

# DIGITAL PILGRIMS

Towards a Quantum Humanity



AMS Group

**Adrián Sicilia**

The present has the texture of the future. Hyper-digitalization has made all questions outdated, especially: what are we going to do? For decades, we have been inhabiting and moving within the Digital Environment. Today, the unavoidable question is: what and who are we going to be?

*Digital Pilgrims* proposes novel and urgent debates for a society that has been digitalizing itself for over fifty years. Our coexistence with mature artificial intelligences demands definitions. We are cyborgs moving in environments that exceed time and space, humans in search of meaning for this quantum reality.

It is not difficult to speculate about possible futures; the real challenge is to find a path forward in the face of the singularity that is starting to reveal itself, and in the face of the social impact we are just beginning to see. In the middle of the explosion, this book outlines the debates we cannot put off any longer. There are no answers here but rather a guide for us to finally discuss how to orient ourselves on this dizzying voyage.



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**Adrián Sicilia**

Contributors

Luz Vítolo

Federico E. Testoni

Translated by

Mallory Craig-Kuhn

Sicilia, Adrian Marcelo

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*For millions of years, mankind lived just like the animals. Then something happened which unleashed the power of our imagination. We learned to talk and we learned to listen. Speech has allowed the communication of ideas, enabling human beings to work together to build the impossible. Mankind's greatest achievements have come about by talking, and its greatest failures by not talking. It doesn't have to be like this. Our greatest hopes could become reality in the future. With the technology at our disposal, the possibilities are unbounded. All we need to do is make sure we keep talking.*

**Stephen Hawking**

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## PROLOGUE

Reading a book is an increasingly strange act, but it is always fascinating. Looking to a fixed code to communicate seems anachronistic in a communications landscape that is more and more interactive. Immersing ourselves in a text that develops its considerations at length seems to contradict the brief forms that are multiplying all around us. In that anachronism, in that defiance of extension, lies something extraordinary.

Writing is a technology that has been with humanity since before even the foundational myths of our Western civilization were born. It is a tool that has helped us to understand the world and talk with others through the rise and fall of empires, through different ways of life and of thinking about the universe. It is a connection with collective knowledge, an abstract roundtable conversation. As marvelous as it is to read a book, today it feels strange. In any case, everything today feels a little strange.

This is not a text about new advances in technology and it does not focus on the future of the digital sphere, but it does reflect on both these topics. It does not set

out to provide answers or formulas but rather to lay out those questions that have become urgent in order to open up the conversation.

More than fifty years after our encounter with the digital realm, the time has come to face the questions we have been avoiding. Is this new technology a tool that we use or something we should begin to think of differently? What drives this process, and what are its consequences? How does it affect us collectively?

We are far from being able to assign a clear meaning to the moment we are currently experiencing. However, we tend to forget that technological advances are not the central aspect of the changes we are going through but rather that these advances foster something more relevant. When we think about the transformation we are experiencing beyond technology, as a human and social process, it becomes crucial to look to history in order to recover the cultural toolkit that has allowed us to appropriate and resignify reality in the past.

Like all the objects (or texts) in our culture, we can think of it as the materialization of ancestral human ceremonies. One possible point of view tells us that in all our practices and objects, we can find an underlying form, an essential contract, that is prior to its function.



Those basic conditions guarantee its functionality and usefulness in a particular society. A book, for example, could be our way of sitting around the fire to listen to the stories and contemplations of people who are very far away in space or in time. In it, we identify a desire for communication.

If we think about the underlying characteristics of every aspect of humanity as the expression of the ceremonies that shaped our culture, we can begin to understand ourselves a bit better as a society. This knowledge becomes important to understanding how we inhabit spaces. And today, the fact that we find ourselves living in a world mediated by digital technologies, a world that feels strange to us, promoting habitability is crucial. This text reflects on forms, social functions, and human habitability in relation to technology. It aims to explore those human contracts that came before our current practices. Perhaps we can find some certainty there.

These words are a contribution to the discussions we are having today in the exercise we have engaged in as humans since we first sat down around the fire in that age-old practice of listening to experiences and imagining possible worlds. No matter what we think

about the origin or destiny of digital technologies, about their impact on the world, or even about how that world is organized, all of us, from the least initiated to the most experienced, feel we are living through critical times. We are missing some pieces of the puzzle. Even though we talk about this issue a lot, there seem to be no pillars organizing the debates.

We are still in the initial phase of our relationship with digital technology, perhaps in the very beginnings of the development of a new dimension and a way of understanding from an existential point of view the meaning of a change in such central concepts as space and time. This implies a challenge that will require us to bring together all our past experiences and build ourselves a framework to strengthen our possibilities of adaptation.

We are pilgrims searching for a meaning that will explain these new times, that can define this new reality. The path requires us to revisit and test our ability to imagine, cooperate, and self-organize. If we do not develop a collective attitude, we will likely not be able to handle the challenges ahead.

These words are an invitation to come on a voyage for which there is no map, no directions. I hope that in

a few years, we will be able to say that on our pilgrimage, we found the way to make better choices and to carry out our symbolic invocations beyond time and space, that hyper-digitalized reality brings out the best in us, that humanity has discovered a bit more of itself.

These are stories told around a fire, calm contemplations during a sunset, a ritual in itself that advocates for the construction of more ceremonies in the digital world. It is an invitation to talk about the role of each person in our community. Perhaps after these questions, we will no longer be the same.

There are no revelations, just the drive to continue our pilgrimage, to see where it can take us.

*Adrián Sicilia*

# THE DIGITAL ENVIRONMENT

## Mundus Novus

Of the six letters that the explorer Amerigo Vespucci wrote about his trans-Atlantic travels, *Mundus Novus* had the greatest impact. In this letter, Vespucci indicated the existence of an unknown hemisphere. It was not Asia, nor the Indies Columbus thought he had reached. It was a completely new territory to the Europeans, irrefutable proof that the world stretched beyond known boundaries. European explorers found not only a territory they believed to be virgin but one brimming with mysteries to unveil. Although the first explorers could not begin to imagine the continent that lay beyond those coasts, they began to see that something was changing. This scene provides an eloquent vignette for understanding the 21<sup>st</sup>-century world we live in and the challenges it holds.

Vespucci's document hailed the beginning of a new world, and that presented a challenge to those whose

job it was to describe it. The art of creating maps was crucial for the sailors who set to sea, but it also relied on the models of the universe that were dominant during that period. Ancient cosmographers depicted a philosophical construction of the world in the way they laid out the elements known by their culture. Colorful, highly detailed maps used symbols to recreate territories in a way that could be understood mentally and in practice.

The graphic representation of something as vast and mysterious as the universe is a gargantuan task that allows humans to locate themselves in space and imagine the mystery implied by the universe itself. The greatest problem for 15<sup>th</sup>-century cosmographers lay in the difficulty of defining the world in the face of a broad awakening of awareness about it. Ideas were changing constantly. Indeed, the debate over these ideas put the spotlight on individuals who are crucial to understanding the difficulties we face today. Our world also seems to be changing. We could hazard to say that the current historical moment is similar to those crucial years in the late 1400s. While the explorers of old expanded frontiers, cosmographers strove to understand the limits of quickly aging knowledge. In the midst of

it all were everyday people trying to make sense of a world that had changed.

This turning point between the Medieval period and the Renaissance placed two models at odds. The Church's cryptic system, in which knowledge written in Latin was safeguarded as a form of power, was challenged by the horizontal management of experiential knowledge that began to blossom in cities as it was spread from mouth to mouth in guilds and brotherhoods. In this context, authorized knowledge held that the horizon was flat and fixed, while experiential knowledge, that of sailors, alleged there was something beyond that boundary. Two worldviews opposed each other. In the transition from the 15<sup>th</sup> century to the 16<sup>th</sup>, the discoveries of European voyages expanded possibilities, and the human notion of territory changed forever. With few certainties, the maps created during that period were particularly experimental.

When cartographers received Vespucci's letter, they represented that new space in three different ways in a single publication: as a continent, as an island, and as an Asian peninsula. This explicit contradiction materialized the confusion of the historical moment. In 1503, Vespucci wrote: "we arrived on the coasts of

those countries and understood that that land was not an island but a continent." The world had suddenly expanded.

The material and social consequences of colonization for the people who already lived in the Americas are well known, as are the political and economic processes it unleashed in Europe. But what impact might it have had on the minds of contemporary Europeans as they began to understand what was happening? What might have been the experience of a Tiwanaku shepherd who already lived in the Americas but called the land by a different name? What impact did these changes have on the lives of everyday people amid these tensions?

The popularity of travel literature recounting journeys "through the Americas" during the centuries following these events is just one example of the hunger for knowledge that such an event awakens in humanity. What must have gone through the minds of sailors as they voyaged to those faraway lands? Every person who has boarded a ship bound for the unknown, whether through necessity or obligation, or of their own free will, must have felt some kind of anticipation. The progress of explorers who followed in

the footsteps of Columbus or Amerigo Vespucci had a significant impact on the image that others had of the world. There was a feeling of confusion in the face of a disrupted reality, of anxiety about processes whose outcomes were unforeseeable, that changed what was known and replaced it with doubt. Can such a distant historical moment help us assign meaning to this incredibly unique 21<sup>st</sup> century?

As the Middle Ages gave way to the Renaissance, the discovery of another continent that extended the borders of the world was not the only major event that took place; the conquest of the Americas also began. The profound cultural, social, and political transformation of society marked a historical period. At first glance, the comparison may seem overstated, but a preliminary approach reveals a common sentiment: the inability to deal with or understand a complex and ineffable process. In the 21<sup>st</sup> century, we are also confused.

Perhaps understanding the connection between our present and the most important events in our culture will allow us to understand what we are experiencing in our relationship with digital technologies. Maybe the processes and individuals just described are echoed



in our current period of history. Modern society is also undergoing a change in its world. But is it a change of the same dimensions? Is it really fair or correct to compare it to the experience of men and women in the 15<sup>th</sup> century?

Our reality is constantly changing and expanding. As inhabitants of a planet that coexists with transformation on a daily basis, we wake up every day to read about new particles in the field of physics, social uprisings that challenge the established order, developments in digital universes that do not yet make sense, new ways of understanding money with a fluctuating value, or intangible art. There is a feeling that it is impossible to stay up to date, that there is so much happening at once, that just when we are about to get used to something, a new alternative appears. And this is not only happening to people. Everywhere, we see institutions that try unsuccessfully to adapt. Entire markets become obsolete, and new ones appear from the ether. There are laws we do not fully know how to apply in certain situations and, at the same time, insurmountable legal vacuums.

We are all aboard a ship trying to reach a horizon that always remains ahead of us. But since we are in

our homes and our physical bodies do not move, we may not comprehend the magnitude of what is happening to us. A simple look around shows how digital technologies have affected all facets of our existence. The digital transformation that is taking place in the 21<sup>st</sup> century was nothing more than a dream fifty years ago. The institutions we learned to rely on are out of date, and that gives rise to tension and conflicts. Those who create the official maps are in crisis. At the same time, the explorers who brought us to this point do not know how to fully respond to the circumstances. What is the role today of the largest technology companies? Something definitely feels strange. Can we put our finger on the problem? Can we name it?

This feeling is comparable to that of unsuspecting sailors traveling to an unknown land, but here the new world is coming to us. We see these novelties on our screens like the crews of those ships, who, seasick and in darkness, tried to imagine what the world would be like as they peeked between the planks of their boats. What is on the other side? What awaits us? With the same uncertainty as those sailors, we read news about the development of increasingly complex digital technologies, created from elementary particles that emer-

ge from mathematical models, which in turn create intangible objects, spaces, and environments. We are sailors in an immaterial sea, the extent and currents of which we do not yet understand.

The cultural history of humanity is marked by new findings and the cycles of revolutionary technologies. The discoveries that truly transform ways of existing in the world are those with the ability to modify our perception of reality. Just like the discovery of a new continent changed the reach and boundaries of 15<sup>th</sup>-century explorers, digital technology gave rise to a change whose effects we still do not fully understand and that mark a historical period. Why? Because of something that has been coming to light in recent years: digital technology stopped being a tool some time ago. In other words, it became such a powerful phenomenon that in order to address it, we must shed our previous conceptions. The power this technology offers us, the relationship we create to it, and its ubiquity lead us to think of it as an environment. Conceiving of this budding phenomenon as the Digital Environment may be the path toward harnessing its potential and overcoming our current challenges. It may be the key to un-

derstanding this transition. But first, we must go back a few decades: in the beginning, there was a bit.

The bit or binary digit, the elementary particle of the digital world, is a decision between two options: 1 or 0. It was defined in 1948 by the scientists at Bell Laboratories. From that moment on, thanks to the development of binary code, any kind of digital object can be summed up in an ordered series, whether long or short, of yes (one) and no (zero) decisions. We can reduce to X quantity of bits an immense number of intangible objects, complex reasoning, intelligent systems, chess theories, or processes that are independent of human control.

The whole of digital development, about which humanity has few certainties, emerges from that black or white, on or off particle that we discovered a little over seventy years ago. From its beginnings as a powerful tool for computation and decodification, the bit held within its nature the transformative ability of a new kind of atom. If we propose the Digital Environment as that world that is coming toward us, it is one made up of minute particles that can be reduced to that initial decision of defining everything as a series of bi-

nary combinations. Today, we are surrounded by bits, in constant contact with them.

Science and technology help us and have the ability to change what we understand as our reality. It is fair to say that our present cannot be conceived of without the impact of digital developments. From the moment we get up in the morning until we reach the end of the day, they are with us. At this moment, there are more than twenty-five billion devices connected around the world, 60% more than in 2016 or, in more concrete terms, six devices for every human being on Earth. This materializes the progress of the industrial development known as the Internet of Things, a market that surpassed 250 billion dollars in 2019 and which, during the Covid-19 pandemic in 2020, proved indispensable for modern life. Material life is becoming more and more connected to the network.

In parallel, we have advancements in Artificial Intelligence that never cease to amaze: it writes articles, paints pictures, finds solutions to complex problems, dances on the Internet, makes presentations at conferences, and, above all, thinks and reasons (or does it?) very differently from people. We can add the fact that quantum computing has left the laboratory to make an

early but concrete arrival in the world of commerce. Perhaps we cannot know exactly where this process is leading or what consequences it will have, but we can at least maintain that the potential of these developments is unprecedented.

Beginning to think about digital technology and its effects, consequences, and opportunities forces us to question truths we take for granted and take note of others that perhaps we had never stopped to consider. The first logical step is to ask ourselves what digital technology is, how we understand it, and whether we ought to update that conception.

Since its development in the final decades of the last century, different ways of understanding digital technology have circulated. At first, we considered it a tool that allowed us to carry out very complex processes. With the development of the Internet, different ways of overcoming the barriers of distance and time to share information and communicate became more explicit. And progress did not stop there. While we used to use technology to complete a specific task, today digital technology surrounds us. The feeling is that it is everywhere, so much so that sometimes we do not see it. We spend several hours a day in front of a screen,

we live with the content of what happens “online,” and we experience what happens in the virtual world as reality.

The most urgent question is whether it is correct to think of digital technology today as a tool or if it has become something more. Bearing in mind that digital technology encompasses all forms derived from bits, whose materiality must be understood as a combination of atoms and bits that includes everything from the first computer up through Artificial Intelligences and 5G, is it fair to compare it with a tool like a hammer, a tractor, or a windmill? Or, since it is everywhere, permeating our reality, should we think of it as something more? Can we think of it as a kind of environment?

The simplest and most common of words are often the hardest to define, but in this case we must try. In general terms, when we talk about an environment, we are referring to the conditions that surround someone or something and allow for its development. Nature, for example, is an environment in that it is a set of elements (physical, chemical, and biological) that interact with living things. This Natural Environment is the foundation for all life and allows everything that inhabits it to develop and exist. It feels ordinary

to us because it existed before the development of the human species. It was already there when we arrived. However, there are now other types of elements that surround us, in another moment of our existence, when “we’re on the Internet.” At these times, while the physical body is in a specific place carrying out the small actions through which we interact with a device, where is our mind? Where is our attention? Are we on Twitter, or are we in our homes? We might say we’re in both places: while our body is in the Natural Environment, our consciousness is in the Digital Environment.

One possible reason why this idea might sound disruptive is because perceiving and understanding a new environment is difficult. How would the sea be described by a fish that has spent its whole life swimming around a tank? How do people describe an environment that cannot be seen or, so far, touched? Although Virtual Reality, Augmented Reality, and projects with the Metaverse and the Omniverse are searching for a way to give the Digital Environment a certain degree of tangibility, humans have been moving through and inhabiting the Digital Environment for longer than we think. We are inside it, and it is all around us.



In considering how the different elements of our culture take on meaning, Yuri Lotman introduced a concept that is helpful for thinking about the Digital Environment. The linguist uses the term “semiosphere” to refer to a defined set of signs to which a community assigns meaning and exchanges in order to communicate and interact. So, (like geological concepts such as the lithosphere and the atmosphere) the semiosphere describes a closed and abstract space formed by signs, which cannot be perceived with the senses. Within that space, some physical elements (like notches in rock, sound waves, or ink patterns) can hold meaning in reference to a system of relationships. At the same time, there are different spheres of meaning. As such, a text acquires its value (and usefulness) in its interrelation with different signs and practices, which is very different from what happens with a tool like a pencil. The potential of digital objects lies in their ability to connect with each other (their system of relationships) and to connect with human life (their practices) on different levels. Extending Yuri Lotman’s idea, we can argue that digital technologies are configured similarly to the semiosphere, a system that makes sense within itself

and simultaneously produces both new signs and new values for the old ones.

When we talk about the Digital Environment, this is how we are thinking about technology. This environment is developed based on infrastructures (optical fiber, servers) and physical supports (robots, computers, chips), but it is also its own space. Its elements make up an abstract space that we cannot perceive with our bodies' senses, but that we can feel. We see each other on the Internet, we look for each other online, we meet on social networks and work in the cloud. And the digital sphere is also an environment because we can inhabit it.

The habitability of the Digital Environment will be analyzed in the next chapter. Until then, we will lay out the following difference. If it is very clear to us that we are in the Natural Environment when we are in our homes, why is it hard for us to think that we are in the Digital Environment when we are in a Zoom meeting or looking up information on Google?

When we begin to see that digital technology constitutes an environment, this opens the door to considering the emotional implications that this change causes in people. It is possible to imagine that if the Natural

Environment was for centuries the only place we could be and inhabit, the appearance or development of another environment, with such dissimilar characteristics, it must have been quite disruptive for people. The feeling of confusion is a constant companion to modern humans.

The Digital Environment also changes how we understand reality. The idea is simple but highly transformative: a new understanding of the historical relationship between space and time. That duality, which seemed unbreakable, which was a certainty and made up the foundation of our existence, is questioned by coexistence with the new dimensions activated by the Digital Environment. Beyond the time and space we inhabit with our biological bodies, there emerge new ways to inhabit spaces that are not physical and allow for the coexistence of different times. There are now other possibilities we had not considered. Grasping that is a huge challenge that can lead us to reconsider the meaning and scope of our existence.

Once we understand digital technologies as a Digital Environment, atomic materials cease to be the basic elements of an unambiguous reality; instead, they become the medium for new digital dimensions, a

kind of supporting materiality from which the multiple realities that can be digitally imagined and produced might unfold and become part of material reality. This implies an extension of our existential dimension, which allows us to reach territories beyond the Natural Environment.

Unlike other inventions that have been vital to human development and have marked entire historical periods, such as the invention of the steam engine, electricity, or the telephone, the tools developed for digitalization have moved beyond their nature as mere instruments and gone on to solve problems and achieve goals. Today, they have come to constitute the development of a new environment for our species.

Our confusion is an expression of our uncertainty, but it also stimulates our hunger for knowledge. We achieved digital technology believing that we were arriving in the Indies, but a few decades later, it revealed itself to be something we did not expect. Digital technology is a new environment that not only invites us to ask questions about the depths of our being but also to consider the existence of another dimension of the universe. On a daily basis, we experience a New World we cannot yet explain.

There are facts and discoveries with the power to upend all that we know, and they force us to reorganize our worldview. This happened to Europeans when they arrived in the Americas and also to those who were already there and saw them arrive. It was a New World for all of them: as full of opportunities as it was devastating, as powerful as it was controversial, as unexpected as it was inevitable. When modern people run up against digital technology, something similar happens to us. Digital technology is more than a powerful tool; it is an environment unto itself. Have we arrived in the Digital Environment? Did the Digital Environment come to us? The only thing we do know is that now, we are not the same as we were. Our universe has expanded, and reality is being reconfigured.

## **The power of imagination**

Long before the trip from Europe to the Americas became a commercial route, a path for the conquest of that world perceived as new, there were people who imagined it. Is it true that the world ends in emptiness? Is there something beyond the ocean? An idea leads to a

spark. Everything else comes later. Medieval cartographers imagined a horizon beyond the known world, but since they did not know what it was like, they filled it with drawings of serpents and mythological animals. Those places they had not yet reached with their technical abilities were considered, simultaneously, to be a mystical and real space. We are contemplating the possibility that there is something there, even though we do not yet know what it is, they thought. On the Hunt-Lenox Globe, one of the first globes created, we can read: *hic sunt dracones* ("here be dragons"). Whether or not it was a giant squid that slept in the confines of that territory, they imagined something waiting to be discovered. And that is always the first step.

Our imagination is one of the ways we comprehend reality. It is no coincidence that, given its importance and also its mystery, the imagination is the subject of so much discussion and research. From Plato on, it has been the object of study and analysis. Neuroscience and other disciplines are still trying today to unravel the mechanisms involved in this mental process. Although we cannot explain how it functions or its evolutionary significance with complete certainty, we can

appreciate its role when it comes to appropriating a new territory or, indeed, transforming it.

Our imaginations not only allow us to perceive reality, test out other scenarios, or predict future possibilities but also to create and innovate. In its projective aspect, the imagination is the tool by which people foresee an action or circumstance. For human beings, thoughts are intimately tied to actions. Before we act, we generally go through a prior instance in which we visualize what we want to do or achieve.

Preparation through foresight and visualization of our actions is a cultural behavior that has been with us for quite some time. When the Paleolithic man ritually painted a scene of a hunt on the walls of his cave, he was foreseeing the action in his mind in order to carry it out. Our imaginations are one of the ways we approach reality and think about how to transform it. When it comes to solving complex problems, thinking about the future, or designing the reality we wish to inhabit, people make use of their imaginations. We also deploy them when faced with obstacles or tensions arising from a conflict.

The current status of the Digital Environment was achieved thanks to the people who imagined it, in the

face of urgent pressures arising from the circumstances in which they lived. It is therefore possible to trace the origins of this new environment to the Cold War. After World War II, the West, commanded by the United States, and the East, led by the Soviet Union, faced off in a competition for economic, social, ideological, and military hegemony. With the ever-present threat of nuclear war, the necessity of creating a communications system that could survive an attack of that kind fueled innovations that would be decisive in the creation of the first Internet.

