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# Digital: The Promise of the Unlimited?

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## Abstract

At the crossroads of notions of Technical and Human lies the notion of limits. Let us question the vocabulary: here, limits in the plural, boundaries, edges..., to be also nuanced with the meanings of bounded, limited. They seem negative: could limits be flaws, deficiencies, or challenges to overcome? Indeed, the Human appears to be limited by the body in the three dimensions of space and in that of time; therefore, there would be physical and material limits, or weaknesses, on which technology can certainly act concretely. But should we necessarily surpass them and seize upon technologies to achieve this? On the other hand, we have the impression that our mind, being more immaterial, could project itself infinitely and onto everything, including the technologies themselves. Could it be that humans are made of an unlimited spirit that creates technology, housed in a limited body served by it? The digital is omnipresent in our lives, and we must take the time to study the new technical-societal relationship developing with it. Guided by contemporary philosophers and thinkers, we will examine what defines a technique in its specific case: its lineage, technologies, dissemination, and interactions with humans. We will explore 1/how the digital represents a technical lineage, 2/how this technique and its technologies have evolved in contemporary societies, its widespread impact on communication and the construction of social bonds, 3/how humanity has adapted to these transformations by becoming hypermodern, 4/the new relationship between humans and time, and 5/why time becomes the place and moment of the social life to survive the digital regime and hypermodernity. Despite its theoretical content

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and level of abstraction, this paper speaks to us, inhabitants of a digital world, who continually use digital technologies and always desire more, faster, in an irresistible need for speed and unlimited.

### **Keywords**

digital, social behavior, social changes, social communication, illimited

### **Digital as a Technique**

Gilbert Simondon (1924–1989), a prominent French philosopher of the 20th century, sought to understand how new technical paradigms emerge and structure themselves around industrial sectors, professions—especially engineering—and the uses that people develop from the technologies that result from the technique. He helps us interpret the relentless deployment of digital technologies and analyze the very particular place of the digital lineage in our daily lives.

#### *Technique and its technologies*

To understand the place, role, and weight of digital in our lives and societies, it is necessary to define it as a technique. A technique is characterized 1/ by its autonomy and singularity, allowing for its clear identification, even if the skills are lacking to understand its precise functioning or language. Few techniques persist over time: printing, steam engines, electricity, combustion engines, electronics, miniaturization, and digital; their singularity distinguishes them from others, and their autonomy comes from their ability to develop on an industrial scale. Indeed, technique 2/ is exploited and developed on an infinite scale, meaning it imposes itself on an industrial scale in all sectors of society—economic, social, educational, symbolic, political, playful, etc. The example of electrical technology helps us understand that a technique is everywhere, present in all devices using electrical energy, thanks to the industrial scale, which offers networking (electric network, energy suppliers, usage norms, etc.) on one hand, and markets technologies derived from this technique on the other. Some technologies are formally identified as belonging to the technique, such as electric bikes or electric cars.

We can now clearly consider a technique, hegemonic, recognizable by its singularities compared to other techniques, and often embedded in previous techniques; technologies consisting of all objects related to it and systemically connected; norms that industrialists must respect; and formats that establish common rules of operation between industrialists and between industrialists and consumers. The success of a technique depends on the success of the technologies that propagate it in society. However, Simondon thinks of the technique more broadly, beyond its industrial and technological characteristics; for him, the technique carries the relationship we have with the world and goes beyond simple utility that facilitates daily life. This is why it must be understood for itself, without being opposed to culture. A new technique is a force of proposals, a method

of apprehending and solving human problems that changes the relationship of humans to the world (Simondon, 2014). We now understand how much the digital and its universe of industries, technologies, applications and networks, norms, markets, data, and usage by connected individuals, constitutes a major technique, indeed revolutionary in changing our relationship to nature, culture, information, and offers solutions to some of our social problems while surpassing certain limits.

### *Technical lineage and its essence*

To describe and understand Simondon's vision of technique and grasp the digital as a technique of force, magnitude, and exceptional dimension compared to previous techniques, it is necessary to understand its genesis by focusing on what happened before its birth. Two terms then go hand in hand: genesis and lineage. Indeed, a technique fits into a lineage, a genealogy that explains its genesis, like a child descending from a family lineage with certain characteristics (part of its DNA, for example). Simondon (1958) thus speaks of a technical lineage to identify the characteristics of a technique embedded in another or in others, as the digital, for example, generally requires electricity, and electrical technique, therefore both present into the lineage of the digital, and not only it, as we will see later. The term "technical lineage" marks the entry into a different paradigm. A technical lineage is defined as much by its genesis as by its subsequent developments and the uses that are built around it. Indeed, the lineage alone is not enough to identify the elements that make the technique singular. To find what makes it unique and unprecedented, Simondon suggests considering the essence of the technique, its striking, invariable, and specific trait, once again as a genetic heritage that remains unique and specific to an individual despite common ancestors. It is necessary to try to summarize a technique with a few characteristics that define its essence on the one hand—i.e., define its essence—and place it in a continuum that shows how it was born from the convergence of other techniques that are either anterior or parallel on the other hand—i.e., define its lineage.

So now let us apply these objectives to digital technology, asking first what are the other techniques that constitute its lineage, and what its essence is. So where does digital technology come from? This is the question we need to ask to apply Simondon's concepts to the reflection that interests us here. What is its lineage? Immediately, many would respond that it is computing that led to digital technology, and then its essence could be summarized in the following characteristics, which we recall must be both specific and unprecedented for the technique to subsequently deploy as such: binary code, computing power, computing speed, or the mass of processed data. Certainly, these fundamentals brought by computing are present in the digital lineage, but they are not enough to distinguish computing and digital. Digital is also about the network or networks. It is necessary to invoke the world of telecommunications, which has already appropriated certain characteristics of computing. Telecommunications introduce the network into the digital and the network into its

broadest conception, including wired and Wi-Fi, the box and the satellite, fiber and 5G, and the technologies (often invisible to the user) related to them, such as routers, hubs, patch panels, connectors, firewalls that allow for smooth, fast, and simple use. The two previous lineages of computing and telecommunications, part of the digital lineage, can develop, but they are of course, above all the technical characteristics of the lineage that rely on code, data processing, and signal transmission. Indispensable, they alone cannot give rise to the digital lineage, which is also inscribed in the lineage of audiovisuals. Indeed, it is the latter that brings the image, the animated image, and especially the video, in other words, the animated and sound-enabled image. It was in the 1980s-1990s that what is called technical “convergence” of these three lineages (computing, telecommunications, audiovisual) began to occur.

