna Arendt masterfully described in her 1951's landmark[87]. Now, to understand why those narratives have bewitched the majority of people in certain historical periods we need to look more deeply, at those glitches that create the preconditions of it.

3.1 The economic issue

Hence, we step back and we analyze the two structural and disruptive conditions leveled by the digital revolution: identity's bewilderment and economic insecurity. Let's start with the latter, picking up where we ended up in the previous chapter. We said that the new digital economy, centered on data, networks, and platforms, has brought huge alterations in our lives, especially in our manner to relate each other socially. Techno optimists tend to highlight the positive effects occurred in the business environment,

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[85] Charles A. (2013), *Media/Democracy: A Comparative Study*, Cambridge Scholars Publishing, Newcastle, Ch. 1, p. 1.
[86] For a lucid investigation see: Benkler Y., et al. (2018), *Network Propaganda: Manipulation, Disinformation, and Radicalization in American Politics,* Oxford University Press, New York.
[87] Arendt, H. (1976), *The Origins of Totalitarianism*, revised ed., Houghton Mifflin Harcourt, Boston.

thus its asserted openness and new peer-to-peer fashion; not only, they emphasize also the advantages that are catching up all kind of workers, with possibilities of crowdworking for the bottom layer, and opportunities of freelancing and digital nomadism for the top one. Pessimist perspectives, by contrast, outlines how business is always more restricted to a small elite of really high skilled profiles, those who can study at prestigious and very expensive universities (providers of needful cognitive tools); how the exploitation of new technologies (BigData, AI, algorithms, etc.) led them toward monopolizing stances; and how larger sections of society – the ordinary people and the last ones – do not benefit of it and actually see their situations worsened. Now, what we see as the smallest common denominator between the two opposite visions is that the digital economy and its employment manner, i.e. the gig economy, jointly with the underpinning automation wave, are profoundly transforming the job market.

We clearly recognize the marvelous benefits to aggregate human welfare and potential underscored by techno-optimists, but identifying ourselves as an average worker we are inclined to be closer to bleak visions since we would configure a shaky future for us and our offspring. For example, all those promises of the new sharing economy of empowering laborers by transforming them into "micro-entrepreneurs" are gradually turning into a chronic anxiety condition for those who rely exclusively on it. Many leftists are criticizing the negative impact on social protections (minimum wage, working hours and so on) and claiming for new regulations. Five years ago Tom Slee was enticingly writing that *"the language of "a little extra money" turns out to be the same as that used about women's jobs forty years ago, when they were not seen as "real" jobs that demanded a living wage, and so did not need to be treated the same, or paid as much, as men's jobs"*[88].

What's more, the same author reports that the reputation system, core business rule for digital platforms, operates as a ruthless surveillance system that blends contractors in obedient serves. By purging this concept from its doomsday component, we agree on the basic principle: in effect, the feedbacks' loop, while being a helpful guarantee to

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[88] Slee T. (2015), *What's Your is Mine: Against the Sharing Economy,* OR Books, New York and London, Ch. 1.

consumers, gives them enormous power over those who are "serving" them, so that worker-servants are subjected to a stress load presumably even greater than that of a classic employee supervised by his boss. I personally had experience in Rome's travel agencies operating through TripAdvisor, and I saw scenes, where to avoid a bad review on the company's public page, the local operators were ready to refund wholly the cost of the service provided, despite the fact that customers had already taken advantage of it and regardless the reliability of their complaints; the same kind of mechanism is likely to apply to the millions of receptive structures working through Airbnb, thus imagine the magnitude. In this way, the feedback system degrades into a form of costumer's blackmail. We are sure that this was not the original goal of those service platforms, but we can neither cover our eyes in front of the reality of facts.

Thus, we assume that the reputation's stress, combined with the unstable chores, proper of the Gig economy, are two aspects attributable to what we describe as people's economic disquiet; condition, the latter, arisen as an (indirect) consequence of the new technologies stemmed from the second wave of digitization. Along that wave, liberal policies were pursued from both right and left-wing factions, in a steady movement of depolarization and political convergence; thus, once the structural changes occurred in the working space manifested to society, the subsequent sense of grievance provided fertile ground for populisms (of both left and right-wing), according to the storytelling of the new morally-recto savior against the old corrupt elite.

The economic insecurity as a key explanation of populist success is a recurrent theme among researchers and scholars, but it is traditionally linked to the globalization's flows, a prospect masterly treated by Dani Rodrik. For instance, in a working paper of the Massachusetts National Bureau of Economic Research, the Turkish economist argues that present and old populism are a direct effect of globalization's spillover outcomes: in the contemporary age, American populisms (North and South) are concerned with the international trade flows and the related IOs, while the European ones are due more to the migration flows and euro-institutions[89]. We subscribe to it, however, we can't ramble too much, so let's go back to our line of reasoning.

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[89] Rodrik D. (June 2017), *Populism and the Economics of Globalization,* Working Paper N. 23559, J. F. Kennedy School of Government, Harvard University, Cambridge (MA).

Now, let's reinforce our thesis by disregarding (partially) the inequality's argument, another master topic amid the researches on rising populism. In his last book[90], the lecturer Barry Eichengreen sustains that one of the possible remedies against the current fortune of populism is to act in favor of the bottom strain of society in order to reduce the income's gap, considerably enlarged in the last thirty years – the latter an empirical truth. Social anger due to increasing economic inequality is a long-standing cause ascribed to political demagogic drifts, and political measures in order to reduce and contain it are in practice since Keynes' theories and the postwar social-democratic consensus. De facto, in those years, continental Europe and the US experienced overall stability of traditional parties, whereby one could think that stepping back to those kinds of policies represent the right move. According to this viewpoint, it's logical to detect inequality as the primary source of the current political turmoil. Conversely, if we cast a glance on the recent political history of the Scandinavian countries, proud bulwarks of the welfare state, such convictions fade away suddenly. The Danish People's Party, a pivotal political actor during the last two decades in Denmark, had become indistinguishable from its progressist origins, taking nativist and anti-immigrate stances closer to the French Rassemblement National (the former FN). In Norway, the libertarian and nationalist Progress Party is currently in government, while the True Finns (now Finns Party) continues to be an important group in Finnish politics. In aggregate terms, the Nordic right-wing populist parties gathered more than 20% of electoral consensus in the recent ballots[91].

At this point, the association between the digital revolution, employment and economic worries and the demagogue momentum acquires a renewed vigor. But let's go further. If so many investigations have substantiate the idea that the mature technologies of the previous digi-waves – chiefly Internet, web, PCs, mobile broadband and smartphones – have destabilized the society by setting new forms of work relations, as many multi-disciplinary experts[92] alert us by affirming that the last and ultimate stage of the digital revolution – with a special attention to AI and robots - will continue on this path with

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[90] For the most knowledge's greedy: Eichengreen B. (2018), *The Populist Temptation: Economic Grievance and Political Reaction in the Modern Era,* Oxford University Press, Oxford.
[91] Bjørnskov C. (2019), *Populism: Three approaches to an international problem*, Wiley, Economic Affairs. Vol. 39, Pp. 273–281, https://doi.org/10.1111/ecaf.12356
[92] Darrel M. West, Martin Ford, Nick Srnicek, Richard Baldwin, just to name few that we know.

even keener consequences. The rationale is that the digital revolution and its automation force are the deep-rooted reasons behind the actual economic unease, and the third digital phase, where we are now, looks to proceed at a more accelerated pace. Thus, it is not a coincidence that Thomas Friedman detects the center of political and social turmoil in the asymmetry between technological changing rhythm and human capacity to change[93].

To fully grasp the relevance of these processes in political terms we must have clear that if globalization's effects normally strike harder the lower strain of societies (outcasts, unemployed, NEETs[94]), the negative results of technological change slug right at the midst of society. With this, we assert that the automation upsurge related to digital advances is affecting first and foremost the extensive group of blue- and white-collar routine workers, wiping out entire job categories: telephone operators and cashiers just to name a few. Still, let us recall that the digital innovations are also breeding new kind of jobs, but not as quickly as those swept away, and not of the same quality (see above the discourse on the gig economy and affiliates). To clear up, the heterogeneous and numerous group of the lower-middle class actually has a job, maybe even a good one, but they don't have any clear future horizon, and this condition frightens them, fearing a loss of status. As evidence of that, the Brexit's leave party and the recent "gilet jaune" movement in France are mainly composed of these categories. Most importantly, the chronicles demonstrated that they are socially and politically engaged insofar willing to express their distress through any civic channel, notably the vote – unlike the poorest ones which are characterized by a high level of abstentionism – becoming in this way a heavy electoral game-changer[95].

Even whether it might seem to us that this type of restlessness could tip towards left-wing political attitudes, contemporary reality has is telling us the opposite. We will justify it below, analyzing the second engine of rightist populism. What we need to unravel here is that, since the cycles of technical changes take place at very macro and

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[93] Friedman, T. (2016), *Thank You for Being Late: An Optimist's Guide to Thriving in the Age of Accelerations*, Farrar, Straus and Giroux, New York, pp. 31-32.

[94] NEET is an acronym that stands for "Not in Education, Employment, or Training".

[95] On this and other our claims see a revealing research conducted jointly by Harvard and Science Po, published last year: Kurer T., Palier B. (2019), *Shrinking and shouting: the political revolt of the declining middle in times of employment polarization,* SAGE, Research and Politics, Political consequences of technological change, I. 6.

slow levels, while being the original source of the political success of characters like Trump, Farage or Bolsonaro, they are not understood by the voters nor explained (intentionally) by those who benefit. What kind of politician would go to the square, real or virtual, and in order to gain acclaim shout a phrase like:

"An epochal shift from the industrial paradigm to the digital paradigm is underway, all sectors are changing radically, including work: fixed place in time and space no longer makes sense in this context, So we all need to study and train and adapt our way of life to fluid work patterns that are more appropriate to contemporary reality".

Well, in our opinion, it would be the sacrosanct truth, but both for its complexity and unpopularity, it would be an announced electoral failure. Much better to pin the blame of the (perceived) economic insecurity on a scapegoat easily recognizable by anyone, regardless of their schooling level and critical ability. Thus, populism draws its strength in the dichotomies "people" vs "elite" (the latter usually associated with mainstream parties, IOs' bureaucrats, academia and experts) and "us" versus "others". The second dichotomy changes substantially according to the different populist declinations: in the social one this takes the form of lower/popular social class against economic and technocratic elites, local or international ones; in the right declensions the identity of "us" is provided by nationality/citizenship, or ethnicity (sometimes leading to forms of racism and anti-Semitism), while the "others", carriers of all evils, are migrants – but only those of the poorest countries – or often who profess another religion, seen as a threat to indigenous traditions and cults, but often also the international economic and technocratic elites (Europe, IMF, WTO, Troika and so on).

3.2 Terminology's frame

So said, we feel compelled to outline a terminological framing of the right-wing populism of which we are analyzing the generating causes. We start reporting the definition of generic populism designed by Cas Mudde. The Dutch political scientist defines it as *"an [thin] ideology that considers society to be ultimately separated into two homogeneous and antagonistic groups, 'the pure people' versus 'the corrupt elite' and which argues that politics should be an expression of the volonté générale (general*

will) of the people"[96]. This statement is a masterful resume of all the core concepts of populism discourse: the distinction between "people" and "elite" is done on the plane of morality and authenticity, thus the populist politician, representing the people's common willing, put himself in contrast to an "evil elite" far from the grassroots exigencies and byproduct of blaming special interests. However, due to the elusiveness and malleability of these ideas, populist movements try to better define their electoral target and to gain political depth pilfering concepts from the great ideologies of the past and mixing them in different original ways according to the historical and geographic context.

Many types have been theorized, and among them, a rather clear picture that we have followed as a model in painting today's rightist populism is the one developed by the professors and social researchers Emilian De Blasio and Michele Sorice in an article published on the RIS not long time ago. They identify four types of populism actives in post-industrial societies: Techno-populism, Neo-liberal populism, Social populism, and National populism. The latter is basically what we mean for right-wing populism, and according to the cited researchers comprise the following features: ethnic positions, xenophobia, people as (imagined) nation, religious traditions and roots, emotional figures, authoritarian leaderism, sovereignism, migrants as enemies, anger[97].

In the next pages, we will see that these characteristics, although not all together, are constitutive of today's populist parties in the limelight. Moreover, it should be noted that net of the differences, there are several traits in common between the current ideology of rightist populism and the great right-wing ideologies of XIX and XX centuries, namely nationalism and fascism. We will propose this arrangement again, articulating it better, in the final chapter. Now let's go back to the sources that explain the populist success, and analyze the second one, which, combined with the first, explains why rightist populism prevails instead of the leftist one.

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[96] Mudde C. (November 2017), *Populism: An Ideational Approach,* The Oxford Handbook of Populism, Oxford Handbooks Online, DOI: 10.1093/oxfordhb/9780198803560.013.1, p. 4.
[97] De Blasio E., Sorice M. (2018), *Populisms among technology, e-democracy and the depoliticisation process,* Revista Internacional de Sociología, Vol. 76(4), e109, https://doi.org/10.3989/ris.2018.76.4.18.005; For the distinction between social and national populism see also: Blasberg C. (2019), *Sinistra. Una storia di fantasmi*, LUISS University Press, Roma, Pp. 46-47.

3.3 Identity in jeopardy

The notion of anomie offers a bridge to reconnect us with the identity factor that underpins the ongoing wave of national populism in most of the western developed countries, and in some emerging countries too, inter alia Brazil. For Durkheim, anomie stem from a discrepancy between individual or group standards and the wider social ones, or from the dearth of a social ethic, which generates moral deregulation and a lack of legitimate aspirations. In his 1893 landmark "*The Division of Labour in Society*", Durkheim uses the term anomie about the phenomenon of industrialization and its resistance to change, which causes disruptive cycles of collective behavior. The French sociologist found a solution: the occupational group[98]. Today we are facing a similar situation, we argue.

124 years later Durkheim's insights, a lecturer of Loughborough University, Eva Selenko, in a joint effort with other researchers, will come to the same conclusions, this time testing empirically the supposition. In a paper published in 2017, she wrote *"job insecurity threatens a person's social identity as an employed person. Job-insecure workers face losing their membership of being part of the employed workforce and fear becoming unemployed*". After 24 months she published another study focused on social identity's consequences, linking them with the electoral preferences: in her words, bringing "*the first empirical evidence of how organizational events affect people's political behaviors*". The result was that people with an identity threatened by working hardship were more projected toward both left-wing and right-wing populist stances[99]. In these terms, the enigma behind the rise of radical right populism, despite these popular concerns are traditionally associated with socialist solutions, persists. Our answer is a key element of all nationalist movements and, why not, of fascism too: the cultural identity.