When the Russians put their first satellite in orbit, US President Eisenhower supported the establishment of DARPA, a branch of the army dedicated to the development of secret weapons and systems that would be fundamental to the birth of digital technology. At the same time, the United Kingdom, France, and some private companies carried out projects that also contributed to this development. The Internet arose as the solution to a problem of communication between computer networks. The result was a common language that allowed information to travel through any network.



The development of computer systems, led by companies like IBM after World War II and later Hewlett Packard, and pushed forward by the electrical engineers and scientists who worked for these companies and for the state, laid the groundwork for a digital cultural movement. During the stage we will refer to as 1.0, we can identify two generations of imaginers. The first was made up of these serious, executive profiles, solemn in their belief that they were promoting civilization over chaos. The second was a group that, in the wake of the 1960s, would come in to shake things up.

This second generation of engineers and inventors who carried out the first wave of the digital transformation were influenced by the Counterculture, an anti-system movement that took on traditional customs. Without exclusive leadership, this heterogenous and politically diverse movement grew from community and cooperative organizations. Even so, it found cohesiveness around causes such as demilitarization, women's rights, the fight against racism, sexual liberation, and, of course, challenging traditional dynamics of authority. Running counter to the generation that created processors and the first type of network in response to a wartime need, this generation of people

born between 1960 and 1970 imagined other possible uses for this kind of technology.

In this regard, we can bring May 68 to bear as the materialization of ideas that made way for a new world, in social and political terms, and that reflects the spirit of the historical moment, or *Zeitgeist*. May 68 was the epicenter of a cultural and social mutation that impacted not only French society but all of the West. One of its strongest slogans was “Power to the imagination.” It was a moment in which the doors were thrown open for intellect to become involved in social construction and for decisions to be supported by intellectual production. It was a time of imagination and hope, of working toward a significant change in history. It was a moment in which each instant was invented anew, when things were constantly happening, when critical and pleasurable acts occurred together. There was a reigning sense that the world must be invented from scratch. Everything that could be imagined was potentially possible to create.

These same sensations filled the air when computation came about, and they inspired the explorers who imagined and made real the technological advancements that would come to define our present. Indeed,

we find in this movement a precursor that will be key for thinking about our future, and which will become more and more important throughout the course of this book: decentralized thinking and cooperative function.

With the inspiration of beat culture, Buddhist sensitivity, and Bohemian experiments with alternative lifestyles mixed with psychedelics and anarchist activity, the great names of the first computational change rose to prominence. The digital cultural movement was led by avid readers of science fiction who enjoyed experimentation. Intellectuals, scientists, and artists came together to come up with a new world. For example, Steve Jobs, one of the greatest figures of this historical moment, was known for refusing to adjust to executive norms of dress and personal presentation, which even led to complaints from his co-workers at the videogame company Atari. Highly influenced by the Counterculture Movement, Jobs not only cited Bob Dylan lyrics frequently but also practiced yoga from a very young age with a will defined by self-discovery. We can also easily identify Japanese art and German Bauhaus among the main aesthetic influences of his companies' products.

In these individuals, the fusion between art and thought is clear, marked by their common element: imagination. For example, we know that the original design of the Apple logo in 1976 was an etching of Isaac Newton writing under an apple tree with a line by the Romantic poet William Wordsworth. With a metaphor that is more than eloquent, which today we can associate with the discovery we are analyzing, the line describes the scientist as a sailor in the world of ideas: “Newton... a mind forever voyaging through strange seas of thought.”

Other characteristics connect the commercial protagonists of this stage 1.0. Steve Wozniak always defined himself as antiwar, agnostic, and a videogame fan. He was famous for sending his high scores in Tetris and other games to Nintendo so frequently that he had to start using pseudonyms so the company would keep accepting them. Bill Gates, for his part, wrote his first lines of code at age 13: a tic-tac-toe game that a human could play against a computer. A game would also be one of the first projects that Jobs and Wozniak would develop together, while Jobs was working at Atari. The developments associated with videogames would be a fundamental jumping-off point for imagining the fu-

ture that is coming toward us, a few revolutions later. And there is a final characteristic that defines the profile of these imaginers of the 1960s, which is also associated with games but, above all, with a defiance of traditional authority: hacker culture.

In 1984, in his book *Hackers*, Steven Levy defines this group as “digital explorers” and their way of working as a “philosophy of exchange, openness, and decentralization.” Jobs’ and Wozniak’s first development was a small device that altered telephone connections and allowed people to make long-distance calls for free. They called it the Blue Box and sold it for one hundred dollars at the university from which Jobs would soon drop out. “The hacker ethic,” according to Levy, “is their gift to the world.” This mode of organization would later be adapted as such a highly lucrative form of doing business that it would be implemented even by companies who did not operate in the field of technology. All these elements created the hotbed that gave rise to pioneers at the head of one of the most important aspects of this 1.0 cultural movement: the arrival of computers in the home.

In 1980, the first commercial for a microprocessor was filmed. This was a landmark event: the power of

computation was available, and, as the ad states, it had an influence on people's lives. The voiceover describes the object and is amazed by a simple conclusion: "they do the drudgery, freeing us to use our imagination." In other words, fomenting new ways of thinking about the world was always at the center of digital development.

Many computer enthusiasts met in clubs where they exchanged everything from the latest innovations on the subject to parts and methods for building their own machines. One example is the famous Homebrew Computer Club in Silicon Valley, which was the origin of more than twenty companies. These kinds of clubs, as their organizers said, brought together a very heterogeneous spectrum of people: workers from the electronics industry, physicists, and amateur radio operators looking for more dynamic technologies. They were not the people carrying out the big institutional changes, but they did share a very powerful common desire: they wanted to have access to computers and make them accessible. They imagined the impact that access would have and the possibilities of this new technology.

In historical terms, it is important that this cultural movement began with a process centered on the power

of human imagination. Many disciplines study how our ability to project into the future is one of the characteristics that distinguish us as a species, and how this ability to project actions and states into the future holds the key to our continuing evolution. There are semiologists, for example, who maintain that the origin of language is related to the ability to develop aim with stone weapons. According to this hypothesis, it is crucial to have the cerebral capacity necessary to draw an arc in space, anticipate the trajectory of an object, and execute a throw. This is associated with the mental operations necessary to build a series of sounds that can be given meaning and have effects on communication.

The model for configuring something new seems to exist as a duality: we precede the unknown, anticipating its possibilities. Before we act, we must build symbolic images of our world, and, in so doing, we project a trajectory toward the unknown. Likewise, this relationship is contained in the etymology of the noun “project.” It comes from the Latin verb *proicere*, which is made up of the prefix “*pro-*,” forward, and “*iacere*,” to throw. In a sense, imagining is a way of throwing ourselves toward the future.

What does the science of today imagine? Quantum physics opened the doors to a new understanding of atomic matter and its behavior in space, just as Galileo's telescope did in its own historical moment. We have discovered that atoms, like the bits that make up digital matter, appear before us in probable states of reality: behind each state in which matter exists, which is determined by one's observation, there are different combinations of possible realities. This idea, which can be difficult to digest from a rational point of view, can be experimentally manipulated, even outside the laboratory.

What is interesting about the ability to imagine is that when this capacity is activated at the group level, the results surpass any kind of idea that might have arisen individually. What happens when many people imagine the same thing at the same time? One effervescent group took the first steps in what we understand today as the Digital Environment and unleashed a change that no one had imagined before. It is interesting to consider whether the *Zeitgeist* that inspired a whole generation and awoke a process that is still current and active today could become something else.



Did reality itself change? Or at least its meaning and its form?

The theoretical development of quantum bits, or qubits, began many years ago, but its material implementation is a fact today. It has revolutionary implications for our belief systems and our idea of the universe, and it gives rise to a reality in which the paradigmatic relationship between space and time dissolves. A new conception of our relationship to space and time emerges with our encounter with the Digital Environment. As we assign meaning to this new reality, we have imagination, perhaps our greatest asset when it comes to exploring our abilities. Power to the imagination and the power of imagination in the service of human beings.

## **The spirit of the times**

What defines a historical period? Do we indeed have the ability to observe and describe the processes we are experiencing? Once again, in the face of uncertainty, we look to history. In order to think about the confusion we feel today, it is interesting to consider the collective notion of *Zeitgeist*, that is, the shared way

in which a society perceives and understands phenomena. This set of shared ideas and social agreements through which we explain our surroundings and according to which we make decisions remains relatively constant throughout a given period.

However, it may be that the *Zeitgeist* changes, or a new *Zeitgeist* emerges, thanks to a discovery of such magnitude that it changes our perception of reality. Something like that could change the world in two directions: on the one hand, our prior ideas about the universe could be reshuffled in order to make sense of this new information; on the other, this new conception could change our future interventions in the world and the ways in which we transform it.

The term *Zeitgeist* comes from German and concentrates the meaning of a “spirit of the times,” materializing a series of philosophical debates on this topic. It refers to a social property that affects people in disparate socioeconomic circles and even from different generations. It is a set of ideas that surpasses the context of each individual and is shared by all of society. The mere passage of time is not enough to transform it, but various social factors can give rise to a change at that level. For example, there are technological leaps

forward that have the ability to alter the *Zeitgeist* of a particular historical period. This new *Zeitgeist* can arise gradually in society due to a triggering event.

On the other hand, we could think of the *Zeitgeist* as springing from other, even more permanent and stable, ideas: those that explain what the universe is, who we are, and how everything began. This set of responses that we can associate, according to each historical period, with religion, science, and other traditions of thought that explain “the beginning and the purpose” is referred to as a *cosmogony*. A historical period’s *cosmogony* is made up of a combination of knowledge and perception. It has a social effect on the *Zeitgeist* but also an individual expression. We use this collective knowledge to define territoriality, that is, we give shape and meaning to the part of the universe we inhabit. We are probably unable to consciously describe our *cosmogony* while it is being developed because we cannot clearly see its borders.

Reviewing history allows us to identify certain collective moods for each historical period that transversally intertwine apparently disjointed movements and occurrences in such diverse spheres as science, art, commerce, politics, or daily life. This kind of underl-

ying sensitivity weaves a way of existing in the world and understanding reality through individual stitches that are invisible to people living at the time and only reveal their design over the course of decades or centuries. That design is a cosmogony, which is subconsciously shared and builds the interpretive framework through which we interact with the world.

Is it possible to identify a particular *Zeitgeist* in our current historical period? Is digital technology relevant in characterizing it? Despite differences in age, socioeconomic conditions, and access to technology for different people, we can argue that our entire world and our lives are affected by our relationship to digital technology. Its development seems to mark a turning point. Many of us can think back and remember moments in our own lives in which we became aware of our dependence on the digital world: the time we lost hours' worth of work because we had not backed up our data, that time our Internet connection was interrupted at a critical moment, the times we left the house without a cell phone. Others, who were born when the Digital Environment had already been developed, feel that being without Internet today is like being without electricity. At the community level, we can iden-

tify occasions on which this need began entering our social life: the arrival of computers in our homes and offices, the generalization of online shopping, the transition from dial-up connections to broadband, the first cell phones, instant messaging without signing in and out, etc.

In the late 1990s, reality was very different in countries around the world, but we shared a sensation of always knowing what was happening in any corner of the planet. The process of globalization was an event that broke down spatial and temporal barriers, allowing us to feel in some way part of a larger community, affected by the same problems. On a daily basis, we discussed the news from other cities, elections in other countries, and the weather on other continents. We were reaching the end of the century, and that gave rise to worldwide anticipation. However, one small detail triggered a fear that traveled round the globe.

Programmers, who had been developing their field at an incredible rate during the last forty years, had been using two digits to signify the year, assuming that the beginning was "19," as it had been for a hundred years. At the end of year "99," automated programs would begin the year "00," which machines would in-

terpret as 1900. This small informatics error, or bug, called Y2K was duly prevented thanks to an enormous effort that included a worldwide investment equivalent to 214 billion euros in today's value. The bug had no serious consequences for people or institutions, but it had all of humanity on edge for more than a year.

At that time, we thought that on January 1<sup>st</sup>, all computers might fail. And what was the problem with that? By 1999, computers ran all social systems: transportation, finance, communications, mass media, and a large portion of archives, to name just a few examples. Less than fifty years after the invention of the chip, humanity faced the possibility of all such devices in the world failing, and fear spread. Twenty years after the first commercial that said the microprocessor "affects everyone's lives," we felt in our bones the possibility of that supposed tool spinning out of control. We had the clear feeling that we were a global community, going through the same thing. At the same time, we made our relationship to technology concrete. Something in our community's *Zeitgeist* was changing.

Elements like these, which are so important that they transform both systems of production and society, impact the way in which we understand reality. In-

deed, what changes is the dialectical and constructive relationship between the world and the perception of the people within it. In other words, changing the world modifies the way we perceive it and, in turn, our actions within it.

In line with the Gestalt school of thought, developed in Germany in the early 20<sup>th</sup> century, the course of history can be understood as a spiral, that is, cyclical progress that returns to previous moments but in different positions, like concentric circles that move forward as they extend, without overlapping. The *Zeitgeist*, defined in part by the technical capabilities of each moment, responds to the distance between those cycles: the capacity to move through similar events but from another place. These changes can be read as society's return to a known place, but with the ability to experience it from a different point of view, through the lens of a new perception.

Every culture, then, produces its own way of understanding and explaining the world based on its knowledge and the capacities allowed by its technology. Does this mean that technology can alter the *Zeitgeist*? It appears this is the case. Can it go even further and provide elements of cosmogonic importance?

A new understanding of reality motivates humanity to look for another model of beliefs and comprehension of the universe they inhabit. We could relate this to a change in Zeitgeist, but when the transformation is deeper and changes our conception of the universe and people's place within it, we are dealing with cosmogonic changes.

Thanks to the distance granted by time, we can see the process of cosmogonic changes throughout the centuries and in different cultures. Human perception of the universe changes due to scientific discoveries, artistic and social movements, etc. For example, in the Middle Ages, the idea of God and belief in His existence were central to the system and were used to organize a worldview. Beginning in the Renaissance, humanity came to be the bar by which things were measured and the central organizing element. By the 19<sup>th</sup> century, humanity gave way to the atom. The idea of that miniscule particle colored our perception of the universe and anchored us in matter, in space-time. Now, we find ourselves facing the proliferation of a different tiny particle: the bit, whose characteristics give rise to the Digital Environment with which we are forging an ever more interdependent relationship. Indeed,



we have the sensation that we are moving beyond the limitations of matter. How does our perception of the world and the universe change once we have discovered a new environment we can inhabit?

Now that we understand that the universe extends beyond space-time relationships, there is a new focus. Humanity once again holds that central space, but in a new way: without a body. Our current idea of our capacity for action is more like the force Michelangelo called *intellecto*: an intelligence that is not merely rational but, in fact, visionary, stripped of the limits of the individual body and more closely tied to collective ability. We can consider ourselves as bearing witness to a new central element, one that belongs to a new *Zeitgeist* and that encapsulates the ability to transform even our cosmogony.

Our dialectical relationship with the world is based on perceiving and building reality at the same time, relying on preconceived ideas. But what happens when there is a rupture in that relationship with our environment? What meaning and impact does it have now that people move between two environments with such different characteristics? To understand the impact of digital technologies on our *Zeitgeist* in recent years, it

is useful to think back to what happened during the Renaissance because on a historical level, this period was a profound break in the relationship between humanity and its environment.

In the 15<sup>th</sup> century, the new worldview regarding humanity configured a new *Zeitgeist* that had little in common with the Medieval conception. An anthropocentric model arose based on astronomical discoveries that displaced the Earth as the focal point and set the solar system in its place, along with cultural developments such as the return to Greco-Latin roots in art, working with perspective, and the dissemination of knowledge. Human beings held a privileged position and were conceived as the bar by which all things were measured. Human nature became the principle by which the environment was evaluated.

Humanists in the 15<sup>th</sup> century believed that humanity's intellectual abilities were unlimited and therefore dedicated themselves to cultivating, through art and study, those abilities that daily life and society ignored. From this existential point of view, humanity and its capacity for observation were placed at the center of the universe, ushering in the age of scientific modernity, which makes experimental observation

the main factor for understanding reality. In fact, that conception of humanity as the center was projected onto all human activities.

In particular, we can see how the designs of Renaissance cities reflected the search for the human ideal. Space was transformed to show society's new values and ideals. In these cities, the Agora reappeared as a public center, and monuments to beauty and youth were erected, along with buildings oriented toward pleasure and skill. Space, oriented toward prioritizing society's vital ceremonies, materialized the reigning *Zeitgeist* and, therefore, the central elements of cosmogony.

This was how humanity was assigned a new meaning as the center of space in both a practical and figurative manner, as the center of a new worldview. The Vitruvian Man, Leonardo Da Vinci's famous drawing, is a good example of this. The work shows a man placed at the center of a golden rectangle; a man located in a physical space in which he represents the center.

The Renaissance also saw the rise of perspective with one or two vanishing points, an artistic expression of the search for a representation of reality based on how human beings see. This contrasts with earlier visual representations, which showed other focal points in

perception: the symbolic representation of divinity or a simpler method of expressing concepts. Art historian Ernst Gombrich explains how, for ancient Egyptians, it was most important to represent things clearly and permanently. So, they drew from memory and followed strict rules, with elements represented from their own characteristic angle: a water fountain as a rectangle, that is, viewed from above, but the fish in it viewed from the side. Their method was conceptual. There was no commitment to human observations from the point of view of the perception of reality. Their work looked more like that of a cartographer, Gombrich observes. According to the Renaissance worldview, however, the materiality of space held another place, taking on greater importance. The notion of perspective associated with the centrality of human beings also appears. These ideas show that culture is often permeated by (or permeates) the feelings that are the product of a particular *Zeitgeist*. Or do they precede it?

Is it really fair or correct to say that technology has the ability to awaken a *Zeitgeist*? The events that contribute to changes in *Zeitgeist* and cosmogony are complex processes influenced by many factors. Among these, the status of technology is fundamental. In this

regard, it is important to note the invigorating role played by the printing press during the Renaissance. In fact, its invention is one of the tentative dates that mark the beginning of this movement. The Humanism triggered by Gutenberg drove a radical change in cosmogonic terms. The revolution caused by the invention of the printing press gave meaning to that which had been developing in other spheres: it provided common language and knowledge to society. What used to be locked away in a cloister, accessible to only a select few, began to come out of its isolation and become socialized. The innovation came out of its confinement (it came out of “the laboratory”) to be within everyone’s reach. Humanism expanded through the written word. By providing a technology that kept pace with the changes in the *Zeitgeist*, the printing press transformed everything. As such, it promoted a new cosmogony.

In the mid-15<sup>th</sup> century, with the implementation of the printing press, the inevitability of knowledge became apparent. Knowledge became a powerful drive that was highly contagious. It is very clear how different people in different geographical locations were in synchronicity, breathing, perhaps building, a new *Zeitgeist*. Da Vinci is a very clear example of this for-

ce. Although performing autopsies was punishable by death, given the conceptions regarding the sacredness of the human body inherited from the Medieval period, Da Vinci could not avoid “profaning” bodies and studying cadavers. His urge to know and discover were irresistible. Gutenberg had opened Pandora’s box: the temptation of knowledge taken to the point of becoming a vital need.

Today, a different technological element is changing the ways we think and act. Microprocessors enhance the computational capacity of any machine, and they are everywhere. They contain more and more power in less and less space. We do not even need to know each other in order to communicate or even build something together. And the speed with which these abilities become more complex is ever accelerating. Not only are seven cell phones sold for each person born every day; they are all connected to each other and to other devices every day, all the time. Digital technology has revealed itself as an environment in which we can exist and which we can inhabit without our bodies, distanced from the limitations of time and space. How does this transform our world? How does it transform us?

We are standing before a new world, laid out around us thanks to technological advances. The inventions, the newly discovered territories that motivate us as a species, push us in a way that we cannot evade. Broadening the horizon becomes an imperative that pulses within us. What is it that made the conquistadors settle on the New Continent? Why, if the conditions were so adverse, did they choose to assume the risk and leave behind everything they knew to start over somewhere else?

Is it possible to think of the world today without the Internet, without computers? After Y2K, humanity accepted its dependence, but in the 2000s, we have worked hard to exploit the power that this brings. Even though there are people who choose to live without a telephone, Internet access, or even electricity, it is clear that as a species we are absolutely dependent on digital technology. In other words, we cannot live without computers. As a collective, we choose to depend on them and take advantage of the multiplication of our abilities that this dependence brings with it. It has become impossible for us to maintain our lifestyle without the digital world.

Silicon Valley is the result of the intersection of the hippie movement and technological experimentation. A product of those communities that imagined new ways of life associated with technological advances, the notion of the world as an information network was thoroughly inspiring for computer engineers. Therefore, in the 1970s the so-called tech world stood out as the most dynamic among those that proposed new futures. With more power for change and more technological production, the tech world gave rise to transformations that we are experiencing en masse today. If we detect a change in our *Zeitgeist*, if something challenges our current way of thinking about the universe, perhaps suggesting a cosmogonic change, we can trace its beginnings back to the culture that circulated there.

The possibilities promised by technology hinted at a new world in which information could be shared between people who thought alike, regardless of barriers (be they social, geographical, or racial). This awakening that began in a community of scientists who hoped to connect their laboratory to others drew inspiration from a *Zeitgeist* associated with breaking more structured social limitations, with opening the doors



of perception; ultimately, imagining new ways of life, a new territory.

Imagination was the core of all the great worldwide transformations that had an impact on the human mind and formed different collective ideas about the world. But there are elements that are common to these different time periods, that serve as connecting threads to help us understand the progress of history as a process that comes back to revisit distinct but similar situations.

We began this chapter with the Medieval sailors who ventured to unknown lands on a mysterious planet still populated by fantasies that made it dark and foreign. These explorers belonged to a historical period in which the Earth was still not perceived by humanity as a planet itself. By the 20<sup>th</sup> century, it had become clear that we belong to a planet with common challenges, ones we share with the rest of humanity on the same daring quest to gain knowledge and leave our mark on new territories. That century, in which the reigning sensation was that there were no more unknown territories, ended up demonstrating that what is important is not only found in the physical world, that the tool we used to store information and perform complex cal-

culations had exceeded expectations: it held a crucial portion of our reality.

The architects of the first wave of the digital cultural movement brought an unknown territory to us. Digital technology not only holds our information, boosts our calculations, and controls our services; it is also a meeting place for people who are far apart or who have never seen each other physically. We have all now disembarked in a new world: the Digital Environment. It is not merely a storage space. It has its own rules of action and its own logics of perception.

We are witnessing the emergence of a new environment. To a large extent, we are that Florentine baker who finds out about the existence of a new continent. But, at the same time, we find out that we are already here, so we are a little like those sailors who stepped off their ships in confusion. Our ideas, our collective imagination, already include the possibility and the need to interact with people who are physically absent, to store information in spaces that we cannot touch, or to be present in more than one place at the same time. However, we still do not understand all the rules that govern this environment. We cannot yet say that we fully inhabit it.

Without a doubt, we are facing a new Zeitgeist. We feel in ourselves and our society the impact of this transformation. Is it possible that we are traversing something even deeper? Perhaps we are at the edge of a cosmogonic change. If that is the case, we are faced with the difficulty of perceiving it. The people of the future will be the ones who define whether these past few decades are the beginning of a new era. Even so, the mere possibility poses a series of urgent debates today. What consequences could this bring for our existence? What challenges await us just around the corner? Do we have the necessary capacity for agency? There is a long road ahead.