The essence of digital therefore lies in these three technical lineages whose convergence gave rise to the digital lineage. It generated ICTs characterized by their versatility, validating the permanence of certain functions (sending an email from a computer, tablet, smartphone, watch...); their diversity offering various ways of appropriation to users (everyone can choose the model of their choice and the applications of their choice and change them); their porosity favoring the circulation of content (to transfer, to share, to publish, to like, etc.); their portability increasing proximity and importance (Paquieséguy, 2007, p. 12). But above all, the striking feature of digital ICTs seems to be their vocation, inscribed in their very design, to become a device through connection (connect, share their 4G network, belong to a social network, etc.) through a constant connection continuum.

But for a technique to become autonomous and singular in relation to the lineages from which it descends, Simondon explains that it is essential that by exploiting its essence, it surpasses the mother lineages and materializes in technologies that characterize it, a stage he calls concretization.

### *Concretization*

Indeed, the convergence of the three source techniques of digital allows the exploitation of all technical possibilities in the system of the new lineage—digital—in an exploratory back-and-forth between the technologies of the mother lineages and the new technologies of the digital lineage. In a sort of kit logic, functional parts of the technical object are invented in search of the right formula, the right arrangement that Simondon calls “functional synergy.” Let us take an example: photography was invented by Nicéphore Niepce in 1827; over time, the initial process (heliographic process) improved, transformed to stabilize in the 1960s with silver films and interchangeable optics, and disappeared from the 2006–2010s in favor of digital photography. What happened? Photography and shooting are still present in our personal practices via several technical objects: first, following the first cameras, the digital camera is taken as a singular technology of the digital lineage appears, it belongs to the lineage of audio-visual (as a producer of still images) and to that of the digital; then the camera became a function (taking photos) that integrated several

technologies of the computing lineage (computer, tablet) and telecommunications lineage (smartphone); finally, some smartphones integrate five or six lenses and try to approach the quality hitherto reserved for cameras. Real digital technologies, they then are even called smartphone cameras, illustrating Simondon's concretization, here "invention brings a wave of condensations, concretizations that simplify the object by loading each structure with a plurality of functions" (Simondon, 2008, p. 171). In other words, the versatility, which Simondon calls the "new multifunctionality" of digital lineage technologies, with the smartphone as the flagship object, materializes the possibilities to come in overcoming previous lineages, easy to identify here: capacity to archive thousands of photos, 100x zoom, sensors of millions of pixels, optimization algorithms, portability, cost, etc. Simondon insists on the necessary iteration, the different versions and arrangements of functions or possibilities follow each other, which will gradually give unity to the technical object. It results from two forces (Simondon, 1958, p. 52): the technique, its research, its advances, its technological proposals which he all calls the technical environment, and what he calls the geographical environment that "limits adaptation and specifies it in the sense of autonomy and concretization. That is the true technical progress" (Simondon, 1958, p. 55). The geographical environment is the one in which and with which in a way technology materializes its environment, its biotope. Concretization comes from the balance to be found between these two environments, whose encounter is materialized by the technical object. Looking at the digital technologies and ICTs around us now, we understand well that Simondon's technical environment has no limits since new versions of software and applications, new models of smartphones, tablets, computers, connectivity, new connected objects such as bracelets, watches, but also now cars or refrigerators, are constantly offered. This comes from the hegemony of the digital lineage technique, which, encompassing the three mother lineages (for recall: audio-visual, telecommunications, and computing) and surpassing them, sees its possibilities for new technologies constantly multiplied: such as embedded cameras in connected cars (here we clearly see the original lineages: audio-visual, telecommunications, and the internal combustion engine or electric depending on the vehicle's powertrain); or for, another example a virtual technology like search engines (there also we clearly see the digital lineage: data, algorithms, and machine learning). It is therefore what Simondon calls the "geographical environment" that will allow a technology to deploy itself, or not, in a located environment.

"Technology has increased man's power, but it has not equally increased the wisdom of its use" (Vaccari, 1957, p. 328). Here, the question arises of what we do with the manifestations of technology, i.e., technologies, and the place we give to ICTs in our daily lives since, as we have understood: nothing can slow down the rise of the digital lineage from a technical point of view (except perhaps the lack of raw materials, such as rare earths that go into the manufacture of certain components of smartphones and other equipment). The de facto monopoly of American industrial oligopolies

(Google, Amazon, Facebook, Apple, and Microsoft, known as GAFAM) and of Chinese industrial oligopolies (Baïdu, Alibaba, Tencent, and Xiaomi, known as BATX) attests to it, and platforms like YouTube, Netflix, Spotify, or Bilibili, Weixin or Kaishou, as well as equipment manufacturers like Samsung, Sony, or Huawei, just confirm it.

Digital technology reigns, data is its wealth, and connectivity is its intrinsic strength.

## The Technical Environment

As we know, digital technology has become omnipresent and hegemonic, based on the observation that all aspects of our society supported by communicative, informational, or organizational phenomena are structured around or articulated with digital or digitized technologies, processes, or data. We live in an environment that has embraced digital technology and has been built upon its propositions, to the extent that our practices change, our reference points transform, our values evolve, and our conversion to the digital is evident (Doueihi, 2011). In fact, it is Leroi-Gourhan (1911–1986) who works on the notion of the environment in the relationship between the construction and operation of a society, and the development of a technique followed by the deployment of certain technologies. An ethnologist and historian specializing in prehistory, he sheds light on Simondon’s thinking from a different technical lineage, starting with one of the first: that of the flaked stone, with the bifacial flint as the flagship object. The notion of environment helps us understand the introduction and deployment of a technique in human life and the appropriation of the resulting technologies through usage until it transforms the practices and social logic of the studied social group or the considered society.

It is this process of infiltration of a technique by its technologies that plays out in different environments, and dominant traits indicate its trend. In his work “Évolutions et techniques” (1973), Leroi-Gourhan writes: “The trend is a term for a simple abbreviation to characterize, in a single word, the sum of virtualities that only become realities in favorable environmental conditions, symbolizing the slope followed in the entire living world by the needs of survival with increasingly complex modalities” (p. 326). He then joins Simondon, as we have seen, positioning the technical object in the balance between the technical environment that conceives its functionalities, and the geographical environment that offers, or does not, the possibility of deployment. The trend, much later referred to, in the era of the consumer society as social logic, must be understood in two steps: first, through the selection of certain possibilities that will materialize, in Simondon’s sense, in daily life (using apps, sharing a photo, online shopping, setting an alarm, etc.) and then by the multiplication of these actions, which, becoming massive and shared (319.6 billion emails were sent and received each day in 2021–50 billion photos shared since 2010 – source: Statista), set the social trend. The trend thus results from a selection through the usage of possibilities from existing

technologies, which, when amplified, imposes the conduct and social rules that follow. Thus, the trend gradually rationalizes all the possibilities arising from a technical lineage (objects, tools, technologies) based on the usages and needs developed by the concerned social group. Our uses of digital technologies have generated many trends that weigh heavily on our daily lives (a Chinese person spends about 5 h a day on his smartphone in 2023), and we will elaborate on them in the following section. For now, let us simply consider the existence of trends.