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[98] Bell D. (1973), *The Coming of Post Industrial Society*, Basic Books, New York.
[99] Selenko E., De Witte H. (2019), *How Does Job Insecurity Affect Performance and Political Outcomes? Social Identity Plays a Role*, Figshare, https://hdl.handle.net/2134/35190.; Selenko E., et al. (2017), *Does job insecurity threaten who you are? Introducing a social identity perspective to explain well-being and performance consequences of job insecurity,* Wiley Online Library, J. of Organizational Behavior, DOI: 10.1002/job.2172.

Therefore, again identity but now linked with the variable of culture, intended as traditions, values, and religion[100]. With this respect, a yardstick is doubtlessly the "Clash of Civilizations" of Samuel P. Huntington who pinpoints the cultural/religious' identity as the core cause of conflicts between people in the post-Cold War era. A thesis, the latter, instrumentalized often by the Islamophobic rhetoric, especially among European right-wing populists. As a matter of fact, when we discuss of identity we can't neglect the centrality of culture, so much is that Castells refers to the first as *"the process of construction of meaning on the basis of a cultural attribute, or related set of cultural attributes, that is/are given priority over other sources of meaning"*[101]. In this case, also, the literature is extremely abundant, but the cultural identity threats are traditionally linked again with globalization's downsides. I personally discussed of a troublesome cultural homogenization as a byproduct of the globalization process in a paper wrote for a course on international geo-economy during my exchange period at the FAAP in São Paulo (I already cited the paper in the introduction).

But here we are taking the identity puzzlement as an outcome of the digital revolution. Thus, globalization or digitalization, which one first? We believe that this question does not make so much sense. Asking of whether the flows of globalization determine the changes in technological regimes or whether this relationship is reversed is somewhat reminiscent of the dilemma of the egg and the hen. Hence, we do not pretend to take a straight position, rather we propose once again the now-famous actor-network theory, for which we see the digital revolution and the latest wave of globalization – triggered by the neoliberal policies of the 1980s, the Yankee unipolarism, together with the diffusion of the Internet– as two phenomena intertwined and stimulating each other.

Therefore, let's assume here that the cultural threats are correlated with the innovations led by all the three waves of digitalization. Moreover, we reported that, beyond the economic earthquake, all other human-related fields are embracing the digital zeitgeist, as exemplified above regarding education, finance, IOs, communication and democracy, and culture is no exception.

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[100]A point of reference for populism' studies focalized on this theme is: Norris, P., Inglehart, R. (2019), *Cultural Backlash: Trump, Brexit, and Authoritarian Populism,* Cambridge University Press, Cambridge, DOI:10.1017/9781108595841

[101] Castells M. (2010). *The Information Age. Economy, Society and Culture*, Vol. II: *The Power of Identity*, 2nd ed., Wiley-Blackwell, Singapore, p.6.

Let's try to trace a historical overview of this theme. For more than half a century, most of the policies of central stakeholders have been aimed at building transnational and cross-border links: from the institutional framework of the United Nations to the global financial order. At the same time, various social movements, starting with the Summer of Love of '68, launched post-materialist messages and values of unconditional love towards others, regardless of their origins. Movements, these, that will forge the consciences of many "master of algorithms", who in turn will shape the beating heart of the early phases of the digital revolution: Silicon Valley.

So, internet and the explosion of the web, which according to the post-colonialist scholar Arjun Appadurai are the basis of what he defines as "overflow modernity", and that, having an ability to circumvent national borders without precedent in history, unleash dizzying experiments in identity transformation, both individual and collective, allowing the construction of possible life scenarios directly influencing.

In this context, ideas and doctrines such as cosmopolitanism and multiculturalism surface and come to the force. The latter was practiced through different models in the United States and in various European countries, chiefly France and England. In the first case it was celebrated the cultural, religious and ethnic diversity by pointing it out as an engine for the enrichment and strengthening of the country – philosophy, this, derived primarily from the work of Horace Kallen; In Europe, on the other hand, assimilationist practices were less pluralistic, and the "newcomers" were mainly Islamic and sub-Saharan families from French and British former colonies. On the geopolitical level, the end of the Cold War does nothing but exacerbate these dynamics.

As result, along decades the middle class was often overlooked, in favor of the forced integration of minorities, both on the left and by neoliberal right-wing policies; however, the collective awareness of this situation was funneled only when the new digital outsets offered to the masses a universal instrument for information. And so the ranks of blue- and white-collar workers, equipped with the powerful digital tools, rejected their fears in the form of a "protest vote" from the second half of the 2000s, spurred on even more by other destabilizing events such as 9/11.

According to Lars Rensmann "a silent counter-revolution turned noisy", and radical right parties are their voice, which in the European scenario stems from a "great cultural divide" between liberal-cosmopolitan and authoritarian-nativist values, or better cosmopolitanism versus nationalism[102]. The reference to nationalism here is anything but random, in fact for almost all expressions of current right-wing populism the nationalist component is a cornerstone of the identity of "us".

Furthermore, the impact of the digital revolution on the cultural identity of post-industrial societies is blatant at a time when supporters of demagogic movements, particularly those of the right ones, are not only demanding protection of their cultural identity in the space (on a national basis), but also over time, nostalgically recalling the customs of an indefinite past time, disfigured and increasingly menaced with the passing of time precisely by the innovations of the new digital paradigm.

In the light of the above, therefore, we can understand the reason behind such a widespread success among the rightist populist factions. In Europe, parties such as Podemos, SYRIZA, and the Five Stars Movement had their exploits in the immediate years following the financial crisis of 2007-08 and the subsequent euro-crisis. Afterward, the winning populist formation is of the contrary pole.

In addition to the classic cleavage ("people" vs "elite") and beyond the factor of economic uncertainty, we argue that radical right populisms have been able to instrumentalize the sense of moral bewilderment felt by the middle class, sensing the power that it, mixed with the economic variable, would have conferred them on the electoral level. Anyhow, we are by no means the first to notice this interwoven double-reason – itself derived from the paradigmatic technical change – as the foundation of modern populism in the limelight. On the one side, a Cambridge's paper drawn up in 2019 pinpoints the concept of "economic nationalism" as the synthesis of the cultural backlash and economic incertitude in expounding the golden moment of the populist

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[102] Resmann L. (2017), *The Noisy Counter-Revolution: Understanding the Cultural Conditions and Dynamics of Populist Politics in Europe in the Digital Age,* Cogitatio, Politics and Governance, Vol. 5, I. 4, pp. 123 - 135.

right[103]. On the other side, the already mentioned Kurer and Palier disclose how the core of post-industrial societies, low and middle-skilled routine workers, do not demand mere measures of social protection, they rather call for cultural and economic protection. Hence, they are more attracted by conservative promises of re-establishing those traditional and "authentic" values, where rigid and hierarchical economic systems were a solid warrantee for domestic workers.

Moreover, if we go back to the nineties, Castells yet was launching a visionary appeal: "*People all over the world resent the loss of control over their lives, over their environment, over their jobs, over their economies, over their governments, and over their countries. Thus, following an old law of social evolution, resistance confronts domination, and alternative projects challenge the logic embedded in the new global order, increasingly sensed as disorder by people around the planet*"[104].

Some twenty years later, in light of recent political events, these words are more relevant than ever.

3.4 Two specifications

Now, before displaying the state-of-art of the present European and American political scenery let us add the last two meaningful specifications.

First, it should be made clear that the populist phenomenon is nothing new, and historical precedents are manifold on both continents under consideration, beginning with the first forms of agrarian populism exploded in the late 19th century in both Tsarist Russia (*Narodniki*) and North America (US People's Party). Latin America has a long tradition too, dating back to the 1930s with the Peronist experience in Argentina. However, until the last decade "Latin populisms" were virtually all manifestations of the socialist vergence, and neither the agrarian incarnations can be classified as right-wing. We need to debark in the European landscape after the Oil crisis, to see the early expressions of proper radical right populism, more exactly in France, where Jean-Marie

[103] Ausserladscheider V. (2019), *Beyond economic insecurity and cultural backlash: Economic nationalism and the rise of the far right*, Wiley, Sociology Compass, e12670, https://doi.org/10.1111/soc4.12670.

[104] Castells M. (2010). *The Information Age. Economy, Society and Culture*, Vol. II: *The Power of Identity*, 2nd ed., Wiley-Blackwell, Singapore, p.72.

Le Pen's inaugurated the *Front National.* In parallel, along the 80s and 90s, the Austrian Freedom Party (FPO) under the leadership of Jörg Haider moved along the path of radicalization. The nineties saw also the entrance of Berlusconi and *Forza Italia*: populist and right-wing yes, but not located on the extreme of the spectrum[105]. At the turn of the millennium these parties were all gaining vigor, not only, if we widen the political horizon, also in the far Australia right-wing populism was playing a central role in national affairs. Thereupon, it is indicative a study, realized by American and Australian lecturers, who identified job insecurity as a determining factor behind the electoral support for Pauline Hanson's One Nation Party[106]. Moreover, If we see these historical precedents with the eyes of a neo-Schumpeterian, we can't avoid noticing a suggestive coincidence between the final years of a Kondratiev wave (…1880, 1930, 1980…) and the explosion of populism and political radicalism more in general.

The second point that we are going to stress out we believe it's paramount to tackle the demagogic forces with an effective approach. We assert that, contrarily to many commentators, populism cannot be understood simply as an element that incites the worsening of the democratic system. Yes, of course, the surging demagogic powers have often keen effects on democratic institutions; this is especially true for eastern Europe – come to mind Orban's Hungary or the Law and Justice Party (PiS) in Poland – but not only. Under this angle, the latest report of Freedom House on the democracy status depicts a gloomy scenario, reporting several steps back in countries led by rightist populist actors: from the Islamic Turkey of Recep Tayyip Erdogan to Brazil's Bolsonaro, until the Trump administration in the US[107].

However, we should have fixed in mind that they convey popular claims that for a reason or another are not listened to by traditional parties. Thereby, populist parties can be also seen as a sort of democratic renewal and dynamism, by funneling new, and

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[105]Rodrik D. (June 2017), *Populism and the Economics of Globalization,* Working Paper N. 23559, J. F. Kennedy School of Government, Harvard University, Cambridge (MA); Wodak R., Krzyżanowski M. (2017), *Right-wing populism in Europe & USA. Contesting politics & discourse beyond 'Orbanism' and 'Trumpism',* John Benjamins Publishing Company, Journal of Language and Politics, 1-14, DOI: 10.1075/jlp.17042.krz.

[106] Mughan A., et al. (2002), *Economic globalization, job insecurity and the populist reaction*, Pergamon, Electoral Studies XX (2003) XXX–XXX, DOI: 10.1016/S0261-3794(02)00047-1.

[107] For more insights we refer to: *Democracy in Retreat. Freedom in the World* 2019, Freedom House, downloadable from: https://freedomhouse.org/report/freedom-world/freedom-world-2019/democracy-in-retreat

perhaps uncomfortable, political issues based on people's legitimate concerns: an "unconscious" transposition of the technological and socio-economic shift on the party-political plane. In these terms, they acquire a positive *raison d'être*, providing healthy competition and testing classic parties. The Argentinian philosopher and political theorist Ernesto Laclau formulated an original notion of populism that fits into this frame, presenting it as a positive force for emancipatory change in society[108]. Furthermore, assuming that contemporary populist parties began often as movements – 5SM and Podemos are two incontrovertible examples – or anyway that entail typical physiognomies of them, it should give us cause of thought the Castells' definition of social movements**:**

"*purposive collective actions whose outcome, in victory as in defeat, transforms the values and institutions of society. there are no ''good'' and ''bad,'' progressive and regressive social movements. They are all symptoms of who we are, and avenues of our transformation. Processes of social change in our world often take forms of fanaticism and violence that we do not usually associate with positive social change. And yet, this is our world, this is us, in our contradictory plurality, and this is what we have to understand, if necessarily to face it, and to overcome it*"[109].

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[108] For a deep comprehension of Laclau's thought about populism we refer to: Laclau E. (2005), *La Razón Populista,* Fondo de Cultura Económica, Ciudad de Mexico.
[109] Castells M. (2010). *The Information Age. Economy, Society and Culture*, Vol. II: *The Power of Identity*, 2nd ed., Wiley-Blackwell, Singapore, Pp. 3-4.

Chapter 4. Right Winds

In recent years there has been no political journalist or analyst who has not spoken at least once about populism, both in Europe and in America. So much so that in 2017 the Cambridge Dictionary "awarded" it as *Word of the Year*. Here we're getting ready to join this club. After having drawn a conceptual linking line between the emergence of the new technological (digital) paradigm and the two right-wing populist's power sources, we go now to browse summarily the European and American political landscape which suggests us urgent actions. The latter we'll be discussed in the conclusions.

4.1 Around Europe

We start our narrative journey with the realities more familiar to us: the European Union, and immediately after, Italy more in detail. In a short historical span of twenty years populist forces – remarkably in its radical right declensions – have passed to be a marginal political entity to a major factor for the national and communitarian destinies. In every corner of the Old Continent, they have gained relevant support: from northern Europe to the Mediterranean shores, from the former Soviet satellites until the core of Western Europe, without forgetting the surroundings where the situation is even worst[110]. In parallel, both left-wing and right-wing mainstream parties have recorded an inescapable decline.

Conversely, if we consider the interval between 2008 and 2018, the share of votes for populist parties in domestic elections has almost doubled in aggregate terms, bouncing from a few less than 10% to more than 18%, with outstanding performances in nearly all EU countries: in Greece we pass from 17% to 54.60%, in the Czech Republic from 12,80% to 49,60%, in Germany from 10% to 22%; also France and Finland doubled their scores, while Slovakia tripled; Denmark, Spain, Ireland, Sweden, Bulgaria, they all experienced an escalation of demagogic expressions, while Hungary and Poland

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[110] For surroundings we are referring mainly to Russia and Turkey. Even though today these cannot be considered democracies in a proper fashion (Morlino might label them as hybrid regimes or democracies in transition), they have authoritarian leaders that share many traits with other rightist populist leaders in the limelight across the EU and not only.

strengthened yet powerful nativist formations; Netherland and Austria stables, in countertendency Belgium decreasing from 16% to 4%, which together with Romania, Slovenia and Portugal form the small club of nations with populist scores under 10%; finally Italy, the most striking case, where from a meaningless 8% we pass to more than 50% (we will see this incredible story below)[111]. Nonetheless, these figures are just a very small representation of the political earthquake that was developing underneath.

The moment when public opinion becomes definitely aware of it has a specific date: 23rd June 2016. I remember well that summer when 51,9% of British citizens decided to vote "leave" at the national referendum about the permanence of UK in the European Union (I was so impressed that I decided to write my bachelor's thesis on the augmented bearing of popular consultations in international affairs[112]). This event, together with the election of Donald Trump in November of the same year, which we'll discuss later, are both regarded by most analysts to be the definitive consecration of rightist populism across western democracies.