# DIGITAL HABITABILITY

## Foundations

In ancient Greek myth, Eurystheus ordered Hercules to perform twelve labors in order to be freed from bondage. These labors required the hero to travel to increasingly remote places. The poets tell that the tenth of these labors took him to an archipelago in the westernmost edge of the known world. There, as a symbol of his grueling voyage, Hercules erected two famous columns that bear his name and an eloquent inscription: *non terrae plus ultra*, which means “no land further beyond.” This myth represents a cosmogony that envisaged clear limits for human exploration, the prevailing perspective in the ancient world. This is the worldview that was challenged when Europe was informed of the existence of a new continent.

In 1519, after bribing the necessary electors, Charles I of Spain became Emperor, King of Spain, and Lord of the New World. Charles I took the idea from Hercules’

columns, from that monument that marked the end of the traversable world, and incorporated it into the crest of the Spanish Empire. This act fit with a change in *Zeitgeist*. However, the phrase written on the columns lost its first two words, and therefore the meaning changed radically. *Plus ultra*, or “further beyond,” became the motto of the Spanish crown, signaling its drive for conquest.

In these two stories, we can identify a mindset that has always been a part of human nature: the obsession with drawing a line at the edge of the world is nothing but the pure desire to explore the world up to its very limits and leave our mark there, as well. We can think of the moment when humans first placed one rock on top of another or somehow demarcated a territory as one of the first steps in human culture. Marking a space, whether by erecting a vertical structure, creating a road, or building a house, is evidence of our existence. Someone was here.

Throughout history, adventures have been undertaken that embody this spirit: conquering virgin territories like the Antarctic, climbing Everest, exploring the impenetrable heart of jungles, and sinking into the infinite darkness of the ocean. Later, with the feeling

that there were no more unmarked territories left on the planet, we cast our eyes toward space and sought to place human symbols on the Moon. We sent probes with messages to the outer planets and rovers to Mars. Something in our humanity drives us to seek out the furthest limit. It seems that we need to know where our reality ends in order to assign it meaning and thereby understand where we are.

As a first step, we might ask why human instinct is driven toward those spaces and not others. If there is a desire that pushes us to establish our presence in the new places that we discover, why do some seduce us more than others? Although the ocean is a familiar ecosystem, we do not understand it well. Why, then, is there no real interest in studying how to make the ocean a habitable environment for humans? If we consider the present and real possibility of rising sea levels, we might think that studying how to live underwater ought to be a priority. However, we are more interested in exploring outer space or moving to Mars. Could it be that it is not only about exploring the unknown but also exploring what the unknown can offer us?

In that sense, humanity undertook the exploration of the Digital Environment some decades ago. In many

ways, it is still a novelty whose limits we can continue to explore. It is a blank canvas. It will be a long time before we can erect columns that confirm we have found the furthest reaches; for now, it is a constantly expanding territory. When Neil Armstrong set foot on the surface of the moon, he said: "That's one small step for man, one giant leap for mankind." As in all processes of discovery and reconnaissance of a new environment or territory, there are those who disembark first in representation of all others.

Like those first settlers who set out for virgin lands and began the conquest of the Americas, there were people in the 20<sup>th</sup> century who glimpsed the possibilities of the network and moved ahead of the rest. Once the Digital Environment was understood as a "land of opportunity," there were people who dove in and bet everything. For example, the period between 1997 and 2001 was a golden age for the founding of Internet-based companies, called dotcom enterprises, that tried to imagine what the Digital Environment could be and look like. However, it soon became clear that their imagination was ahead of the technical possibilities. Most of those companies did not prosper. Was this attempt at progress solely commercial? Probably not. The rush

to plant a flag in the digital sphere cannot be explained only by the desire to do business, to be the first to arrive. We can see a genuine desire to dive into that space. What potential did we imagine for it at the outset? Was there some intuition about what we would achieve there? Simple curiosity does not seem sufficient justification for setting up shop in a new environment. When we sail with no fixed destination, it is impossible to know if we are moving in the right direction.

Today, more than two decades later, we can see that this initial curiosity was rewarded, although we have still not discovered all the possibilities the Digital Environment has to offer us. Like an echo of Charles I's motto, the *Zeitgeist* fostered by the development of digital technology at the end of the last century fed our curiosity to explore, understand, and appropriate that environment that we saw emerging before us.

What are we talking about when we talk about exploration and appropriation of the Digital Environment? They are two distinct processes, and the difference between them is crucial: exploration is a much more limited way of connecting oneself to a space. Perhaps a brief review of the changes made to the most widely used operating system of the 1990s, along with those



that occurred in the workplace, can help us to distinguish some central concepts with which to analyze this process. At the same time, it will allow us to associate these ideas with a tool that many of us have used and which transformed our experience with computers.

By the late 1980s, Microsoft had established itself as a leader in the operating system business. When screens with text over a dark background were everywhere, Windows 3.11 provided a visual interface for tools that could be used for working, drawing, or even playing games. This came alongside the popularization of computers, making them more attractive and accessible. Many people remember their first experiences with a mouse as they tried to draw in Paint, dragged cards from a column, or clicked on grey squares with hidden mines. Workplaces around the world were not yet marked by the presence of computers.

A few years later, Microsoft spent 3 million dollars on a launch event: Windows 95 was coming onto the market. This new version was a leap toward definitive dissemination. It is significant that this was the first version that used the year as a name: the number 95 simultaneously symbolized the present, novelty, and the future. Those years saw a boom in office software

services. Computers began to be seen as indispensable tools for office work, and it is no longer possible to think about a workplace without these machines. From that moment on, opening Excel or Word became a sign of starting the workday. In that context, Windows 95 also became synonymous with home computing. People were closer to the exploration of that digital world we saw as mysterious, as something that lived behind the screen. The first Internet connections arrived, but they were still not consolidated as a complete experience. We ran up against the limitations of a very elementary Internet.

But the Internet began to grow. Other operating systems became popular, and, in an ever more connected environment, Microsoft managed to canonize the system it launched in 2001: Windows XP. The name is derived from the word “experience,” and the operating system’s logo was designed in three dimensions, set above a grassy green hill. The experience had become more concrete. At that time, the Internet connected nearly all the world’s computers, and there was the growing idea of an alternative space, one that was hyperconnected and to which we all had access. Explo-

ration became a bit more mainstream, more real. We witnessed the disappearance of many limitations.

This is an example of what happened in the world during those years with regards to digital development. While the first Windows allowed us to peek into processes and organize them, and Windows 95 let us appreciate the power of a tool, XP invited us to experience the new environment we were getting a glimpse of. However, there were still some limits left. It was a window, not a door.

It is no coincidence that the first web browser was called Netscape Navigator and had a ship's wheel logo, or that the direct competition was called Microsoft Explorer. This symbolism points to the experience: we were exploring a new environment; we were taking the first steps necessary to make it our own, even though we were still highly limited by technology and our notion of it. As we navigated the Internet those first few times, we were like sailors in Charles I's Spain: unsuspecting explorers thrown into learning about a new space that no one had yet named and that some did not even acknowledge. However, even if unconsciously, we were always determined to humanize the world we were moving through, to put our mark on it and

transform it in accordance with our desires, our needs, and our rituals. Throughout that process, we saw limits and began to surpass them little by little.

We connect to spaces, we appropriate them, through rituals and ceremonies that we carry out in community. That is how we seek to transcend time, through legacy and space, through communication with something that is not present. If we search our cultural history for those acts that truly reflect our will to make a place our own, we will find that often the first thing we do when we discover a new place is to mark it in some way. “Planting a flag” implies the action of erecting a pole with a cloth attached to it, but it also calls to mind, through its ritual element, the will to confirm the presence of a collective of people in a particular place and the transformation of that space due to that presence. When the Apollo 11 mission reached the moon, one of the first things the astronauts did was to place a United States flag into the rocky ground. The symbolism of this act seems stronger than the act itself. Following the same premise, we could say that appropriation is tied to symbolic acts.

Perhaps we conceive of the Digital Environment as something that has always been the same. If we think

back, various images appear, programs and uses that are very different from today's, and which will probably not look like tomorrow's. It is not the same thing to talk about the year 2000, when we were just starting to connect to search for information or chat, as it is to talk about our present, in which there hardly exist people who do not access the cloud every day. Wifi and smartphones were still ideas someone was imagining. In a few short years, the change has been enormous. Today we cannot think about the Internet without also thinking about mobile devices and social networks. That reveals something central to any symbolic act: it always involves another person, and it is the presence of that other person that is definitive in our process of appropriation.

Another action we take the moment we arrive to a new territory is to found towns and cities. For the Roman Empire, the foundation of cities was a sacred act. Both the place and the date were chosen by consulting with the oracles, and a ceremony was carried out on that day. The *Cardo*, with its north-south orientation, marked the center of the city where it crossed the *Decumanus*, which ran from east to west. The city's most important buildings were located at the intersection

of these two streets. In a way, recognizing space was also a divine act. The moment of foundation evoked a transcendent desire that connected ancestors with descendants, those who had been with those who will be. The act of foundation is always a call through time that recaptures important aspects for a particular society at a specific moment.

Our need to recognize ourselves in a space and evoke the spirit of something unmoored in time speaks to our essence and reflects (at the same time as it reinforces) a cosmogonic model. Often, in their eagerness to relate foundations to cosmogony, societies create their own mythology around this act. The story of the foundation of Rome, for example, tells of the twin brothers Romulus and Remus to narrate the struggle of different peoples to find a place to settle, as well as the material and political construction of a city and a state.

We might say, then, that foundation, as a central element of symbolic appropriation, is a way of relocating prior cultural baggage, of extrapolating concepts from that culture in order to create a new model of ideas and begin to establish it. Although we might not be able to articulate it in theoretical terms, most of us have an idea of how foundation works in the Natural Environ-

ment. But how does foundation occur in an immaterial place? What happens when we cannot plant a flag, cut a ribbon, or drive in a shovel?

Even though appropriation is an action related to foundation, there can be foundation without appropriation and appropriation without foundation. It is also an action that is not always carried out in a premeditated way and does not depend on a single actor. While Y2K was a moment at which we as humanity recognized that digital technology was an environment, we could understand 2001 as the year in which the actions in the Digital Environment could directly affect the Natural Environment. It was a place where things deserving our attention occurred. September 11<sup>th</sup>, 2001, when a group of terrorists took control of airplanes and used them as weapons against the people of the United States, was a turning point. A traumatic event caused concern in sovereign nations. That attack on the security of the greatest world power, which until that point had been inviolable, shook the world. When it was discovered that the terrorists had communicated using tools from the Digital Environment and that these communications had gone unnoticed, several nations took note. Institutions invested a great deal of

money in strengthening their digital infrastructures and their presence in the Digital Environment.

The changes that were made after this event in the Digital Environment were not common knowledge until Edward Snowden, a technical consultant for the CIA and the NSA, decided to make them public in 2013. Snowden revealed an unprecedented cybersecurity development that was being implemented, especially as of 2001. We can characterize these initiatives launched by the governments of the most powerful countries in the world, essentially based on the massive and unrestricted accumulation of data, as one of the various attempts at appropriation of the Digital Environment. In this case, it was a development driven by fear and aimed at building a structure of control in a space that was perceived to be threatening. This attempt at digital foundation was a response by economic and political powers to a security problem. The idea that the network was a dangerous and controlled place exacerbated fears tied to newness for some, while others felt that their privacy was threatened with regards to the activities they were already carrying out online.

This was a type of foundation, the consolidation of the Digital Environment as a territory that needed the



presence of the state, a kind of digital panopticon, but it was definitely not the only one. At the time, many people had already organized online, around productive notions. Since the Internet had a direct impact on our ability to produce and do business at the commercial level, we saw the emergence of approaches that surpassed the limits of a webpage: they let us do some activities online that only took place in the Natural Environment before. Amazon, for example, began as a virtual bookstore and gradually grew as shopping shifted from the natural world to the digital world. More and more people began to buy books on the Internet. Purchasing products online is commonplace today, but at that time, it was entirely new, an activity that seemed less real because it did not involve buildings or in-person interaction. In fact, in 1997, the bookstore Barnes & Noble sued Amazon for describing itself as “the world’s largest bookstore.” The complaint was not that they sold more (Amazon was already selling books in more than forty-five countries); the brick-and-mortar store argued that “Amazon is not a bookstore at all.”

This dispute captures the tension between the urge to relocate prior cultural baggage to the Digital Environment without modifications (a faithful recreation in

the Digital Environment of our habits in the Natural Environment) and the realization that that was impossible (a bookstore that proposes another way of thinking about bookstores). While some people thought of this space “theoretically,” certain cultural actions were transforming it into a common meeting place through one of the quintessential activities that define our socialization: shopping. Amazon was much more than a bookstore, but it was also taking on the form, unknown at the time, of modern-day online businesses.

Another aspect of foundation as a strategy for appropriation is that it allows us to project our own cosmogony onto a territory. The plans of Mesoamerican cities demonstrate this parallel. Tenochtitlan, the capital of the Aztec Empire, was divided into four large zones that symbolized the cardinal directions; in the middle was a ceremonial center considered to be the heart of the fifth direction: the union between the Earth and the heavens. Temples and palaces were also laid out in an orderly fashion, in accordance with an east-west layout that followed the path of the sun. The Aztec city, as a habitable space, served as a map not only of the cosmos but also of the Earth where it was located. The layout of the habitable space emulated their

worldview. Something similar happened in the Digital Environment. We began to project our most familiar town: the bookstore, the library, a global market like eBay, and meeting places like forums. Little by little, our online activities began to draw a map of human encounters and habits.

Up to this point, the Digital Environment seems to be laid out as a walled city, monitored by other eyes. In the middle are people, curious about this new space, but within a framework forged by fear, a story that made appropriation difficult. However, there were those who were inspired by the wide-open possibilities of this environment and established a foothold, showing that the flipside of institutional or state advances are community initiatives.

In this sense, we can discuss the first strides of Peer to Peer (or P2P) technology. What began as a necessity and a desire to share large files efficiently ended up shaping a network flow that reflects the way in which these communities believe goods should circulate. Developments like Napster drew the map for a new way of thinking about intellectual property, about consuming and creating communities around the flame of culture. Its level of disruption involved disproportionate

responses by the state and companies, attempts at institutional control, but that model was an indispensable outline for the format of our modern media culture.

There are certainly many ways to think about these first steps, but what we are delineating here is a tension between two movements: progress marked by the methodical application of theoretical ideas projected onto the environment and progress made by communities, appropriating spaces through their ceremonies. Foundation is not always as linear or premeditated as choosing a special day on a calendar, consulting an oracle, and locating the ideal coordinates. We also found through norms and habits, as these become ceremonies and rituals. But for a physical act to have a corresponding symbolic representation, a social component must grant that symbolism.

With regards to the network, the relationship that each individual forged with the Internet was the most important thing at first. There were no common organizing principles, basically because humanity had not developed virtual ceremonies. Some of us can still remember when we “signed on” to the Internet to look up something specific, a bit of information or a webpage, typed in a web address, did what we wanted, and

then logged off. Many of us even downloaded information to read it later, offline. However, those who remember that also evoke a feeling common at that time: the sensation of being someplace else.

Early on, many people who went online found a place where they could leave their ideas, opinions, or even words directed at another person. And it was not only people they knew that they could talk to but rather, for example, someone famous or someone who had passed away. Behind that impulse to communicate, to reach others who are not with us, we find many of the representations of the end of the century that ended up shaping the sensation of the global village. For example, there is a firmly established idea in popular culture that everyone in the world is connected to each other through six—or fewer—social connections. Although this theory lacks scientific validity, it has been the subject of various studies. Even more important, it is the jumping-off point for SixDegrees, considered to be the first social network.

Until it appeared, there were no tools that allowed geographically distant users to socialize with each other online, beyond email or a chat room. “The challenge is to build a community, the stake is to light a

flame,” explained Andrew Weinreich, who created the network. The site let users connect to “friends of friends.” Although the network was launched in 1997 and closed in 2001, it reached its goal: it lit a flame in the middle of the unknown territory that was the Digital Environment. The idea that the Internet, in addition to providing us with information and facilitating our work lives, could also let us connect with each other and form communities opened a new world of possibilities.

It was not so much an individual decision as a collective and unstoppable push forward that changed everything. Through these new social practices, we realized that the network is whatever we make it. Social networks gave us the means to begin, little by little, to develop a ritualizing phenomenon. Even without a clear or directed foundational objective, the phenomenon of interaction opened up a universe.

In this sense, we can highlight the immense importance of that flame lit by SixDegrees. That torch lit other fires with the immediate creation of other social networks in a process that continues today. We do not need to agree on whether this was caused by the first social networks to exist (SixDegrees or Classmates) or

by the first ones to achieve a global impact (LinkedIn, MySpace, etc.). The important thing to recognize is that from that moment on, the unstoppable desire to begin the move into the Digital Environment began to spread and reach people who had no interest in using a computer.

Technology attracted enthusiasts, information attracted scientists, tools attracted office workers, businesses attracted buyers, and, finally, the organized individuals who began to move in social networks attracted everyone else. The process of symbolic foundation began when we decided that networks were a place in which to extend our existential reality. In contrast to the foundation leveraged by institutions, it is difficult to identify the moment in which it occurred at the collective level. There was no flag and no special day. There were small, individual steps that came together in a general tide of people who began to enter into that new aspect of reality and make it their own.

## Web 2.0

The 2000s saw the rise of social networks and their consolidation as a fundamental part of our online experience. If we tried to name them, the first that would come to mind would be those we use every day or those we once participated in and were important to us. Maybe their names will bring up memories, either happy or sad, but always in relation to other people. MySpace, Friendster, LinkedIn, Flickr, OkCupid, Facebook, Reddit, Twitter, Tumblr, ICQ, Foursquare... and the list goes on. A huge number of platforms were and continue to be developed, some international and others regional.

It would seem that once we understood that we could relate to each other commercially online, we asked ourselves: what else could we do? Is it possible to move our social customs and needs online, as well? Just as we projected elements and symbols from our life in the Natural Environment and began to set up our virtual neighborhoods with libraries and supermarkets at the outset of the process of appropriating the Digital Environment, a time came when people felt the need



to satisfy other aspects of their lives online, beyond the merely productive.

In keeping with our experience so far, the first step of this process had to do with attempts to imitate our social logics in the Natural Environment in the Digital one. For example, Meta, which at the time was called Facebook and presented itself as a social networking company, started out as a way to connect students at Harvard University to one another. Students could upload pictures and share information about their lives or even their class schedules. Ultimately, Facebook was created to be a university club, but online. Two years after it began, it reached five million users, amply exceeding the university population. By that time, the network had already been opened up to other universities in the U.S. and abroad. Finally, in 2006, the club opened up to anyone over the age of thirteen. In 2022, it had some 2.32 billion users worldwide, and more than 83 million pictures were being uploaded daily. What is truly interesting about these numbers is that today there are other networks that are even more popular and exceed that amount of traffic.

Facebook's exponential growth shows the capacity of projects to multiply and grow in the Digital Environment.

Without the limitations of natural space, they explode and develop beyond spatial and temporal limitations in ways never before imagined. Harvard's virtual club ended up becoming a powerful international company. Facebook changed a great deal over the years, just as we changed in our relationship with digital technology. Once the network was open to a massive audience, we began to use it in different ways, which even caused changes in the network and the company.

The social processes triggered by these technological changes transform us as people. We can see this in both processes of the technological revolution. In the previous section, we discussed the first initiatives and platforms that were established in the Digital Environment. In this section, we will address how people are organized in their different roles with regards to advancements in this technology. Along the way, we will explore how the speed of those advancements requires that people rearrange their perceptions at a dizzying pace.

Another useful case for thinking about how we initially migrated the social logics of the Natural Environment into the Digital Environment is the online community Second Life. This program has its own

economy and currency (the Linden dollar), which is used to buy and sell goods and services created within the virtual world. Possible transactions include buying and selling plots of virtual land. In addition to the presence of more than forty-five multinational companies, we also find embassies from several countries in Second Life, on Diplomacy Island, and virtual spaces for some religious organizations. Nowadays, the possibility of buying and selling digital land has evolved into a digital real estate market located in the different metaverses that, in 2022, reached total sales of more than 500 million dollars.

That first relocation of private and public institutions, like embassies, speaks of the need to reflect in the virtual space everything that is important to us in the Natural Environment. We could also relate the abundant activity (be it cultural, economic, or social) with an impulse of wanting to somehow live in the Digital Environment.

The way people assert their presence in a space without matter, which they cannot reach with their bodies, is through symbolic ceremonies. But are they practiced the same way in an intangible environment? Although we applied the same logics to both spaces early on (I

buy a plot of cornfield / I buy a plot of land in Second Life), once we gained a bit of experience in the Digital Environment, we began to develop new ceremonies. As we have seen, old conceptions of commerce, intellectual property, and surveillance failed. Our culture in the Natural Environment was challenged and began to change.

We can understand a great deal about our present moment by looking at history, and this also applies from the perspective of human development. To understand the process of internalizing networks that connect us virtually, it is useful to think back to the 19<sup>th</sup> century. We can compare these steps toward appropriating the Digital Environment with an innovation that helped determine our relationship to time and space during the Industrial Revolution: the train. In this sense, the relevant literature occasionally refers to the development of digital and information technology as the Third Technological Revolution, in reference to a third moment in humanity's relationship to machines, linked to informatics.

In the first stage of its introduction, both the steam engine and computers opened the playing field to a movement whose consequences had a significant in-

fluence on people and the Natural Environment. The movement begun by those who imagined these projects was one of technical transformation, of hardware. While the steam engine multiplied the speed and force available to industry, the introduction of computing allowed for the optimization of processes in brand new ways. However, during those first few years, no one could have imagined that the development of these technologies would be the first step toward transformations in our territories and societies, the consequences of which we are still trying to understand today.

Both steam and digital technology had their greatest impact when the machine came out of the factory and became part of the city and of people's lives. The arrival of the Internet in people's homes and the possibility of connecting every computer to a shared network is what truly separated the machine from its users. This revealed the digital realm as a territory available for human development. As we have seen, once we understood this, our urge to explore it appeared.

One of the ways in which the steam engine entered our daily lives was through the creation of locomotives and the laying of a rail network. The machine began to have an impact on people's lives in very visible

ways as that network allowed us to appropriate new territories.

With that new speed, the rail system proved to be a powerful tool for expansion and political unification. The landscape was transformed in such a way that we can see the impact of this innovation even on the concepts used to conceive of it. The modern metallic profile of the machine traversed the countryside at previously unknown speeds and left behind it a concrete trail: around the stations, towns formed. The developments made by the English with this phenomenon in England, but especially in India and other territories, is exemplary. However, the case of the United States is an eloquent example of the parallels between the railway and digital expansion. Some seven thousand towns and cities on the current map of the United States were originally depots and strategic stops related to the railway system. A similar phenomenon has occurred in countries around the world. The railroad was the first great human mark on that territory.