Four major types of environments coexist for André Leroi-Gourhan (1945–1973), overlapping and interpenetrating without interruption, and these exchanges, porosities, and interactions drive social evolution and the transformation of societies, without necessarily correlating them to the notion of progress, which needs to be briefly mentioned here to strongly mark the distinction between technical progress (stemming from fundamental research that can lead to a new technical lineage) and social progress (shared by all and in humanistic ideals).

### *The external environment*

The external environment encompasses “everything materially surrounding humans: geological, climatic, animal, and plant environment” (1945–1973, p. 333), given to us by previous generations; its alteration can be observed over decades through the technologies that enable its exploitation (oil, forestry, agriculture, etc.), rationalization (standards, planning, quotas, nomenclature, etc.), and now preservation (surveillance, prohibitions, protections, etc.).

### *The internal environment*

It is “what constitutes intellectual capital, i.e., an extremely complex bath of mental traditions” (Ibid, p. 335). It consists of our representations and our horizons of expectation. Indeed, we project into every social action expectation, code, and processes that condition our behaviors (expecting an immediate response to a text message, sharing the experience as it happens, staying connected, etc.). Our ability to analyze and self-analyze helps us adapt to the evolution of mental traditions and exploit multiple registers simultaneously, to stay within the “socially correct or acceptable,” i.e., the dominant social norm. This norm weighs on the technique and its forthcoming technologies, which seek to conform to it and accompany it in an endless iterative process; “technical rule has no history, it goes from mutation to mutation” (Hottois, 1984, p. 334).

### *The technical environment*

According to Leroi-Gourhan, the internal environment interacts with the technical environment: an intermediate space for the socialization of technique, which will be appropriated and included as it adapts to the social group using it, until it modifies its natural environment. The technical environment is like an airlock in which humans create and tame techniques because “any technique can



only settle (that is, be invented or adopted) in an environment that corresponds substantially to its level” (Leroi-Gourhan, 1973, p. 345). The digital lineage being more than prolific and complex, some of its branches have already left the technical environment to feed the natural environment (smartphones, digitization, QR codes with CovidApps, self-service kiosks, clouds, RFID chips, but also on another scale, cryptocurrency, biometric locks, etc., while others are developing in the present, such as telepresence robots, generalized artificial intelligence, or NFTs.

### *The natural environment*

Finally, the natural environment results from the evolution and transformation of the external, internal, and technical environments because “society constantly adjusts its technical capital to the needs and evolution of the natural environment” (Ibid, p. 131). It constitutes the reference environment, the living environment of humans. It is structured by iterative integrations of technical innovation (Flichy, 1995) according to dominant trends in social, industrial, and governmental practices. These trends are specific but present at all levels and in all sectors of society and based on transformations in the external environment, as seen today.

Thus, humans place themselves at the center of the process, both technical and social, and it is precisely to stigmatize this that the term Anthropocene is so widely used today. “The Anthropocene is a new geological epoch characterized by the advent of humans as the main force of change on Earth, surpassing geophysical forces. It’s the age of humans! One of unprecedented planetary disorder” (Gemenne & Denis, 2019). The age of Humans, or the age of data: DataAge 2025, as we have seen above! Through the techniques he has developed, including digital technology, not forgetting the exploitation of fossil fuels, nuclear fission, space exploration, quantum physics, and many others, the human being has taken precedence over the external environment and placed the technical environment as the primary one, where transversal balances and exchanges were once present – let us not forget that Leroi-Gourhan studied prehistory and cave art. Today, a new order prevails that favors the technical environment, to the detriment of the natural environment in proportions hitherto unknown. Leroi-Gourhan already analyzed metallurgy in “Le geste et la parole” (1966, tome 1, pp. 245–249) and mentioned the Promethean power of the technician “master of civilization,” with Prometheus in Greek mythology having stolen fire, Zeus’ intelligence, to strengthen humans whom the king of the gods wanted to annihilate. However, Prometheus is then condemned by Zeus, and Leroi-Gourhan emphasizes the myth’s reversal: “The craftsman is a subservient demiurge. (...) It is he who forges the weapons used by the leaders, who melts the jewelry worn by their women, who hammers the gods’ dishes, powerful yet lame and ridiculed Vulcan.” He pointed to the origin of this devalued position on page 242: “it is he who materializes what is most anthropic in man, but [we have the feeling that] he represents only one of the two poles, that of the hand, at the antipodes of meditation,” even though the two are welded together. This relatively humble position pointed out

by our ethnologist now seems outdated, and in a 1949 conference collected under the title “La Question de la technique” (in *Essais et conférences*, 1954), Heidegger expressed concern about the domination of new technology (*Machenschaft*), its “Empire of doing” or to better account for the disturbing ambivalence, the era of “Machination.” In any case, he affirmed the new precedence of technology over all domains of human life as a substitution of know-how for being. Of course, since the Industrial Revolution of the 18th century, machines and techniques have enslaved nature and relieved humans of their efforts. However, the digital lineage changes the game. It seeks to do without nature (which is on the verge of destruction due to the abuses and damages committed by previous generations) or to reinvent it and recreate it because it opens the door to the virtual, dematerialization, virtualization, and generalized artificiality (holograms, avatars, data visualization, simulation, machine learning, robotics, artificial intelligence, etc.). The digital lineage aligns the trends of the natural and internal environments with its own tune, showing how a limit has been crossed since ancient order and balance have been surpassed. For Gérard Berry of the Collège de France, who seeks to understand “why and how the world becomes digital, [...] with the digital revolution, a new imaginary dominates our societies” (Berry, 2008, p. 6). Hottois, on the other hand, suggests that technology has become the natural state of man because “today, all the resources of science and art are called upon to create the new individual who is best integrated, most accomplished, most autonomous and most efficient, and finding his niche in a very complex and mobile human and technical environment” (Hottois, 2009, p. 6).

The concept of environment, as contemplated here, clearly demonstrates the influence of the social aspect in the Digital Revolution. While propelled by digital technology and its various components, from machines to data, including software and the two-faced economy (Tirole, 2018), the Digital Revolution can only be guided by the Human who incorporates it into daily life to amplify, enhance, and saturate it with intensity. This is done to the point where the digital becomes natural, saving time and creating the illusion of living more. It represents an illusory surpassing of limits and a shifting of traditional boundaries, but that should be emphasized, without the technology being beyond the limits of the Human who carries it.

Having comprehended the characteristics of the digital realm (Acceleration, Amplification, and Immediacy), we must now delve into the characteristics of the Human. Their primary task is to build a society, to establish social bonds through communication, exchange, and interaction with others, a communication facilitated through their technologies.