But, the timeline of political upheavals also in the British system is wider and long-standing. It should be said, for the record, that in Great Britain, and even more in the US, the populist discourse is carried on not so much by new parties, but almost exclusively by new leaders entrenched in the centenary parties of their respective countries. This is due to the Anglo-Saxon majority electoral system, which prompts monolithic bipartisanship, discouraging the formation of new parties-movements, and relegating hypothetical "*Terzo polo"* basically to extra-parliamentary forms of representation. The UKIP storyline fits well.

The United Kingdom Independence Party was founded in 1993 and for twenty years did not represent more than 3% of British voices. In 2014, seizing the Euroscepticism window, the UKIP, headed by the controversial Nigel Farage, became the first party voted at the European elections, with more than 27% of indications. Some twelve months later, at the national polls, it became the third party in terms of votes,

[111] Data extracted from: *Populism, Dossier Plus on populism in Europe and the United States,* Statista, 2019, https://www.statista.com/study/69118/populism-in-europe-and-the-united-states/
[112] Malventano A., Rapporteur: Sellari P. (2016), *Il Referendum nel III Millennio. L'influenza nelle relazioni internazionali e in geopolitica*, Tesi di Laurea, University La Sapienza, Course of Scienze Politiche e Relazioni Internazionali. available on www.academia.edu.

outstripping quota 12.5%; despite the result, however, it obtained only a seat at the House of Commons precisely owing to the electoral system. The success of Farage's party fomented the most radical spirit within the Tories, to such an extent that the leader David Cameron had to promise the Brexit's referendum in order to succeed in the same elections. We all know the ominous consequences[113].

Today the British political panorama seems to follow the lane of radicalization, showing unquestionable signs of demagogic attitude along the whole political axis; last year's elections are concrete evidence of this. On the domestic level, both main fronts have leaders that followed the populist track. On the one hand Boris Johnson, the current Prime Minister and winner of the last election. An early supporter of a "Hard Brexit", he's giving a radical right and populist mind to the Conservative party as its leader (thus containing Farage's advance). On the other hand, Jeremy Corbin who has revived but also radicalized the Labour Party, coming close to winning the 2017 elections with a slogan like *"For the many, not the few"[114]*. At the European level, the 2019 elections have witnessed the obvious triumph of the formation led by Farage (Brexit Party), who already in 2016 had reached the key goal of its previous party-project (UKIP), defining the Brexit as a historic achievement for the British people and nostalgically evoking the ancient glories of the British colonial empire.

It should be outlined that the characteristics of extreme right-wing populism are strongly echoed by both Farage and Johnson: they are authoritarian leaders, with xenophobic and sovereigntist stances, who affirm to defend the interests of the people, understood as citizens of the British nation-state, recalling ancient traditions and emotional figures and "listening" the anger of society.

Said that, if we go toward East, looking at the Visegrád group, the political agendas appear even more radical and the success of far-right leaders has deeper roots. In

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[113] Among the countless statistics on the Brexit's vote, it should be noted that, as reported by the Statista's dossier quoted above, the main ethnic minority to vote "leave" were whites, and the main religious minority Christians. This goes to support the thesis of the two reasons related to the digital revolution that strike heavily the middle class of the western democracies.

[114] Data and info from: Leslie Bethell, *Populism in Europe,* revised, expanded and updated version of a lecture given (in Portuguese – "O populismo na Europa") at the Academia Brasileira de Letras on 12 September 2017.

particular, we refer to Hungary and Poland, respectively molded by the action of Victor Orbán and Jarosław Kaczyński. At the same time, Slovakia and the Czech Republic are by no means immune to the winds' right: the first is governed by a social democratic left-wing formation which however uses a populist language and shares nationalist sentiments, so much so to form a coalition with the chauvinistic SNS (for the second time), not to mention that is surrounded by a constellation of conservative, populist and far-right forces; in the second country, the actual *premier* is the multi-millionaire Andrej Babiš[115], chairman of ANO 2011, populist party-movement auto excluded from the right-left political axis in an M5S fashion, but positionable in the center-right according to many commentators.

Nevertheless, the latter is a "good boy" compared to the euro-champion of radical-right demagoguery: the Hungarian prime minister Victor Orbán. Chairman of the right-wing and nationalist Fidesz (the Hungarian Civic Union), he's built is overwhelming success appealing to the mass of common workers and people, using messages of cultural and social protectionism, religious conservativism, anti-immigration and xenophobic stances, and national emotional figures, reviving the role of Hungary as European bastion against the Muslim invasion during the medieval times. Moreover, the Magyar crusader is a row example of sovereignism, authoritarian leadership, and plebiscitary drifts. Along the decade just passed he's managed to win the domestic elections three times in a row (2010, 2014 and 2018), and, as if it were not enough, getting each time a supermajority of two-thirds of the seats. Thanks to these numbers, while remaining inside the constitutional framework, he's forged a state model defined by many "Illiberal Democracy", i.e. a democracy stripped of some of its cardinal properties such as the freedom of the press, minorities' protection, and the political independence of the judiciary system. According to Freedom House, Hungary under Orban's rule has performed one of the most dramatic declines in democracy ever charted within the EU[116].

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[115] Note here a suggestive comparison with other "folk heroes" like Berlusconi and Trump. In spite of the different political outlooks, they are all millionaires coming from the business world, and albeit this should not sound as the best background for a defender of grassroots' interests, they were able to transform their image thanks to the populist storytelling.

[116] *Democracy in Retreat. Freedom in the World* 2019, Freedom House, downloadable from: https://freedomhouse.org/report/freedom-world/freedom-world-2019/democracy-in-retreat

In a similar fashion, the same Freedom House worries about the democratic life in Poland, guided by the PiS of Kaczyński. Active since the early 2000s, the Law and Justice party has always played an important role in Polish politics, reaching its apogee in the last elections which saw the national-conservative force exultant. Its chairman, despite not covering any institutional position apart from being a regular member of the parliament, is regarded as the most powerful politician since the triumph of his party in the previous presidential elections (2015). Besides the authoritarian manner of the leader, the PiS is a peculiar example of penal populism, intuitive since its name, which in turn wastes the legal framework of the country by undermining the independence of magistrates, a key function for every democratic system.

Southern Europe, with the exception of Italy which we'll exhibit soon, looks to be more refractory to the radical right claims, but not to the populist discourse as a whole: in Spain, the left-wing Podemos, arisen from the *Indignados* movement, has gained enough popular backing, and in Greece, the coalition of radical left, or simply SYRIZA, has governed during the murkiest years of the euro-crisis with floating lucks. On the other hand, chauvinistic seeds have been implanted also here, where the ultranationalist and neo-Nazi Golden Dawn reached nefarious levels of popular backing in 2012 and 2015 ballots, surpassing the 7% of the preferences and entering so in the Hellenic parliament[117]. The extremist right stream is another story, and thankfully at the moment does not have a real grip across European societies, nevertheless, the upsurge of similar realities – like Pegida or Casapound to name few others – is a harsh warning, echoing the dim first half of the XX century. For the record, the increased popularity of ultra-nationalist movements/parties is attributed by many experts to the widespread of disinformation and partisan contents (in journalistic terms: fake news) that is made possible on a large scale by social media. But as we have said, it is a different story, and this is not the place to discuss this burning issue[118]; to others the burden.

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[117] Leslie Bethell, *Populism in Europe,* revised, expanded and updated version of a lecture given (in Portuguese – "O populismo na Europa") at the Academia Brasileira de Letras on 12 September 2017.

[118] For instance, see the controversy between Facebook and Casapound surged last December 2019 which, beyond the political legitimacy of a scandalous party as Casapound, put at stack fundamental values as freedom of expression and political opinion *versus* the internal policy of a private digital platform, in this case the Facebook's policy regarding fair limitations of violence and incitement to the same.

Moving toward, Central Europe we find that the governments are still dominated by traditional parties, but the electoral trends and political chronicles are anything but encouraging. In the Netherlands, for example, the PPV directed by the Islamophobe and nativist Geert Wilders occupy a central place in the national scene for 14 years yet, risking to succeed in the last 2017 appointment. Ahead in polls, he's been defeated in the end by the VVD whom secretary and incumbent prime minister, Mark Rutte, had to recur to akin populist rhetoric in order to gain decisive electoral support. In Austria, the FPO is sturdily the second political force. We've already mentioned it before as one of the early expressions of rightist populism. In effect, already in the early 2000s, it was the second most voted list, then a slow decline, and in the last electoral rounds again in the limelight. In December 2016 the leader Nobert Hoffer come really close to become the new President of the Republic, in a head-to-head against is opponent (Green Party) repeated twice - because of the invalidation of the first counting. In the parliamentary elections of one year later his party has arrived again second. Currently is the principal opposition group. With all this in mind, in both Netherlands and Austria the balance of power appears unstable and likely to switch suddenly.

Likewise, the Franco-German axis is not exempt from the populist wave, and that the two pivotal countries of the European project host such loud nationalist and Eurosceptic voices it is anything but reassuring. In France, we know, there is one of the eldest and drastic expressions of national populism. The one-time FN, which as we have already written has its roots in the 70s, is certainly not a recent challenge, and yet in 2002's presidential elections Jean-Marie Le Pen – nationalist mentor and uncontested party's secretary for forty years, until his resignation in 2011 – accomplished to reach the runoff, beaten only by the Republican Jacque Chirac, victorious of the second mandate with a matchless 82% share. The party experienced a second life with the entrance on the stage of Le Pen's daughter, Marine. She did a mixture of smart movements in order to look more allowable for the average voter, including to take the distance from her father about the most racists, xenophobic and negationist standpoints. With a "rehabilitated" chairman, the former Front National ranks third in the 2012 presidential calls, and does even better two years later, when it became the first party in the 2014

European elections, finding the favor of a quarter of the French voters, a result that will repeat five years later[119].

In this respect, it must be noted that in the last decade a common trend has surfaced to almost all European party systems: when it comes to voting for the European Parliament, populist parties (from both right- and left-wing) perform better, compared to the domestic appointments. According to most analysts, this is due to the adverse popular feeling toward European institutions, depicted by populists as a frigid bureaucratic and technocratic machine; but it is true also because the citizens perceive the European dimension very distant and consequently they assume that voting for a party with extreme positions is not as bad, at least not as bad as in the national context. Notwithstanding, contrary to what was supposed, the two traditional European political families (EPP and S&D) still maintain a relevant majority of the seats, as an outcome of the last elections in 2019. Conversely, beyond the predictable victory of Farage's Brexit Party, the triumph of the radical right lists in Italy and in France is a warning for the future and produce an alarming rift with two founding countries essential to the EU's holding. In effect, if we sum the seats of the newly formed Identity and Democracy group (fostered precisely by Italian and French nativists) and those of the anti-federalist ECR – which embraces the Polish PiS inter alia – we have a right-wing Eurosceptic alliance that ranks third, surpassing Greens and Liberals, and counting around 120 units.

Back to the French soil, we cannot fail to report the last presidential election in 2017. Then, following the path inaugurated with the Brexit vote, Le Pen managed to score the best FN's result ever, reaching the second turn and obtaining approximately one-third of the preferences. What is more, for the first time since the post-WWII the two mainstream parties within the left-right spectrum were almost swiped away, reporting the lowest score ever charted, and the winner Macron, leading the new centrist force *EnMarche!*, had to use some populist rhetoric to curry favor with his countrymen, as occurred in the Netherlands[120].

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[119] *Populism, Dossier Plus on populism in Europe and the United States,* Statista, 2019, https://www.statista.com/study/69118/populism-in-europe-and-the-united-states/; Leslie Bethell, *Populism in Europe,* revised, expanded and updated version of a lecture given (in Portuguese – "O populismo na Europa") at the Academia Brasileira de Letras on 12 September 2017.
[120] Ibid.

In neighboring Germany, for its part, the situation does not seem so choppy, at least not yet. Here the political authority of the four-time Chancellor Angela Merkel heads the rampant national populist temptation, but not without recording backward steps. Despite performing the best results in the last electoral round, both CDU and SPD registered their worst scores since 1953, smashing the Merkel's SPD dream of one-color government and forcing to re-propose the grand coalition CDU/CSU/SPD, in the sign of continuity. In parallel, the Alternative for Germany (AfD), founded in 2013, has seen a steady headway, shifting from simple Eurosceptic and conservative claims toward more marked nationalistic attitudes, especially after the 2015 migration crisis. In 2016 it was able to gain seats in 13 of the 16 Lander parliaments, gathering more consensus within the states of the former D.D.R. A stat, the latter, reemerged in the federal elections one year after, when it reached an astonishing 12.6%, becoming the third supported list – the first one in Saxony – and entering the Bundestag for the first time, as the third political entity and main opposition group, strong of 94 seats. Germany is still the stronghold of the Communitarian dreams, but it comes out weakened too by the last electoral calls.

Even in the hyper civilized Scandinavian countries, the national-populist virus is taking hold. We have already touched on the situation in Norway, Finland, and Denmark. Well, Sweden is no exception. The Swedish Democrats, a populist and national-conservative party with ambiguous neo-Nazi roots, has become the third most voted force in both 2014 European and domestic calls, with 13% of preferences in the latter, and had also improved in the last general elections, reaching the 17.6% of popular support. However, the uniqueness of this formation, together with the highly proportional and fragmented Swedish political system, relegates it still to a marginal dissident voice, although the worrisome ascending tendency[121].

At this point, aware of the many peculiarities that characterize both the nature and the rise of the political entities just discussed, we want to showcase a few common trends and traits that reinforce our thesis of the double-source of social instability indirectly generated by the digital revolution. In the previous chapter, we've analyzed deeply these roots, namely the economic precarity and the identity bafflement. Threats that are perceived – real or unreal does not really matter here – by the large majority of the

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[121] Ibid.

workforce of the countries took in exam. Thus, the first common attribute to stress out is that all the right-wing populist parties do not appeal simply to the lower strain of society (the outcast), which in European democracies apart from being small in number is often politically disengaged; they, on the contrary, plead the lower-middle-class which, being the larger block of the social fabric, and being accustomed to exercise civic rights and tools, are a real electoral game-changer. They are angry, worried, disenchanted, nostalgic and the actual demagogic manner build exactly on this kind of sentiments.

In practice, beyond the general disorientation led by the new digital paradigm which encompasses every area of our life, they are on the edge of dramatic disruptions if the public institutions will not act soon and well. For instance, in a really recent OECD Document is acknowledged that of the 16-65 years old workers (in the OECD area) less than 30% have a "well rounded" combination of skills (cognitive, high-level literacy and numeracy, problem-solving) which are required to "navigate the digital transformation"; and more, it is reported that only the 40% of lower-skilled workers – who are more in need – receive a proper training, compared with the 75% of high-skilled ones. A state as such is a perfect generator of social anger. Then, if we count that the third wave's digital technologies will accelerate the changing pace and will impose severe risks of job loss due to AI automation, especially amid the blue- and white-collar workers, the scenario seems to be the ideal one for protective and nationalist reactions. With this regard a 2017 report of the McKinsey Global institute forewarned that approximately 30% of "work activities" could be automated by 2030, resulting in a loss of 375 million jobs[122].

