THE DARK ZONE. PHILOSOPHY OF THE METAVERSE

THE CULTURAL LOGIC OF THE ALGORITHMIC SOCIETY

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METAVERSE
IMMERSIVE TECHNOLOGIES
CULTURAL LOGIC
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The concept of the Metaverse, originating from Neal Stephenson's 1992 novel *Snow Crash*, has transitioned from a speculative fiction idea into a complex cultural and technological reality. This paper explores the evolution of the Metaverse as both a digital twin of the physical world and a new 'cultural logic' permeating various sectors such as gaming, education, and commerce. By integrating immersive technologies such as virtual reality, the Metaverse offers a blended "phygital" environment where users engage in activities ranging from social interactions to commercial transactions, seamlessly merging physical and digital realities. This study delves into how foremost technology leaders have influenced the Metaverse's trajectory, focusing on transforming it from a gaming interface to a broad digital ecosystem. We analyze the role of blockchain technology in facilitating a network of interconnected spaces that allow for the preservation of digital identities and assets across platforms, highlighting the challenges and potential of achieving interoperability. Ultimately, this paper presents the Metaverse as a paradigm shift in digital interaction, suggesting future directions where digital and physical realities might further converge. Through a comprehensive review of technological advancements and cultural shifts, we discuss the implications of this convergence for future digital interaction frameworks and societal norms.

ABOUT METAVERSE

The interest in the Metaverse was born at the turn of 2019 and 2020 when first the CEO of *Fornite* and then Mark Zuckerberg made several statements within a few months with the prospect of developing this technology preponderantly. At the end of 2019, *Fortnite*, the famous game, points to the Metaverse as the horizon for technological development. The idea is to turn a game into a real participatory environment where people are not just players but users who can communicate, exchange information, and participate in events such as film premieres, concerts, etc. *Fortnite* looks at the precedent of *Second Life* without, however, forgetting its gaming origin. The idea is to create a real-world where those who enter can take advantage of different functions and practices, thus customizing their presence and experience to the maximum degree.

The statements by *Fortnite*'s executives were followed by Mark Zuckerberg's now-famous press conference announcing the transformation of his holding company into Meta. Meta's goal is to create a Metaverse and, thus, a uniquely immersive, participatory, interactive, and shared environment in which *Oculus* buyers and Facebook and Instagram subscribers can be. In short, users participate in the world the young American entrepreneur created.

AT THE ORIGINS OF THE METAVERSE

The term Metaverse first appeared in 1992 in a science fiction novel attributable to the cyberpunk genre entitled *Snow Crash* (Stephenson, 1992). The author is Neal Stephenson. It is interesting to start right here, from how Stephenson describes this Metaverse: firstly, it is a sphere, and thus an apparent reference to immersive devices such as Virtual Reality that produce, precisely, 360° spherical images. Secondly, the sphere refers to the Earth and thus to the fact that

the Metaverse may represent a 'digital twin' of the physical world. It is a world of 'solid', three-dimensional images created in high-resolution computer graphics. Moreover, it also has sound. You have to use special glasses and headphones to access it.

The sphere is crossed by a vast road of lights continuously travelled by millions of people. By protocol, the length of the ' Street ' is 65,536 kilometres, so it is longer than the circumference of the Earth. Constructions of different types and nature jut out onto the Street, defining the Metaverse with distinct neighbourhoods, such as the Hackers'. The model is Las Vegas, both for its glittering, phantasmagorical and spectacular appearance and for the excessive aesthetic heterogeneity of its buildings, which range in styles and ornamentation that are very different in nature and age. On average, the Street is occupied by a population roughly double that of New York City. The Street is one hundred metres wide, and a monorail passes through the middle. The people who live in the Metaverse are avatars, the product of software that generates audiovisual bodies capable of dwelling in the Metaverse. Just as one can buy objects, assets and gadgets, one can buy facial expressions and aesthetic retouches of one's avatar to look more and more like oneself, take on someone else's features, or improve one's profile. The whole world of the Metaverse revolves around gaming protocols: working, going to amusement parks, shopping, meeting people, and attending events, designed according to graphic, architectural, storytelling, and behavioural logic modelled in the world of video games. Some of the 'people' in the Metaverse are artificial intelligence programmed for different utilities but capable of learning and evolving. Every element of the Metaverse is also monitored, mapped and covered by sensors capable of perceiving and interpreting even the slightest changes in the inhabitants. It must also be said that this extraordinary construction has a 'solid' foundation in vast information and software capable of processing and controlling it. The power in the Metaverse is directly proportional to how much data

can be collected and how refined the models for processing them are.