## **Communication, Social Connection**

François Ascher, an urban planner, and sociologist (1946–2009) based the city and hypermodern life (Ascher, 2000) on a system of continuous mobilities and interactions of people, information,

and goods, the PIG system (people, information, goods). This system is managed and regulated through exchanges and communication interactions. Its pervasive presence is carried and supported by a vision of a digital world structured around unlimited consumption and access to the Internet, data, and information. According to this vision, the world would be entirely shaped by constant movement, exchange, and interaction, constituting a realm entirely dedicated to relationships. As French philosopher Breton (2000) put it, in such a world, everything would finally be pure communication.

These changes raise questions about the position and situation of humans in their social extension and their own horizons. The first aspect involves the concept of multi-belonging, borrowed from Ascher, and the constant adjustments necessary for managing these social ties and relationships.

### *Multi-Belonging*

The concept of multi-belonging, as described by Ascher, depicts a social situation in which individuals embody multiple different statuses, such as being a child of, a neighbor of, a friend of, and so on. While this situation is not entirely new, Ascher (2009) shows that the technicization of time, a characteristic of our current period, leads to a growth in multi-belonging. Individuals who are multi-belongers engage with increasingly varied individuals (different origins, different belonging groups), and in greater numbers. The social origins of individuals become less determined in their daily lives. This gives rise to a different form of socialization than that within the family, with information and communication technologies (ICTs) playing a significant role. This phenomenon inevitably has repercussions on social ties and modes of life, such as the tendency to “zap” in our activities and relationships (Ascher, 2009, p. 76). From this emerges ubiquity, a concept developed by Rosa to capture this multiplication and the illusion of being an indivisible individual, closely related to Ascher’s multi-belonging. Ubiquity involves performing several social roles simultaneously by combining social actions (having a conversation and sending an SMS, watching a movie, and making a call or tweeting, listening to a lecture, and responding to emails, experiencing something and sharing it live, etc.). Engaging in parallel activities in the same time frame provides the opportunity for multi-belonging or ubiquity but forever dissolves our personal and inner unity. This dissolution leads to compensatory individualism as a survival mechanism. This description aligns with our daily lives and highlights the dangers inherent in such a lifestyle. Ascher and Rosa argue that ICTs and the connected objects we use daily are indispensable tools for organizing, planning, and managing our social relations, which have become increasingly numerous and varied. We navigate through many social circles that demand a high level of mastery of these technologies, not just in their operational use but in producing social relationships through content, information, and communication. These technologies encompass different communication codes because social

codes vary across technologies, such as SMS language, the use of emoticons among adolescents or young adults, the respect for the academic standard language in emails to professors or colleagues, and the meaning of hashtags on Twitter/X.

Mastering these codes and rules of operation helps us navigate our multi-belonging and derive benefits by expanding our relationships and social statuses. For example, one can become a young, elected official, an entrepreneur, a member of an association, or a representative of a social group, effectively integrating into society through various roles expressed by Interaction Rituals (Goffman, 1967). This mastery enhances one's social coverage and strengthens one's ego.

At the same time, these pieces of information and relationships that offer us a different perception of the world impact our social practices, leading us – in the sense of being followers – to follow trends promoted by Key Opinion Leaders and constantly seek to live more experiences and share them intimately, closer to our emotions, encounters, and selves. Moreover, our action registers multiply. In other words, it is a cycle that everyone can judge as virtuous or vicious on their own individual scale. This cycle, driven by trends and the influence and leadership effect, compels us to belong more and more (including following a leader, subscribing to a channel, an official account, a newsletter, etc.) and obliges us to maintain all these social actions. This communication and interaction work, reacting through ICTs and connected objects, places communication at the core of our social existence, enhancing it.

Ascher's text stresses the influence of ICTs on social practices, transforming how individuals follow trends, seek experiences, and share them in real time. The constant communication and interaction facilitated by ICTs place communication at the core of contemporary social existence, making it public and accessible to others.

Here, humanity surpasses its old social limits and sociability because media and social networks (mainly) inherently constitute unlimited socialization. They offer us a social existence spontaneously, without effort, from the moment the account is created. Harcourt speaks of a digital exhibition of the individual, a kind of self-showcasing. "The exhibition society is our new political, social, and intimate condition ... our passions – in tension with our ambivalences, anxieties, and discomforts, of course – fuel this exhibition society" (Harcourt, 2015, p. 165). The limits, or more precisely, the boundaries, are crossed by exposing oneself, offering oneself to the world as a potential, universal friend, and opening up to the unknown without any guarantee, without any protection (the multiplication of harassment situations can testify to this) through simplified communication facilitated, coded, and structured by technologies, applications, software, in short, digital artifacts that enable us to communicate even more constantly to maintain social ties (necessarily plural due to multi-membership) continuously; a condition for social existence in hypermodern times. Some will materialize multi-membership by creating other identities through avatars or pseudonyms, essentially trying to live multiple lives, and multiple social identities simultaneously

by changing age, gender, social category, and image! Creating an avatar, living behind a pseudonym is changing lives, and thus having more possibilities to exist, with a share of fantasies or dreams that undoubtedly open up other, virtual, simulated, or even deceptive horizons. Bernard Lahire, a contemporary sociologist breaking with the “homogenizing vision of society” carried by 20th-century sociology, proposes the concept of a “plural man” (Lahire, 2016), pushing the limits of a single existence where one lives in the illusion of the uniqueness of the self, as there exists a “heterogeneity of socializing experiences” (Lahire, 2011, p. 36). The plural man seeks to live several lives in parallel, transforming his socialization. “Beyond the simple play of social roles, this disparity refers to a diversity of socialization models. One can hypothesize the incorporation, by each actor, of a multiplicity of action patterns or habits. This stock of models, more or less extensive depending on the individuals, organizes into repertoires, which the individual will activate depending on the situation” (Lahire, 2016, p. 57).

### *Permanent adjustment*

The situation is indeed changing and complex because models and identities coexist, cohabit, and transitioning between them or cumulating them requires a permanent cognitive, social, and psychological effort. This is the gap, the interstice through which digital technologies have penetrated the social fabric and joined us. They are necessary for regulating, synchronizing, calculating, planning, and archiving our social relations that have become plural. Ascher talks about a permanent adjustment that we need to survive in this incessant flow of models, habits, and disruptions related to socialization. He aligns with a more social and socializing approach advocated by Dominique Boullier, a sociologist, who tries to envision the City of the future; it would be structured around an “engineering of being together” (Boullier, 1999) increasingly complex and requiring tools, accompanied by ICTs, to keep social bonds active and the individual’s various affiliations active. Adapting to these relations, materializing in different space-times, real (in person) or virtual (messages, video, etc.), demands a real effort, a cognitive, affective, in other words, a social investment, as Boullier noted a long time ago, since the early days of ICTs, that “connecting is not instituting” (Boullier, 1989, p. 11).