But as we said the threatened people didn't turn their attention toward left, rather toward the right, because of the second fear, the cultural one, which combined with the unemployment menace shake profoundly identity's people. Not only due to the blabbered migration – an optimal scapegoat for both economic and identity sensed risks – the dread of losing traditional, and often religious, values can also be traced in the nostalgic vision of the past shown by the average voter of rightist populist realities. For

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[122] Data extracted from: OECD (2019), *Measuring the Digital Transformation: A Roadmap for the Future*, OECD Publishing, Paris, https://doi.org/10.1787/9789264311992-en; Manyika J. et al. (December 2017) *Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation*, McKinsey Global Institute, New York.

example, the supporters of parties like AfD, UKIP, Rassemblement National, PVV and Swedish Democrats, all share the view that 50 years ago the life was overall better, presenting those nostalgic tendencies particularly prone to conservative politics[123]. Additionally, in our opinion, this is another certifying sign that the national populist voters are unconsciously frightened by the digital revolution and its innovative maelstrom.

Therefore, economic, cultural and identity apprehensions – all largely derived from the change of technical paradigm – that are the fuel of xenophobic, Islamophobic or even racist and ethnic stands, ground for nationalist, protectionist, sovereigntist and also authoritarian reactions, all masterly synthesized in the right-wing populist package, in power (or almost) also within the next two realities that we decided to treat separately: Italy and USA.

4.2 The Italian Lab

The reasons why we've opted to analyze the Italian case *per se* are manifold: first is the political scenario and country more familiar to us, being citizen and resident in the same; second, the relevance of Italy in the EU context, being one of its founders, one of the most populous country, and second only to Germany and France for economic and industrial power, despite the discouraging recent trends; third, apart from Hungary and Poland, it is the European state with the largest populist records and it's where not long time ago the government was led by two populist parties in coalition; fourth the history of authoritarian and fascist degeneration of Italy should impart perpetual lessons for the continent all.

Here, we argue, the entire party system was messed up so harshly in the last years that many journalists and critics have called for the coming of the "third republic", evoking the political circumstances that arose in the early 90s, drawing more than one truth. In point of fact, the one-time surfacing second republic[124], together with the disappearance of traditional parties, has witnessed the entrance on the stage of Berlusconi, depicted by

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[123] Nationalism around the world, Statista Dossier, 2019, downloadable from: https://www.statista.com/study/58054/nationalism-around-the-world/

[124] It must be reminded that the Italian second republic does not entail a change in the constitutional regime, as occurred in France under De Gaulle. The "second or third republic" are more journalistic terms which expose colorfully the restructuration of the party system.

many as a populist character *ante litteram*. He was different, however, from modern Italian demagogic formations (M5S and Lega), under more angles: firstly he came from the business world and was yet a mighty millionaire; secondly, he was collocated in a more traditional center-right position so that we could catalog his creature *Forza Italia* as a sort of hybrid between Neo-liberal and National populism, according to the De Blasio and Sorice.

But let's focus on the last decade, where the central players are others rather than Berlusconi, marginalized after the tremendous years of the crisis[125]. Besides the short interlude of the center-left with the Renzi's PD, also beneficiary of rabble-rousing mechanisms – not by chance in the most successful years he called himself the *rottamatore*, railing against an "old and corrupt elite" – the Italian scene is dominated by two forces quite different from each other but that share a very populist essence, namely the M5S and more recently the Lega Nord, rechristened just Lega by the leader Matteo Salvini, capable to confer it a national breath far from the autonomist and regionalist's origins[126]. How to forget the nativist slogan "*Prima gli Italiani*", reiterated to the point of exhaustion in the last national calls and over, becoming the trademark of the new Lega, under the Salvini's era. Unquestionable evidence, the latter, of the party's evolution realized by shifting the electors' anger: from being against the Southern Italians (*terroni*) to become hostile (all Italians now) versus the African and Islamic immigrants.

Taking up the leitmotif of our thesis, we uphold that if the M5S enjoyed its fortune by exploiting the classic populist cleavage combined with the economic distress, in the long-run Salvini's Lega is more likely to secure the popular support because it takes vigor from both identity/cultural and economic anxieties bounded through the populist manner. The timeline of events and the more recent chronicles look to ascertain this viewpoint.

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[125] We refer to the events befallen during the last Berlusconi's government (the fourth one), from the sexual scandals to the spread's crisis, which have forced the leader of Forza Italia to resign.

[126] For more insights: Albertazzi D. et al. (2018), *No regionalism please, we are Leghisti! The transformation of the Italian Lega Nord under the leadership of Matteo Salvini*, Regional & Federal Studies, Vol. 28, I. 5, Pp. 645-671, DOI: 10.1080/13597566.2018.1512977.

From its foundation in 2009 (after the brief meetup's experience) until the 2018 general elections, the Five Stars Movement has been the protagonist of a march apparently unstoppable. Certainly, the events' juncture has been propitious, but above all the party's architecture and communication have benefited from the digital revolution itself, anticipating all other Italian political actors and becoming a unique case on the international scene[127]. Backward it two key figures: Beppe Grillo, perfect showman able to convey also emotionally the classic anti-establishment and anti-euro messages, and Gianroberto Casaleggio, enigmatic digital guru. The latter, computer master and marketing expert, in a letter written to *Corriere della Sera* a few years before his death, affirmed to be a Net fanatic since the 1990s, conscious of its revolutionary significance and especially interested in understanding and forecasting its social and political effects[128]. With this spirit, he founded the network strategy's company "Casaleggio Associati", today carried on by his son Davide, and the M5S together with the Genoese comedian. The marriage between the two entities is no mystery, and the avant-garde ideas of the Movement neither, starting from the dream of a (digital) direct democracy, embedded now in the Rousseau platform. In this sense we could define it as Techno-populism (nor left nor right, as the same members continue to repeat), referring again to De Blasio and Sorice.

The success was transformed in votes and proper political results: the first one in 2013, when they turned into the first Italian party, by seizing more than a quarter of popular consent. However, a German-type grand coalition between center-left and center-right relegated them to the opposition side. This provided even more fuel, and the growth continued: they collected more favor in the South, especially in Sicily, where the economic hardship is keener, but also elsewhere, notably in the 2016 administrative elections of Rome and Turin, conquering the two Major's positions. Finally, the last general elections marked their apex: a striking 32% of votes, again the first party, winning more seats by far in both Chamber of Deputy and Senate. This time their weight was too heavy to stuck at the opposition side, so after months of exhausting

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[127] For an insightful story see: Lanzone M. E. (October 2014), *The "Post-Modern" Populism in Italy: The Case of the Five Star Movement*, Emerald, The Many Faces of Populism: Current Perspectives, http://dx.doi.org/10.1108/S0895-99352014000022002
[128] Gianroberto Casaleggio: *«Ho scritto io le regole del Movimento 5 Stelle»*, letter to Corriere della Sera, Politica, 30 May 2012, retrieved from: https://www.corriere.it/politica/12_maggio_30/casaleggio-regole-mov-5-stelle_9e8eca9c-aa1a-11e1-8196-b3ccb09a7f99.shtml

negotiations, they formed a new government with the Salvini's Lega[129]. But for many, and for us too, this is a turning point which consecrates definitely the Italian populism in his far-right and national declension.

As a matter of fact, the last two years have witnessed a neat decrease of the M5S's backing and parallelly a ceaseless upsurge of Salvini's allure, as demonstrated by recent regional calls and also mostly by the 2019 European ballots. Lega and M5S have actually switched of power's position: the Movement has halved dramatically its score (17%), while the *Carroccio* has raised from the yet performing 17% at the national elections to a stunning 34%, becoming the most voted Italian political party. We add that currently, according all the latest polls, is easily the most beloved one, owing to Salvini's clever political tactics, his continuous propaganda, and also thanks to his divisive but firm actions promoted as Ministry of the Interior during the year (2018-2019) of the fully-populist government M5S-Lega, especially those against immigration.

We've named often the actual head of the Padanian party; this is not a random choice: in fact, we could straightforwardly state that today "the Lega is Salvini". With this regard, it must be said that the personification of the party is a very common feature of Italian politics: from Umberto Bossi, undisputed previous chairman of the one-time Lega Nord, to Berlusconi, Grillo, and Renzi, and also going back until Mussolini, doing a hazardous parallelism. Furthermore, it is also a shared feature between the large majority of national populist figures: Bolsonaro and Trump, Orbán and Hoffer, just to name a few in Europe and America, they all move the public attention from the party to the person, playing the role of the strongman who fascinates people by assuring sturdy and decisive measures against those uneases ensued from the ongoing digital revolution. The similarities between the quoted personages and Salvini are countless: they are all vivid specimens of right-wing populism as we've already extensively outlined.

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[129] The Lega, despite being the third party with 17% of votes, is the other winner of 2018 national elections because it is its best result ever by far, and hurl it as the heading actor of the Italian right, as Berlusconi's party have nearly disappeared.

4.3 USA great again?

Yes, Salvini and his brutal manners are a serious challenge for Europe and not only, especially if he will manage to seize the power in the next electoral appointments. Notwithstanding, if we leave the Old continent and we cross the Atlantic the situation has been particularly explosive for more than three years: welcome to the US under the Trump administration.

There is virtually unanimous consensus between analysts and observers that the American presidential elections held in 2016 (November 9th) are the second political maelstrom which, together with the Brexit, has exacerbated international political agendas, jiggling western democracies in their foundations. While the British decision to withdraw from the EU has destabilized more than never before the European project that, net of all its flaws and miscalculations, has ensured a pan-European peace for over 70 years, after centuries of bloody and catastrophic wars, Americans backing for an outrageous, populist, nativist, and *sui generis* Republican candidate as Donald Trump is undermining the oldest functioning democracy, compass reading for the entire world[130].

The unpredictable and contemptuous attitude of the American President has caused several negative repercussions on both the domestic and the international front, so much so that many senior executives and also members of the cabinet left the ship well before the expiration of the presidential term. On the international plane, the blind unilateralism pursued in economic matters, as exemplified by the trade war against China, in military terms, highlighted by its reserves towards NATO and the latest events in Iran, and also touching on the environmental issues, trivializing the work of a large part of the scientific community, has certainly damaged the image of the United States as a global power and as the example of development in line with democratic principles, favoring the advance of the Chinese authoritarian alternative.

At home, the continuing attacks on the judiciary, particularly with regard to the contentious politics on immigration and asylum seekers, the demonization of the press

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[130] According to Freedom House the USA under Trump administration has decreased to 86 out of 100 points of the *Freedom in the world* score (negative trend that however started yet with Bush and continued during Obama's presidency). Now their closest peers with respect to the cited score are no longer Germany, France of UK, rather countries like Belize, Latvia, Greece, Croatia and Mongolia.

and the unfounded accusations of electoral fraud by the opposition, during the midterm voting, have undoubtedly weakened the democratic structure of the country. These are all familiar mechanisms perpetrated by other demagogic and authoritarian figures – we've reported Hungary and Poland, but we could also easily add Russia and Turkey – who seek to subvert the democratic institutes in favor of their lasting power. To top it off, the conflicts of interest around his businesses and the numerous ambiguous relations with foreign powers, primarily undemocratic regimes, have culminated in the procedure of impeachment initiated last year by the President of the HoR Nancy Pelosi[131]. Denunciations of mutual favors between Trump and external powers are not new, it comes to mind the suspected Russian interference through the dissemination of trolls and fake news in the last presidential round.

Now, after having exposed in brief the negative outcomes of such a right-wing populist character, let's see how all this materialized a few years ago and above all why. When the Tycoon started his run for the Republicans primaries few were betting on him, anyhow he managed to become the Republican candidate by captivating public opinion with his "politically incorrect" language, but also thanks to the massive media coverage. Similarly, along with the race for the White House, he was able to polarize the political scenario as never before through his scornful dialectic and behavior. The night of the count was a remake of the Brexit: the adversary, the Democratic Hilary Clinton, as well as the "remain" vote, was largely expected to succeed, but state after state Trump turned into the favorite, winning nearly all the swing states, and eventually becoming the 45th POTUS. The result was net: 306 electoral college votes to the Republicans, 232 to the Democrats[132].

The historical conquest can be ensued from the motto "Make America Great Again". Here are summed up all the causes that give power to the national populism: economy, identity, culture. The storytelling is as follows: when the globalist elite, embodied by the Democrats, has ruled the nation, that is, the people who make it up (the real redneck

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[131] The procedure started owing to an alleged pressure of Trump and his staff on leaders of foreign nations, particularly Ukraine, to open investigations in their respective states against Hunter Biden and his father Joe, former US Vice-President and Democratic candidate in the 2020 presidential election. Thus it is contested an abuse of power of the Presidency to favor Trump's personal and political interests.

[132] *Populism, Dossier Plus on populism in Europe and the United States,* Statista, 2019, https://www.statista.com/study/69118/populism-in-europe-and-the-united-states/

Americans, not the immigrants who are also guilty of the current economic and cultural decay), this one has seen an inexorable decline; now it's time to change tendency, and to return to being great, as once, again; and the most suitable guide for this transition is precisely Trump, a "common man" who through his effort has succeeded as a multimillionaire, realizing the American dream. The nostalgic, nativist, sometimes xenophobic sentiments, masterly packaged in the populist skeleton, are what place Trump as "comrade" of the European equivalents and mentor for aspiring national populists.

To be honest, the radicalization of American politics does not surprise us so much. Conscious of the numerous reasons that explain it, and with always in mind the actor-network theory, we cannot fail to notice that the USA is the global epicenter of the digital revolution. It is not by coincidence that major digital improvements blossomed here, as we've lengthily discussed in the first chapter. The digital pioneer Anurag Harsh, aware of it, was uttering curiously in concomitance with Trump's election: "*The United States is undergoing one of the most significant and radical societal, cultural, and economic revolutions of its short history—quite possibly of all human history. The state of society, culture and economics of just two decades ago compared with what they are today is both disparate and staggering*"[133]. Therefore, the fact that the average Trump supporters, as well as the average "leave" voters, are white, Christians and aged (the so-called middle class) only reinforces our argument that the new digital paradigm and its spillover effects – perceived particularly keen from that group – are the basis for the surge of rightist populism in western post-industrial societies.