Stephenson makes one last exciting notation about this fantastic creature: Being in the Metaverse changes and modifies cognitive processes. It assimilates software and neural structures, creating a unique environment synergistically fused with people. Moreover, it also defines a symbiotic system of human-machine relations capable of profoundly modifying people's knowledge structures. That is, it imparts a new logic.

... AND THEREFORE, THE METAVERSE

Starting from this description of the Metaverse, what is proposed here is an alternative interpretation whereby the Metaverse is not the sum of the technologies currently being developed within the so-called XR (Extended Reality) field, i.e. immersive technologies. The Metaverse is understood as a 'cultural logic', borrowing the concept from Fredric Jameson (1992/2015) and Alexander R. Galloway (2022). We can basically agree with Yuk Hui when he states that: "Scientific and technical thinking emerges under cosmological conditions that are expressed in the never-static relationships between humans and their environments" [my translation from Italian[1]] (Hui, 2021, pp. 27-28).

Relationships are never static, and thus processes, acts, actions and complex communication systems that Cybernetics had only tried to imagine. All this is 'Cosmotechnics', a system of values and relations generated in this dimension, furthermore, all the more so in the turn of the Metaverse that is rooted in action and processes involving the relationship between human beings and machines in environments that are hybrid (or augmented natural or enriched artificial). In this case, the emerging digital technology (at the intersection of XR, IoT and AI) that we can call the Metaverse represents the architecture and broader relational space within which

different uses, impacts, models and practices decline. Referring to the studies of Gilbert Simondon and Tim Ingold, Yuk Hui speaks of a theoretical field capable of reformulating the organic unity of technology and nature. Here, it is not only a matter of expressing a thought (Hui calls it philosophy) capable of realizing this task but also of identifying a panorama, a social and cultural horizon in which this unity has already been realized, basing its foundations on the sense of space and the act, action as a creative form, of thought, of communication of data generation.

Metaverse is therefore understood as a system of thought that originates within immersive technologies and that places people in a communicative dimension basically made up of certain elements and functions: immersion (being inside stories, inside communication flows, inside artificial or mixed environments), participation (the system is activated only after an evident and overt decision to enter the environment), sharing (each environment is a participatory platform), interaction (each environment adapts and reacts, not only to our actions and our crossing but also to our simple presence).

Metaverse means organizing communication by defining specific environments. They can be completely artificial environments (Myron W. Krueger's 'artificial reality' or Jaron Lanier's 'virtual reality'), usually realized in computer graphics, or rather in CGI (Computer-Generated Imagery) and developed by graphic engines such as Unreal Engine or, above all, Unity. Graphic engines have become famous for their use in the video game industry. However, little by little, they have become fundamental tools for cinema, television, and the Web, defining the most characteristic aesthetic imagery of our time (and evidence of this is the use made of them by famous contemporary artists such as Jon Rafman or Ian Cheng, or activist groups such as Total Refusal) and also the most widely used working system in the world of communication.

The first cue proposed here is that we can speak of the Metaverse as the 'Unity logic' that defines our time. In this way, we clear the field of two misunderstandings. First, the

Metaverse is not (only) the strange technological creature that Mark Zuckerberg, Apple, Microsoft and other high-tech companies are preparing. They have merely appropriated a term (circulating for a few decades) to redefine the corporate branches that deal with XR, i.e., the complex of immersive technologies such as Virtual, Augmented and Mixed Reality. Secondly, the Metaverse is not there to come; it is well present, and it already has its history made of attempts, proposals, experiments, and the use of different technologies. It has a history of its own, which was born in the world of video games and has colonized different fields over the last decades. Moreover, with the development of XR technologies, this field can (and is) define a new cultural status for contemporary technologies.