Since networking society alone is not enough to sustain it, it is up to humans to find the rules for living together, on their scale, in their constantly expanding, diversified, compromised fabric and social networks. It is up to them to invent, to forge “the places, roles, and rites of the representation of this ‘being-together’” (Boullier, 1999, p. 45) in a perpetual interaction between technology and society in their natural environment. This adjustment to an evolving environment, to new social relations and sociabilities, to new ICTs, applies not only to the private sphere but also to the daily lives of individuals whose tools enabling sharing, synchronization, and collaboration are indispensable adjuncts. These profusions and collusion of activities in the present time, multiplied, exploited, counted, generate conflicts regarding the management of these social times, of exchange,

sharing, and integration – of socialization, but also raise the question of managing individual, family, professional, social relationships that multiply and complicate under the trend of multi-membership. Certainly, ICTs are here to help us and to remind us of appointments, birthdays, contacts, etc.; but it is up to humans to manage their social relationships and maintain social ties.

## **Hypermodern Human and Digital ICTs**

The profound changes we have just grasped truly signify a revolution in the cosmic sense of the term, heralding a radical paradigm shift that, through the dematerialization of artifacts and the power of algorithms, overwhelmingly favors the artificial while overlooking nature. New scientific disciplines, grouped under “the sciences of the artificial” (Simon, 2004), are emerging in parallel with life sciences or natural sciences. “This conceptualization [sciences of the artificial] starts from the argument that the world in which we live can be seen more as shaped by humans, that is, ‘artificial,’ than as a natural world” (Avenier, 2019, p. 46). So, if our natural environment has changed so much in just a few decades, what has become of humans? How has the Human adapted to survive these profound transformations, which at the same time open the doors to time, the world, prediction, the limitless, and perpetual information? How has the Human seemed to surpass his own limits to embrace the digital?

Several contemporary philosophers provide convergent answers through the concept of a “hypermodern human.” In summary (Aubert, 2004; Lipovetsky, 2004; Rosa, 2010), hypermodernity is characterized, in the aspects that interest us, by an excessive way of living and behaving; an imperative of enjoyment: the law of desire, of always more; immediate satisfaction and impatience; sensations taking precedence over the search for meaning; overconsumption to exist; a quest for oneself that involves extremes and surpassing; a mode of operation favoring the fleeting, performance, and self-evaluation. Indeed, the prefix “hyper” attests to amplification, acceleration, augmentation, and above all, points at our human potential. If this potential, at birth, is mostly natural (except in cases of assisted reproductive technologies, surrogacy, embryo selection, or genetic modification of embryos), it will be quickly enhanced by the artifacts of the digital lineage, primarily by information and communication technologies that contribute to the social construction of the hypermodern human. Clearly, beyond their central role in communication, digital ICTs are necessary – even indispensable – for the social survival of an individual in a digital regime; two major changes testify to this.

### ***Increase in the natural potential of the human!***

Two authors primarily accompany us on this first change that increases the natural potential of the Human. First, the philosopher Gilles Lipovetsky, defends the thesis of hypermodernity (Lipovetsky,

2004), a sign of excess in all areas of society (hyperconsumption, extreme sports, bodily transformation, space travel, etc.) and of a necessary fierce individualism for the social survival of the individual in an increased and rapid competition. Then Nicole Aubert, a sociologist analyzes the transformation of the Human into a “hypermodern individual” (2004). We witness the “emergence of a new individual,” whose ways of being, doing, and feeling differ profoundly from those of his predecessors. The “hypermodern” individual presents contradictory facets; he is focused on the immediate satisfaction of his desires and intolerant of frustration; however, he pursues, in new forms of self-transcendence, a quest for the Absolute that is always relevant. Overwhelmed by solicitations, constantly pressured to be more and more performant, and chased by urgency, he develops compulsive behaviors aimed at saturating every moment with maximum intensity. For Aubert, a “strong self” is necessary to survive in a rapidly changing society where Darwinian rules dominate the social game; only the strongest and most constructed personalities are capable of positively capitalizing on this environment, threatening indeed, but fertile in new opportunities. Having more and more choices, and being increasingly responsible for one’s own destiny implies being psychologically strong to assume it.

However, not everyone is “strong,” and many develop pathologies related to social pressure or are excluded. Surpassing oneself remains a challenge that not everyone succeeds in, leading to existential anxiety linked to the awareness of failure and the predominant fear of death. Narcissism is the obvious manifestation of this anxiety. One must be young and beautiful according to the standards of the time. It is the royal path to exist in relation to others, but it is also, let us not forget it, a social asset that allows access to representation opportunities or even better, to access to media coverage. The entire mediatised universe glorifies appearance at the expense of Being (Aubert, 2006). To increase one’s natural bodily and physical potential, the hypermodern individual resorts to processes, applications, and artifacts that help to beautify, strengthen, and artificially improve oneself for some (implants, prosthetics, plastic surgery, dietary supplements, etc.) and naturally for others (exercise, sobriety, healthy living, meditation, etc.). In addition, digital technologies help the hypermodern individual to artificially increase cognitive abilities for some (automatic translators, online dictionaries, optimization, GPS, simulators, ChatGPT, etc.) and naturally for others (MMPO DIY, tutorials, Ba’idu Baïke, National Digital Library of China, etc.). They also contribute to the promotion, and exhibition (Harcourt, 2015) of his transformations, the increase in his natural potential, either through the display, and exhibition of his results and performances, and to his affirmation as a social individual, strong in his successes, self-acceptance, or resilience. Indeed, let us not forget that the search for the ideal, the extreme, operates in both directions, in tension and contradiction: acceleration, speed, amplification, and slowness (Rosa, 2010), minimalism, self-sufficiency. The question remains the same: to what extent can the Human push his physiological, psychological, and cognitive limits, whether in excess or in restriction?