Again, our admonition is that the digital revolution, which entered not long ago in its third phase, and the consequent disruptions of its last technological frontiers are likely to manifest soon in our societies, of which the US one is at the frontline. In effect, the international debate on the automation wave led by the AI innovations focuses to a large extent on the American workforce. Several studies have appeared on Brookings, MIT and other advanced think tanks or academic centers. For example in a fresh paper, Frank Levy (MIT, Harvard Medical School, and Duke Robotics) warns about the next years

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[133] Anurag Harsh, *The Digital Revolution and its Impact on Industry, Consumers, and Government*, HuffPost news, 8 November 2016, https://www.huffpost.com/entry/the-digital-revolution-and-its-impact-on-industry-consumers_b_57acdc9de4b0ae60ff020c2d

where we will be spectators of a vast jobs' automation, in particular of the lower and middle-skilled ones like truck drivers, factory operatives and call center operators. The professor emeritus uphold that there is scientific evidence that the already existing AI will transform profoundly the American occupation structure, and *"since automation anxiety is already high, it is likely that AI-induced job losses will eventually create their own political reaction"* [134], a populist and restorative reaction, as Trump has already personified.

4.4 Brazil and over

Widening more the horizon we can spot that right-wing and populist temptations are not exclusiveness of the western world. Naturally, we are talking of geographic areas and political systems that have profound differences with the mature democracies of which we have discussed so far. However, putting our attention on the Brazilian scenario, we can discern some familiar features.

Let's remind, first of all, that Latin America has hosted a large variety of populisms since the second quarter of the last century: from the forerunners Juan Perón in Argentina and Getúlio Vargas in Brazil, to the modern ethno-populism prototype of Evo Morales. The demagogic manifestation in the Latin continent is so diversified and long-standing that we could consider it as an endemic phenomenon, intertwined with physiognomies typical of transitional democracies, above all the recurrent overlapping of military and politics.

In this frame, in October 2018, Jair Bolsonaro won the presidential mandate at the second-round with the 55.1% of votes at the expense of his rival and PT candidate Francisco Haddad, who had replaced the former president Juan Ignazio Lula da Silva, or simply Lula, faced with legal troubles over an alleged involvement in money laundering[135]. Bolsonaro, former army captain with ambiguous correlations to the last military dictatorship (1964 – 1985), has been a member of the federal parliament for over thirty years, demonstrating an attitude no so active, to use a euphemism – Imagine

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[134] Levy F. (2018), *Computers and populism: artificial intelligence, jobs, and politics in the near term*, Oxford Review of Economic Policy, Vol. 34, N. 3, Pp. 393–417.

[135] The storyline is quite unclear, and are not to exclude political motives. Whatever, Lula has passed almost 2 years in the jail, after being released last November following a supreme court's decision. The process is still pending.

that he has had only two bills approved overall[136]. He's joined the PSL in early 2018, altering the nature of the party from a simple conservative posture to more national-populist, social-conservative and radical anti-communist visions, mixed with liberal economics (especially in the BRICS mark and toward the US).

His rude dialectic, his penal populism – urging fervent actions against criminals out of control – the "one-side corruption", his xenophobic positions toward feminist and LGBT communities, and his disregard of experts opinions about the environmental matters, coupled with the promises to defend the traditional values of Christian families, as well as the country from the migratory pushes (notably from Venezuela), have granted him the pass to join the club of authoritarian and demagogic leaders. Not by chance the BBC famously nicknamed him the "Trump of the Tropics".

Of course, the reasons behind Bolsonaro's popular backing are manifold and peculiar of the Brazilian scene, come to mind the fundamental role of the Evangelic church which has a very potent grip on society or the action of businessmen and thinks tanks which mask capitalist interests as folk demands through misleading studies. On the other hand, the new job arrangements and the economic changes in general, together with the sensed loss of traditional values, have a certain role and are, also in this case, ensued (partially) from the digital revolution, especially in the urban areas. I've been spectator of it during my exchange period in São Paulo where I could observe how many Uber drivers and food delivery guys were around the megalopolis, not to mention the massive use of social media – Brazil is the second country in the world, with an average of 9 hours and 32 minutes spent every day[137]. Therefore, it should not surprise the support to Bolsonaro of the urban middle classes, evidence yet reported in the US and UK alike, so much so that someone proposed to rewire the WASP acronym (White, Anglo-Saxon Protestant) as WASSC: White, Anglo-Saxon Sympathizer, Christian[138].

A very divisive figure like Bolsonaro, who according to Freedom House despises various democratic institutes, ruling the fifth most populous country, the eighth world

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[136] Stats and info from: *Brazilian Presidential Elections 2018 - Statistics & Facts,* Statista Topic, 18 July 2019, https://www.statista.com/topics/4888/brazil-election-2018/
[137] Kemp S. (31 January 2019). *Digital 2019: Global Digital Yearbook,* WeAreSocial and Hootsuite.
[138] Barros A., Wanderley S. (2019), *Brazilian businessmen movements: Right-wing populism and the (dis)connection between policy and politics,* SAGE, Organization, I-II, DOI: 10.1177/1350508419883378

economy, and the chief state of the Southern hemisphere, is not a positive and reassuring sign for the international order.

Regrettably, other emerging countries are in even worst conditions, let us think to Russia and Turkey. The first is dominated for more than twenty years by the undisputed strongman Vladimir Putin, who has undeniably transformed modern Russia in an illiberal and authoritarian state, also revising the constitutional asset on more occasions, where shade elections and puppet government officials keep the empty nomenclature of Republic. For these and other reasons, it should be collocated in the cluster of the "not free states" according to Freedom House.

The second is a miserable example of democracy worsened. Here the populist president Recep Tayyip Erdoğan, in power since 2003, when he was nominated prime minister, is transforming the republic into a presidential system close to a dictatorship, with historical reminiscences of the Ottoman empire, way far from the democratization and secularization accomplished during the Kemalist era. The situation became particularly serious after the doubtful coup d'état failed in 2016, which resulted in a constant state of alert and numerous purges of civil servants were carried out, as well as the imprisonment of thousands of politicians, judges, journalists, academics and civilians with uncomfortable political views for the establishment. In this atmosphere were held presidential and parliamentary elections in 2018, with the obvious outcome of the reconfirmation of Erdoğan.

Finally, it is worth mentioning also India that under the guidance of Narendra Modi and his Bhartiya Janata Party has undertaken a dangerous drift towards a nationalist and populist right, critic of the mainstream Congress Party, and of all the western media, NGOs and academia, as well as a grievous adversity towards the Islamic and ethnic minorities[139] – It should be reminded that India and Pakistan, divided on religious base, are both nuclear powers, making the Indo-Pakistani border one of the hottest and most daring fronts in the world.

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[139] All the info are extracted from: *Populism, Dossier Plus on populism in Europe and the United States,* Statista, 2019, https://www.statista.com/study/69118/populism-in-europe-and-the-united-states/; *Democracy in Retreat. Freedom in the World* 2019, Freedom House, from: https://freedomhouse.org/report/freedom-world/freedom-world-2019/democracy-in-retreat; McDonnell D., Cabrera L. (2018): The right-wing populism of India's Bharatiya Janata Party (and why comparativists should care), Routledge, Democratization, DOI:10.1080/13510347.2018.1551885.

With this, we conclude our journey in the present political landscape, deemed as an indirect outcome of the shifting technical paradigm, the so-called digital revolution. A journey that rubs in our face how strong the right winds are blowing on consolidated democracies and on the emerging ones alike. But moving beyond the space, back in the time, the similarities with the pre-wars span are troublesome. This is exactly the warning that we are going to launch in the last paragraph.

4.5 Lessons from History

In the preceding pages we have described the emergence of the new digital paradigm that by twisting and capsizing societies as a whole, and especially those people who do not have the proper means to understand and navigate it, it has created the conditions for the bourgeoning of populist and reactionary policies, and it keeps fostering the attainments of rather controversial strongmen who resemble nefarious times. In this final hat, we want instead propose a succinct comparison with a not so distant historical epoch that in many respects has redolent and, politically speaking, disturbing likenesses. We are alluding to the industrial revolution (first and second) linked with the rise of aberrant political ideologies and practices: from the most exasperated versions of nationalism to the surfacing of fascism. We do not aim to provide theoretical, much less empirical, evidence of such a connection, because due to the massive intellectual effort and the lengthiness that would require it, we believe that this is not the correct place to do so. Thus we assume it, in the wake of the analysis that we did in describing right-wing populism as an (indirect) outcome of the digital revolution.

What is more, the dissimilarities between the two historical periods are innumerable, and we are not upholding at all that we are on the verge of a definitive global war: thank heaven the universal institutional framework created after the WWII is the most solid ever, the democratic maturity of the Western world and beyond is at an upper level, the background of human rights is universally accepted and recognized, and the trade and economics interconnection between countries is too pervasive. However, reflect on the past is never a mistake, on the contrary, taking into account the necessary differences, it can give us wise and far-sighted lessons, and in some cases, it can also serve as a socio-economic and political thermometer. Let's proceed in stages.

In primis we want to clarify that the ideas of the cyclicality of events and the connection between technological development and the change of socioeconomic paradigm in capitalist systems are nothing new; in fact, we have taken inspiration from the Neo-Schumpeterian school that resumes the Schumpeterian tradition implementing it with the Kondratiev's theories. So, according to one of its major exponents, the Venezuelan scholar Carlota Perez, the *"Kondratiev's long waves are not a strictly economic phenomenon, but rather the manifestation, measurable in economic terms, of the harmonious or disharmonious behavior of the total socioeconomic and institutions system (on the national and international levels)"*, where for system she means the capitalist one, composed of "*two main subsystems: on the one hand a techno economic, and on the other a social and institutional, the first having a much faster rate of response than the second"[140]*. We simply use this conceptualization as a point of departure, extending its corollary to the political sphere. With such a perspective we venture in displaying the abovementioned comparison[141].

So, the digital revolution, as depicted in the early chapters, is an extraordinary moment of technological innovations; similarly, everyone would agree that the industrial revolution was also, with resemblances in the advancement's patterns. The latter dates back conventionally to the last third of the eighteenth century, resulting from breakthroughs such as the steam engine, the spinning jenny or the Cort's process in metallurgy, initiating the first automation processes by replacing traditional manual tasks with machines. Its original epicenter was the UK, but it spread soon to North America, continental Europe, and Japan. The application of the steam engine to the transports marked a critical schism with the past: from the outset of the XIX century steamships and steam locomotives had been reducing the transport time and augmented capacity hand in hand. On land, this entailed the huge construction projects of railroads which in turn connected cities, regions, nations and eventually continents. Most importantly, it increased the scope and the geographical reach of industrial activities, triggering the urbanization of the world.

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[140] Perez C. (1983), *Structural change and the assimilation of new technologies social systems*, Futures, Vol. 15, N. 5, Pp. 357 – 375.

[141] For a comprehensive grasp of the Kondratiev waves linked to the innovation patterns, matching somehow with the industrial revolutions, see: Perez C. (2010), *Technological revolutions and techno-economic paradigms*, Cambridge Journal of Economics, Vol. 34, N. 1, Pp. 185 – 202.

In parallel, the communication sector was bringing societies in the modern age. Along the first half of the same century the inventors Morse, Gauss, and Weber, conceived the electric telegraph that for the first time in history bred a distinction between the speed of communication and physical transportation. Entering in the second industrial revolution, thousands of miles of wires and submarine cables speeded up also international communication, initially through the telegraph, subsequently replaced by the Bell's creature: the telephone. At large, the development of electricity and chemistry, the combustion engine, and all other science-based innovations – not by chance the first R&D laboratories have appeared in this period, inside the German chemical factories – decreed definitively the advent of the modern and industrial world[142].

The reflects on economy and society were of epochal scope, like those produced by the installing digital age, we suggest. For example, the introduction of the microchip, designed by Intel in 1971, is regarded by many as a key turning point in communication development because, being at the core of the whole ICT compartment, caused a shrinking of space-time that has nothing to envy to the electric telegraph and telephone, which had done the same a century before[143].

The list of scholars who endorse these comparative visions is quite long. Inter alia the renowned business experts Erik Brynjolfsson and Andrew McAfee, who reflect on the "Second Machine Age" and its consequences in the marketplace, on labor force and at the organizational level, looking it as a sort of remake of the "First Machine Age", namely the transition from steam power to electrification which prompted the full reform of factories, particularly in the manufacture sector. Actually, as we've seen in chapter two, the contemporary business model is being totally reshaped by new digital technologies. Therefore, it could be a stimulating exercise detect similitudes between the protagonists of the so-called "Gilded Age" and the contemporary winners of the digital economy. On the one side, Bell, Carnegie, Rockefeller, and Vanderbilt, who amassed uncountable fortunes, creating quasi-monopolies in key sectors by seizing the

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[142] For an in-depth history of these technical breakthroughs we indicate the masterpiece of David Landes: *"The Unbound Prometheus: Technological Change and Industrial Development in Western Europe from 1750 to the Present",* published by Cambridge in 1969.
[143] Rennen W. and Martens P. (2003), *The Globalization Timeline,* University of Maastricht (ICIS), Integrated Assessment, Vol. 4, N. 3, pp. 137 - 144.

technological momentum in communication (telephone) and transportation/industry (steel, oil, and railroads). On the other side, Bill Gates, Steve Jobs, Page and Brin, Bezos and Zuckerberg, whose firms dominate the core of the post-industrial economy.

However, besides the change of business elite, we are more interested to show the effects felt by the workforce and about social/cultural identity, keeping in mind the current condition. It is undeniable that along that period western societies had changed face dramatically; the industrial revolution (as the digital one today) induced a drastic discontinuity on the material basis in society, economy, and culture. In fact, the historian Emma Griffin informs us that *"large numbers of families gave up working the land, and moved to towns and cities to take up employment in factories, mills and mines. As each decade of the early nineteenth century passed it became increasingly obvious that Britain had left behind its pre-industrial past and was travelling on an entirely new trajectory"[144]*. The same was true, with some decade of discrepancy, for most European countries, and for the United States too. The colossal shift of population from rural areas to the burgeoning cities produced different reactions at the laboral level: in the long run and in general terms this process led to more jobs for skilled and unskilled workers alike; conversely, in the short term, the results were not so jovial and peaceful. According to Freeman and Louçã, *"there is strong evidence of very serious unemployment in the 1803s and 1840s in Britain"* and also *"widespread unemployment in most industrial countries in the 1880s and especially in those that were most advanced in the use of machinery"* which led to demonstrations and riots of suffering laborers[145].

In a very similar fashion to the aspects that we have discussed in the third chapter, the profound transformations that took place during that period had generated considerable turmoil in the identity of the common people (consciously or unconsciously). Paraphrasing Emma Griffin again, *"The generation born in the 1790s did display an unmistakable awareness that the times had changed. This period marks the emergence*

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[144] Griffin E. (2013), *Liberty's Dawn. A People's History of the Industrial Revolution,* Yale University Press, New Haven & London, p. 4.
[145] Freeman C., Louçã F. (2001), *As Time Goes By. From the Industrial Revolutions to the Information Revolution*, Oxford University Press, New York, p. 338.

of a new kind of society, a society in which change over an individual's lifetime became normal… What is also striking is the degree of agreement between the autobiographers concerning the general tenor of the changes they had witnessed"[146].