The Metaverse is thus a system of thought and relations that rests on different technologies, often used together or, at other times, hybridized with each other. It is Stefan Sonvilla-Weiss who precisely indicates the underlying communication system and social model that defines the logic of the Metaverse:

> In this global connected info space where there is no longer any ontological difference between the real and the virtual, novel forms of human-machine interaction will impact tremendously and prevasively on almost all life issues. Intelligent agensta, augmented eyewear, and virtual world avatars and habitats are only a few existing examples that signal the forthcoming changes in the networked societies. (Sonvilla-Weiss, 2008, p. 10)

Already, Alexander R. Galloway, in his systematic analysis of the gaming system (Galloway, 2022), points to a series of elements and functions capable of imposing a different cultural logic, which, from the niche of video games, has quickly colonized other media and other communication models. It invades the world of social and thus of Web 2.0, as well as that of platforms for the sharing and enjoyment of content: from music to audiovisual ones, up to new interactive applications that, freed from the explicitly playful purpose

of videogames, are called serious games and range from simulators to marketing campaigns to museum guides. For Galloway, gaming should not be studied as a media or entertainment market but rather as a new system of communication and thought, a new 'cultural logic' (Jameson, 2015) based no longer on passive enjoyment and the linear dimension of storytelling but on action. Thought ac,tion, and space are the fundamental dimensions of this praxis. Action and space become the essential functions of communication from which every other function, communicative strategy, model of fruition, storytelling, and aesthetics (with the dominance of computer graphics that, in the meantime, thanks to Pixar and its Renderman software, has invaded the imaginary of animation cinema and then moved on to action, fantasy and in short defining the aesthetic statute of Hollywood special effects of the last 30 years).

That logic, meeting the world of XR and so-called spatial computing and relying on two infrastructural pillars such as AI and 5G, may definitively become the logic of the new algorithmic paradigm.

Neal Stephenson's novel *Snow Crash* describes a dystopian near-future in which the only possible escape is into an artificial parallel universe, realized in computer graphics, accessed through an immersive helmet, and the creation of one's digital double called 'avatar'. A world also subjugated by the absolutist power of the market, by the violent logic of profit and by a social division worthy of the Middle Ages, and which is now instead becoming the model of what is being passed off as the new, irresistible and incredible technological revolution.

Behind these apparent inconsistencies of meaning lies something more profound that must be plumbed with the weapons of thought, erecting a philosophical architecture capable of reading and attempting to interpret the phenomenon, placing it in its proper context, which is the cultural one, rather than the merely technological one. Above all, subtraction and withdrawal from the communication of the sig-

nificant players and operators and relocation in the cultural sphere must be carried out. The usual hubbub, often disjointed, of the media is generating a fragmented discourse around the Metaverse and, above all, oriented towards accounting for it as a technological achievement observed solely from the point of view of the major players.

THE METAVERSE IS HERE

However, let us return to Stephenson's novel, which defines the technological horizon we move, that of immersive technologies, with virtual reality in the lead. It was 1992 when *Snow Crash* came out, and the world of digital technologies was looking at the new immersive devices that were trying (with difficulty) to enter the market. In particular, Jaron Lenier's attempts at virtual helmets are making inroads into the imagination. Lenier's idea is to create a series of devices ranging from helmets to gloves to complete suites, armed with sensors to transport the body (not just sight) into a 360°, responsive, interactive, and participatory artificial universe. It is a true digital twin that is realized with a synthetic aesthetic. Also from 1992 is Brett Leonard's *The Lawnmower Man*, the film that explores the potential of virtual reality.

Almost at the same time, Myron Krueger develops software. He makes hardware in this direction and speaks explicitly of an 'artificial reality' (Krueger, 1983/1992) of environments that video, sensors or helmets can access. It is no coincidence, therefore, that the world of literary science fiction draws on these drives and futuristic research: Stephenson, indeed, but before him also Daniel F. Galouye with *Simulacron* (Galouye, 1998), Ursula K. Le Guin with *La falce dei cieli* (Le Gui, 2005) and, again, Ernest Cline with *Ready Player One* (Cline, 2018) from which Spielberg will make his film of the same name.

However, Stephenson's novel is the primary reference for the definition of the Metaverse (anticipated only by that of

the 'database') and avatars, i.e., the digital twin that takes on the characters we wish to give it, thus defining our digital identity. It helps enter virtually infinite worlds (generated by GAN - Generative Adversarial Network), responsive, participatory, and 360°.

Krueger and Lenier, in their theoretical reflections on these artificial worlds, although they do not use the term Metaverse, are already describing it in practice, outlining its contours, architectures, practices, functions, and aesthetics. We find all of these in a series of works explicitly cited by Galloway (2022) as emblematic of this new algorithmic logic that games (in a broad sense) are defining. The examples proposed by the English philosopher are, in fact, serious games such as Sid Meier's *Civilization* (a true game-world forerunner of all meta-verses), the Machinima, and even the ARG (Alternate Reality Game, participatory and interactive storytelling that takes place alternately in the virtual and real worlds), MMOG (Massively Multiplayer Online Game) or MMORPG (Massively Multiplayer Online Role-Playing Game). What are they? These are complex, participatory (online), interactive, customizable games. Environments in which one enters a new logic where the action (as a new form of knowledge and thought) and the environment (as a new organizational structure of data and its function) dominate – an environment with non-linear and complex storytelling that defines a new communication system.