### *Mastering space-times*

Multi-belonging, acceleration, and the quest for immediacy lead individuals to use ICTs to increase their autonomy, and to master their own space-times, as they are constantly seeking more intimacy and privacy—an indispensable counterbalance to their exposure in Harcourt's sense. The ability to control their environment becomes a priority to reduce risk: they want to be able to choose what they do, plan when and where they will do it, and decide with whom they will experience it. Planning, anticipating, and therefore being able to move in both space and time (Dupont, 2004) and master these space-times (Virilio, 1984) as well as the transition from one to another. To move in space, they use all means of transportation, usually combining them to fit their specific needs, from planes to wheeled suitcases, including trains, trams, buses, cars, scooters, bicycles, shared scooters, or Segways. To move in time, they use techniques that allow them to desynchronize and resynchronize, to easily and quickly store and unload information or products: from replay to streaming, including mobile phones, FaceTime, and messaging; but also, frozen products and microwaves that allow time to be frozen or accelerated. For Virilio, time is fragmented, fractured, and ultimately reduced to "immediacies" compiled successively or simultaneously under the pressure of technologies that count in nanoseconds and generate a resulting or causal tyranny of speed, accelerating the pace of human activities, which, according to Rosa, places the individual in a "tyranny of urgency" (Rosa, 2010). These space-times are also the places of existence, exposure to multi-belonging that makes the human plural. Here, mobility is understood from both a spatial perspective—and there are no longer any limits today, since even space and weightlessness are now accessible to the layman, provided he can afford the space tourism trip offered by Jeff Bezos; and from a temporal perspective, which is greatly enhanced by technologies that allow both the sharing of the present moment in immediacy and the unlimited dissemination of the archive via media and social networks.

Understood in this way, space-times would be the unit of measurement of our social life (individual scale) and the traces it leaves in those of others (at a collective or societal scale).

### **Reflecting on the Limits of the Present Time: the Grand Challenge**

Time and mobility are the two specific structuring elements of our century and from Western to Eastern societies. In abstraction – disregarding the concrete effects of mobility: pollution, congestion, energy consumption, contamination, etc. – the latter can be considered a corollary of the former. Evidently, time is a scarce commodity that the hypermodern Human chronically lacks. Despite all the technologies at their disposal, nothing can give them an extra minute. Everything develops and unfolds through them and around them, while the seven days of the week, the twenty-four hours of a day, and the sixty minutes of an hour persist unchanged. The gap between human



hyperactivity and the scarcity of time has given rise to a new relationship with time, established since the beginning of the century: time is experienced as a major concern (Rosa, 2010). This is characterized by the widespread reign of urgency to accomplish everything, to experience everything, immediacy to seize the present moment, and ubiquity because, to exist, one must be visible (Aubert, 2018a, 2018b), and omnipresent (Ascher, 2009). It becomes unbearable as the world changes and living conditions evolve. The vision of the future fades in the face of the reign of immediacy, the present that must be saturated with eternity by capturing it, sharing it, and over-living it. Unable to control the duration of their existence, humans constantly seek to surpass their limits in the present moment to do more and live more. This new relationship with time is illustrated by consumerist passion. “The fundamental desire of the new consumer is to rejuvenate their experience of time, revitalize it with novelties presenting themselves as adventure substitutes. Hyperconsumption is an endlessly renewed emotional rejuvenation” (Lipovetsky, 2006). In short, the hypermodern human deceives their anxiety by consuming in a perpetual quest for the new version, novelty, the unprecedented, and the ephemeral in a perpetual agitation that makes them feel alive in the present moment.

### *Social acceleration of time (Aubert, 2018a, 2018b; Rosa, 2010)*

Two phenomena arise from this new relationship with time.

Firstly, there is an attempt to extend time, in other words, to live longer and in better health, not to age – this is the “dictatorship of youth” (Aubert, 2006, 2018a, 2018b). The anxiety of limited time leads the hypermodern individual to deny physical decline, which is the manifestation of our inevitable journey toward our own end. “No longer believing in a better and eternal world promised to us by all the religions of the Book, we must enjoy our bodies for as long as possible. In the absence of convincing, we must seduce!” (Aubert, 2006, p. 22) Thus begins the race for eternal youth through high-tech, nano-bio technologies, illusion merchants, and the previously mentioned paradoxical trends in artificial or natural practices. At the same time, it is about pushing the ultimate physiological limit of death through advances in medicine and its technologies (artificial heart, respirator, prosthesis, etc.) and masking death, distancing it from our daily lives to avoid confrontation, obscuring it to believe ourselves immortal.

Secondly, there is an acceleration of time (Rosa, 2010) through the multiplication of our social activities by implementing the concept of ubiquity discussed earlier as much as possible. This social acceleration of time, as Rosa writes, directly stems from several factors:

1. The gradual and regular reduction of working time (paid leave, reduction of working hours - gap year, parental leave, etc.) which favors individual practices and the personal

development of the individual in activities, passions, and hobbies of their choice (sports, creative leisure, artistic practice, DIY, etc.) until some develop skills worthy of professionals.

2. The progressive disappearance of the identified and fixed workplace (the office) due to mobility, the portability of ICTs (computer, smartphone, Wi-Fi, docking station, and other portable terminals or accessories), and the smartphone, a flagship object of the digital lineage that influences professional practices (co-working spaces, open-plan offices, desk-sharing). These technological devices, which dematerialize work and organizational structures, liberate a large portion of workers from their workstations, and the COVID-19 pandemic has itself accelerated the process of relocating work through the injunction to telecommute.
3. Working everywhere amounts to working all the time, in a porosity of time that blends holidays and work, home and office, private and professional life. The boundaries and demarcations between these spheres and times shatter under the impact of multi-membership, the ubiquity of mobility that characterizes the hypermodern human who no longer recognizes these boundaries because he has control over his time expenditure, time organization, and time management, which undoubtedly takes precedence.

### *Immediacy as a hypermodern value*

For Rosa, the social acceleration of time stems from the amplification driven by the digital lineage, which constantly renews and develops its technologies; from social change based on dominant trends and the primacy of the technical environment; and from our transformed lifestyles shaped by these structuring trends. These phenomena generate increasing stress and alienation among hypermodern and connected individuals. One of the most structuring trends is identifiable: the “Atawad” logic, which, through its sequence “Any Time, Any Where, Any Device,” glorifies immediacy, the masterful present. This concept was proposed by the CEO of a Telecom company, Xavier Dalloz, in his report on *Communication 3.0* in 2008. Thanks to the dominant features of ICTs (to archive, capture, and share the present moment, to organize and program communication), ICTs help us live the present moment as the “place of all temporalities” (Rosa, 2010, p. 86), generating “an intertwined temporal configuration” both through constant back-and-forth between past, present, and future and because several tasks can be performed simultaneously. Stress is heightened by conflicts between social times, these well-known schedule overlaps push us towards ubiquity and reinforce the weight of the present, avoiding any projection into an increasingly uncertain future. Expressions such as “real-time,” “timed or timed time,” or the older “just in time” are indicative of this.

When immediacy – giving rise to impatience – asserts itself, it imposes constant vigilance, permanent connection, unlimited access, a connection continuum (Paquienséguy, 2012, p. 182) to avoid missing anything: not an opportunity, not any information, not an event, not a relationship. Thus, the social acceleration of time precipitates our social bonds and actions while demanding constant attention to keep them active and saturate the present with intensity. Socially, practices adapt, favoring the ephemeral and fleeting, but in a tense relationship with performance (since the opportunity remains unique), pushing for constant self-evaluation, of which the “quantified self” is a strong trend. “Quantified self or personal analytics is a practice born in the United States that encompasses the tools, principles, and methods allowing individuals to measure, analyze, and share their personal data” (Wikipédia, 2022); it promotes constant self-evaluation and the idea of personal performance without competition: individuals set their own goals, choose challenges to overcome, and push their limits.