Not only the factory works and the urbanization, but also the innovations in communication, elicited a strong emotional impact and a general sense of bafflement, a little bit like the ubiquitous computing is carrying out in this millennium. Manuel Castells makes us aware of the space-time skewness proper of the information age; the same kind of asymmetry was traceable at the dawn of the XX century, when telegraph and telephone, built upon the electric systems, coupled with other innovations in entertainment, like the phonograph and the cinema, had warped the traditional conception of time and space. The Fin de Siècle and the modernist movements were evidence of it. So, the cubist painter Fernand Leger was stating in 1913 that: *"present-day life, more fragmented and faster-moving than preceding periods, was bound to accept as its means of expression, an art of dynamic `divisionism"*; meanwhile the conventional rules in narrative were being deferred by Virginia Woolf and other writers with the aim to represent the rapid-transit simultaneity of material and psychological dimensions[147]. Today's expressions of post-modernism, net of the diverse peculiarities, it brings to mind that epoch, as both moments combine elements of revolutionary nature and conservatism.

In light of what said so far, political associations become a natural consequence. Hence, back then, the surging nationalist doctrines were providing a new identity to people, also because the described communication and transportation technologies were making possible the homogenization of distant and different regions within the state's territory. Moreover, we cannot fail to notice that, beyond the colonial-imperialist and economic reasons that triggered the WWI, the most extreme nationalist approaches provided the ideological ground to justify the war atrocities among the masses of soldiers: people as imagined nation indeed[148].

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[146] Griffin E. (2013), *Liberty's Dawn. A People's History of the Industrial Revolution,* Yale University Press, New Haven & London, p. 242.

[147] Jackson M. (2008), *Distracted: The Erosion of Attention and the Coming Dark Age,* Prometheus Books, New York, Ch. 1.

[148] For a far-reaching fathoming of nationalism' ideology, we advise: Hobsbawm E. J. (1992), *Nations and Nationalism since 1780. Programme, myth, reality,* Cambridge University Press, 2nd Ed, New York.

Most disturbingly, history tells us that the fascist ideology, which was enthralling the popular masses of continental Europe, stemmed from the then economic insecurities and identity disorientation; just this is enough to launch a peremptory caveat about the contemporary rightist populism which, ensued from similar malaises, sprawls across democracies. Actually, many historians have argued that fascism represents a mixture between socialism and nationalism, a conjuncture that has deep roots in the XIX century. Amidst them, the Israeli historian and political scientist Zeev Sternhell have formulated an original and notable theory. In the illuminating book where his theorization is matured, he addresses the theme commencing with a tantalizing assertion that the fascist ideology is *"a very specific revision of Marxism"*[149]. Thus, at least at the onset, it was not a conservative reaction. On the contrary, it was a revolutionary response that swapped class with nation and reason with myth. Sternhell also acquiesces with other classic views insofar he affirms that socialism and nationalism were both constitutive elements of European fascism, cultural and intellectual roots established well before the "great war", along the XIX century indeed. He pushes ahead eventually, stating that in its very nature fascism was a radical rejection of the Enlightenment values, a ghastly doctrine which built on the pan-European uneasiness with the then-modern world.

Needless to say that there are manifold reasons why fascism is incompatible with today's populism, starting with the fact that the first is entirely anti-democratic while populist actors contend elections. Nevertheless, the revealed similar roots should serve as a perpetual alert to policymakers and common people (electors) alike.

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[149] Sternhell Z., et al. (1994), *The Birth of Fascist Ideology: From Cultural Rebellion to Political Revolution.* Princeton University Press, Princeton (N.J), P. 5.

Conclusions

Along with this multidisciplinary and comparative work we have discussed of many intertwined themes, with the aim to provide a holistic understanding of the transitional age of which we are spectators, trying to derive useful lessons for a critical mindfulness of today's political scenery in most democracies, mostly focusing on the western ones. We've started by affirming that technology matters for society at large, but rejecting deterministic stances, rather, taking inspiration from the actor-network theory. We have also acknowledged Neo-Schumpeterian theories, extending them to the political realm, in order to justify a sort of cyclical historical perspective, which compels us to look at the past so as to better grasp the present condition, and possibly forecast the upcoming aftermaths.

With these lenses, we've offered in the first section a wide and deep panoramic of what we have referred to as the digital revolution, an epochal shift of the technical and socioeconomic paradigm comparable with the preceding industrial revolution. Thus, the first chapter was dedicated to reporting the technical and historical evolutions, occurred in the last century, which led to the current state-of-art. In doing so, we have decomposed the revolution in three phases, drawing on the ITU discussions. So: 1) the digital emergence, itself divided in a "prehistorical" period and a proper emergent one, which encompass a temporal span of roughly forty years (1950 -1990); 2) the network age, characterized chiefly by the outbreak of internet and the definitive popularization of ICT technologies; 3) the advanced stage began more or less 15 years ago and still developing in our days (apparently with an accelerated pace). Thereby we've stepped into the second chapter where we have described the new surfacing breakthroughs – namely AI, Robotics, IoT, Blockchain, Cloud Computing, VR, Big Data/Analytics – and we have shown how these, together with more mature digital technologies, are dominated by the titanic tech corporations. We have labeled the chapter "the digital paradigm", delivering examples of how the portrayed innovations have direct and disruptive effects on virtually all human-related fields: from education to communication and media, from the international institutions until potential reconfigurations of the democratic structure. We've paid particular attention to the

economic sphere, with the attempt to explain the scaffold of the present-day digital economy. For this burdensome task, we've banked on the milestones of leading figures such as Shapiro, Benkler, Srnicek, Tapscott, among others, stressing out key concepts like data, networks, and platforms, complemented with insightful statistics.

Having clarified all this, we have ventured in the second part of the thesis, also composed of two chapters. Here we've adopted a considerably more sociopolitical angle. Inspired by the monumental "Information Society" of Manuel Castells we've upheld that the change of technological paradigm entails, beyond positive phenomena, unruly consequences for society, more specifically the distress of workers (lower and middle-skilled ones) and a general sense of uprootedness from traditional cultural values; both conditions are detrimental for identity's people. Hence, we have discussed of the negative outcomes of Gig Economy and Sharing Economy architectures, the threats of AI automation processes, but also the fears of western middle-classes to lose their cultural values due to multicultural politics, post-materialist values and minorities-oriented rights; a middle-older class nostalgically anchored to a bygone analogic era. We went deeper in these kinds of explanations making reference to several studies of recognized economists, sociologists and political scientists, bounding the abovementioned malaises with the different right-wing populist forces in the limelight. In a nutshell: today's populisms are a side-effect of the digital revolution. But in accepting their dangerous behaviors toward democracies, as well registered by Freedom House, we've also stated that the best approach to tackle the challenge, before they take nefarious drifts, is to understand them as vectors of popular legitimate claims not heard by traditional parties, and also like patent signals of structural changes, just as Laclau informed us.

Finally, to underline the urgency of concrete actions, we have dedicated the fourth chapter in accounting the salient steps occurred in the last years across Europe and America, and we've compared the various rightist populist protagonists, from Orbán to Salvini, from Trump to Bolsonaro, passing through Farage and Le Pen. Therefore we've exhibited their electoral successes, their impacts on democracy, their rhetoric, and their sources of popular support, all ensued from the two original roots: economic insecurity

and identity bewilderment, equally stemmed from the rolling technical revolution. We have concluded launching an evocative warning, by reminding that also the industrial revolution had provoked destabilization in the social fabric and, maybe coincidentally maybe not, after those events the most radical nationalist doctrines together with the fascist ideology gained support with the catastrophic consequences that alas we know. After all, following the Kondratiev's waves, it is noticeable that populist and, most broadly, extreme political reactions tend to gain strength in the wake of economic downturns leveled by the technical discontinuities. And we are not alone in asserting it: amid numerous samples, note that Barry Eichengreen is of the same opinion in his last book "The populist temptation".

Now, in light of what has been discussed and demonstrated, and contemplating that this thesis represents the culmination of years of university studies in the field of political science, we do not want to limit ourselves to depicting and comparing historical-political events. We find it more appreciable to exhibit also possible solutions to the risks highlighted, albeit relying on the foresight of recognized authors and key players of the international order. In other words, we feel the duty to respond to the question already posed in the introduction:

How we can act to address the digital revolution in a way that its disruptions are minimized, and the benefits are amplified and shared equally among people, building a pacific, sustainable and flourishing future?

The first answer is retraceable in the words of our prime minister Giuseppe Conte in the frame of the meeting with the LUISS students of last March when he responded to my question about the impact of the digital revolution on democracy. Amongst other remarkable statements, he affirmed that there are some preconditions to fulfill in order to steer the headway, i.e. a free and universal internet access, overcome the digital divide[150], and, we want to add, a proper "digital alphabetization". Measures of this type

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[150] Around this concept there are many interpretations and categorizations, for a well-rounded discernment we indicate: Hilbert M. (2011), *The end justifies the definition: The manifold outlooks on the digital divide and their practical usefulness for policy-making*, Telecommunications Policy, N. 35, Pp. 715–736, DOI:10.1016/j.telpol.2011.06.012

are well-acknowledged and undertaken by several national governments, and even better by the UN, the OECD, the EU, and all the principal IOs. Notice, for instance, the IGF activities – the last annual meeting has been centered on the digital inclusion – or the European Commission that in the last three cycles it has modified considerably its conduct to pursue these objectives (and others related) adopting a series of avant-garde actions whereof the most noteworthy is the Digital Single Market[151]. Likewise, the OECD has regarded the access issue as one of the seven policy domains that countries should follow so as to couple properly with the digital transformations and ultimately build a brighter future. The same organization informs that, besides the mere access that is yet becoming more universal day after day, it is fundamental to increase a more rounded use' sophistication, enabled by skills like numeracy, literacy, problem-solving and creative/critic thinking[152] – in short, what we've named digital alphabetization. In political terms, this would mean a great help to fight fake news and other modern propaganda tools used by populists and extremists politicians to expand their consent bases. Once these aspects are accomplished, all society's segments will be fully familiar with the extant digital paradigm, having increased opportunities and possibly enhancing the benefits on an equal base.

However, apart from advancing in these preliminary requirements, we should embark on two clusters of actions that match with the two detected "deep roots" underneath the favorable moment of national populism; thus, on the one side tackle the economic threats, on the other mitigate the identity and cultural unease. Only proceeding in such a way we'll be able to absorb positively the digital revolution.

Let's starts with the economic concerns. In the last years, almost all political key actors have called for urgent actions within the work environment, recognizing the radical changes occurring in it. Changes so profound that Barack Obama himself has recently stated: *"because of automation, because of globalization, we're going to have to examine the social compact, the same way we did early in the 19th century and then*

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[151] The DSM' reach is quite wide-ranging and commendable. We signal the website to appreciate better its features: https://ec.europa.eu/digital-single-market/en

[152] See: OECD (2019), *Measuring the Digital Transformation: A Roadmap for the Future*, OECD Publishing, Paris, https://doi.org/10.1787/9789264311992-en

again during and after the Great Depression. The notion of a 40-hour workweek, a minimum wage, child labor laws, etc.—those will have to be updated for these new realities"[153]. Experts panels from the EU Commission to the WB, from the OECD to the ILO, passing through the WEF, have redacted numerous reports and documents which include enlightening sets of measures. We have browsed some of these texts and we want to present the central recurrent themes.

First of all the stress and the anxiety, which can turn ultimately in mental illness, caused by the faster volatility of today's employment framework should be lessened through new social rights and safety nets, for all. That is why there is a loudly call for a "new social contract". To be clearer, it is imperative to regulate properly the gig economy, harmonizing freelance works and non-standard employers with the traditional ones: we need a more comprehensive and neutral scheme of social protection and security, centered more on the worker (in constant movement) rather than on the job.

Among various concrete proposals, a special seat is reserved for the universal basic income. In truth, many European welfare systems yet provide similar arrangements: the *reddito di cittadinanza* recently introduced in Italy by the M5S, and the *Revenu de solidarité active* in France are two examples, but the list is quite longer. In its more extreme version, however, this became the fundament of a society where individuals do not work anymore owing to the full automation led by technological advances[154].

Aside from futuristic speculations, all the abovementioned IOs agree that AI automation and new work arrangements are impacting the labor market and in particular the middle-lower skilled workers. Hence, they and we call to enhance workforce overall skills so as to avoid a perilous job polarization, typical engine of social anger. Already today the skill gaps between employees are somehow worrisome, but the forecasted results of the automation wave are even worst: with an always more accelerated clip, many skills will become obsolete and new ones will be required, wiping out millions of

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[153] West, D. (2018), *The Future of Work. Robots, AI and Automation.* Brookings Institution Press, Washington D.C.
[154] With this respect see: Srnicek N., Williams A. (2015), *Inventing the future. Postcapitalism and a World Without Work.* Verso, London & New York, Ch. 6.

inoperable jobs. On the other hand, it is expected that many job positions will be created, probably more than those lost, but only those who will have an apprised skillset will be able to seize them up. So it is essential that many workers will be ready to change environments and mindsets accordingly the last innovations. In order to do so, one of the most subscribed measures is to rethink drastically the people learning method: we need to move away from the current model, where individuals acquire recognized abilities in school and university to deploy them later at work, to a new lifelong learning approach in which skills are continuously updated according to the changing circumstances[155].

A wise placement of the displayed actions should smooth up the first reason behind right-wing populism reactions, the economic insecurity, creating a solid and inclusive job environment and conferring to people a renewed identity, as workers. Notwithstanding, to achieve an optimal result, it is important to strengthen identity by ameliorating also other qualities, those related to the second source of popular disquiet: the cultural confusion.

With this regard, we believe vitally worth to improve the emotional intelligence and the cross-cultural awareness of people from all social strains. We should build a sensitive consciousness of others' feelings, needs and belongs, through a cooperative attitude and inclusive understanding, without forgetting the appropriate respect for local and traditional values. The international exchange programs well in placement among universities and other educational institutes – of which I've also benefitted – are an excellent step in this direction, but they are not enough apparently. We should fortify it and offer also far-reaching alternatives: e.g. compulsory training programs abroad, at least once for every worker. This second block of actions is aimed to offer an upgraded mindset in line with the current global flows, in order to diminish the sense of value loss

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[155] The documents that we have rapidly browsed are: *The Future of Jobs Report 2018*, Centre for the New Economy and Society, World Economic Forum, Geneva, 2018; *The Future of Work*, Highlights, OECD Employment Outlook, 2019, available at https://oe.cd/employment-outlook; *The Impact of the Digital Transformation on EU Labour Markets*, Report of the High Level Group, European Commission, Brussels, 2019; *Work for a brighter future*, Global Commission on the Future of Work, International Labour Office, ILO, Geneva, 2019; World Bank (2019), *World Development Report 2019: The Changing Nature of Work,* World Bank, Washington, DC, DOI:10.1596/978-1-4648-1328-3.

and hostility toward alien cultures. In such a way also the cultural cleavage would be less exploitable from the populist propaganda.