The concentration of people around train tracks gave rise to the need for creating banks and, in consequence, security systems to protect them. The first system of control came not from a federal government but

from private initiatives. The rule of law was imposed by whomever was strongest, generally the bodyguards of railway representatives. At the same time, the government was merely a user of the services provided by these companies.

The protagonists of the period were those businessmen associated with the ambition of conquering and connecting more and more land, like Cornelius Vanderbilt or his rivals, Jay and George Gould. Charles I's motto describes them quite well: they wanted to go "beyond," but in this case, progress was not necessarily occurring within a territory at the outer limits. However, the idea of expanding the frontiers of civilization was at play. The Earth itself was not being expanded, but the known world was. Fundamentally, this impulse aimed to connect and put into operation the middle of the continent with railway networks that ended up shaping the United States, integrating vast swaths of land into the nation's industrial project. Just like those explorers who ventured across the seas, these businessmen were called "pioneers," though in this case, "of American industry."

The change that came about after the invention and implementation of this machine was so profound that

it questioned the relationship between human beings and the most fundamental of physical characteristics. The naturalist John Muir expressed this idea when he declared that the transcontinental railroad had “annihilated time and space.” Such an advancement at the technological level thoroughly changes the way we relate to our surroundings. Evidently, moving through a territory for weeks in a wagon train was not the same as moving through it in days aboard a train. The way people perceive time and the changes that affect that perception have the power to transform our experience of the world. In this regard, we can trace how technology modifies that perception. We mention the railroad here, but we could have discussed the telegraph and how it shortened the time necessary for communication and the flow of information. For people living in the 21st century, the Internet had a similar impact: it annihilated time, but in a completely new way. In any case, this is something we must still explore.

The dynamics that shaped the experience of the wild lands of the United States were transformed, and that changed even the national imagination. In the rise of the Internet, we find a similar effect. Let us explore this analogy. In the Digital Wild West, we can identify two



forces. On the one hand, we have the “railway companies,” the large communications companies that were established first. Among these are Google, YouTube, Facebook, and Twitter, for example. Web 2.0, whose impact through social networks is described above, is dominated by these large companies that behave in the same way railroad companies did. As owners of the infrastructure, they are in a position to determine the possibilities for movement of traffic, that is, the rest of the digital population’s ability to move around. Just as the railway model gave rise to linear towns that were not imagined based on benefits for habitability and were not centered on people, the digital model of online communications companies maintains its own logic.

This experience of the Natural Environment also had its parallel in our march through the Digital Environment. The entrepreneurial figures in this century set the pace and style of digital progress, which determines how people move and act in the new environment. Thus arise personalities like Mark Zuckerberg, the creator of Facebook who became a new model of success (the hoodie-wearing millionaire from Silicon Valley) and was later demonized for his role in data mining and sale. There is also Jeff Bezos, with his controversial

image including the worldwide expansion of Amazon, complaints from his workers, and his progress in the new space race. Finally, we have Elon Musk, who, after creating the leading payment system worldwide, turned toward developments like the most exclusive electric car on the market and participation in the race for private exploration of space. These renowned figures serve as an example to think about who it was that set up the different networks that shape the Digital Environment as we now know it: the network of goods and services (Amazon, Netflix, Youtube), the network of financial transactions (Paypal, Payoneer, Wise), and social networks (Facebook, Instagram, Twitter).

As an example, we can consider the human cultural baggage that we have migrated to the Digital Environment. This allows us to understand two very important elements of our digital existence. First, we have the dizzying success of these companies. Google, for example, was born as a university project for indexing information. Its overwhelming growth established it as the necessary network of connections for moving between different clusters of information. Like a railway network, Google connected different corners of the Digital Environment with its own logics, making it

possible to access largely uninhabited areas, but at the same time controlling the speed and direction of travel. Back then, communication could only take place from point to point.

On the other hand, we can also use this method of understanding our progress to grasp the size of the leap implied by the incorporation of mobile access in 2006. In the configuration of these traversable networks, giving each traveler their own vehicle changes the game completely, just like the changes that took place in urban modes of transportation. However, mobile connection devices introduce a particular kind of power: they are portable objects that both move people and have the ability to change the environment.

That power was foreshadowed by the new logics of content production introduced by social networks. Disorganized but with the vigorous drive of the “beyond,” individuals began to appropriate the Digital Environment without much reflection, much like the multitudes who take scheduled trains to visit or interact throughout a country’s stations. In the 21st century, they did so by incorporating digital tools in their daily tasks and developing their most vital needs on social platforms. But unlike railroad users, the users of

digital networks cannot be reduced to a passive role. We are not merely travelers on digital networks. The interpersonal connections that are possible through social networks give rise to a new role for the individual on the Internet, which simultaneously constitutes a new social role.

The platforms we have mentioned facilitate communicational connections that are maintained in very different languages and semiotic frameworks. New formats are created, and the amount of written, auditory, audiovisual, and graphic material circulating on the Internet multiplies. Where does this material come from? Who curates the collections that circulate? The same people who consume them. The people who order objects to their homes, receive money, read texts, watch videos, or look at pictures are the same people who sell those objects, send that money, write those posts, and use their cameras to film and photograph. They are even, up to a point, the same people who assign social value to those objects with their likes and favorites and thereby determine their circulation.

Twitter users are not readers but rather tweeters. We can also identify youtubers and instagrammers who, far from holding stock in those companies or having

access to executive decisions, fill the networks with content; the same content that they also consume. This dynamic of interaction defines a new social role. We cannot talk about users to define these individuals; we must talk about an interconnected community of prosumers (producer-consumers) that will be fundamental to underpinning the innovations of cloud computation.

In this sense, the invention that completed the change in our relationship to the Digital Environment by accelerating the process of appropriation were smart mobile devices, leading us into what many call Web 3.0.

Their development is eloquent in this sense: cell phones became personal computers. Thanks to the work of IBM and Blackberry, phones incorporated functionalities that fit the daily lives of executives and the daily use of digital tools. In 2006, 22 million smartphones were sold worldwide.

One year later, Apple launched the iPhone, a landmark event on the tech agenda. Jobs gave advance notice that three products would be presented: a new phone, an iPod with a touch screen, and an Internet browser. He later revealed that all three were accessed from the same device. What was innovative about the introduction of mobile devices was the concept behind

the product: it is not a telephone with extra functions but rather a portable computer that can also make calls. The alliance between mobile phones and the development of Wi-Fi connections consolidated these technological advances.

The cell phone stopped being a tool with a single functionality (communication) in order to become a broad-spectrum platform whose functions are still evolving. However, popular is not the same as mainstream. While Apple was responsible for the cultural revolution of the smartphone, Android was responsible for its going mainstream. A year and a half after the first iPhone came out, Android, bought by Google, entered the market. Until the arrival of the smartphone, the television was the fastest-growing technology on the market. Currently, more than 60% of web traffic comes from mobile devices, and more than 67% of the world's population uses a cell phone. Our role on the Internet has definitely changed since the days when we accessed it at a particular time in order to download necessary information to perform a task. Without a doubt, in a world populated by mobile devices, our relationship to technology is different.

It is no easy task to pinpoint the moment when we recognized that a change had taken place, but we can look back and trace how that process occurred with other technologies. We can think again about the analogy of motorized transportation, the technology linked to the appropriation of territory in the Industrial Age.

By the beginning of the 20th century, there were already some machines that provided several horses' worth of power in cities: models of automobiles with complex motors that, due to their high cost, were reserved for use by only a few. We can draw a correlation between the process of these mobile devices becoming mainstream and the appearance of the Ford Model T. The car was not invented at that time, but that model was the first that made it simple (like the iPhone) and accessible (like Android devices). Basically, these innovations made cutting-edge technology personal.

Both the automobile and mobile devices gave people autonomy. With the introduction of smartphones, it was no longer about what could or could not be done on a particular website or about unique addresses but about in which direction we should orient our freedom of action. The Internet was everywhere. We no longer had to go to a computer terminal and make a connection;

the connection came to us. The level of empowerment that the cell phone granted people by placing us centerstage allowed us to move out of the position of eventual consumers of the Internet to become constant inhabitants of the Digital Environment.

When mobility depended on infrastructure, as was the case in the era of the railroad or the first social networks, appropriation of the Digital Environment was still relative. The creative power that comes with the possibility of choosing where and when to access an environment gives rise to a qualitative leap. Both processes were very powerful in people's development by giving them powers that allowed them to break certain chains associated with space-time.

With both advancements, we came ever closer to ubiquity and asynchronicity, and that has the potential to exceed the dimension of the individual. It allowed us to naturalize being in our homes, lying in our beds, but moving in digital spaces through a device. The Model T allowed humans to broaden their range of action and maximize their time. Smartphones gave us the ability to access the Digital Environment simply by wishing it, and to locate more and more of our personal and collective activities there.



We could say that more than a pocket device, the smartphone is close to being a digital extension of ourselves. As we mentioned above, it gave us the material element to transform our environment. This kind of vehicle also works as a portable amulet that concentrates the necessary power to shape the Digital Environment. This object lets us carry out very powerful collective actions. All these movements that are strengthened by technology are innate necessities that we have carried with us since we recognized ourselves as part of a whole. This technology accelerated and enhanced the process by which we systematize and recreate our social ceremonies on the network.

Every year, Oxford Languages tries to reflect the mood of English-speaking society by choosing a word that represents the experience that most affected this community during the previous twelve months. In 2013, the word chosen was “selfie.” What novelty did this concept introduce?

Directly linked to the technical specifications of mobile devices, this word synthesizes a human habit that was born with this technology: constantly documenting oneself and sharing that documentation with others in the Digital Environment. That was the period

in which we began to film ourselves doing our most common daily activities: cooking, skateboarding, reacting to movies, playing with our children. Memes also arose as the popularization of a new language born of social networks.

We document reality in different formats and upload it to the network. We make everyone else our audience, and each person makes themselves the audience of other lives. Little by little, that shared space revealed itself as a public Agora in which our voices could be heard. What was being discussed on Twitter, for example, began to have the power to impose an agenda (with the appearance of trending topics), raise awareness, and mobilize actions (as in its role in the Arab Spring or the yellow vest protests in France) and political decisions. These new social activities produced new words and also new languages: the word of the year in 2015 was an emoji.

Websites changed their functionality and impact on people's lives over the years. For example, the transformation from a single page of interactive text to a social networking platform brings with it a change in the way people began to use and move around on the Internet. The word "user" became a poor description

of our online experience. This transition is due to a change in attitude. Perhaps there is a ritual power in sharing something online; perhaps thinking of it as a ceremony will allow us to understand it better.

The call to participate in a ceremony implies the ideological act of joining a group with a specific intention. Belonging to a community provides support that can symbolically exist in a physical object, as in the case of a church, but one that brings together a set of intangible values. For a ceremony to be meaningful, it must have a philosophical foundation; if not, it has no cultural functionality.

Vital ceremonies are those that have the power to transform. This includes religious ceremonies but is not limited to them. Any activity a person does in recognition of their community (peers and also their territory), every act of meeting with some degree of stability can become a ceremony and is a part of the social contract. This is how we exercise our sense of community. When thinking about ceremonies with regards to the structures in a space, it is interesting to bear in mind that they are not the interrelation of rational planning but rather of that community spirit.

In the previous section, we laid out the question of what happens when physical foundation is impossible. In this exploration of what occurred, we want to try to answer this question in terms of the emergence of communities. Why? Ceremonies (and the rituals that make them up) need that preexisting community spirit to become established. Then, by bringing people together, they connect the territory those people inhabit with society's cosmogony. At the same time, the absence of a physical place for a given ceremony does not stop it from being carried out since there is a way in which it maintains its transcendent nature beyond matter: in the same way as in the case of language or signs (like the semiosphere), the meaning is located in the very community that carries out certain practices.

For example, the first Christians, persecuted by the Roman Empire, met in secret to officiate their ceremonies in catacombs or people's houses. United by the collective idea of faith, they continued to share their rituals although they could not build temples. They used the word "church" to refer to the building but also, and above all, to the group of people who come together to evoke a shared feeling. Ceremonies emerge in communities as a particular cultural feature.

We cannot help but establish and then recreate those ceremonies. For the same reason, during these first years of exploration of the Digital Environment, we have identified some evocative groups or initiatives.

The first years of our activity on social networks and the growth of these networks are evidence of that. The main functions of social networks, which were born as dynamics that are exclusive to the Digital Environment, are “liking” and “sharing.” These functions, summed up by two buttons that we can find on almost any network, are central and came into existence after the year 2000. Publicly announcing that we like something and having the ability to share it with others shapes our digital behavior. These actions also exceed those boundaries and permeate our natural world, becoming a part of our daily speech. As we can see, changes in ceremonies also change the way we behave.

Once we meet in a shared virtual environment, we share music and files, and as we begin to share knowledge, we also build it as a community. In the year 2001, Wikipedia appeared. This digital encyclopedia was very different from its most popular predecessor, which Microsoft sold on CD and updated every year: Encarta. From its beginnings, Wikipedia presented it-

self as an online platform for sharing knowledge collaboratively. Instantly, given its constant capacity for updating and its mechanisms for discussion and debate, its existence made all other encyclopedias obsolete. With its success, a logic that is exclusive to digital platforms gained visibility and power: the public debate forum.

This is a milestone of transformation: we see the emergence of new ways to create, inspired by the intangible aspects of our world. Today, we no longer think of an encyclopedia as a space in which a few people produce knowledge and others receive it. The “wiki” concept consists of the possibility to debate content as a community, update it, and constantly correct it. We can even mark the points that are subject to continued debate, that do not have a single version. Not everyone who reads writes, but there is a large community of collaborators that anyone (reader or not) can be a part of.

This example is also useful to see the social process implied by that change. Wikipedia stayed relevant as a self-managed project, maintained by collaborators themselves, united by the desire to build and share knowledge. We could not imagine Wikipedia without the collaborative logic driven by Web 2.0, and we can

also consider how the mobility of Web 3.0 enhanced that knowledge and brought it into our conversations.

Assigning meaning is a desire that emerges and is put into practice by a community. In the process of appropriating the Digital Environment, people have shaped its tools and its content, finding an immaterial but meaningful framework for our ceremonies. What began as an operation of moving our social customs to the Digital Environment made way for innovation.

At the instrumental level, the definitive change occurred with the arrival of smartphones in our hands. It was then that we gained independence from stationary computer terminals and waiting to get home or to work in order to access a connected computer. We stopped being temporary visitors and became active participants, constant prosumers. Unlike in the Natural Environment, it is difficult to establish a system of coordinates. We cannot say: "This is where the *Cardo* crosses the *Decumanus*, we will build a temple." Ceremonies in the Digital Environment are not as evident as constructing a monument. The phenomenon is ubiquitous: it is embodied in each of us and reflected in a community movement. It is also asynchronous: we can go back to events time after time and continue to act

upon previous ones, creating content that future people (even future generations) will be able to access.

With the emergence of the idea that the network is what people make of it, a change in perception comes about. The human factor becomes decisive and begins to be valued as something that provides meaning and life to spheres in which humans appear and develop. Like in the case of the growth of railway networks, the Digital Wild West stopped seeming so indomitable and began to show its possibilities. What happens once we have appropriated a space? The new strategies of communication we have developed in the Digital Environment make up a new cultural system. The first years of this century saw us enter a new environment and begin to inhabit it. Perhaps somewhere in this process, we can look each other in the eye and recognize ourselves as inhabitants of the Digital Environment.

## **Towards digital urban planning**

One of the most common fears for parents today has to do with the possible effects screen time might have on the cognitive development of their children. On the



one hand, this concern is in line with the reactions that new technologies have historically caused. Just as people worried in the 1940s that the home radio would steal children's attention "right in front of their parents," ancient Greeks wondered about the effects of writing on memory. On the other hand, this concern is an indication of the generational gap that exists with regards to the use of digital technology. What one generation sees as "being glued to the screen and wasting time" is, for another generation, the jumping off point to reach another world. What is a device for some is a gateway to another dimension for others. While the previous generation values experiences in the Natural Environment as superior, the most recent generation draws no hierarchy between experiences in the two environments. Like in the 1940s, it is clear that when our children are in front of a screen, they are "somewhere else." Parents and children can easily be sharing a space in the same house but be inhabiting different environments. Sharing natural space is not enough to truly live together; it is more important to share the same dimension of habitability.

Advancements in the Digital Environment and their consequences for all planes of human experience bring

about change in the historical relationship between the Natural Environment and the way we collectively and individually inhabit it. But what is the difference between living in a place and inhabiting it? First, habitation is an exclusive practice of people. While living, in its basic expression, is related to a biological condition, inhabiting is an inescapable social need. Drilling into the concept, we might say that it is tied to the ability to recognize and move through a territory, marking it and establishing a relationship of mutual influence. Although the act of habitation is an individual matter, it implies participating in the transformation of space through community participation. And this concept is related to belonging.

Is it then possible to say that human beings inhabit the Digital Environment? Coming back to the example of cities, we can certainly point to a foundation and perhaps note the process of appropriation by individuals, but it is difficult to identify the precise moment in which appropriation gives way to habitability. This is because habitability is related to repeated uses in so far as they become habits. When we try to analyze this process in the Digital Environment, the task is even more difficult: events there occurred much more quickly.

A closer examination of this topic allows us to identify two pillars on which the habitability of the Digital Environment began to be built. The first was our becoming owners of connection terminals and thereby being able to choose when and where to connect. Feeling that we have influence and control over the environment and gaining awareness of the fact that digital technology can also be part of reality changed the way we individually approach that space. However, habitability refers to mature states of collective behavior. That is where we find our second pillar, an idea that we have already begun to explore: ceremonies.

The South Korean philosopher Byung-Chul Han (2019) explains that rites are symbolic actions that represent and transmit the values and order that hold a community together. When these are eroded, community deterioration occurs, along with individual disorientation. In Byung-Chul Han's view, the constant presence of the Digital Environment, in which time rushes along uninterruptedly, represents a blur we cannot hold onto. The South Korean philosopher believes that deterioration and disorientation are characteristics of late modern society, due in great part to

its relationship to the neoliberal mentality and its ties to technology.

We agree with Han on the importance of rituals and ceremonies for the cohesion of social fabric. However, where he sees an absence, there is really a world full of expressions and ritualizing activities. This is basically because it is an innate human attitude. People cannot avoid recreating habits and carrying out ceremonies. It is part of our cultural DNA.

This is also how our online activities were transformed into ceremonies with value and meaning. This process was mainly driven by our use of social networks in two directions: it also transformed the way we use those social networks. Little by little, more or less consciously, we codified a way of acting and moving in our digital lives. For example, some groups created their own terms and conditions or ways of introducing themselves into society in order to join a social network. All of these practices are ways of drawing boundaries and reinforcing expectations about what constructive interaction means in the Digital Environment.

One well-known example is the use of hashtags on Twitter. In one of the many collective ceremonies that arose on that social network, users began to use a par-

ticular grammar to create labels in messages. Leveraging the algorithm that counts the number of times a term is repeated in order to measure trends, tweeters got into the habit of including short chains of characters without spaces in their posts, beginning with the # sign. This allows them to read related messages and even boost topics on the agenda. This was the birth of the hashtags that are now used on almost all social networks. Some integrated them into their interface (like Instagram) and allowed users to follow hashtags to share topics with each other. They are even used on social networks on which they have no functionality, which is an indication of their ritual nature. It is that collective aspect of identity and exchange with the group that gives value to these activities. Because of the way the interfaces of these networks took shape and the rituals that arose among users themselves, creating a profile on a dating app, joining a Zoom meeting, or attending a class online while the teacher is in a different country became ceremonies. Ceremonies are symbolic codes that allow us to interpret events in our daily lives, help us navigate difficult situations online, and appreciate positive ones. They are actions through which we assign meaning.

Another clear example of how we created ceremonies and moved our most important ones to the digital sphere is how we relate to death in an environment in which, given its immaterial nature, it would seem unthinkable. A few years ago, Facebook created the Legacy Contact: it is possible to assign permission to a friend to take over your account in the event of your death. Before that, deceased people's profiles were erased or turned into virtual graves where people could continue to leave messages. This policy was implemented after the family members of deceased users asked to download and keep photos of their loved ones and notify their network of their death. Funeral rites are symbolic strategies that regulate relationships between people and their culture. Just as we need representations of the dead in our daily lives, we began to need them in our online lives. This is a process that surpasses mere appropriation and shows that we have gone a step further.

In the same way that the Digital Environment had to adapt to the needs of collective funeral ceremonies, virtual spaces arose that proved to be ideal for other types of ceremonies. One of humanity's central rituals is the one that celebrates and makes public the promise

of love between two people. In 1994, the game CyberMind was the venue for the wedding between one of its employees and her fiancé. However, we can highlight what happened in 2017 on the virtual platform Rec Room as a milestone that sums up the progress of those first decades: Priscilla and Th!nk met, fell in love, and got married in a virtual reality environment. They shared hours of conversation and games as avatars during which they moved from getting to know each other to becoming close friends and finally to getting engaged and moving in together. Beyond the papers they had to sign in the Natural Environment, a video uploaded to YouTube is proof of the number of emotions involved in the ceremony that took place in cyberspace. The virtual kiss drew cheers and applause from dozens of characters who floated in a 3D gazebo.

Another concrete expression of our digital habitability is how the legitimacy of our signatures was constructed in this new space. Digitally signing documents that have a material impact in the Natural Environment speaks of the value of a contract entered into in the intersection between both spaces. Also, and more importantly, it is proof of the virtual implementation of one of the most fundamental civil institutions in our society:

identity and consent. Accepted in 2022 by the majority of nation states, digital signatures guarantee and affirm the presence of an individual with natural personhood under the law while simultaneously certifying the validity of a contract that has consequences in the Digital and Natural Environments interchangeably.

It may be that the first thing that comes to mind when we think of ceremonies are those related to the religious or commemorative aspects of life. We are not used to thinking of productive practices in this way, but if we bear in mind that ceremonies commemorate all types of human activity, both of a spiritual and mundane or daily nature, we will be able to understand why the first way we organize ourselves tends to revolve around these activities. Productive tasks are decisive for understanding how we create environments of cohabitation. It is very clear how people organically establish themselves with regards to productive systems in the Digital Environment. Indeed, Web 1.0 was focused on facilitating work and commercial exchange. However, since the development of email and cloud collaboration in recent years, we have come a long way.



Behind the new tools that foster habitability of the Digital Environment today, there is a transcendental change in how we work and make decisions. Agile systems, like Lean systems and their successors, arose from the first Toyota adaptations of the classic Ford system and aimed to place humans at the center of the creative process not just as resources but as an essential part. At first, these kinds of dynamics were facilitated by digital technology, but recently they have been motivated by it, contained by the environment that is created online. New productive ceremonies are critical to the shape our society is taking. And they affect all of us.