While the idea of performance and improvement is not new, the contemporary peculiarity is that the competition takes place between oneself and oneself in an individual relationship summarized in the expression “to surpass oneself.” However, at the same time, performance, and progression, only hold value when shared instantly, directly on social networks, and in videos that inscribe them in the media universe, whether it be a sports, culinary, artistic, cosmetic accomplishment, or others, all registers being present. This trend is very present today because it creates a link between very performant amateur practices, the professional world, and social recognition. As evidenced by vlogs on Bilibili, Kaishou, or WeChat chains that value the beauty, physical abilities, or artistic performances of some Internet users. In other words, several media spaces establish the transition from the amateur to the professional or from anonymity to media glory through individual performance. Contest shows reserved for unknown professionals such as Top Chef, The Best Blacksmith, Face-Off, or for amateurs like The Voice, Best Talents, etc., daily testify of it in the media space.

In short, ephemeral, and elusive, the present moment demands all our attention and involvement. Despite the undeniable interest of Rosa’s theses on the social acceleration of time and his brilliant demonstrations of temporalities, he presents and exposes acceleration and its trends in a hegemonic way without questioning the (social) significance that individuals attribute to them, while other trends exist and develop (Deléage & Sabin, 2014); resistance to acceleration persists, even intensifies. Several other trends are already present, such as slow (slow-life, slow-food, slow-travel, etc.), which proposes to “slow down step by step and flourish”; ecology (fallow, short circuits, seasonal fruits, and vegetables); self-sufficiency (producing one’s own food); and energy autonomy, or even craftsmanship that requires taking one’s time to produce. While some seek to push their limits in an ideology of permanent performance and “always more,” others seek not to cross them at all by focusing on primary and essential elements in an approach that, misunderstood, could be mistaken for a step backward when it is primarily the corollary of acceleration, distance, and globalization.

## Let's Move on to Ethics!

Since we are living in the digital age (Paquienseguy, 2012), which is only just beginning, the rules of the social game, the economic world, and governance must evolve to reflect the new values generated by the Digital Revolution. Establishing rules, of course, involves setting limits between what is legal and illegal, socially acceptable, or unacceptable, hidden or exposed, etc. However, these are boundaries that can evolve and make the limit evolve. In other words, the rules of a digital world need to be considered beyond the law (legal or social) towards an ethics of the digital that would help define the limits not to be crossed to protect humanity. For this, it seems first necessary to distinguish ethics and morality once again to fully understand the magnitude of the task of thinking about the ethics of the digital to regulate human and social relationships, considering both the societal and individual scales, experienced in the dialectic between natural and artificial; the Human, the living being embodying the first term, and the technique, the machine, the data, the virtual the second.

Ethics and morality are very close, and their meanings vary according to authors, currents, and eras. To stick to our era, the one we live in, it is Ricœur (1990), Deleuze (1969, 2002), or Sangral (2015) who can help illuminate them more than Spinoza or Brunner whose thinking bears a trace of the society in which they lived, structured around less prevalent modern values, or at least shaken, than today. If in vernacular language ethics and morality are close, we can here consider the former as the condition for reflection on the latter. Indeed, Ricœur “[...] proposes to consider the concept of morality as the fixed reference term and to assign it a double function, that of designating, on the one hand, the region of norms, in other words, principles of what is permitted and forbidden, and on the other hand, the feeling of obligation as the subjective aspect of the relationship of a subject to norms” (1990, p. 1). Morality dictates social behaviors and norms, marking the limit between what is socially acceptable and what is not, which is variable because it remains strongly influenced by individual convictions, whether religious, political, or ideological. Applied to the digital realm, it would be tempting to affirm that humans have no morality and that they use and abuse ICTs, data, and connected objects as they are preoccupied with their own physical, mental, and social well-being. It is a fact, the statistics of “social big data” (Digital Report 2023 – We are social wear-social.com/digital-2024), these usage data generated by our connections, are unequivocal: steadily increasing, in 2021, the average daily time spent using connected devices (smartphones, tablets, and computers) is 6 h and 54 min per person, and more than 5.22 billion individuals use a smartphone every day worldwide.

As for ethics, it could be “sometimes something like a meta-morality, a second-degree reflection on norms, and on the other hand practical devices inviting us to use the term ‘ethics’ in the plural and to accompany the term with a compliment, as when we speak of medical ethics, legal ethics,

business ethics, etc....” (Ricœur, p. 2). In other words, ethics would help identify and define characteristic values (of an era or a sector of activity) from which social rules, norms would have “a legitimate claim to regulate conduct” (Ibid., p. 4). As Jacques Tremintin, an ardent defender of Social Link, puts it more simply, “Ethics is the science of morality and customs. It is a philosophical discipline that reflects on the purposes, on the values of existence, on the conditions of a happy life, on the notion of ‘good,’ or on issues of morals or morality. Ethics can also be defined as a reflection on behaviors to adopt to make the world habitable for humans. In this, ethics is a search for an ideal society and a way of life” (2016, p. 4). And just as we have shown in this paper, our technologized societies are changing because the twenty-first century unfolds at the confluence of two very powerful movements, like uncontrollable rivers: hypermodernity, which accelerates, complicates, amplifies our lives and living environments, and the still young but already hegemonic digital lineage that accompanies these changes and supports these evolutions and transformations. This rapid and profound mutation therefore requires building and accepting new social and societal values to protect both freedom and living together. Following Lipovetsky or Aubert, Sangral notes the rise of the individual to the detriment of the social group or groups of belonging with his concept of “individuation,” which he defines as the “process of desacralization of any group and sacralization of any individual” (2015, p. 22). If the Human, taken as an individual, pushing his limits becomes the central and primary element of the social model to the detriment of social groups, social classes, and the in-between, then contemporary ethics needs to be built in the purest Greek tradition, following Aristotle, for whom ethics is ultimately the reflection of the human on his own action with a view to acting well in the city, recalling the humanistic dimension that refers to benevolence and sociability. In other words, the ethics of the digital should be thought of in a generic, meta way.

So, it is still up to us to reflect on limits by considering the boundaries, our boundaries in our social actions, our relationships with technology, in the space we allow or create for it in our daily lives. Thinking about them involves asking whether to exceed them, respect them, or invent new ones, and therein lies the real challenge for Humanity.