As "grand finale" we want to launch an original and suggestive idea-project which, relying on current features of the digital economy and taking benefit from the last technological frontiers, could contribute to alleviating the economic troubles and identity bemusement of communities. We will call it *Radix*.

In practice, the proposal is to create an online platform that connects people with their far roots, becoming another manifestation of sharing economy in a P2P fashion, and more precisely of gift economy. Let me explain it better: on the one side, there is the individual user with genealogic roots in a town where he – and likely all his family – no longer lives; on the other side, there is that small locality (i.e. less than 50,000 inhabitants) which discloses to the individual a series of projects that, if funded, could improve the quality of life and/or boost the economic vibrancy of the local community. So, the user, willing to help his community of origin, makes a donation; on the other hand, the local administration thanks through public tributes, such as naming a street, a square or a building, or offer services provided by the local SMEs, in partnership with the public administration.

Well, to make it feasible there would be preliminary steps, *in primis* digitize as much as possible the birth records of these localities and unify them in a shared database. Then, thanks to AI algorithms and cross-reference procedures would be possible to detect the original locality of the users registered to the platform. The transactions could be certified via blockchain technologies, and other digital innovations could be implemented so as to bestow quality, transparency, and security.

The project takes inspiration from the Southern Italy realities, small towns spectators of relentless trends of depopulation due to inactive responses to modern times – I personally come from there, a Sicilian inner town: Caltagirone. In the event that this project takes hold, the goal would be to revitalize these realities with the donations of those individuals bounded by far roots, financing projects in the wake of the digital

transformations, for example working on the realization of smart cities through the deployment of IoT technologies.

Of course, relying solely on the altruism of others is certainly not the best business strategy. So, to turn the platform in something popular and trendy we would need to sponsor it in some way. To this end, the role of influencers and social media would be pivotal. For instance, with an Italo-American lens, how many Hollywood stars and international singers have Italian origins, usually from tiny cities? That could be an excellent start.

In the most positive scenario, such economic recovery could invert the abovementioned trend of depopulation, creating a positive spiral of economic opportunities. How we've shown above, more and better job prospects = fewer reasons to vote populist and reactionary figures. With this respect, it must be reminded that right-wing populist parties have a more powerful grip on these small realities, partly due to the economic malaises. Moreover, once in the limelight, this project could also be an input for a reversed movement from the alienating big metropolis toward the smaller human-sized towns. These would mean also a further identity benefit, by strengthening local communities. What is more, because the donations would come from individuals of other countries and continents, perhaps far away, this would increase the mindfulness of the cross-cultural global links between people, generating an overall positive view of the foreigner and installing a more relaxed atmosphere on a local level. In such an ideal world, rightist populist actors would see their sources of popular support fading away, and subsequently, the political climate would assume a completely different connotation than the current one. We know that is likely a naïve idea of a young dreamer, but we prefer to share our ideas rather than close them in our limited minds.

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Summary

Technology matters. This is our simple but forceful starting point. The knowledge of artifacts (from Greek: τέχνη, techne=art, skill + -λογία, -logia=knowledge) is something ancestral and recurrent along with all human history. But technology matters not only to the individual condition and the physical environment but also to the way we live together in society. That is why the leitmotiv of this historical and sociopolitical work will be the technological phenomenon that we refer to as Digital Revolution. Inversely, we are also conscious that explaining historical, political and social changes requires a set of variables much wider than technology alone. For this reason, we reject the theoretical framework of technology determinism and we prefer to adopt the so-called Actor-Network Theory. Unlike the deterministic doctrine, which leads us to a passive adaptation to the technological changes, the actor-network theory gives us a deeper awareness of such changes in a context of multiple intertwined variables, revealing that it's also possible to shape those changes and thus our future.

The central focus of the present dissertation is the socio-political consequences of the technical revolution. It is quite intuitive that our world changed significantly in the last thirty years, the numbers in 2019 of mobile phone unique subscribers (5,112 B.), internet users (4,388 B.) and social media "faithful" (3,484 B.) are impressive. But what is exactly the digital revolution? In short, it is an epochal change of paradigm comparable with the other two major ones that occurred along with human history: the agrarian revolution and the industrial revolution. Actually, we could trace some striking similarities among them: The Agrarian, or Neolithic, Revolution (10.000 – 2.000 BC) marked the transition from a nomadic lifestyle of hunting and gathering to a sedentary one built on agriculture and settlement, laying the foundations of human civilizations; the Industrial Revolution (1st and 2nd / 1770 – 1950) also carried out a thoughtful change in human existence, it's the beginning of the industrial production, and consequently of the modern urbanization, a ceaseless and massive displacement of people from rural areas and small towns to the modern industrial cities; similarly the Digital Revolution (1950 – today) is shaping radically a new way of life, opening the doors of a new virtual and timelessly interconnected world, marking the shift from a material system to a (partially) immaterial/virtual one, for the first time in human history.

The ideas of the cyclicality of events and the connection between technological development and the change of socioeconomic paradigm in capitalist systems are nothing new; in fact, we have taken inspiration from the Neo-Schumpeterian school that resumes the Schumpeterian tradition implementing it with the Kondratiev's waves. In particular, we pay tribute to the admirable work of Carlota Perez. This school sees the capitalist society as composed of two subsystems: the technical-economic and the socio-institutional, having a different rate of response to technological innovation (the first is much faster). So under this angle, the long cycles theorized by the Russian economist are not just economic phenomena, but rather paradigmatic shifts of the society as a whole. We simply use this conceptualization as a point of departure, extending its corollary to the political sphere. We can't avoid noticing a suggestive coincidence between the final years of a Kondratiev wave (…1880, 1930, 1980…) and the explosion of populism and political radicalism more in general. Likewise, we affirm that populist and, most broadly, extreme political reactions tend to gain strength in the wake of economic downturns leveled by the technical discontinuities, matching with the Kondratiev waves' evolution. Alongside the thesis and particularly in the last paragraph of chapter 4, we provoke the readers by presenting a comparison between two historical periods and their political maelstroms: on the one side, the Industrial Revolution, its technical and socioeconomic disruptions and the (linked) right-wing ideologies, thus the exasperated nationalism and fascism, the latter intended as a mixture of socialism and nationalism and a radical rejection of the Enlightening values – paraphrasing Sternhell – which enthralled the European masses with the catastrophic end of the two World Wars; on the other side, the Digital Revolution, its technological breakthroughs and the subsequent socioeconomic anxieties, connected to the rightist populist figures in Europe and America.

But before reaching this point, the intellectual journey is quite articulate and long. Therefore, we dedicate the first section to a wide and deep panoramic of the ongoing digital revolution in order to provide a solid grasp of the actual zeitgeist. With this respect, we want to clarify that we use a western-centric lens, and we take into consideration the society's dynamics at large. So, albeit we acknowledge the centrality and the relevance of other realities – in particular in the Asiatic continent – and also the

different conditions and histories of women and minorities, in choosing our matter of study we need to cut off them, leaving the duty of analysis to others.

In the introduction we affirm that the digital revolution starts at the dawn of the 3rd Industrial Revolution, and it's still rolling nowadays, evolving sharply in the last three decades. According to Klaus Schwab, we've already entered in another era, the 4th Industrial Revolution, which builds on the information technologies, but it differs qualitatively: new surfacing advances like artificial intelligence (AI), robotics, the Internet of Things (IoT), 3-D printing, nanotechnologies, biotechnologies, and quantum computing, will be embedded within societies and even our human bodies. The executive chairman of the WEF enters into an intense discussion regarding cyber-physical systems, influenced by a sort of transhumanist thinking, but we don't aspire to any futurologist speculation, so, disregarding the biological sphere, we just show how most of the listed innovations – plus others such as blockchain, Big Data/Analytics, and VR – represent the most advanced stage of the digital age. In a nutshell, we regard the digital revolution as a broad shift of paradigm encompassing both the 3rd and 4th industrial revolutions. Moreover, relying on the studies about the digitization waves of the ITU expert Raul L. Katz, we decompose the current technical revolution in three phases: 1) the digital emergence, itself divided in a "prehistorical" period and a proper emergent one, which encompass a temporal span of roughly forty years (1950 -1990); 2) the network age, characterized chiefly by the outbreak of internet and the definitive popularization of ICT technologies; 3) the advanced/mature stage began more or less 15 years ago and still developing in our days (apparently with an accelerated pace).

The history of the technological development befallen after WWII is the matter of the first chapter, where we follow a chronological order in displaying the emergence the computers, the internet, mobile phones, and other innovations related to them. In doing so we discuss the forces that pushed these accomplishments: from the military interests to the academic hubs, from the Space race to the Counter-revolution, passing through the business world and the scientific community, showing the interwoven nature of these processes. We also exhibit the "ancient" origins of AI and robotics – protagonists of the current digi-wave – also evoking the genius of Alan Turing inter alia. Naturally, we don't forget to report the folk heroes that definitely popularized the digital spillover

results: from Steve Jobs to Bill Gates, from Tim Berners-Lee to Richard Stallman, from Larry Page and Sergey Brin to Jeff Bezos, and eventually Mark Zuckerberg.

In this way, we step into the second chapter in which is briefly showcased today's digital background. Therefore we start by showing how some of the aforementioned characters and their creatures (the so-called Big Four, or better Five: Google, Apple, Facebook, Amazon, and Microsoft) dominate the IT sector and are omnipresent in our lives, acting as quasi-monopolies, a little bit like one century ago Carnegie, Rockefeller, and Bell did in the respective fields. Logically, we discuss the social media outbreak and of the last technological frontiers, above all the VR, IoT, AI, Blockchain, Cloud computing, and Big Data. Besides presenting their essential features, we try to highlight the impact of the entire set of digital technologies on society. So, firstly we mention the international mindfulness embodied by new organizations and initiatives like the W3C, ISOC, the European DSM, the Net Mundial, and so on; then we deliver some succinct example of the digital outcomes in the education, finance, democracy, and media/communication; finally, we turn our attention toward the digital economy, trying to explain its present-day scaffold. For this burdensome task, we bank on the milestones of leading figures such as Shapiro, Benkler, Srnicek, Tapscott, among others, and we stress out famous notions like informational capitalism, network economy, platform capitalism, sharing economy, etc., individualizing three core elements: data, networks, and platforms. We complement the narrative with insightful statistics, e.g. the top ten firms by market value in 2019: the ranking is very impressive if we see the first seven positions, respectively: Apple, Microsoft, Amazon.com, Alphabet (Google), Berkshire Hathaway, Facebook, and Alibaba. The quasi-total domination of the IT sector is interrupted only by the holding of Warren Buffet, an astonishing situation if we compare it with the hierarchies of just two decades ago, and undeniable evidence of the society forecasted by Daniel Bell, the post-industrial one.

Behind the obvious considerations, we close the chapter by introducing both positive and negative consequences in the work environment. With this, we conclude the first descriptive section and we jump into the second, bestowed to the sociopolitical analysis. Here we try to answer the following questions posed in the introduction: Can disorientation of identity and economic/job uncertainty alike help to explain the achievements of rightist populism? Are those insecurities caused by the ongoing digital

revolution? Is, therefore, right-wing populism a "side-effect" of the 3rd and 4th industrial revolutions?

So, inspired by the monumental *"Information Society"* of Manuel Castells, we uphold that the change of technological paradigm entails, beyond positive phenomena, unruly consequences for society, more specifically the distress of workers (lower and middle-skilled ones) and a general sense of uprootedness from traditional cultural values; both conditions are detrimental for identity's people.

We start the third chapter addressing the economic issue. Techno optimists tend to highlight the positive effects occurred in the business environment, thus its asserted openness and new peer-to-peer fashion; not only, they emphasize also the advantages that are catching up all kind of workers, with possibilities of crowdworking for the bottom layer, and opportunities of freelancing and digital nomadism for the top one. Pessimist perspectives, by contrast, outlines how business is always more restricted to a small elite of really high skilled profiles, those who can study at prestigious and very expensive universities (providers of needful cognitive tools); how the exploitation of new technologies (BigData, AI, algorithms, etc.) led them toward monopolizing stances; and how larger sections of society – the ordinary people and the last ones – do not benefit of it and actually see their situations worsened. The smallest common denominator between the two opposite visions is that the digital economy and its employment manner, i.e. the gig economy, jointly with the underpinning automation wave, are profoundly transforming the job market. We clearly recognize the marvelous benefits to aggregate human welfare and potential underscored by techno-optimists, but identifying ourselves as an average worker we are inclined to be closer to bleak visions since we would configure a shaky future for us and our offspring.

For example, all those promises of the sharing economy of empowering laborers by transforming them into "micro-entrepreneurs" are gradually turning into a chronic condition of anxiety for those who rely exclusively on it. Moreover, the feedbacks' system, core business rule for all digital platforms, while being a helpful guarantee to consumers, gives them enormous power over those who are "serving" them, so that worker-servants are subjected to a stress load presumably even greater than that of a classic employee supervised by his boss. In this way, the feedback system can degrade

into a form of costumer's blackmail. With this perspective, we assume that the reputation' stress, combined with the unstable works, proper of the gig economy, are two aspects attributable to what we describe as people's economic disquiet. If it is true that we have a much wider choice about when, where and which type of work to do, it is also true that we don't have the economic safety of a life-long contract and we don't have either the certainty to work in the same geographic area. That is why many criticize the negative impact of the gig economy on social protections (minimum wage, working hours, etc.) and claim for new inclusive regulations.

In addition to that, many multi-disciplinary experts alert us by affirming that the last and ultimate stage of the digital revolution – with a special focus on AI and robots – will continue (and perhaps accelerate) on this path with even keener consequences. To fully grasp the relevance of these processes we must have clear that if globalization's effects normally strike harder the lower strain of societies (outcasts, unemployed, NEETs), the negative results of technological change slug right at the midst of society. With this, we assert that the automation upsurge, led by AI improvements, is affecting first and foremost the extensive group of blue- and white-collar routine workers, wiping out entire job categories: telephone operators and cashiers just to name a few. To clear up, the heterogeneous and numerous group of the lower-middle class actually has a job, maybe even a good one, but they don't have any clear future horizon, and this condition frightens them, fearing a loss of status. As evidence of that, the Brexit's leave party and the recent "gilet jaune" movement in France are mainly composed of these categories. Most importantly, they are the larger block of the social fabric, socially and politically engaged and willing to express their unease through any civic channel, notably the vote – unlike the poorest ones which are characterized by a high level of abstentionism – becoming in this way a heavy electoral game-changer.