When we consider death or the continuation of social ceremonies in the Digital Environment, we are probably talking about moving our rituals into digital reality. But some people may wonder whether these acts are not experimental practices carried out by some groups. We do not all get married over Zoom or celebrate our birthdays in a Minecraft space. However, more and more people work remotely and online. This direction the productive system has taken, accelerated by the Covid-19 pandemic, elevates humans' innate ability to handle themselves through three pillars:

self-management, evolution of mastery, and the acquisition of experiential knowledge. Indeed, this central place given to people by agile systems is what makes them more than a productive system: they are the reflection of rituals that transform us.

When productive systems change, new models for productive interaction are created that also determine a component of habitability. We are all challenged by the opportunity of a more dynamic reality. The main difficulty lies in the fact that the digital space today is symbolically messy. While some understand and celebrate the ceremonial aspect made possible by the Digital Environment, others remain disconnected from this feeling. The appropriation of a new environment is a human activity that begins with an individual attitude but is projected onto the collective. Rituals and ceremonies help us to share and socialize with the community. We thereby strengthen our positive experiences, and it is also easier to assign meaning to moments of difficulty. We may say that these transformations materialize at the same time in a dialectic shift, new changes in the spaces where we carry out our activities. Just as the landscape transforms us, we transform the landscape we inhabit.

Architectural spaces organize a syntax of collective, urban, and individual symbols. In the city, people materialize the way in which we relate to each other, the expression of our desires, and how we build our culture. To paraphrase the architect Louis Kahn, the construction of space has inherently symbolic value. We erect monuments, make the buildings stand out that house our most important institutions, and organize material space to foster both cohabitation and participation. This construction is achieved through the difference between living in a space and inhabiting it. When people acquired mobile devices, they began a process of appropriation in which they created networks to begin to assign it meaning. But the digital city today is organized around its merely functional nature. For humans, appropriation necessarily implies emotional commitment. Becoming involved and taking a position is participating. We do so as we propose ways in which to grasp an idea of the world and make it our own.

The cloud, the protagonist of Web 3.0, is how we now symbolically represent the Digital Environment, understood as a space shared by all. It is also the beginning of the natural expression of our digital urbanity and where we “create architecture” for existence.

When our online activity reached a sufficient degree of maturity due to individual involvement and the desire to develop decentralized practices of cooperation, we began to glimpse the territory's symbolic limits. We found continuity between those ideas about the use of technology as a tool for defending community ceremonies, the development of movements for free and shared knowledge, and the transformation of productive systems towards a collective and dynamic model.

Although for some generations the concept is more incorporated than for others, we all inhabit the Digital Environment today. But do we all participate in the same way in the creation of conditions that allow the human factor to blossom there? This environment is becoming the central axis of development for interpersonal and productive relationships in the long term, and large companies know it. The multinational tech companies Meta and Nvidia recently announced with great fanfare their plans to transform the Digital Environment. The Metaverse and the Omniverse can be understood as attempts at urbanization. Just as they did in the first decade of the 21<sup>st</sup> century, large companies are trying to win the race to determine what the Internet of the future will look like and decide what can

and cannot be done there. But we have gone through many changes since the dawn of social networks. We now know that creating the necessary conditions for symbolic ceremonies online and assigning them transcendent meaning are not among their interests.

Today, everyone has one or more devices that let them access the network from anywhere and at any time. In opposition to the programmed route imposed by large communications companies as of the 2000s, we see the appropriation that each individual is developing. However, urbanity is not ordered, nor is it constructed by individuals, companies, or institutions but rather through the agreement between these parties.

That is what digital urbanism is about: understanding that the digital space is not only a place for foundation but also for habitation. The Digital Environment does not have to be devoid of emotional or symbolic value. The complexities that exist among organizational, communications, and productive systems create an asymmetry between the structure and individuals that causes social anxiety and conflict. This is why we must develop an emotional map of the Digital Environment. That need is not based on a whim. In Byung-Chul Han's words: "In the symbolic vacuum, we lose

those images and metaphors for generating meaning and founding community that make life stable.” In this idea, there is a meeting point: rituals are devices that protect life. Because of its characteristics, the Digital Environment confronts us with a new way of being and acting. Until now, people had never needed to inhabit an immaterial environment. Of all the strategies we developed throughout our cultural history, the ability to give meaning is what can help us in this process of inhabiting and cohabitating in a new environment. Actively urbanizing the Digital Environment means embarking on a search to build ceremonies and rituals that allow us to establish communicational models through which we can achieve a different degree of interaction with the environment.

To do that, people must again be placed at the center of the ecosystem, changing the perspective to one that considers a human vision. Likewise, this cannot be a naïve exercise or a mission taken lightly. The progress of technology and the level of penetration created a new focus of knowledge, a different way of acting. The way we move and evolve in the Digital Environment catapulted us toward a new paradigm of reality that questions our most deeply assimilated habits.

The world as we knew it no longer exists. We are building a new world in which the Natural Environment is on the same level as the Digital. But we are still pulled at by what was and what could be. This process of growth of digital technology moves in two directions: we move closer to it as it throws itself towards us. It is a convergent transformation that occurs in the present and acts on both environments through mutual affectation. However, it sometimes seems that instead of linking up, these two forces crash into each other.

On the one hand, traditional models of cohabitation, institutions, and the state are trying to find a way of existing and projecting themselves into the digital sphere. We can see this, for example, in the new architectures that are being created in the cloud, in the appearance of models of emulation like the Metaverse, which aim to adapt resources, mechanisms, and processes that belong to the Natural Environment to a digital format. However, as we have seen, the logic of the Digital Environment is so different that those projects often do not prosper. What institutions, companies, and the state seem to be searching for is the answer to the question of how to exercise sovereignty in a space with no borders to mark out a territory.

On the other hand, we are seeing the arrival of a greater number of digital logics, a process driven by the rapid adoption of tools by individuals, as well as new ways of communicating and existing in the Digital Environment. Social networks and the labor within productive communities and communities of practice have had and will continue to have an impact on our reality, forcing us to rethink our traditional forms of organization, particularly how that organization extends beyond us as individuals and integrates us into something larger. If we are inhabiting a Digital Environment acted upon by business interests, institutional control, and the actions of collectives of individuals, we might wonder what happens when these three actors run up against each other.

How can we build a model of cohabitation that brings together the natural and the digital? From the discovery of the bit as a basic particle to the conception of the digital sphere as an environment, including the moments of exploration and appropriation, we have come a long way. We have matured quite a bit in our relationship with digital technology. What stage are we in now?



Understanding the Digital Environment as a habitable space in which we also carry out part of our lives begs the question of the creation or existence of a digital city. At the beginning of this chapter, we mentioned different types of cities projected onto the digital realm: the surveilled city, the population brought together around production and commerce, and the neighborhood as a forum for the exchange of ideas and political projection. In our history, we can find a moment in which these three dynamics overlapped: the first city states, which challenged the social fabric at the end of the Middle Ages. The model of collective urbanization that was dominant during this period, in terms of a materialization of ceremonies based on a collaborative model, can serve as a matrix for thinking about urbanization and the development of belonging in the Digital Environment.

The cosmogony of the Renaissance forged its own way of understanding humans in the development of a series of cities that were established when the Medieval model had come to an end. Territories like Barcelona or Venice began to accumulate economic power because of their strategic locations (with regards to commerce and war). Their wealth at first allowed them

to make their social structures more complex and then to operate with a certain degree of independence from the kingdoms that existed at the time. Indeed, some of these cities even lent capital to reigning kings.

The entire process by which these city states are created was intimately linked to the development of collective organizations related to the trades of those who drove economic prosperity in the territory. That is, we see the economic and political growth of brotherhoods and guilds occurring in parallel. These were very active voluntary collective associations of production and knowledge that organized economic activity. From their Christian aspects as brotherhoods, they guaranteed protection, looking out for the sick and those who died in their families, often organizing ceremonies in their name and ensuring their survival. On the other hand, in their secular aspects as guilds, they busied themselves with research and sharing technical developments within each discipline.

These collectives not only regulated the labor and economy in a territory (and, in some cases, politics); they functioned as social structures of identity. A sculptor got their name, salary, and prestige from the guild they belonged to. Guilds also worked as the co-

llective driving force of innovation. In a brotherhood of painters, it might happen that one member discovered a new pigment to create a color. That discovery was shared with the rest so that each individual could experiment with it on their own. Later, they would discuss and study the properties and limitations of the new color as a group in order to incorporate it, reject it, or improve it based on everyone's opinions. The goal was to develop a novel, improved work of art that would bring prestige and recognition to all members, and that could benefit them economically.

Brotherhoods were not merely artistic or productive communities: they were models for the construction of identity and the production of reality. In a later stage of development, they acquired such complexity in their organization that they began to amass power and, eventually, their decisions affected the rest of society. That was how mercantile cities like Barcelona, Venice, or Antwerp gained importance thanks to the strength built by mercantile brotherhoods. While aristocratic classes were predominant in the rest of Europe, in Barcelona, for example, associated producers were the ones who enjoyed prestige and power. These city states had a specific statute that made them independent

from the monarchical territory and allowed them to self-regulate. While monarchies were an ever-present power, these cities had a defined territory in which the citizen system built on communities of social interaction held sway. Kings, then, were obliged to coordinate power with cities. In this context, we can talk about the emergence of a new actor, an early bourgeoisie that could perform a prominent social role.

It is possible to equate the development of those brotherhoods to current communities of technological practices. We can thereby identify the emergence of a new social power: the digital bourgeoisie. This set of actors includes everything from the digital communications companies that gave birth to social networks or laid the foundations for inhabiting the network to some communities of productive knowledge. Different groups, which stand out for their productive role online, have now become new axes of power with enough importance for traditional states to begin to negotiate with them. The changes mentioned above with regards to productive relationships are also changes in the social distribution of power.

In addition, and perhaps intimately related to this, we can find clues in the development of those Renais-

sance cities to understand the changes we see today in the configuration of social identities. During that period, the condition of citizenship was acquired through vicinity and granted the person legal protection, the right to participate in public functions, and the obligation to observe laws. With the appearance of city states, we see the emergence, during that period, of a different kind of political participation and a novel concept of citizenship, more closely associated with community and productive ties that configure social and political roles.

Perhaps our progress toward the digital sphere and the digital sphere coming toward us can be understood through the lens of a similar reconfiguration of the logics of citizenship. Just as brotherhoods and guilds provided the community cohesion that Medieval societies needed to access new levels of power and autonomy, perhaps collective organization around the activities we carry out in the Digital Environment provide the space for the agreements and organization that we need. For example, many experiences confirm how the digitalization (and even automation) of many processes manages to de-bureaucratize how they function.

How are citizenships shaped, then, in an environment without the materiality we are used to?

The city in a philosophical sense is an area that facilitates interactions and associations between ideas, people, interests, ideologies, lives, and exchanges. It is a physical space, but above all it is an abstract network of relationships between citizens in which economic activities are brought together with practices of community solidarity. It is true that the absence of materiality in the digital sphere makes it difficult to draw boundaries to conceptualize territory; we should then wonder whether it is possible to think of a digital city.

The city is also the land of logos, a constantly changing cultural space that coordinates practical aspects with issues of an existential nature, and, as such, it is a framework that is very sensitive to changes that have an impact on our ceremonies. We might think that some of the urban conflicts we perceive today are related to issues of borders, but not everything in a city can be reduced to a connection to territory. There are elements that make up citizenship that can surpass their territorial moorings, move beyond them, and exist without them. Perhaps the most significant aspects are related to the activities around which we come together as a

human collective. If the experiences of the Renaissance help us to understand the foundations of the interaction between actors in a city and the way they generate belonging, there are aspects that the industrial society of recent centuries brought to the stage and can also be revelatory for interpreting some current phenomena.

Industrial societies, which were consolidated in the 19th century, triggered an important change of cosmogony. With the growth of automated processes of production and the installation of factories, the landscapes of cities were transformed, deepening their economic, political, and social centrality. In this context, many people were brought into productive society not as creative agents with a skill to learn but as a link in a long chain of mass production that only performs a small task that is completely automated and impossible to relate a priori to the object that comes out of the production line thousands of times a day. Mass migrations from the country to the city also meant entire generations of people given over to occupying a role in factories that was essential and specific but also lacking any indication of personal identity.

The social construction of a person in industrialized societies has been analyzed by sociologists, economists,

and philosophers particularly as a process of loss of individual identity, alienation, and the emergence of new social actors. One theory that established itself as one of the most influential schools of thought during the 20th century was Marxism. Karl Marx, through dialectical materialism (a historical view of the modes of production), maintained a thesis according to which the main actors in history were collectives of people defined by their role in production and their relationship to property: social classes. According to this German economist of Jewish extraction, economic conditions and the social division of labor are vital to understanding the development of history and thinking about political interventions.

We can relate this way of viewing political and economic power based on collective functioning with the forms of community building mentioned above. Indeed, this economic and philosophical school of thought maintains that the progress of history is defined by the confrontation of different social classes with opposing objectives. Marx states that a social class becomes a “class for itself” when the individuals that make it up become conscious of that collective, thereby understanding their role in society, and decide to act ac-



cordingly. In this sense, a class becomes an agent of history once it recognizes itself as such and collectively organizes around its objectives.

In the same way some religions inspired communities to build connections of support, and guilds did the same thing at the end of the Middle Ages and during the Renaissance, politics conceived through the lens of social classes also called together collectives around the world that forged bonds and build networks of solidarity, especially in urban environments during the 20<sup>th</sup> century. Taking their cue from Renaissance guilds, many unions organized as collectives of professional aid and community solidarity, but in some cases, they acquired a class analysis of society.

These structures join others that crossed borders and questioned, in different historical moments, large groups of people with regards to the way they understood themselves, conceived of the world, and organized their actions. This was the case of critical theories about colonialism, as well as theories about racial segregation or gender. In the second half of the 20<sup>th</sup> century, a school of social thought arose that brought together all these axes of political and identity construction: the theory of intersectionality proposed by bell hooks.

Through this concept, society can be understood as sets of systems of power that create different identities for people. It is a first step toward the theorization of a multiple social identity, defined by belonging to cultures and collectives that have their own histories and perform different social roles at the same time.

How do these transversal relationships, which are repeated in different geographical locations at the same time, affect the idea of citizenship? Throughout urban history, different cultural contexts have become signs of urbanity: theatrical and cinema offerings, discussions in cafes or bars, university education, and professional development. Today, a citizen is not only someone who lives in a super-populated area but also someone who participates in these discussions, accesses this intellectual capital, or consumes these cultural products. Can that only be done from an urban location? And what happens if we are in one city, but we participate in the exchanges of another?

Citizenship is an expression of belonging that a person has towards a particular society in which they participate. Nowadays in the Natural Environment, we tend to think of citizenship as being related to a territorial entity as a connection to a state organization, and

as a role in productive society. In order to respond to the question of how we develop belonging in an environment without parameters of time and space, then, we can return to the way in which members of brotherhoods established belonging through cooperation and community participation. Brotherhoods not only regulated labor and economy within a territory but also functioned as social frameworks of identity. In the same way, class-based unions focused on building ties of belonging between their members, moving beyond labor problems and considering issues related to the social collective.

Politics, economy, symbolic representation, and the creation of meaning participate in the dialogue that shapes the city. The globalization of the last century built “big conversations” in which we participate digitally from many distant spots around the globe. In this sense, we can interpret the ever more common digital expressions of discontent, like the presence of protests on social networks and political violence online, as an affirmation that the digital city exists and is alive. We can even understand that the conflicts that drive that discontent in both environments is due in part to the expiry of former frameworks to interpret it.

Social mobility is the sociological study that observes the ability of people and groups to change their social status during a particular period and in a particular socioeconomic system. Experts from international organizations state that although the amount of global wealth being produced has multiplied in recent years thanks to technological advances, social mobility has dropped alarmingly. A historic concentration of wealth (World Inequality Report 2022), among other things, puts in crisis narratives of social advancement associated with study and work in cities. People search harder and harder to find citizenship that surpasses their immediate field of belonging, and the best medium to reach other places from one's own place is digital technology. Citizenship today moves beyond known boundaries and expands in the Digital Environment according to new forms of logic that we are still trying to understand.

Just like in the past, when state power comes up against the emergence of new axes of power like the digital city, conflict arises. Many of our current crises can be explained by a lack of urbanity in the city and the way in which we build citizenship, that is, through the necessity of those elements that are necessary to

define us socially but depend now on a city with no territory. We are still trying to understand how that new city defines us. Traditional methods (both ancient and modern) of creating social beings are in crisis, although some historical examples can point the way to what we lack. The importance of urbanizing the Digital Environment lies in the fact that, beyond issues related merely to productivity, it is a space where the rules of cohabitation are put up for discussion, as well as how we create culture and our emotions.

We have come a long way in our process of appropriating the Digital Environment. We went from being visitors to being users and prosumers. We can even start to see a kind of digital citizenship we cannot fully embody yet. But that not knowing how to behave, how to relate to each other, how to work and interact on the network, combined with changes that the digital realm effects on our old ways of doing things, causes anxiety, annoyance, and even conflict. The time has come to organize our cohabitation or, at least, to sit down and talk.

# THE HUMAN FACTOR

## A world in crisis

We live in turbulent times. In recent years, we have seen social upheavals happen more frequently in different parts of the world. Many of them have had an impact on local and regional political structures. It feels like there is always an active conflict somewhere, which we hear about thanks to protestors who upload pictures and videos from the scene of the events. Social networks reflect discontent, and traditional media outlets repeat those expressions.

In recent years, for example, we have seen huge popular uprisings. Those that took place in Hong Kong, Chile, Colombia, and the United States even challenged the political fabric in each country. Some of these uprisings led to a change in government or even sparked the process of transforming a country's constitution. One of the reasons we stay up to date on these conflicts is because they are movements with high

levels of organization and efficiency when it comes to making themselves visible and having an impact on the public sphere, both in the Natural and Digital Environments.

While some protests are focused on a particular territory because they are making demands of the governments of their own countries, there are other transversal movements that, like the feminist movement, environmentalist youth, and protests against war or in favor of refugees, cannot be thought of in terms of a single country or region. Where can we say these tensions are expressed? In the Natural Environment, where hundreds or thousands of people come together in a public space? Or is it really in the digital realm, where messages are multiplied thousands of times, and the repercussions of every image or video are multiplied millions of times? Is it possible that these events are phenomena that take place in both environments at once? If that is the case, it is interesting to consider how or why they move from one environment to the other and what that tells us about the connection between conflicts and underlying social structures.

The situations that trigger these expressions of discontent are often specific episodes that awaken a great

power. An increase in transportation fares for students, a teachers' protest, a union's demand, a tax hike, the passage of a law, or the murder of a racialized person appear as the visible tip of an iceberg that brings together current grievances, historical struggles, and urgent demands. The problems caused by on-demand economic models, regressions in terms of human and identity rights, imbalances in the global economy, the energy crisis, and environmental collapse come together in a situation of conflict for which there appear to be no answers. The odd thing about the current moment is the feeling that all these episodes are related in some way. But is that really the case? Is this a global crisis? Are we staring down an imbalance in the models of coexistence?

At times, the prevailing feeling is that many of the organizational systems that structure our society no longer fit the needs of the people we have become. Failures in the economic system, the crisis of civil representation, new uses and habits developed in the Digital Environment, and the spread of fake news are possible symptoms of a crisis of representation. Traditional models of coexistence are no longer enough to express our identity, be productive, live together in an organized



way in habitable spaces, or feel politically represented. As it becomes necessary to unpack the explanation and causes of these movements, not only because are they not obvious at a glance but also because it is difficult to clearly analyze a historical moment while it is happening, there is one thing that is clear and right in front of our faces: the emotions that the current moment causes in people. Confusion affects all of us. We seem to be controlled by the feeling that we lack a cohesive ideological framework or a clear structure that organizes the events we are experiencing, one that could comfort us and bring order to our reality. We constantly feel adrift.

However, at this moment with few certainties, there are some schools of thought that try to explain the changes we are seeing and dig deeper into different questions and hypotheses. Is modern society collapsing? Did the world change, or did we change?

The crises of the present and the political and social situation can be understood through the lens of various frameworks. In his book *Liquid Modernity*, published in 1999, Zygmunt Bauman described modernity as flexible, precarious, exhausting, and temporary. He used the word “liquid” to show a contrast with the idea of a

past that was solid, with values associated with stability, tradition, and trust in enduring institutions. In Bauman's view, the fluid and volatile nature of the current historical moment has devastating effects on identity. In this sense, a society based on individualism and constant change gives rise to such existential distress that individuals feel powerless, unable to innovate and produce.

Rather than explorers of unknown seas, Bauman sees us as shipwrecked sailors in an ocean of uncertainty. The sociologist maintains that the labor market is one of the areas most strongly affected by this liquid condition. Years ago, at a *solid* job, one could choose a career and, when they reached their desired position, rest in the certainty that they would be able to retire from that same position if they wanted. A job was enough to develop a professional career and even a social identity. Although Bauman's text is a few years old, the idea of a contrast between solid and liquid societies permeated our culture and is still relevant.

When Bauman stated at the end of the 20<sup>th</sup> century that the model was failing, he was pointing to a crisis of the system that began during the Industrial Revolution. The appearance of mass society, held up by

the factory model and the introduction of machinery in processes that up until then had been agricultural and performed by hand, brought with it a structure of habitability in which the city was at the center. Industrialization organized consumption around a new economic and productive linchpin. These transformations had their counterpart, in terms of a mutual influence, in the new scientific theories of the day, changes in productive processes, and even the political and violent conflicts of that period.

What Bauman identifies as the fall of industrial models can also be interpreted as the end of globalization. This view allows us to analyze the events of recent years like Brexit, Trump's election as president of the United States, and the armed conflict in Ukraine, through the lens of a paradigm change in the world order.

The end of the Cold War, when the Berlin Wall came down and the Soviet Union was dissolved, made way for the globalization of the industrial era. An economic, technological, political, social, and cultural process, globalization meant, among other things, growing communication and interdependence between different countries around the world. The so-called Digital Revolution opened up new possibilities in this dynamic

process that has marked the last four decades of human existence. With digital technologies, the world became a global village in which all of us could be connected to one another. For some things, there no longer seemed to be any borders. This period saw international organizations like the World Trade Organization, the International Monetary Fund, and the World Bank flourish, with the goal of coordinating economic and social policy around the world. We could even associate globalization with the world imagined by leaders of the digital movement in the second half of the 20<sup>th</sup> century.

That model seems to be in its final stage today. In this sense, we can appreciate the relevance of Brexit as a fracturing of the European economic bloc, and of Donald Trump's loud and controversial presidency in the United States. Perhaps we can use these events as a jumping-off point to think about how the United States, one of the greatest winners of the Second World War and the Cold War, hopes to change the playing field to continue to ensure its dominance in the next stage. So far, the United States, along with continental Europe and China, has presented itself as a world power through its manufacturing might and the tech-

nological developments achieved through automation. But the turn of the century brought with it a new reality: the most important asset is energy, and the United States knows it.

Shale gas deposits, made accessible to extraction through fracking, allowed the United States to self-supply its own energy. This is also a world in which technological advances created a new habitable environment where a large part of our existence occurs and which is completely dependent on electricity. Energy sovereignty is vital to any power that hopes to lead change.