We observe an ongoing process that finds its roots in video games that subsequently colonize different forms, modes and communicative practices (including education, training, and entertainment). It is a process that scholar Stefan Sonvilla-Weiss had already observed in 2003 in his essay *(In) Visible: Learning to Act in the Metaverse* (Sonvilla-Weiss, 2008) in which he defines the Metaverse as the set of those immersive and interactive environments created by digital technologies: from Google Maps to platforms such as *Organic City*, to smart city apps. For Sonvilla-Weiss, the Metaverse also exists and has precise and delineated characteristics. What distin-

guishes it is not the use of one technology or another but the cultural logic it expresses.

The Metaverse already exists, then. So much for Zuckerberg and his disciples searching for an operating system capable of making inroads into the market. All that needs to be debated is the impact it can generate and whether it will become the primary cultural rationale of the coming years (and here we advance the hypothesis that the answer to this question is positive). The Metaverse exists independent of devices, and its logic is so imbued in our cultural system (and is so successful), especially in the last two generations of young people who are about to occupy managerial positions, that we can clearly define it as the most likely cultural logic of our time.

As mentioned earlier, we already have notable examples of successful Metaverse: from *Second Life* to all participatory games such as MMOGs and MMORPGs, starting with *The Sims* up to *Minecraft* (which are now used in various fields from education to learning to science, tourism and even online activism). Moreover, even earlier, we can cite *Habitat* from 1986, a game that is a trustworthy online virtual environment for multiple participants, as well as *EVE* or *Civilization*. To these, we should also add MUDs (Multi-User Dungeons), text-based virtual worlds based on *Dungeons and Dragons*, MUSH (Multi-User Shared Hallucinations) and MUX (Multi-User Experiences).

VR Chat is already a popular virtual reality platform for events, conferences, previews, concerts, and information exchange. The best-known platforms at the moment are *Roblox*, *Fortnite*, *Decentraland*, *Sandbox*, and the Italian The Nemesis. Metaverse and NFT marketplace platforms exist, such as Enjin, Axie Infinity, Metahero, Wilder World, and Bloktopia. SushiSwap and Render are specifically NFT markets.

By now, millions of people habitually spend time on *Roblox*, *Fortnite* and other smaller platforms such as Decentraland, especially millennials and representatives of the so-called 'Generation Z'. Not only to play games but also (and

now especially) to attend events of various kinds, to create communities, carry out actions of different kinds (including political and activism), but also to exchange digital objects, make auctions, buy, sell. Moreover, in the meantime, the most popular social network of the moment, TikTok, is preparing to land in virtual reality by purchasing Pico, one of the big players in creating virtual reality visors. The announcements and financial movements of Zuckerberg and his behemoth, with Facebook at its centre, have all come into play. A holding company that, emblematically, has taken the name Meta precisely to highlight the near future mission. Conversely, Microsoft's industrial reactions want to merge the functions of Teams with those of Mesh to produce a new, larger, and more complex version of Hololens, its holographic computer. If Meta aims at Virtual Reality, Microsoft seems primarily interested in mixed reality. So does Apple, which seems bent on following Microsoft's path, thus renewing an industrial rivalry that originates even in the clashes between young Bill Gates and Steve Jobs.

A TECHNOLOGICAL ISSUE

Logic preeminent it will become shortly, the moment these models are brought into full swing, others are joined, and above all, a minimum of interoperability is organized. Understanding by interoperability the possibility for the user to move from one environment to another, from one platform to another, taking with him his identity (the avatar), his data (photos, videos, comments, friendships, followers...), his wallet (made up of cryptocurrencies, credits, subscriptions and cards or credits of different kinds and nature). Moreover, this is an area that is particularly sensitive and emblematic at the same time: the emergence, albeit with many contrasts and jarring, of blockchain and bitcoin, intelligent contracts and NFTs that drive in the direction of the new world of the so-called Web3 of decentralized networks, DAOs.