To validate these statements we convey also some stats of renowned IOs and think thanks. For instance, in a recent OECD Document is acknowledged that of the 16-65 years old workers (in the OECD area) less than 30% have a "well rounded" combination of skills (cognitive, high-level literacy and numeracy, problem-solving) which are required to "navigate the digital transformation"; and more, it is reported that only the 40% of lower-skilled workers – who are more in need – receive a proper training,

compared with the 75% of high-skilled ones. A state as such is a perfect generator of social anger. Moreover, a 2017 report of the McKinsey Global institute forewarned that approximately 30% of "work activities" could be automated by 2030, resulting in a loss of 375 million jobs.

We also take into account the notion of anomie which offers a solid bridge between work and identity. In his 1893 landmark "*The Division of Labour in Society*", Durkheim paints it as a discrepancy between individual or group standards and the wider social ones, which generates moral deregulation and a lack of legitimate aspirations. The French sociologist uses this term about the phenomenon of industrialization and its resistance to change, which causes disruptive cycles of collective behavior; most importantly, he depicts the occupational group as the solution for this condition. 124 years later Durkheim's insights, a lecturer of Loughborough University, Eva Selenko, comes to the same conclusions, this time testing empirically the supposition. But she goes further, demonstrating that people with an identity threatened by working hardship are more projected toward both left-wing and right-wing populist stances.

So said, to explain why in recent times rightist populisms are in the limelight, despite the portrayed concerns are traditionally associated with socialist solutions, we refer to the second malaise: identity again but now related to the cultural variable.

According to the post-colonialist scholar Arjun Appadurai, the Internet and the explosion of the web alike are the basis of what he defines as "overflow modernity" that unleash dizzying experiments in identity transformation, both individual and collective. Hence, in the last decades, ideas and doctrines such as cosmopolitanism and multiculturalism surface and come to the force. As a result, the middle class has been often overlooked, in favor of the forced integration of minorities pursued by both social democratic and neoliberal policies. However, the collective awareness of this situation is funneled only when the new digital outsets offer to the masses a universal instrument for information and communication. And so the ranks of blue- and white-collar workers, equipped with the powerful digital tools, have rejected their fears in the form of a "protest vote" from the second half of the 2000s. According to Lars Rensmann "a silent counter-revolution turned noisy", and radical right parties are their voice, which in the European scenario stems from a "great cultural divide" between liberal-

cosmopolitan and authoritarian-nativist values, or better cosmopolitanism versus nationalism.

But not only due to the blabbered migration – an optimal scapegoat for both economic and identity sensed risks – the dread of losing traditional, and often religious, values can also be traced in the nostalgic vision of the past shown by the average voter of rightist populist realities. For example, the supporters of parties like AfD, UKIP, Rassemblement National, PVV and Swedish Democrats, all share the view that 50 years ago the life was overall better, presenting those nostalgic tendencies particularly prone to reactionary politics. Additionally, in our opinion, this is another certifying sign that those voters are unconsciously frightened by the digital revolution and its innovative maelstrom. In fact, since the cycles of technical changes take place at very macro and slow levels, while being the original source of the political success of characters like Trump, Farage or Bolsonaro, they are not understood by the electors nor explained (intentionally) by those who benefit.

In other words, the core of post-industrial societies, the low and middle-skilled routine workers, do not demand mere measures of social protection, they rather call for cultural and economic protection. Hence, they are more attracted by conservative promises of re-establishing those traditional and "authentic" values, where rigid and hierarchical economic systems were a solid warrantee for domestic workers. That is why parties such as Podemos, SYRIZA, and the M5S had their exploits in the immediate years following the financial crisis of 2007-08 and the subsequent euro-crisis, but are now sinking in favor of the populist formations of the contrary pole.

In light of this, we affirm that, in addition to the classic cleavage ("people" vs "elite") and beyond the factor of economic uncertainty, radical right populisms have been able to instrumentalize the sense of moral bewilderment felt by the middle class, sensing the power that it, mixed with the economic variable, would have conferred them on the electoral level.

Before display the proper political results, we also trace a terminological frame of right-wing populism, drawing on the work of Mudde, Sorice and De Blasio. So, we essentially refer to the notion of national populism, characterized by the following

features: ethnic positions, xenophobia, people as (imagined) nation, religious traditions and roots, emotional figures, authoritarian leaderism, sovereignism, migrants as enemies, anger.

We finally state that the populist forces are not only a threat for democracy, as the last Freedom House report shows us, but they are also an incontrovertible sign of profound change, funneling and conveying popular claims not heard by the mainstream parties, thus acting also as a positive emancipatory force in society, as the philosopher Ernesto Laclau teach us. Therefore, an "unconscious" transposition of the technological and socio-economic shift on the party-political plane.

With all this in mind, we venture in the fourth and final chapter where we properly display how in a short historical span of twenty years populist forces – remarkably in its radical right declensions – have passed to be a marginal political entity to a major factor for the national and international destinies, comparing among them the numerous populist protagonists. Thereby, we consider the United Kingdom, now definitely out of the EU, which show clear signs of demagogic attitude along the entire political axis: Johnson, Corbin, and above all Farage; we look at the Visegrád group, in particular at the "illiberal democracy" of the Magyar crusader Victor Orbán, and at the PiS of Kaczyński who is wasting the legal framework of Poland by undermining the independence of magistrates. We also see the different chronicles in Southern Europe and the old and new challenges for the democracies of Central Europe, namely the PVV of Geert Wilders, the FPO of Nobert Hoffer, Rassemblement National of Le Pen, and the German newcomer AfD.

After that, we analyze more in detail the "Italian lab", so labeled because of the political formations that are peculiar of this scenario: M5S and the one-time Lega Nord, rechristened just Lega by the leader Matteo Salvini, capable to confer it a national breath by shifting the electors' anger: from being against the Southern Italians (*terroni*) to become hostile (all Italians now) versus the African and Islamic immigrants. Here, we uphold that if the M5S enjoyed its fortune by exploiting the classic populist cleavage combined with the economic distress, in the long-run Salvini's Lega is more likely to secure the popular support because it takes vigor from both identity/cultural and economic anxieties bounded through the populist manner.

Then we dedicate another paragraph to the US under the Trump administration. Here we claim that the American presidential elections held in November 2016 are the second political earthquake which, together with the Brexit, exacerbated international political agendas, jiggling western democracies in their foundations. Indeed, while the British decision to withdraw from the EU has destabilized more than never before the European project that, net of all its faults, has ensured a pan-European peace for over 70 years, Americans backing for an outrageous, populist, nativist and *sui generis* Republican candidate as Donald Trump is undermining the oldest functioning democracy, compass reading for the entire world. In fact, the unpredictable and contemptuous attitude of the American President has caused several negative repercussions on both the domestic and the international front: from the blind economic and military unilateralism to the attacks on national judiciary, press and the unfounded accusations of electoral fraud by the Democrats, not to mention the ambiguous relations with authoritarian foreign powers, which culminated in the procedure of impeachment initiated last year by the President of the HoR Nancy Pelosi.

Most importantly we analyze the reasons behind Trump's success, looking at the motto "Make America Great Again" as a resume of them. The nostalgic, nativist, sometimes xenophobic sentiments, masterly packaged in the populist skeleton, are what place Trump as "comrade" of the European equivalents; and the fact that the average Trump supporters, as well as the average "leave" voters, are white, Christians and aged (the so-called middle class) only reinforces our argument that the new digital paradigm and its spillover effects – perceived particularly keen from that group – are the basis for the surge of rightist populism in western post-industrial societies.

We also widen the political horizon taking into consideration the Brazilian landscape. There, Jair Bolsonaro, nicknamed by the BBC the "Trump of the Tropics", has been elected President of the Republic, after more than a decade of the PT rule. His rude dialectic, his penal populism – urging fervent actions against criminals out of control – his xenophobic positions toward feminist and LGBT communities, and his disregard of experts opinions about the environmental matters, coupled with the promises to defend the traditional values of Christian families, as well as the country from the migratory pushes (notably from Venezuela), have granted him the pass to join the club of

authoritarian and demagogic leaders. Despite the peculiar reasons behind the backing for Bolsonaro, he had the support of the urban middle classes, and this does not surprise us too much; in fact, there, the new job arrangements and the economic changes in general, together with the sensed loss of traditional values, are conditions particularly felt. So that someone proposed to rewire the WASP acronym (White, Anglo-Saxon Protestant) as WASSC: White, Anglo-Saxon Sympathizer, Christian.

We close the chapter with a peremptory caveat due to the historical comparison that we've anticipated above. Finally, in the conclusions, after debriefing the hot topics discussed along with the dissertation, we try to reply also to the last question posed in the introduction, feeling compelled to do so, hence:

How we can act to address the digital revolution in a way that its disruptions are minimized, and the benefits are amplified and shared equally among people, building a pacific, sustainable and flourishing future?

We argue that the first answer is retraceable in the words of our prime minister Giuseppe Conte, in the frame of the meeting with the LUISS students of last March when he responded to my question about the impact of the digital revolution on democracy. Amongst other remarkable statements, he affirmed that there are some preconditions to fulfill in order to steer the headway, i.e. a free and universal internet access, overcome the digital divide, and, we want to add, a proper "digital alphabetization". Once these aspects are accomplished, all society's segments will be fully familiar with the extant digital paradigm, having increased opportunities and possibly enhancing the benefits on an equal base.

However, apart from advancing in these preliminary requirements, we assert that we should embark on two clusters of actions that match with the two detected "deep roots" underneath the favorable moment of national populism

Acknowledging that many political key actors have called for urgent actions within the work environment, recognizing the radical changes occurring in it, we report the words of Barack Obama: *"because of automation, because of globalization, we're going to have to examine the social compact, the same way we did early in the 19th century and*

then again during and after the Great Depression. The notion of a 40-hour workweek, a minimum wage, child labor laws, etc.—those will have to be updated for these new realities".

Actually, experts panels from the EU Commission to the WB, from the OECD to the ILO, passing through the WEF, have redacted numerous reports and documents which include enlightening sets of measures in this direction. So, having browsed some of these texts, we present some central recurrent themes.

First of all the stress and the anxiety caused by the faster volatility of today's employment framework should be lessened through new social rights and safety nets, for all. That is why there is a loudly call for a "new social contract". To be clearer, it is imperative to regulate properly the gig economy, harmonizing freelance works and non-standard employers with the traditional ones: we need a more comprehensive and neutral scheme of social protection and security, centered more on the worker (in constant movement) rather than on the job.

Among various concrete proposals, a special seat is reserved for the universal basic income. In truth, many European welfare systems yet provide similar arrangements, but, in its more extreme version, this became the fundament of a society where individuals do not work anymore owing to the full automation led by technological upsurge. Aside from futuristic speculations, all the above-mentioned IOs agree that AI automation and new work arrangements are impacting the labor market and in particular the middle-lower skilled workers. Hence, they and we call to enhance workforce overall skills so as to avoid a perilous job polarization, typical engine of social anger. Already today the skill gaps between employees are somehow worrisome, but the forecasted results of the automation wave are even worst: with an always more accelerated clip, many skills will become obsolete and new ones will be required, wiping out millions of inoperable jobs.

On the other hand, it is expected that many job positions will be created, probably more than those lost, but only those who will have an apprised skillset will be able to seize them up. So it is essential that many workers will be ready to change environments and mindsets accordingly the last innovations. In order to do so, one of the most subscribed measures is to rethink drastically the people learning method: we need to move away

from the current model, where individuals acquire recognized abilities in school and university to deploy them later at work, to a new lifelong learning approach in which skills are continuously updated according to the changing circumstances.

A wise placement of the displayed actions should smooth up the first reason behind right-wing populism reactions, the economic insecurity, creating a solid and inclusive job environment and conferring to people a renewed identity, as workers. Notwithstanding, to achieve an optimal result, it is important to strengthen identity by tackling also the cultural confusion.

With this regard, we believe vitally worth to improve the emotional intelligence and the cross-cultural awareness of people from all social strains. We should build a sensitive consciousness of others' feelings, needs and belongs, through a cooperative attitude and inclusive understanding, without forgetting the appropriate respect for local and traditional values. The international exchange programs well in placement among universities and other educational institutes are an excellent step in this direction, but they are not enough apparently. We should fortify it and offer also far-reaching alternatives: e.g. compulsory training programs abroad, at least once for every worker. This second block of actions is aimed to offer an upgraded mindset in line with the current global flows, in order to diminish the sense of value loss and hostility toward alien cultures. In such a way also the cultural cleavage would be less exploitable from the populist propaganda.

As "grand finale" we launch an original and suggestive idea-project which, relying on current features of the digital economy and taking benefit from the last technological frontiers, could contribute to alleviating the economic troubles and identity bemusement of communities. We will call it *Radix.* It would be a digital platform that connects people with their far roots, a sort of gift economy manifestation. So, on the one side, there is the individual user with genealogic roots in a town where he – and likely all his family – no longer lives; on the other side, there is that small locality (i.e. less than 50,000 inhabitants) which discloses to the individual a series of projects that, if funded, could improve the quality of life and/or boost the economic vibrancy of the local community. Thus, the user, willing to help his community of origin, makes a donation; on the other hand, the local administration thanks through public tributes, such as

naming a street, a square or a building, or offer services provided by the local SMEs, in partnership with the public administration.

The project takes inspiration from the Southern Italy small towns, spectators of relentless trends of depopulation due to inactive responses to modern times. In the event that this project takes hold, the goal would be to revitalize these realities with the donations of those individuals bounded by far roots, financing projects related to the digital transformations, for example working on the realization of smart cities through the deployment of IoT technologies. To turn the platform in something trendy we would need to sponsor it in some way. To this end, the role of influencers and social media would be pivotal. For instance how many Hollywood stars and international singers have Italian origins, usually from tiny cities? That could be an excellent start.

In the most positive scenario, such economic recovery could invert the trend of depopulation, creating a positive spiral of economic opportunities. How we've shown above, more and better job prospects = fewer reasons to vote populist and reactionary figures. With this respect, it must be reminded that right-wing populist parties have a more powerful grip on these small realities, partly due to the economic malaises. Moreover, once in the limelight, this project could also be an input for a reversed movement from the alienating big metropolis toward the smaller human-sized towns. These would mean also a further identity benefit, by strengthening local communities. What is more, because the donations would come from individuals of other countries and continents, perhaps far away, this would increase the mindfulness of the cross-cultural global links between people, generating an overall positive view of the foreigner and installing a more relaxed atmosphere on a local level. In such an ideal world, rightist populist actors would see their sources of popular support fading away, and subsequently, the political climate would assume a completely different connotation than the current one.