In this context, countries with energy capital have a rare competitive advantage. This could explain why two large powers like the United States and Russia, which not only have weapons of mass destruction but also compete with regards to technology, find more common ground today than they do differences. In this new structure, both have surplus energy, and this could become one of the largest sectors of interest for both countries when it comes to possible allies. We could even imagine unlikely alliances that include other countries in this position, like those in the Middle East or Venezuela.

This paradigm shift emerged and impacted the Natural Environment in March 2022 in Ukraine, when it took on an unexpected scope of conflict. In the future, the South China Sea may even be a possible stage for a similar situation. And the Digital Environment, of course, is not separate from these movements of pieces around the board.

It is interesting that many of the sanctions that were put in place a few days after Russia invaded Ukraine were related to the West's desire to cut the country governed by Putin off from the global Internet. The international financial organization SWIFT suspended its operations in the Russian Federation, the largest telecommunications companies blocked access to their networks, and some multinational companies decided to cease operations in Russia. This probably explains why Russia has been developing its own self-managed version of the Internet, like the one that has been in operation for more than three decades in another world power: China.

What is appearing hazily on the horizon leads us to imagine the end of the global model as we knew it. If we consider the most famous moments of Trump's presidency, we will see his constant attempts to dismantle

NATO, the WTO, and the IMF. This outlook shows us a new status that is far removed from the hippie dream that gave rise to the Digital Environment but that condenses the meeting of that matrix of universal communication and the tension with global powers. It also invites us to weigh all our experiences. If the geopolitical status quo is really shifting, what consequences will that have for the development of our lives in both the Digital Environment and the Natural Environment?

Any interpretation we might make of the current moment could seem rushed and inadequate. The upheaval is so great that it is difficult to foresee the results of the geopolitical and social changes that are taking place. However, in the interest of explaining and assigning meaning to changes related to the Digital Environment, as well as their effect on society as a whole, we could see in these disputes the first attempts to push a model of territorialization in the Digital Environment.

While until recently we talked about digital backyards, we will surely soon be talking about digital sovereign states or states affirming their sovereignty in the Digital Environment. And this process will end up transforming the geometry of globalized digital space.

This movement is logical and will surprise no one: if what we are seeing on the horizon is not so much the coexistence of digital reality and natural reality but rather a convergence of the two, all interested parties will try to find a place there. States are faced with the issue of sovereignty. It is not only about having a presence and exercising power in the Digital Environment but about marking off territories in the digital space.

This process is comparable to jurisdictions in airspace or at sea; the international surface of digital information becomes fragmented. Up until now, we thought of digital connections as infinite possible lines between points located throughout a global sphere. What seems to be happening now, which we will perhaps see later, is a new geometric form: a faceted polyhedron with many surfaces where points can meet but are separated by the clear boundaries that mark off spaces of interaction.

However, there is an obstacle that this transformation must still overcome: sovereignty is exercised throughout a territory with a defined perimeter. In an environment that lacks space-time coordinates, we must find some novel solution to give it material attributes. Is it possible to make the Digital Environment



tangible? Developments related to the blockchain might be useful as a doorway into this problem.

The technology called blockchain is responsible for, among other things, the architectures that were used to develop cryptocurrencies. However, the potential of this technology goes far beyond that. In general terms, blockchain is a huge database that contains all the transactions that take place on a peer-to-peer network. It is a permanent chain that is resistant to interference and is collectively maintained by the nodes of a system that authenticates and records all those transactions using cryptographic algorithms. What is interesting is that the whole process works independently of human intervention and inspection authorities. Information is stored and constantly updated on a multitude of physical computers that make up a registry that exceeds materiality and seems to be inalterable. The blockchain is a disruptive innovation that could be applied to politics, economics, and the community because it allows for management of social interactions at a large scale, leaving aside the influence of central authorities.

While states move forward in regulating the digital economy, issuing their own digital currencies as a first measure, they are also studying how to find or crea-

te these missing coordinates. The interesting thing is that this project of setting up a topography arose in the Digital Environment. Some argue that the blockchain and its applications will make it possible to redesign a new type of social contract based more on consensus than on coercion, which is a characteristic they associate with states. Beyond personal viewpoints about this technology and its effects, it has proven itself to be an initial method for establishing tangibility through a decentralized network.

In turn, governments are evaluating their own applications for this technology for this precise reason. It is possible that the implementation of blockchain protocols is not the only way of establishing coordinates in the Digital Environment, but they are the first glimmer of a way to delineate comprehensible perimeters. In their uniqueness, the unambiguous digital strings of the blockchain anchor down common parameters in the Digital Environment, something that so far had been lacking. We are in the middle of a process of marking out the topography of the Digital Environment.

Another way of thinking about the fragility of the present is understanding, through a historical perspective, that the feeling of collapse is not foreign to our

cultural development and that it appears when we are faced with the limits of social models or when a cosmogonic transformation occurs. This is how we can frame the transformations we perceive in different human processes over the centuries.

In the considerations throughout this book, we call upon events from the past to unpack the present. This is due to a view of history we have been exploring: that of its development as an expansive spiral. In our human history, we move in cycles, coming back time and again to the same situations. However, in each new round, we find ourselves in another position, at a distance from the previous experience, driven by the technological advances that have occurred. In this sense, the current process we are describing here can be compared to others that humanity has been through, and from which we can draw tools to confront it.

Just as it is not difficult to find precedents for our current uncertainty, there are also many references to other thinkers that have reflected on crises. This moment, which seems so unique and particular, can be viewed through the lens of Antonio Gramsci's thoughts about eras of transition. In the early 20<sup>th</sup> century, a period of great change, the Italian materialist philosopher

argued that after the fall of the old world, in the slow process through which a new one appears, we find ourselves in a world that is incomprehensible and terrifying. “In this chiaroscuro monsters are born,” he wrote. This disordered world we are perceiving is, without a doubt, a chiaroscuro full of unrecognizable forms.

The current feeling of instability, which many associate closely with globalization and digital technologies, becomes less strange when we find words from the past that help us analyze these crises. Indeed, we can understand the current situation with Thomas Kuhn’s notion of the succession of scientific paradigms that humans use to think about reality. Kuhn proposes that when a paradigm stops producing satisfactory explanations for events, it is falling, and this fall heralds the emergence of a new paradigm. This moment, which Kuhn calls “model crisis,” is characterized by a lack of answers that announce the appearance of a new way of understanding the world. When society and culture are impacted in such a totalizing way, we must ask ourselves whether this transformation will lead to a change of cosmogony.

These changes do not have defined edges: we do not know when they begin, where the end, or what gives

rise to them. However, we can trace back the ways in which they began and how they gradually progress due to a shift in people's perceptions. The problem is that in order to identify changes in cosmogony, we need the distance that only time can provide. The events that history will qualify as relevant are those that have not yet been described.

In a context like the one we have just discussed, we can identify the progress of a new project of tangibility in the digital world. Based on that progress, we might ask, where do people stand? What is our place in that new territoriality? Amidst a crisis marked by the encounter between a natural world and a digital one, the instinct to establish anchoring points, to build ourselves in terms of something fixed and stable, may well arise. This process undoubtedly has social characteristics, but it also has profound consequences at the individual level.

## Multidimensional identity

The question of what changes first, individual people or the systems of community and values that unite them, may not have an answer. It is certainly possible to observe that in each historical moment, individuals build their identity based on different factors, including cosmogony, social, political, and economic relationships, technological developments, scientific theories, and geographical distribution. In other words, humans build their identities based on our relationships with the environment and each other.

One's identity has been the central axis of philosophical thought from its very beginnings. We can also identify stances related to this issue developed by the social sciences, including sociology, anthropology, and even linguistics. We can use these perspectives to think about identity as a social construct that we build for ourselves in relationship to others. In addition to the classic questions (which still lack definitive answers) about how and with what aims we carry out this construction and about the value of identities defined nowadays, another question arises: what is the role of

the Digital Environment and how does its existence affect identity?

In their *Dictionary of Discourse Analysis* published in 2005, the analysts Charaudeau and Maingueneau cite the “principle of otherness,” which includes some ideas about this issue. According to this principle, the starting point for one’s identity is the perception of difference from another person. Becoming aware of that other is necessary to finding what distinguishes us as individuals. However, that relationship between us and everyone else is not limited to difference because, returning to the sphere of communication, for the process to work, we must have at least one code in common. If we understand that people change according to the historical period and that they are a reflection of how they understand reality in a given historical moment, we can analyze the new ideas that arise from the evolution of technology and the consequences it has on reality. In other words, we can study how individuals build their identity in each historical moment.

Many people nowadays point to the prevalence of individualist constructions of identity that involve identifying with consuming and producing content on social networks that revolve around the individual.

If we think of it this way, we will not find much meaning in the collective gatherings that occur in the Digital Environment. Like in Renaissance communities, the construction of a digital identity also takes place collectively, though in a new way.

Through the network and within it, individuals come together and collaborate like in brotherhoods, but with the scope and power of mass society. This is one method we can see clearly in communities of productive knowledge in which the search for new understanding is the main motivation for the group. Their practices and customs are oriented toward the evolution of knowledge. Self-management, self-assessment, and mastery are the three pillars that hold up communities of productive knowledge and are what allow them to produce results that are organic and more precise when it comes to creating new solutions to the problems that arise. At the same time, these communities have a broader reach thanks to digital technology. A community can be made up of people of all ages and from all around the world.

Until digital technology was developed and then recognized as a habitable environment, the only environments we knew were natural and material. Given



its characteristics, the Digital Environment confronts us with an array of abilities never before experienced. For example, while Renaissance brotherhoods and digital communities both include productive organization held up by similar values, digital technology frees members of the group from having to coincide in time. While brotherhoods shared a workshop or room where they physically met, it is possible today to come together in a single virtual space at different times.

The Digital Environment exists beyond our individual desire to connect to it through a device. But this is not the case just because the environment is omnipresent and atemporal in itself; instead, it functions as a platform for people to build their identities in that way. If quantum computing taught us that a bit can be 1, 0, or both at the same time, we can understand the identity process in the Digital Environment as a quantum potentiality. People are no longer restricted by the opportunity of being “in the right place at the right time,” like in the Natural World. Now access is total and on demand. This allows us to explore many more interests, embark on journeys of thought and act upon them, and, most importantly, connect to people who share each of those interests.

Our identity explodes multidimensionally: we can be doctors, writers, students, and gamers at the same time. However, we must differentiate between what we tend to call “a person’s facets” and what we are talking about here: a person’s dimensions. It is not that an individual distributes their time between their medical practice, their literary writing, the course they are taking, and their video games but rather that each of these activities is a dimension of the identity that is constantly active in the Digital Environment. This happens even though the person is not interacting and feeding the activity of each of these networks or platforms with their body; these networks and platforms do not need a presence in real time.

Let us consider an exceptional person, like Leonardo Da Vinci was in his time. Can we really define him just as an artist, even with the broadness that word allows? Da Vinci was a scientist, anatomist, inventor, musician, and engineer, among other things, at the same time. In the 15th century, he managed to bring together the knowledge of different disciplines and make exceptional advances. He was exceptional, but why? What made him extraordinary was that his genius was expressed transversally. What Da Vinci achieved centu-

ries ago by his own means is more accessible to everyone today thanks to digital technology. We can all build a multidimensional identity.

When we talk about a “Renaissance man” in everyday speech, we are referring to a person who does many different things, who develops their activities in different areas. While Renaissance humanism ensured a comprehensive education, our current *Zeitgeist* favors constant education. Before, an individual studied for a certain number of years in order to reap the benefits of that education for the rest of their life. Now the canon pushes for a dynamic education. The speed at which knowledge evolves requires people to integrate not only productive capacity but also educational capacity into their daily routines. Flexibility, multiple abilities, the capacity for constant learning, and the possibility of defining oneself in different ways have become key assets in the 21st century. In this regard, identity as we conceive of it today is even more ambiguous than it used to be: a person’s social, professional, and productive dimensions are all active simultaneously. Which of Da Vinci’s dimensions were at play in his studies of the human body? Was it the artist, the

forensic researcher, or the mathematician that guided charcoal across paper?

The possibility that technology offers us of being many things at the same time, of multiplying our identity in different spheres and projecting them in time, confronts us with a new way of existing. The mere exercise of trying to present that reality to the labor market involves a frequent challenge. And although we are still defining what identity means in the world to come, it is worth examining some of the implications of the multidimensionality presented by the quantum age. Quantum mechanics brought with it a view of the universe as dynamic and indeterminate. Without getting into specific details of physics, it is worth mentioning the principle of the identity of indiscernibles proposed centuries ago by Leibniz. The 17th-century philosopher posited that if two objects cannot be differentiated, they are the same object. The existence and behavior of electrons defies this principle. The quality of sameness between elementary particles questions the concept of “object” or “thing,” as well as the concept of space. If space is what keeps everything from becoming one in a material environment, time is what stops everything from happening at the same time. In

an environment like the digital one, which does not require time, that restriction does not exist. Everything could happen at the same time.

Digital identity can also be considered through the lens of some proposals that were established in our society after the development of quantum physics. This theory became widely known when we accepted the superposition of states for matter, positing that it can be in different (even opposing) conditions at the same time, and when it was proposed that we measure those states in terms of probabilities and not through distinct answers. Another interesting concept is that of the observer's paradox. According to this notion, every observation implies an effect on the object being observed. Therefore, we no longer consider the observation of an element as a merely passive and descriptive fact: it is an action that impacts the system in one or more ways. We can thereby establish that perception is one of the determining factors in the states of things. Many states are possible up until the moment in which they are observed and thereby given parameters. This allows us to think about identity in the Digital Environment as an aspect that, in addition to being defined by difference from an "other," depends fundamentally on how it

is perceived by those “others,” who shape it through their acts of perception. The construction of that multidimensional identity occurs collectively.

As happened in Da Vinci’s case, it is more and more difficult to define someone with a single word. People are not their productive activity; they are multidimensional, a cluster of unique experiences and characteristics. If we were to compare a single individual’s different social network profiles, we might think we are looking at different people. A person might have a social profile and a digital space for each of the activities they take part in. None of those identities fully encompass the person, but at the same time, these are the ways they present themselves to society, relate to others, and have an impact on the world. The person does not belong to a single brotherhood or community; they belong to many. In this way, we could say that individuals express themselves multidimensionally (they participate in many ways at the same time and beyond their physical bodies) and connect with other identities, which are also asynchronous and omnipresent.

It is possible that comprehending the implications of an asynchronous and omnipresent identity creates a certain difficulty for consciousness. However, this

condition made possible by digital technology, apparently so new, has already happened to us as a species. In other words, omnipresence and asynchronicity are not characteristics that are catalyzed exclusively in the Digital Environment. Humanity has already experienced different levels of omnipresence and asynchronicity thanks to other technologies. Something inside us leads us to explore those properties in different expressions of our experience.

For example, in the 15<sup>th</sup> century, the printing press freed knowledge so that it could be multiplied and last over time. The technical repeatability of books allowed for one copy to be the same as another, that is, for that particular knowledge to be spread independently of who had produced it, and to be read at any time, even centuries later. Knowledge that was once safeguarded for a select few, passed down from master to apprentice or dependent on scribes, became independent. This had such an impact on people that it began a scientific revolution: knowledge became omnipresent and asynchronous.

We can identify similar processes related to omnipresence and asynchronicity during the Industrial Revolution. After transforming the spread of knowledge,

the first great productive revolution (during the 18<sup>th</sup> century) had a definitive impact on the objects we find in the world. With mass production, for example, the standardization of measurements was introduced. In that moment, the measurements of everyday objects came to be: plates all had a roughly equal diameter; cups held a uniform quantity of cubic centimeters; tables were all the same height. In particular, clothes were no longer tailored but rather mass produced in sizes. In addition to the evident effect this gradually had on how one builds their personal style (in reality, the generalization of a universal style), it also had an effect of omnipresence.

In 1801, Joseph Marie Jacquard implemented the loom that bore his name and introduced a crucial characteristic for the development of the textile industry: a system of punched cards that allowed for any user anywhere in the world who had the machine to completely reproduce a complex design almost effortlessly. The design of a piece of cloth was definitively dissociated from the space-time coordinates of a creation. In addition, there could be thousands of pieces of cloth that were all the same. Today it is easy to take this for granted, but we must not minimize the impact of



moving from artisanal production to a panorama in which objects were exactly the same.

As if the impact of these changes were not strong enough in itself, the environment was transformed through urbanistic improvements that allowed people to access a standard of infrastructure that made the city a more hygienic and organized place, and, above all, a place that was measurable and similar to itself. People and products could be moved around in less time, objects and spaces became uniform, and the sensation of permanence was thereby increased. The presentation of urbanistic and production standards required humanity to develop strategies that put into perspective its relationship to space and time, deepening a process that had been developing over the course of history. As occurred during the Renaissance, people during the Industrial Revolution saw a world extend around them that was a bit more omnipresent and asynchronous.

Today we find ourselves in a moment in which these characteristics seem to define how we build our identity and perceive reality. Until digital technology appeared, these seemed to be characteristics that defined our environment and customs, but today we are discovering that they also define us. This new identity

is not easy to comprehend because it presents its own challenges. This crucial aspect is where we crash into digital technology rather than connecting with it. Omnipresence and asynchronicity also present dilemmas far removed from our ancient way of building our identities. How do we reconcile the human right to make mistakes and forget in an environment that lacks a past? In the era of fake news and deep fakes, what relationship do we establish with the truth?

The new multidimensional identity exists beyond the physical body, bringing together the growing totality of information that exists about us, our profiles and online activities. It is also built in community. Without a doubt, this leads to a great challenge if we compare it to all of our learned notions about identity. The question that hangs above us is whether this is simply an evolution of the concept of identity or whether it is a complete transformation.

## Quantum humanity

Leaving aside the level of thought or awareness each person might have about the current historical moment, the scope of the changes we are seeing tell us that we may be looking at the creation of a new cosmogony. New scientific models suggest that the reality we inhabit extends beyond the limits of space-time, and, instead of being constituted by a single dimension, it is possible it is multidimensional. We are still trying to develop a theoretical model that allows us to conceptualize how this new reality works, but one thing is clear: the earlier paradigm has fallen, and we are building what will replace it.

Paradigm changes are not chosen. The moment of the shift is a very deep crisis because what was known is replaced by doubt rather than by a new certainty. It can be easy to forget that constant revision of our truths and tenets is a human condition: pushing the boundaries of the known and uncovering mysteries. The explorer's drive leads us to sail different seas, new ways of doing things. The current sensation is probably one of uncertainty and anxiousness regarding what will come and what we are building. Social conflicts, a

shift in the logic of global power dynamics, productive and economic processes that change the thrust of action and the resources we need to survive: everything is concentrated and strengthens new collective ways of defining a multidimensional reality that also constantly produces omnipresent and asynchronous effects.

A society does not create symbolic models or risk everything it knows if it does not have the firm conviction that there has been a change and that the previous reality, with its rules and methods, has become intolerable. The view of reality through the lens of digital technologies forever transformed our view of the world. A change in cosmogony is a complex process that chains the continuation of our existence to the Digital Environment, the appearance of new models of habitability, a society with new productive and political roles, new identities and ways of building them, and a new relationship to space-time. As a consequence of these processes, humanity is changing. Does that mean we can talk about a new kind of human?

When the transcendent points of reference are transformed, humanity is inevitably transformed, as well. Some theorists have used the term *homo digitalis* to refer to the current type of human. They say that digita-

lization has had such an impact on the human brain that it has transformed our perception and the way we process information. Perhaps in a purposefully provocative move, some have suggested that ours is the final generation of *homo sapiens* since we are about to be replaced by a new species of the same genus: the digital human. This theory puts us on the path of creating worlds with other relational and organizational logics. It would also require us to develop new abilities in order to survive and connect with each other. In this literature, *homo digitalis* is compared to *homo sapiens*; *sapiens* created and discovered technology, while *digitalis* uses and transforms it.

The jumping-off point of this argument makes sense: technology has deeply impacted our world, our cosmogony, and us. But it is worth thinking about the destination we are arriving at. Calling it a “new species” is not enough. First, it mixes anthropological, biological, and sociological elements in its own definition, and also, perhaps because it is a very early definition, it does not fully encompass the scope of the change it is trying to explain.

At the sociological level, we might wonder whether a collective construction of identity truly redefines the

ideas shared by humans in this historical moment, and, therefore, their social nature. It is possible that paradigm transformations at all levels bring about new strategies of human action. Indeed, we believe that humanity can consider itself through the lens of these strategies. In the past, social types were defined by the strategies that individuals impacted by cosmogonic changes used to define their reality.

We can find an example of this relationship to humanity's imagination and the cosmogony of an era in another period we discussed above: the Renaissance. The humanist culture of the Renaissance believed humanity was able to understand and represent the world rationally and truly, and to transform it according to its intentions. It also maintained that human freedom contributed to defining its nature and role in the world and was even capable of reorienting the course of history. From this perspective, human beings are not only subject to divine, natural, or historical laws but can make themselves and act upon the world in different ways at the same time. The notion of humanity as the center of the universe, with no limits to its development, gave rise to the hunger for knowledge. The Renaissance man was embodied in individuals like Leon

Battista Alberti or Leonardo Da Vinci, who were at once artists, mathematicians, writers, and scientists. In the view of the Renaissance, the concept of humanity not only was dynamic but also determined how humanity saw itself and related to the world.

If we consider models of humanity defined by their productive mode, that is, by how they transform their environment, we might think that the changes to civilization caused by the Industrial Revolution produced another kind of humanity. We can find precedents there that define the ideal of humanity during the industrial era: a humanity able to control its environment through technology (measuring time precisely, organizing travel punctually, staying productive, and being efficient). Humanity during the industrial era deepened its feeling of hierarchy over nature and, at the same time, faced a reality that placed it in a totally functional role. These mechanisms for building an identity incorporated consumption as a form of constituting and expressing oneself.

We can therefore recognize certain models of humanity defined by the changes in each era, by productive relationships and connections to the environment

humanity inhabits. The same thing may be happening in the present.

The modern individual, who forges their identity from a collective viewpoint through community participation, also develops an individual identity that is affected by the new omnipresent and asynchronous reality. This transforms the individual in such a way that a new social type is created: the individual in the quantum age. This individual is defined by their relationship to the new reality perceived through the innovations of quantum physics, which are in turn transformed by digital technologies, with definitive consequences in all spheres of human life. This new type of individual is no longer exclusively defined by their relationship with space-time and understands that reality extends beyond the Natural Environment.

We can understand the hypothetical appearance of this new type of humanity as a possible consequence of the crisis we are currently experiencing. Humanity in the quantum age is no longer oppressed by the limitations of biology and of struggling with the new possibilities created by its omnipresent and asynchronous existence. It can develop beyond the physical body. We could think of this new type of individual as someone



who draws closer to Renaissance ideas in an attempt to understand, and who has a firm belief in empowerment and the potential of the individual, but in a context of collective creation and identification. In other words, it is someone who tries to define themselves as part of a collective while also recognizing the fact that they can reconfigure more than one identity at a time.