That the 'logic' of the Metaverse is destined to become preeminent can be read in a few elements: first of all, by the amount of investment that the compartment manages to gather and that, despite some critical voices, does not seem to be diminishing. The investments of the so-called big tech companies are significant. On the other hand, the research compartment, in which private and public companies and universities are at work, also registers decidedly onerous movements and investments. It should also be said that the idea of a spatial system for the dissemination of information that is based on presence, participation and sharing has well-established roots in the past (we have already talked about the world of role-playing games, to which we can also add artistic experiments in the field of installations and expanded and augmented environments). Let us also not forget the audience factor: We are talking about at least three generations of young people who are accustomed to an algorithmic system based on immersion and participation, who are familiar with video games, who are accustomed to the systems of exchange, reward, purchase and access to information and digital objects in gaming. A digital native and immersive native audience that is comfortable with immersive environments and spatial information searches.

Suppose we dwell even on purely technological data. In that case, everything is pushing in this direction at a time when both research and market investments (and already market results) are rewarding the convergence of the XR world with the IoT world, that Internet of Things that realizes so-called spatial computing. It is basically about deploying Internet functions in space. Creating augmented environments, perhaps using QR codes or sensors (from Arduino to leaders to Kinect) or through voice command systems such as Siri, Alexa, and Cortana that already redefine the home space into a kind of intelligent city increasingly dependent on our voice paths, another form of bodily action that turns into thought/action. Moreover, in fact, it is precisely the latest generation of AI that increasingly takes on the role of

the infrastructure that ensures at least two fundamental functions of this new computing of space: on the one hand, addressing the monumental computational challenge that complex, participatory and responsive environments propose; and on the other hand a personalization of our paths in virtual and real, augmented and mixed worlds. AIs, just like voice assistants, allow our data assets to transit, to be exchanged, to swell, and above all to build increasingly personalized paths in a universe that is not only dual but complex and even ever-expanding.

For example, we are used to imagining a purely visual space. We do not necessarily. Furthermore, at the very least, it is not the only one. Intelligent voice assistants, and perhaps also oriented by geolocation data and sensor installations with which to monitor movements and the use of appliances, do indeed define sensitive, augmented, responsive, participatory, personalized environments that involve a logic that has to do with thought/action, with space as a platform for the distribution of information and correlations of different kinds (between people or between people and bots).

Sound and images imply the use of a mass of data that must be available live, precisely because we are talking about thoughts/actions. For Pedro Domingos (2018), this dimension is the natural evolution of AI, which he calls the 'ultimate algorithm'. This algorithm will combine the capabilities of evolutionary algorithms, machine and deep learning, and analogue and Bayesian learning-based methods. It will dispose itself towards us in synergistic and symbiotic ways, like a 'digital stand-in'.

> Within a decade each of us will probably have a 'digital stand-in,' an AI partner that will be even more indispensable than smartphones are today. Your digital stand-in will not need to physically move with you: it will most likely live somewhere in the cloud, just as much of your data already does. We see the beginnings of this in virtual assistants like Siri, Alexa and Google Assistant. [my translation from Italian [2]] (Domingo, 2018, p. 35)

The other major infrastructure needed to activate this process is the data integration network for transmission, that 5G that not only challenges the power of connection but also gives rise to next-generation platforms capable, precisely, of supporting expanding worlds participated in simultaneously by multiple people.

The technologies that determine the Metaverse are thus the complex of XR and spatial computing that defines a so-called 'phygital' (physical plus digital) universe. This definition identifies a hybridization and continuous exchange between real and virtual spaces, AIs and next-generation connections from 5G to 6G. The technologies in question can variably correlate, coexist, hybridize in depth, build platforms, and define sensitive spaces of different natures and dimensions.

THE UNDERLYING TECHNOLOGIES

As we have seen, the participation of specific technologies characterizes and substantiates the Metaverse. Specifically, infrastructural technologies, connectivity technologies such as 5G, and cloud technologies are about to become the real enablers and facilitators of the next generation of computing, which will always be experiential and immersive.

On the other hand, we have graphics engines like Unreal Engine and especially Unity (and others like Mozilla related to open logic) because they represent the scaffolding to build the virtual spatial environments on which the Metaverse experience is based.

Metaverse experience that lies within the convergence of so-called XR technologies and spatial computing. XR consists of immersive technologies such as virtual reality, augmented reality, mixed reality, video mapping, and photogrammetry.