## **Conclusion**

The essence of the digital realm raises complex moral questions that require deep reflection. The advent of the digital or data age (Seagate, 2021) has opened up a world of infinite possibilities, but it has also posed considerable ethical challenges. I wish to draw particular attention here to the need for deep reflection on the moral implications of the unlimited nature of the digital, as well as the implementation of concrete measures to ensure ethical and responsible use of these constantly evolving technologies.

Access and equity, because while the digital offers nearly limitless access to information and resources, it raises concerns about equity. Not everyone has equal access to digital technologies,

which can widen the gap between disadvantaged and advantaged individuals. Privacy Protection, because the unlimited nature of the digital means that our personal data can be collected, stored, and used on a massive scale, often without our knowledge. This raises ethical questions about privacy protection and individuals' control over their own information. Ethics of AI, because AI means power, but it also poses ethical challenges as automated decision-making by algorithms and unforeseen consequences for individuals and societies. Disinformation and manipulation, because digital enables the rapid dissemination of information, but it also facilitates the spread of disinformation and manipulation. Online platforms can be used to manipulate public opinion, sow confusion, and even influence democratic processes. And at least, responsibility and transparency: with the unlimited core of the digital comes the need for increased accountability and transparency in how companies and governments use digital technologies. It is essential to establish ethical standards and accountability mechanisms to guide the responsible use of digital.

In summary, the morality and unlimited nature of the digital are intimately linked, and it is crucial to address the ethical issues that accompany the development and increasing adoption of digital technologies. This requires ongoing reflection, open debates, and collaboration among stakeholders to ensure that the digital is used ethically and beneficially for society as a whole.

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### **References**

- Ascher, F. (2000). *Ces événements Nous dépassent, feignons d'en être Les organisateurs: Essai sur la société contemporaine*. Éditions de l'Aube.
- Ascher, F. (2009). *L'âge des métapoles*. Editions de l'Aube.
- Aubert, N. (2006). *L'individu hypermoderne*. Erès.

- Aubert, N. (2018a). *@ la recherche du temps. Individus hyperconnectés, société accélérée: Tensions et transformations*. Erès.
- Aubert, N. (2018b). *Le culte de l'urgence: La société malade du temps*. Flammarion, coll. Champs Essais.
- Avenier, M. J. (2019). Les Sciences de l'artificiel: une conceptualisation révolutionnaire de sciences fondamentales à parachever. *Projectics/Proyèctica/Projectique* 3(24), 43–56.
- Berry, G. (2008). *Pourquoi et comment le monde devient numérique*. Collège de France.
- Boullier, D. (1989). Archéologie des messageries. Réseaux. *Communication-Technologie-Société*, 7(38), 9–29.
- Boullier, D. (1999). *L'urbanité numérique. Essai sur la troisième ville en 2100*. l'Harmattan.
- Breton, P. (2000). *Le culte de l'Internet: Une menace pour le lien social?*. La découverte.
- Deléage, E., & Sabin, G. (2014). Peut-on résister à l'ère du temps accéléré? *Ecologie Politique*, 48(1), 13–21.
- Deleuze, G. (1969). *Différence et Répétition*. PUF.
- Deleuze, G. (2002). Review of Gilbert Simondon's *L'individu et sa genèse physico-biologique* (1966). *Pli: The Warwick Journal of Philosophy*, 12, 43–49.
- Doueihy, M. (2011). *La grande conversion numérique: Suivi de Rêveries d'un promeneur numérique*. Éd. du Seuil.
- Dupont, B. M. (2004). Traverser l'espace ou habiter le temps? *Vie sociale et Traitements*, 4 (n° 104), 82–85.
- Flichy, Patrice L. (1995) *Récents développements en sciences sociales - vers une nouvelle théorie de l'innovation*. Editions de la Découverte.
- Gemenne, F., & Denis, M. (2019, October 8). Terre, climat: Qu'est-ce que l'Anthropocène, ère géologique | vie-publique.fr. <http://www.vie-publique.fr/parole-dexpert/271086-terre-climat-quest-ce-que-lanthropocene-ere-geologique>
- Goffman, Erwing (1967) *Interaction Ritual. Essays on Face-to-Face Behavior*. New York: Pantheon Books.
- Harcourt, Bernard E. (2015) *Exposed: Desire and Disobedience in the Digital Age*. Harvard University Press.
- Hottois, G. (1984). *Le signe et la technique: La philosophie à l'épreuve de la technique*. Éditions Vrin.
- Hottois, G. (2009). *La technique*. : Garnier-Flammarion, coll. Corpus.
- Lahire, B. (2011). *L'homme pluriel: Les ressorts de l'action*. Éditions Pluriel.
- Lahire, B. (2016). *Pour la sociologie: Et pour en finir avec une prétendue " culture de l'excuse"*. La Découverte.
- Leroi-Gourhan, A. (1973). *Milieu et techniques: Évolution et techniques*. : Albin-Michel, coll. Sciences d'aujourd'hui.
- Lipovetsky, G. (2004). *Les temps hypermodernes*. Grasset.
- Lipovetsky, G. (2006). Le bonheur paradoxal. *Essai sur la société d'hyperconsommation*, 377.
- Nicole, Aubert (2004) *Aubert Nicole (2004) L'individu hypermoderne Paris*. Édition Érès.
- Paquiénéguy, F. (2007). Comment réfléchir à la formation des usages liés aux technologies de l'information et de la communication numériques? *Les Enjeux de l'information et de la communication*, 2007(1), 63–75.
- Paquiénéguy, F. (2012). L'utilisateur et le consommateur à l'ère numérique. In G. Vidal (dir), *La sociologie des usages : Transformations et continuités*. : Éditions Hermès Lavoisier, collection Traités, pp. 179–212.
- Ricœur, Paul (1990). *Soi-même comme un autre*. Édition du Seuil.
- Rosa, H. (2010). Accélération. Une critique sociale du temps. *Lectures, les livres*.
- Sangral, S. (2015). *Fatras du soi, fracas de l'autre*. Éditions Galilée.

- Simon, HA. (2004). *Les sciences de l'artificiel*. Gallimard.
- Simondon, G. (1958). *Du mode d'existence des objets techniques*. Aubier.
- Simondon, G. (2008). *Imagination et invention*. La Transparence.
- Simondon, G. (2014). *Sur la technique*. Presses Universitaires de France.
- Seagate (2021) Datasphere 2021, a new way for data is coming <https://www.seagate.com/fr/fr/datasphere-2021/>
- Tirole, J. (2018). *Économie du bien commun*. PUF.
- Vaccari, V. (1957). Progrès technique et progrès social. *Relations Industrielles*, 12(4), 326–347.
- Virilio, P. (1984). *L'Espace critique – Essai*. Christian Bourgeois Editeur.
- Wikipédia (2022) [https://en.wikipedia.org/wiki/Quantified\\_self](https://en.wikipedia.org/wiki/Quantified_self).