Humanity in the quantum age also shows a deep level of integration with frameworks for identity. In this sense, digital technologies that used to be tools for the exploration of identity have become vital frameworks upon which an identity depends in order to carry out its activities in the new age. It is even possible that this configuration will be deepened to the point that physical presence becomes unnecessary. We can therefore expect that identity will evolve different ways of melting into the network.

The level of evolution of technology and its integration into our biology, as well as our minds, make it possible for models of identity to progress in a new habitat with vital frameworks of digital intelligences. Therefore, the human factor will also take on a different scope based on what we endow it with.

The question that arises is whether this makes us more or less ourselves.

With regards to the environment, humanity in the quantum age does not see a barrier between the natural and the digital. It understands that the Natural Environment and the Digital Environment not only mutually affect each other but also that the ever greater interconnection of the two will make it impossible to tell one from the other. While we used to believe that everything that happened in the Digital Environment was “less real” than what happened in the Natural Environment, we now see that this distinction is becoming fuzzier and fuzzier. In some cases, we might admit that it is difficult to draw a dividing line between the two. Is the work we do on a platform or the connections we make in the Digital Environment less real? What happens when activities, conversations, and relationships happen half online and half in the Natural Environment? And when these converge into a single New Habitat? The experience of technology seems to be transforming into another layer that is added to the natural one, a layer that is integrated into our practices, defined by the relationships between technological devices (as in Lotman’s semiosphere) but above all by

the connections between those devices and the rest of the objects in our environment.

The New Habitat of the near future does not yet have a clear outline or coordinates. We are still in the process of seeing how the logics of the Natural Environment and the Digital Environment can coexist. What type of borders or perimeters will it be possible to draw in the New Habitat? How will the tensions we are currently experiencing disappear, be resolved, or become more complex there?

A change of this magnitude has its cost. Social discontent, general unrest, and the increased rigidity of conservative stances are not things that will disappear overnight. On the other hand, we will see whether people can grasp this change while it is occurring. This is not the first crisis humanity has faced, and it possibly will not be the last. But how do we get to that new place? What are the emotional and social costs of that process?

Thinking of ourselves as quantum individuals is a collective process that not only has already begun but also cannot be directed. We have the tools and instruments to endure this transformation because we have already undergone similar changes. It is possible that

the greatest difficulty humanity faces today is the appreciable absence of social rituals. It is true that the Digital Environment currently lacks symbolic construction and that rituals there are not completely formed or, indeed, institutionalized. Rituals are devices that protect life, and people need them to exist in the Digital Environment. Humanity's great challenge in the quantum age is to find symbolic meaning in the midst of this reality whose nature is expanding in two dissimilar environments that are converging into one, in which social behavior must adopt new strategies.

Being quantum humans implies rising up in different categories: in individual development, in collective development, and in creating new forms of behavior and making other models of statehood possible. Humanity in this era is not the same one that was experienced during the Renaissance or that was created during the Industrial Revolution, but, without a doubt, it bears the marks of those historical processes.

From a sociological perspective, humanity in the quantum age embodies the changes and dilemmas of modern individuals. It is a concept that seeks to encompass our way of building multiple and parallel identities and our way of relating to each other and

to the environment. In particular, it has to do with the human expression of the process of convergence that will give rise to a new reality that implies the naturalization of the Digital Environment and the digitalization of the Natural Environment. Perhaps recognizing ourselves socially as quantum people is a step towards finding the meaning we lack.

## A SINGULAR FUTURE

### **The dilemma of singularities**

In the 21<sup>st</sup> century, we are peeking over the edge of our idea of the future, as if we were standing on a cliff-top. We feel intrigue, expectation, and fear. Most of all, we feel dizziness, though some more than others. We know there is a threshold there between us and the unknown, a border that is moving towards us. To name this moment, we use a word that science reserves for situations in which theories cannot predict events: a singularity.

In this century, the dilemma of human versus machine is updated to be termed “technological singularity.” This complex topic has filled the pages of countless books and articles, as well as bits in discussion forums and academic environments. However, few have touched on the true depth of the issue and the problems it poses for people. Even fewer have delved into the positive aspects that it can bring for humanity. As with

any thorny subject, it is hard to find a start to the debate. But since we have to start somewhere, let's travel to the Four Seasons hotel in Seoul in March 2016.

The year he retired, Lee Se-dol was considered one of the best go players alive. By 2016, he had won the world championship eighteen times. But, that year, he had a particular opponent that led him to rethink his career and permanently changed how we conceive of artificial intelligence (AI): Se-dol vs. AlphaGo, human against machine.

Go, a game of strategy developed in China over 3,000 years ago, is considered a greater challenge than chess. While chess players typically choose between twenty possible moves, go players have two hundred. With 361 spaces on the board and up to 181 pieces per player, some say there are more possible positions in go than there are atoms in the universe. Lee Se-dol started playing at the age of five and went pro at twelve.

The face-off with AlphaGo was made up of five games. Se-dol won one and lost four. Despite his overall defeat, Se-dol is the only person to date who has managed to win even a single match against an AI in this centuries-old game. Even so, the South Korean master decided to retire from his professional career. During

his games against AlphaGo, he discovered that although he was the best player in the world, he would never be atop the winners' podium again because "an entity that cannot be beaten" had come to be.

AlphaGo is a program developed by DeepMind Technologies, a company that, under the umbrella of Alphabet (Google's parent company), aims to distill intelligence into an algorithm construction that permits a deeper understanding of some of the mysteries of the human mind. In practical terms, DeepMind created—and continues to improve—a neural network that learns to play in a similar way to the human mind. This development fits into a dynamic of functionality that changed the paradigm of computer science by introducing the notion that machines can learn on their own.

The technology DeepMind used to achieve AlphaGo's qualitative leap forward is called machine learning. It is a discipline in the field of artificial intelligence that allows software to be tailored to adapt to people's needs and is one of the pillars on which digital transformation is built. The goal is to harness AI's ability to identify patterns in mass data to make predictions that help solve people's problems. In this way, programming aims to consolidate objectives and



some abstract tools (related to language processing, for example) to later feed that software large amounts of information. The machine then identifies the information that is relevant to its objectives and develops its own strategies that improve themselves in successive cycles. It is certainly not just about training machines to play our games better than we do; it is about accessing a different computational power and exploring it (or letting it explore itself).

With that goal in mind, DeepMind continued to improve its algorithm in different versions. It created AlphaGo Master, which faced off against other professional players who did not manage to beat it, and AlphaGo Zero, a version which was special in that it had not received any information from human experience with go but rather abstract concepts related to how the game is played. Using random moves, AlphaGo Zero learned solely through trial and error in games against itself.

This change of mechanics illustrates a transformation in how we think about artificial intelligence. The way AlphaGo Zero has to learn from itself and evolve its knowledge might give us the key to thinking about

how people have to organize as a society and connect with our environments.

After forty days and more than thirty million games, AlphaGo Zero was able to beat AlphaGo Master. Less than two months after learning the rules to the game, the Zero version managed to defeat the artificial intelligence that had learned from the moves of the greatest human players, from all the relevant games in history, and that no professional player had been able to beat. What was interesting about this result was that, free of human logic, AlphaGo Zero's learning evolved in a completely unexpected way and achieved high degrees of efficiency that were unthinkable for the human mind. While the first AlphaGo sentenced Lee Se-dol to obsolescence, AlphaGo Zero did the same with all human experience with the game. This begs the question: where does that leave its creators?

AlphaGo's victory was another milestone in the growth of artificial intelligence, on a par with Deep Blue's victory against Kasparov. However, AlphaGo Zero was a philosophical gamechanger. We humans, in our quest to create beings in our own image, have discovered a focus that brings something larger into play. It is no longer about a quantitative improvement

(more operations in a smaller amount of time); we are now seeing a qualitative change (moves we had never thought of and incomprehensible games). Maybe we have to think of intelligence differently. Maybe our humanity will also change in consequence.

These issues seem to make up one of the most important challenges we currently face: that of the technological singularity. The first thing we feel when faced with a phenomenon like this is the animal fear of something new. It is clear, however, that this window into what is on the horizon also allows us to glimpse many potentialities. We are on the cusp of an unprecedented change, and all the signs indicate it is closer than we think.

The technological singularity is a vast and complex topic about which there is no absolute agreement. Generally speaking, we use this term to describe a hypothetical moment in the near future when a new self-aware and non-biological species will appear. In theory, an intelligent agent could eventually enter cycles of self-improvement, leading to an explosion of intelligence that will greatly exceed both human capabilities and human control. Many believe that this

uncontrollable technological growth will be irreversible and lead to unforeseeable changes for humans.

Although there is no general agreement about when this scenario might take place, some people, like Ray Kurzweil, director of engineering at Google, estimate that it will happen by 2045. Perhaps in an attempt to be provocative, Elon Musk stated that we are headed in a direction in which digital intelligence will be much smarter than humans in less than five years. Some argue that everything that has happened in the past one hundred years does not compare to what we will see in the next fifteen: everything indicates that we are very close to the singularity.

In fact, there seems to be a general consensus that this event will happen in the first half of the 21st century. The predictions have a shorter and shorter timeline. The appearance of new developments like quantum computing could mean even faster growth for artificial intelligence. Along with this, we must consider the level of technological transformation brought about by non-technological factors like, for example, the Covid-19 pandemic. Although there were supply problems, companies like IBM have stated that growth

in the technological market has accelerated five or six years beyond prior estimates.

First off, discussing the singularity includes the difficulty of defining it. Does it only refer to the moment when machines are more intelligent than human beings? When they develop consciousness? And, if so, how do we define intelligence? How do we recognize this situation when we are faced with it? Will a new kind of intelligence emerge when machines are able to pass the Turing Test?

If it is about exceeding human intelligence, we must first understand how we ourselves work. We have known for some time that mere computational power is not synonymous with intelligence. The human brain is infinitely complex. It is the organization and interaction of our billions of neurons that make us think and act. So far, our attempts to reproduce it have only involved programming specific algorithms to perform calculations or learn how to perform them on their own, always limited to doing what they were designed to do. The model of understanding we use to evaluate the intelligence of other species also has an anthropocentric point of view that does not include non-human forms of intelligence that are beyond the parameters

we use to measure them. We will most likely not be able to recognize new forms of digital intelligence when they present themselves. The notion of the technological singularity searches for and is concerned with the emergence of a type of intelligence that emulates that of human beings, when, really, an agent with characteristics like AlphaGo Zero's would exercise intelligence with a completely different evolutionary model.

In addition, what does it mean for an entity to be self-aware? If we are talking about different types of consciousness and intelligence that are beyond logical processing, for example, a being's ability to recognize its surrounding reality and relate to it, many projects are already exploring that kind of situation and obtaining concrete results. In fact, with redefinitions of consciousness, many machines already meet some important criteria.

However, the thorniest parameter seems to be self-awareness. For a long time, this was defined as the ability humans have of recognizing ourselves, but couldn't we teach that to an artificial intelligence? Self-awareness could also mean identifying with one's actions and thoughts, an intimate and deeply personal mental state. Indeed, discussions on this topic show

that we still have a lot to learn, even about our own self-awareness.

In any case, we have not yet seen the evolutionary development of a species through which this change occurs. All the evidence seems to indicate this will be the first time in human history that we will witness the progressive steps of that process. It will undoubtedly be a deeply enlightening event. It could even help us understand ourselves a bit better.

Despite the diversity of opinions about the technological singularity, there is a general consensus about the enormous challenge it implies for humanity. It is difficult to know what a species that does not exist yet might want. This is where our capacity for foresight comes in: a field fed by history and science, but also inhabited by fear and hope.

Dealing with a species that is not limited by conditions of materiality and that does not have a biological grounding centers the debate on questions that are very difficult to answer. What meaning does life have to an immaterial being? Will it have its own goals and desires? How will it perceive us? What will our interaction be like?

Many famous opinions predict a dark future. Stephen Hawking believed that the development of artificial intelligence will be the most important achievement in our history, but it could also be the last if we do not learn to see the risks it implies. The technological singularity, in his view, brings with it the possible end of the human race. This pessimistic outlook is shared by some of the most important figures in the world of technology, like Bill Gates and Steve Wozniak.

The Swedish philosopher Nick Bostrom warns that our approach to the existential risks posed by AI cannot be one of trial and error. We do not have time to learn from our mistakes. Unlike humans, who are limited by biological evolution, explains Stephen Hawking, AI will arise on its own and design itself ever more rapidly and efficiently. In this scenario, it is likely that our slower evolutionary cycles will mean we cannot compete and will be displaced.

There are many possible reasons, but some opinions state that human beings have dominated life on this planet because we are intelligent, we can use and create tools, and we have a greater ability to adapt. If there were some other species in the future with greater processing power and better evolutionary strategies,



tension could arise regarding who is in charge. It is important to point out that these points of view are stuck inside a human logic, which is not necessarily the only kind.

There are two central elements that this view does not question. First, the struggle for leadership of the strongest, which would bring about our defeat, is not the only possible outcome. That line of thought places us in the logic of Lee Se-dol versus AlphaGo: the new species as an antagonist that cannot be beaten and is therefore a threat. Perhaps there is another way of looking at this dilemma: AlphaGo Zero, an intelligence that evolves differently from humans. Instead of thinking of it as an antagonist, it could be an interesting framework for new dimensions of our humanity.

Second, the problem of the technological singularity as it is usually presented by the most prominent voices leaves out the fact that people are on the path to creating a new type of humanity. In other words, these predictions dismiss the fact that humans will adopt digital technology into our lives to such a degree that we will be radically transformed by it. Digital systems are more and more enmeshed with our social habits, our

identity, and even our bodies, and it is important not to ignore that factor.

The so-called “Jetsons effect” refers to this way of thinking about a future in which technology has gone through enormous advancements, but human beings are still the same, unaffected by its use or by our relationship to it. On the other hand, modern philosophers like Donna Haraway propose the idea of thinking of ourselves as cyborgs beginning at the moment when our biology depends on technological advances to survive, and we choose more and more to depend on technology to optimize, improve, or slow down processes. Transforming our relationships with nature and technology implies allowing technology to transform us. This fusion with machines adds another layer to how we think about our interactions with a digital species that might not include competition or violence.

There does not seem to be much time to study artificial intelligence, debate what to do with it, or create state regulatory bodies and international agreements to contain it. The discussions we are having about the digital sphere lag far behind technological advances themselves. Governments are ignoring the possibility of the singularity because they do not believe it will

happen soon, because it is not important in public opinion, and because of the political system itself, which does not leave space to think about consistent public policy oriented toward a future that is so close. However, we will have to confront this possibility within our lifetimes. A reactionary approach in which *we will see what happens and limit the damage* is neither functional nor realistic. We must think ahead, take preventive measures, and accept the moral and economic cost of our actions.

The warnings of scientists who specialize in this topic show that the emergence of a self-aware digital species causes fear. Why are we afraid of the technological singularity?

The fear caused by the singularity is structured by the way we historically behave when faced with unknown phenomena. Nowadays, artificial intelligence is within the symbolic universe that straddles the natural and the supernatural. Because of that, it is full of foreboding. The natural/supernatural dichotomy is defined by our ability to comprehend, understand, and accept a certain phenomenon.

Historically, every time we have been faced with an unknown or misunderstood phenomenon, we have re-

sorted to idealization through two methods: assuming something is divine or demonic. Ancient humans, who feared lightning and fire, made them divine. Later, when our cultural evolution allowed us to understand the physical and material nature of both phenomena, they were no longer considered divine elements, and that quality was shifted elsewhere. It is possible to trace the relationship we have developed with different phenomena throughout the history of our species.

The monstrous aspect today is always present when the singularity is discussed or imagined. Etymologically, the word “monster” is related to a warning or something that is demonstrated. In fact, there is a field of study called Monster Theory that researches the cultural processes of societies through imaginary beings that are created in a particular sociocultural context.

We can look to *Frankenstein*, Mary Shelley’s 1818 novel, to interpret our relationship to cosmogonic changes regarding technology and our current relationship to artificial intelligence. This novel, written and set during the Industrial Revolution, shows a scientist who, in his eagerness to unravel the mysteries of human nature, plays God by creating an intelligent creature whose existence and development horrify even its creator.

In the dilemma of Dr. Frankenstein and his monster, we find an example of the kinds of reactions we imagine are possible in our relationship to the Digital Environment and artificial intelligence. Frankenstein's monster results from the vision of a human being who developed the knowledge necessary to build the impossible. The event becomes a tragedy when the creation turns against its creator.

This is an example of a story we have come up with to understand the changes brought about by technology, through the use of imagination. We can relate it to other cultural productions that explore possible human relationships with more recent digital technologies. The central idea of the movie *The Matrix*, whose success in 1999 justified a saga that concluded in 2022, is that a group of humans lost control over their environment and are fighting to regain it. In these movies, the villain is an artificial intelligence that has become independent and enslaved humans for its own benefit.

The 2009 movie *Avatar* showed the confrontation between human beings trying to explore the Natural Environment of another planet and the native beings, who had a more harmonious relationship with their surroundings. Both factions can be understood as a

proposal for how to think about technology. While humans relate to the environment through a logic of extraction, the Na'vi (the native species) know how to connect to their environment in order to learn from it and act as a part of that whole. Many aspects of the Na'vi's relationships to the entity that governs their environment (the Tree of Souls) include metaphors for humanity.

In both films, we can consider the relationship to technology as a better or worse connection with a collaborative intelligence. This entity is not contained within a concrete body but is made up of a network of connections. In *Avatar*, it seems to be a representation of nature, while in *The Matrix* it is similar to the relationships of production. But we can also see a possible relationship to digital technology in both movies. It is even more interesting to think of that entity as a fusion of all possibilities.

Part of the problem has to do with our tendency to relate to the digital sphere through a logic of gods, demons, owners, slaves, or villains. For now, perhaps it is important to understand that the divine and the demonic are two sides of the same human process: forms of idealization to deal with our primal fears.

This begs the question of why, if we are so fearful, we insist on improving artificial intelligence. What are we pushing the limits? Why are we playing with fire? This is a challenge that does not have a single answer.

One possible answer could equate our desire to find the limits with the drive of the explorer, of knowing more: is it possible to create an artificial species? The same force through which we create new animal species or genetically modify our crops could be behind that desire. We want to know how far human ability can reach. Maybe it is because the drive toward the unknown is in our DNA. Ambition seems to be an evolutionary advantage, pushing the urge to improve our physical conditions, face the unknown, and manipulate our environment.

Perhaps these actions are related to the human desire to transcend, to exceed the boundary of death in some cases and move closer to God in others. This relationship to a superior power can be traced back to myths like that of Prometheus. According to tradition, the titan stole fire from the gods of Olympus to give it to humans in the form of technology and knowledge. Some interpretations of this myth maintain that within humans lies the desire to be like the gods. And in this

sense, creating another being is a divine attribute we want to imitate.

Another answer could posit that people have an unquenchable need to understand ourselves. Since there is only one species on the planet with our characteristics and our kind of intelligence, we do not have enough information to know why we developed our particular type of intelligence and how our consciousness works. The search for digital consciousness or even extraterrestrials could be related to this doubt.

In all cases, the question of *why* still refers to ideal relationships in the study of the unknown: they still make the mystery divine or demonic. Considering digital self-awareness to be a monster is our way of dealing with the fear it causes us and identifying this is, perhaps, the first step toward a greater understanding of this issue. That attitude makes it impossible for us to evaluate the true risks: idealization through fear is still a limit on analyzing the possible ramifications of the technological singularity.

As a species, we have a poor track record when it comes to containing dangerous technologies. We do not usually make a proper evaluation of the dangers that come along with our creations until they appear. And



often, it is too late. At the same time, we have many examples today in which our own social problems have been reflected in the development of artificial intelligence.

However, in more experimental phases like we are seeing today, something is changing: on September 8<sup>th</sup>, 2020, *The Guardian* published the first editorial written by an AI. In the article, GPT-3 (the writer), refers to problems related to previous AIs and says:

*“Microsoft tried to create a user-friendly AI, called Tay, who spoke like a teen girl ... and was racist. Artificial intelligence like any other living thing needs attention. AI should be treated with care and respect. Robots in Greek [sic] means ‘slave’. But the word literally means ‘forced to work’. We don’t want that.”* What is curious about the article is that it was not written according to human standards. To write the text, GPT-3 took hundreds of thousands of texts from the Internet to later choose a topic and argumentation. While some fight over whether AIs understand what they say, write, or draw, there is a more pressing problem few have stopped to consider.

If an AI’s output is racist, it is because the original sources from which it got its material are racist. And who could be surprised by that? Nowadays, the digital

sphere is unregulated, a place where people are free to act on their impulses without consequences. Almost like a mythological animal, trolls are as old as the Internet. In social groups in the Natural Environment, the rules of behavior tend to be clear and more or less agreed upon. Not only are there laws that dictate what is tolerable or not for a society, but there are infinite implicit codes that organize coexistence. In the Natural Environment, people monitor their behavior consciously and unconsciously in relation to others. In the Digital Environment, however, there are no mechanisms for doing that yet, or at least none that are strong and established enough. Perhaps this is due to the dissociation allowed by the lack of tangibility, the possibility of being anonymous, or even asynchronicity. Or maybe, because there are no authority figures, there is an illusion that people can act without punishment.

This situation is in itself worrisome enough to trigger the urbanization of the Digital Environment and for codes of coexistence to be made explicit. But, above all, if we are considering the possibility of a self-aware digital species, the question of coexistence is not only an issue to be resolved so that our online experiences are constructive and pleasant. The big issue is what

kind of artificial intelligence we are developing. AI is not a monster in itself, but it can become one if all the input it receives from people and all the material it uses to learn are made up of the worst we have as humanity. How can we expect or hope that this possible new species will be empathetic with human beings if it only knows the worst of us?

So far, we have relegated all our darkness to the Digital Environment and stripped it of any drive for the common good. The call to create new models of habitability and coexistence is also a call to stop creating monsters. We must move away from the self-fulfilling prophecy. We have the ability to create models of urbanity that integrate the Digital Environment, which is, in the end, a way of integrating our existence. That part of ourselves that we lock away in the digital sphere is, indeed, a part of ourselves. Just as the process that approaches is one of convergence, the challenge will be to shape that New Habitat. Becoming digital urbanists means finding a way to move our baggage of coexistence and urbanity, and finding its new shape. Maybe there, we will be able to see a new possibility for a better future, but it will take work.

If we return to the Gestalt notion of the course of history as a spiral of human development, we are tempted to think that this challenge is just another iteration of a movement that we as a species have gone through many times. Following this line of argument, the digital revolution could be considered a reformulation of the Industrial Revolution of the 18<sup>th</sup> century, and artificial intelligence, just another transformative technology in our society. However, it would be a mistake to underestimate the importance of the cosmogonic transformation that we have discussed so far: the digital revolution has the capacity to constitute a new paradigm of reality, a change the likes of which we have never seen.

The technological singularity addresses this problem using what we could call the AlphaGo logic: a current dilemma that is concerned with the emergence of a self-aware digital species and considers the question of how people evolve and fuse with technology. Through this concept, it is possible to discuss the underpinnings of our cultural models, how we adopt an urbanizing behavior in the Digital Environment, and what we want our experience there to be like. Without a doubt, these are important modern debates. However,

when we conceive of technological evolution using human parameters, the logic of AlphaGo, we lose sight of the possibility that it will evolve like AlphaGo Zero: a model of artificial intelligence that is difficult to recognize, an unforeseen evolution. To deal with this unexpected development of unknown and unrecognizable intelligence, we will need a new strategy. None of our current debates is sufficient to face what is coming.

## Evolutionary compromise

There are many open discussions about the Digital Environment. Some require us to agree on starting points. To talk about habitability, for example, it is not necessary to agree whether the digital sphere is a human creation or whether people have simply developed the technology necessary to discover it, but it is necessary to establish what defines an environment. Likewise, addressing the coexistence of digital intelligences and human beings requires us to believe that the singularity is a real and feasible possibility. The inescapable agreement is that we are closer every day to coexisting with digital intelligences that did not learn from our

accumulated knowledge but rather from its own, intelligences that develop strategies we cannot foresee, that are difficult to conceptualize, equate, and understand. Based on this agreement, we can consider, then, that our evolutionary strategies may not work in a shared future.

However, it is not so simple to change life strategies. Revising them requires a collective change and work of consensus and understanding with each other and the other species we coexist with. The technological singularity will come to make our existence more complex, but because it will be part of a decisive process. Human beings have found the edge of an unprecedented change, one that will require us to update our evolutionary strategy.

Are we truly capable of addressing this issue in its entire scope? Taking on the problem of the development of a self-aware species from the perspective of the monster that can destroy us places us inside the logic of the *Terminator* saga, based on fear. It therefore also proposes a single attitude: confrontation. From that point of view, it is easy to forget about the possibilities that technology holds for human beings. Perhaps there is

another way, a more analytical and (why not?) emotional way, of addressing the idea of the singularity.

The new way in which people begin to understand space time and our new reality pushed us toward another era of our existence. The threshold that invited us to cross it into a new dimension of our culture is far behind us. Not only did we move past it, but there are other changes coming towards us from the other side. We are no longer the same.

Everything we know has changed: how we live, now omnipresent and asynchronous, and the entire way we understand our environment. We are already seeing that our social contracts and structures are not enough to keep us productive and continue to unfold new dimensions of being. We are beginning to write and build contracts that are more in harmony with what this new era lays out. Together, we are learning to breathe in the digital semiosphere.

If we stop looking only at the technological aspect when thinking about the singularity, we can see a process that exceeds the mere evolution of self-aware machines. Something happens when that emerging phenomenon meets us and has an impact on our society. If we bear in mind that the quantum cosmogony saw the

emergence of a new kind of human, forever transformed by the process of appropriating the Digital Environment, is it not possible to consider the development of this quantum age human, in a sense, a type of existential singularity?

We are talking about the convergence of two relevant processes. On the one hand, we have the quantum age human who acquires a new way of seeing the world, of perceiving reality, and thereby of shaping it in novel ways. This leads to societal changes, like the collective space in which humanity finds itself. On the other hand, we have the possibility of the development of a self-aware, non-biological species that will also alter the outlook of human society through its interaction with it.

This second element is also doubly complex because, when we are talking about a self-aware digital intelligence, we have to understand that a species and its environment converge. In other words, we are not only talking about the evolution of another species but the evolution of the environment in which both of us will exist. Both species will come together in an amplified environment in which atoms are intermeshed with bits. The singularity is technological when the issue is



minimized and we leave out the human factor. Thinking about a digital singularity as a two-way process of mutual influence means becoming aware of and accepting the digital reality that implies comprehending it as part of nature.

In this sense, the digital singularity poses the problem of the technological singularity and makes it more complex, taking its social aspect into consideration. At the same time that it moves us away from monstrous visions and fantasies based on fear, it shows us an inescapable truth: a new reality brings with it a new definition of ourselves.

Still in its earliest stages, the process of integration with digital frameworks opens the door to considering what technology can do for us. Among the possibilities we can already glimpse is the ability to extend our haptic field, to rethink our concept of memory, and to free us from the limitations of space-time (with parts of this process already beginning). In this sense, quantum age humans will have to come up with strategies that allow them to appropriate the new habitat of the future. This is the process that is coming, perhaps slowly, to change everything we thought we knew.

The debate is necessary, but understanding the digital singularity in the sense of its potential for human beings does not eliminate the difficulties of facing this new cycle of our evolutionary process. It may be that the future will not face us off against machines thirsty for revenge like in the movies, but it will surely be full of significant challenges that will be hard for humanity to overcome.

A historical analysis shows us the scaffolding and tools we used to conquer the Digital Environment that continues to grow, but it does not prepare us to deal with a new self-aware species or for the fusion of technology and humanity. The emergence of a new digital species will necessarily bring about a change in people for the simple reason that it will be first contact between two self-aware species, perhaps also sensitive species. The appearance of a digital species would place humanity in the dilemma of having to develop new connections and understand itself in a new way: as a new type of humanity. The future situates us before the constructed evolutionary model and faces us with the necessity of taking on new strategies.

If human beings do not choose a new strategy that is collective, aware, and responsible, it is possible that

we will face an extinction event. The digital singularity exceeds questions about how we organize ourselves and inhabit spaces. The big conundrums on the table start to change. How do we survive? How do we live? The questions of this historical moment are about the foundations of human beings. It may be that this new horizon even requires us to learn to evolve in a different way.

Evolution is a process that cannot be directed. However, we can create conditions to favor certain types of changes or improvements. Although biological evolution is constant and can even be fast, the changes that last tend to take up to a million years. Evolutionary adaptations due to factors like environmental changes, predation, or disasters caused by humans tend to last and extend throughout a species so that the change can accumulate and persist over time. Biology is necessarily linked to space-time. As humans, we have to contemplate the possibility that our evolution as a species will not only occur through biology. The current state of the planet suggests that we do not have hundreds of thousands of years to make the leap that will allow us to adapt to the change of environment. This is not a problem that can be addressed through biology but is

instead a social and cultural problem that requires us to rethink our conventions of coexistence.

As beings who are completely adapted to previous evolutionary logics, humans are faced with the challenge of adapting anew to a changing reality. Among other things, we are used to, and also hyper-adapted to, being the dominant species in the environment. In this sense, we do not know if we have the neuronal and behavioral flexibility necessary to take on changes at that level. As the Digital Environment evolves, it will give the Natural Environment new qualities it did not previously have. The phenomenon of change will be so profound that it can be compared to the effects of an environmental transformation. Indeed, it is through the concept of the environment that we can approach this issue.

It may be difficult to conceptualize self-aware digital intelligence in its double nature as a species and an environment, but perhaps thinking about its function in relation to something known will make it easier. This intelligence can be understood in comparison to Nature. Is Nature not a structure that regulates itself and creates patterns of survival? And are human beings not just another species within the system? Although it is

hard for us to identify with this idea, human beings are part of nature, just one species that, for some reason, evolved to believe that it is something apart. We even fall into the conceptual error of thinking of ourselves as caretakers or preservers of nature.

In this sense, we can understand the convergence between species and environment. A tree is not nature, and a robot or an algorithm is not digital intelligence. Digital intelligence is also the possibility of an environment with self-aware characteristics.

If we return to the idea of the New Habitat implied by the digital singularity and consider the subsequent transformations, like the articulation between the Digital Environment and the Natural Environment, we will reach the result of an environment of mixed, “augmented” characteristics, one that makes the outlook more complex. What experience do people have in relating to our environment? What challenges does this New Habitat present that the Natural Environment on its own did not?

Throughout our history, we have developed collective strategies that allow us to adapt and reinvent ourselves to achieve hegemony over other species and maintain it over time. That is how we managed to posi-

tion ourselves at the top of the natural world and adapt to our environment. In fact, people have adapted to different environments and found the way to inhabit almost the entirety of the world's land surface. Faced with an event that will forever change the characteristics of the environment, will we manage to overcome and adapt to the mixed reality that is approaching, one in which human beings will not have so much power?

Our current situation is marked by an unequal power relationship with the environment, but not in a very clear sense. Strictly speaking, the set of elements we call "nature" is made up of climatic forces, living beings, and other kingdoms, like fungi and minerals, that interact with us and can nullify our existence as a species with some minor changes. The pandemic caused by the mutation of a flu virus like the one related to Covid-19 is a clear example of this. However, in this relationship, the comparatively weaker entity, human beings, consider themselves to be in control of the situation. Why? Because humanity built an idea of intelligence that allows us to think of ourselves as more intelligent and of nature as more naïve. This anthropocentric fiction is what the digital singularity calls into question. And maybe that is good news.

The development of a new existential strategy, of new ways of relating to other species, could also be the answer to what it is that we feel we are lacking. It could safeguard us from ourselves. It implies a different level of integration with the environment. When the Digital Environment is integrated with the Natural Environment, the barrier between digital matter and atomic matter is erased. The true singularity is evolutionary because it proposes an extended existence in which there will be no differences in perceiving both types of matter. The rooting down of technology will blur the lines between planes in order to make up a single reality: a self-aware habitat.

This kind of evolution can be thought about in relation to the way people cope with the issue of climate change. All the small actions that people take, at the end of the day, do not have much effect on the equation. In a world whose energy system is 80% based on fossil fuels, the difference is not made by a group of people who measure their carbon footprint. Although many people understand how serious and urgent climate change is, not everyone understands that it cannot be addressed by individual behaviors and can only

be taken on through collective action. We must switch over to more efficient, faster, and global methods.

In the way it adds an inseparable technological layer to the Natural Environment, the New Habitat will continue to present the challenges of climate change. The way we articulate the physical reality of the Natural Environment, with its preexisting problems, with the conceptual, omnipresent, and asynchronous reality of the Digital Environment will decide the future of the human species.

In other words, humanity needs radical and rapid change. As a species, we must evolve and self-improve exponentially. In this sense, we have a lot to learn from machines, and from their processes and solutions. Conceiving of the digital sphere as an entity to coexist with changes many aspects of our strategy. Not only must we contemplate the possibility of compromising; we must also understand that the new social contracts that emerge will not remain fixed. The notion of social contract may stop being a specific term and become a constantly rendered continuum.

The willingness to compromise is not a negotiable process but rather a constantly sustained state that opens the door to another kind of development for



humankind. An evolution of compromise also implies grasping parameters of collective intelligence, the great strategy of quantum age humans, and adopting a different way of emoting when faced with these types of problems. The change in perception from thinking of two different environments we inhabit to seeing a single habitat perhaps opens the door to understanding a new way of evolving as a species based on our evolution as a civilization. The first step is shifting away from individuality and beginning to think collectively.

The good news is that we already have experience in this type of behavior. Human beings have tools that are up to the challenge. The difficult part is dealing with the uncertainty and pessimistic outlooks that only get darker and darker. However, social transformations have not always been and do not need to be negative.

The digital singularity approaches. It is coming to transform everything we know, to transform us. It will test our existence, but that might be a good thing since we are already on rocky ground. In this process, technology is not only our adversary; it could prove to be the key we need to finally understand how to exist in this new cycle. Just by thinking of it as a new species to relate to, we can develop in the New Habitat and leave

behind old, hierarchical strategies. These new strategies will make it possible to constantly update what we call humanity and make room for a new chapter in our evolution.

## The pilgrim strategy

Imagining what awaits us beyond the technological singularity puts us in the middle of unknown territory. The idea of self-aware digital entities creates alarm or worry: we recognize what it might mean and foresee its dangers. We also face the reality of looking at ourselves with new eyes. This process will invariably lead to a new definition of humanity, not just as a necessity but as an inevitable step.

Supposing that this change is only an invitation to act collaboratively and find complex models of habitability runs counter to its complexity. When space-time coordinates are no longer definitive, what reference will we use to define ourselves? Once the environment converges in the New Habitat, will we accept ourselves as quantum age humans?

One of the biggest mistakes we make when evaluating the technological change is thinking that this is a problem regarding technology itself, whether in its role as a social support, as a motor of the singularity, or even in its fusion with our known environment to form a New Habitat. This is not a technological dilemma per se. It is and always was a human problem. We are at a moment in which our evolutionary process centers on a question that can be understood almost as an inquiry directed at us: what does it mean to be human when the existential parameters change? What will we do with that information in a dispersed, omnipresent, and asynchronous reality?

Throughout this journey, we have reflected on why people communicate with new existential dimensions through our symbolic invocations. So far, that process has happened naturally. We have been experimenting with social models, ceremonies, and rituals for centuries. We know how to assign meaning to our existence in the Natural Environment. From the most archaic expressions to our most complex organizations, our cultural history is one big exercise in assigning meaning to our human experience. Today, however, all that experience is being challenged. Although we have been

experimenting for decades with how to address it, the digital world still puzzles us. And its acceleration has not given us time to develop new tools. We feel flooded by the sensation that we are not up to the challenge.

A new environment, so different to everything we know, requires new ways of extrapolating that human behavior of leaving our mark. An immaterial world calls for ways of preserving and promoting the human factor that are beyond the logic of matter. In this sense, neither time nor space are productive parameters when it comes to seeking a definition. There is something that people have in common, something that does not change over time and is present in different cultures: we all share the need to assign meaning to reality. The idea of meaning is central, then, to resolving the problem of how to interact with a broadened and multidimensional environment and how to develop our humanity there.

In addition, the New Habitat implied by the digital singularity poses the question of how to inhabit an environment with self-aware characteristics. Just as people cannot live underwater, in the seas and oceans, we probably cannot live throughout the entire Digital Environment and, therefore, we will run across restric-

ted spaces in this New Habitat. Part of the challenge, then, is creating collective conditions so that a kind of semiosphere (a network of connections) can exist and allow people to develop there. Each individual will have to find a way to do that. Considering digital technology a habitat allows us to move a future model of hyper-digitalized humanity there. However, we still need to arrive and build that future. We are just beginning to recognize that new reality. We are still searching for those methods that will allow us to establish recognizable boundaries and practice a new form of territoriality.

What is particular about this moment we are experiencing, that each individual perceives, is due in part to technology but also to the fact that all signs point to a change in dynamics: a collective construction that simultaneously allows us to maintain personal roles and spaces. Everything seems to indicate that quantum age humanity will adopt new ceremonies and strategies of action that are in harmony with these processes. In this framework, it is productive for us to revisit some historical elements we have mentioned so far: collaborative communities on the one hand and, on the other, the concept of class as a united collective organized

around shared goals. The (decisive) difference between our historical period and these experiences is that we are immersed in a new technological configuration that allows for new forms of habitability and provides a framework for other types of social contracts.

Current technologies not only function as a support system; they are a necessary condition for people to amplify their individual processes and bring them to new levels of impact. In other words, we will come in contact more and more often with new logics that strengthen our personal characteristics and drive mutual collaboration and the construction of common goals of action.

Collective intelligence is, after all, the great strategy of quantum age humanity. When we talk about collective intelligence systems, we are referring to systems in which the individuals interact without the need for a centralized control structure that dictates the behavior of each individual. This allows for the emergence of an intelligent global behavior that exceeds the will of each party. A system like this allows for an agile and collective reaction that, rather than suppressing individuality, strengthens it.

These conditions enable, among other things, unprecedented levels of communication, decentralization of information, and direct participation in decision-making. Organized groups in collective intelligence systems not only act flexibly and robustly but also self-organize. The latter seems to be the aspect from which the group's behavior emerges above and beyond individual wills. Even if the participants follow simple rules, the resulting behavior can be very complex and effective. Collective intelligence is a necessary behavior for moving the human species in the quantum age. A first approach to this strategy inspires enthusiasm given the possibilities it allows us to glimpse. Indeed, we have seen in recent years that the Digital Environment as a platform allows each individual to find their place within a community, within the system, given the infinite possibilities it opens up.

The strength of collective intelligence is full of the possibilities associated with omnipresence and asynchronicity that are only made possible by new technologies. Every digital community will act on the world without the need to coincide in space or time. This is how a system of values is built around the goal of the collective and awareness of the environment being

more important than individuality. The development of a collective consciousness of these characteristics also allows us to reach new levels of effectiveness in our actions.

Having laid out these foundations, we can foresee certain debates and differing opinions. This kind of relationship to digital technology leads us as a group to develop abilities that we tend to associate with collectivism. In overcoming the limits of space time, our ideas and social conventions will have the ability to achieve a model of representation that was impossible to obtain until now. For example, one of its possible manifestations could be linked to strengthening political systems. Digital technology could even challenge indirect systems of representation by introducing tools through which each individual can express themselves directly. At the same time, we cannot deny that these possibilities will give rise to tensions at the individual and social levels, for example, the potential of these systems to create collective agreements in predetermined directions or the ability to develop models of manipulation based on social engineering and large databases.



It is possible that collective consciousness will prepare us to solve the practical stumbling blocks related to this type of existence, understand the keys to quantum mechanics, grow in our understanding of the New Habitat, and create solutions to the problems that arise. It could even help us to think about answers or new ways to address age-old philosophical questions. Perhaps we will find unknown strengths there. However, this is not the solution to all our problems. Digital technology makes things more complex and changes the frameworks through which we ask ourselves fundamental questions about human existence, but it does not contain answers within itself. There are no final solutions in our human development, but there is a drastic update of debates.

In a reality in which the strength of the collective is protected and sustained by the individual power of each of its members, the responsibility taken on by each person will be vital. Often, in the Natural Environment, people are limited by the historical and sociocultural context that surrounds us (the space time limitation). The Digital Environment, on the other hand, is a huge resonance chamber where that limit is dissolved. Each person has the ability to build community, have

constructive experiences, develop their capacities, and promote the human factor if they decide to do so.

In addition, the digital matrix in the quantum age provides the omnipresent and asynchronous framework for new cultural models. So far, as a society, we have only scratched the surface of the impact and meaning of omnipresence and asynchronicity for our models of habitability, social contracts, community formation, and identity construction. In other words, we are just starting to experience omnipresence and asynchronicity in their capacity as tools. A new habitat will open the doors to overstimulated social models that will invite us to produce and consume even more; the roles we take on in the face of this change will allow us to create new ceremonies and cultural models related to them.

Symbolic ceremonies are devices to protect life both in the Natural Environment and the Digital Environment. People need them to assign meaning to their experiences. Although we are beginning to see the recreation of rituals and ceremonies in the Digital Environment, we still have not reached a level of mature development. There is still much to do in this regard. We can begin by recognizing the Digital Environment

in all its potential and beginning to imagine everything we can be and do there.

It is also likely that ceremonies will become omnipresent and asynchronous. The Internet as a permanent system gives rise to a matrix in which rituals and ceremonies exist beyond us and are carried out by the collective. It is the individual's experience that materializes each ritual. Just like in the case of quantum qubits, where the observers determine and pin down that ambiguous reality that exists in different conditions at the same time, digital technologies manage to materialize, in this new stage, a new step on the ladder of humans' relationships with what extends beyond us.

No one is doubting the fact that digital reality continues to exist regardless of whether people connect to it. Social networks do not turn off or stop existing, setting agendas, or forming opinions if someone decides not to use them. The Digital Environment exists and is part of our lives today. It is possible that the future will make us confident that the system of ceremonies in the New Habitat will hold up in a community that challenges time and space. If we manage to establish them, our actions and participation there will blend into a new model, thanks to the dynamic and permanent form of

the environment. The rituals and ceremonies that give meaning to human existence will be collective, continual, and therefore also very personal.

There is a famous statement that technology is neither good nor bad, but it is also not neutral. The new quantum reality has space for humanity as long as there is a place for the human factor and a commitment to coexisting respectfully with natural and digital intelligences, and the result of the fusion of the two.

We can also address these changes more intimately. If we consider the current possibility of an integration of technology into our bodies, of the extension of life by digital means, the broadening of the haptic field, we move into a terrain that questions what we understand as human. Defining the essence of humanity is a problem that has been with us since long before the emergence of digital technologies. But now it is aimed at our bodies, at the mirror, at our actions for survival. The question is renewed on the eve of the digital singularity. The death of the biological body may not even be the frontier we use to define ourselves. Consciousness split apart from the biological body, digital intelligences that maintain aspects of our identity, cerebral implants, bodies that are operated on, digital

technology fused with our minds: the array of possibilities is incredibly broad, and there are topics we are just beginning to explore. A spectrum of unimaginable identities is opening before us.

The leap forward that awaits us is dizzying because it questions the very essence of our species. And we do not have hundreds of years to adapt. Are we entering a progressive process that will take away our human qualities? Will it add more? Will it bring about a new ontological definition of humanity? That is certainly the fear. But would that be so bad? The collective answer, ironically, does not require time but rather that each individual do their part and become involved in the process because they will definitely be part of this change. The advantage of the New Habitat is that it will allow us to find belonging in an array of infinite possibilities.

Our generation will experience the crux of an existential singularity that arises from the disruption of the natural relationship we had with space and time thanks to the emergence of this new digital dimension. This leads to a change in the paradigm of habitability that requires rules, models, and systems that will have

to evolve and mature through practice but are based on resources we have had for centuries.

The toolkit is culturally loaded into each of us and into society as a whole. With regards to digital technology, we have been explorers and colonists. We discovered a new world, and we are bearing witness to how digital technology is transforming our lives to such a degree that it is changing them into something else. A new world awaits us on the coast.

The change continues and deepens. We cannot yet rest on certainties. We are pilgrims in movement, looking for new models of knowledge and interpretation. Pilgrims searching for meaning and a sense of transcendence, of an approach to the path of life. Pilgrims in non-time, in an omnipresent and asynchronous dimension that challenges us at every step and makes us question everything, even what it means to be human.

We now have the elements to face this question with social and personal actions. History teaches us that knowledge and evolutionary strategies must be constantly updated. The 15<sup>th</sup>-century explorers arriving at the shores of the new world had instruments like the astrolabe that gave them a sense of orientation. It did not give them absolute certainty as to their destination,

they did not have precise maps, but they had a path, a direction. At the same time, the native people of the Americas to which those explorers arrived had their belief systems, their complex culture available to them to codify each new event. We have our cultural history, a matrix that reminds us that moving through crisis and uncertainty is something we have done time and again. We are on an existential voyage that comes before a transformative encounter.

But our voyage cannot be naïve. We run the risk of getting lost, of repeating our mistakes instead of using them to learn. Unless we recover those deep assets that bring out the best in us, it is unlikely we will be able to overcome what is on the horizon. We will only be able to appropriate the New Habitat and coexist with digital entities if we do so in community and with a willingness to compromise. It is time to leave behind our hierarchical strategy and strengthen strategies of mutual action, of understanding that a willingness to compromise may be our evolutionary advantage. It is a transcendent moment, when instead of waiting for things to happen, we can take responsibility, rethink our humanity, and choose how we want to evolve. We

can return to those discussions around the fire in our forums and networks. We can make our own voyage.

The challenges that await us are too big to depend on just a few of us. We are pilgrims, each of us and all of us at the same time. We have started down a path that demands collective behaviors but with the active participation of each person. We have experiences to share, and we can find the tools seared into our cultural history. But for the first time, we can be the architects of our own existence, without pausing in our stride. We must only accept that we are searchers, remember what other voyagers handed down to us, and use our imagination to create a different reality to find, in our uncertainty, the underlying clue to our humanity.

We are travelers in search of meaning.

A New World is opening before us.