These are, or better to say, were, while now fundamentally converging, the technologies of spatial computing

and, thus, IoT (Internet of Things). These technologies can amplify and augment physical space by making it a hybrid of physical and virtual, or by situating digital information in physical spaces or linking physical and digital spaces as in the interactive maps that underlie satellite navigation systems or the operating systems of self-driving cars. These are the complex sensor systems that redefine the boundaries of physical space by connecting to the information in the digital cloud. Emblematic is the case of voice assistants that 'fill' physical spaces with their voice and the information they derive from the Web. The Metaverse is thus substantiated by virtual environments that communicate with physical spaces and real people located in physical spaces together with natural objects, or by hybrid spaces that build a single environment and thus define a new 'chimeric' ecology, or - again - by physical spaces augmented (on demand) by virtual informational spaces.

Enabling this convergence and thus making the experience viable in the Metaverse, we find AI coming to assume two functions primarily: 1) to process data with increasing speed (and getting closer and closer to the so-called '0 latency') and 2) to provide the cues for orientation in virtual space, in 'extended' absolute space and in the transfer or overlap of the two states.

AI's role in the Metaverse is even more complex than that. We will have a chance to see how it interacts in the very construction of the Metaverse (through synthetic media and thus all the applications of so-called generative AI) and how it goes on to inhabit the Metaverse in the form of 'smart' objects (smart objects), voices and dialogue texts (chatbots) or real synthetic identities such as intelligent avatars. Nevertheless, for the moment, let us dwell on AI's role in producing the Metaverse: on the one hand, as a data processing capability. We talk about the most efficient system for processing data and meeting the need to build a credible and responsive space, enabling real-time relationships through predictive systems.

On the other hand, he performs a function very similar to that of Virgil in Dante's *Divina Commedia*, specifically in *Inferno*. Dante has to travel through a world parallel to the physical one; he has to enter the otherworld, a real immersive Metaverse, participate in it, and share, but to do so, he needs a guide who cannot only show him the way.

Ond'io per lo tuo me' penso e discerno
Che tu mi segui, e io sarò tua guida,
e trarrotti di qui per loco eterno.
(Dante, 1265-1321/1986, p.14)

But it is also capable of revealing the logic of that new world:

E poi che la sua mano a la mia puose
con lieto volto, ond'io mi confortai,
mi mise dentro a le segrete cose.
(Dante, 1265-1321/1986, p.31)

Moreover, Virgil will not only show Dante the way but will also be able to assist him in recognizing places, sins and sinners, thus revealing to him the inner logic of the 'Metaverse Inferno' but also the relationships, the threads, the connections that link the real world to the otherworldly.

The AI is thus proposed as a subject capable of guiding into another, alternative world and marking the paths within this but also marking the interferences with the real world, on the one hand highlighting the interfaces (and thus the thresholds) and, on the other hand, the correspondences. Moreover, this explains connections and identities. Furthermore, it does this by explaining secret things and thus working in the dark side, in the secret black box.

The AI stands just like Virgil for Dante. It is not a mere companion but a special guide capable of connecting and hybridizing two very different realities: the real one and the 'other' meta-real one of Hell. The two realities are evidently connected through a specific interface that is the gate to Hades. Then Virgil offers a map and a route, identifies the specifics, and allows Dante to understand the logic of the route itself.

MULTIVERSE AND METAVERSE

> A maximally scalable and interoperable network of 3D virtual worlds rendered in real time, which can be experienced synchronously and persistently by an effectively unlimited number of users with an individual sense of presence within them, and which guarantee the continuity of data about identity, history, rights, objects, communications and payments. [my translation from Italian[3]] (Ball, 2022, p. 55)

What Ball describes is thus an immersive, interactive, participatory and shared space, but one that is also interoperable; that is, the user is able (made possible) to move from one space to another, from one environment to another, bringing with him or her his or her identity(s), his or her 'history' made up of texts, images, videos, pieces of communication, but also objects purchased or obtained through exchanges or challenges. For Ball (and many others), one can speak of the Metaverse only at the moment when the infrastructure is configured as a complex architecture, as a vast social that within it contains other social or other platforms and toward which all the functions at this moment delegated to media, social and platforms flow. A universe in which the experience is 3D (but not everything will be 3D), is enabled by real-time rendering and is usable in all its dimensions regardless of its origin as a proprietary system. Several immersive 'collaboration' platforms are already geared toward work and participation in real-time and presence: Virbela, Spatial, Glue, Engage, Arthur, and Horizon Workrooms, for example.

According to many observers, the Metaverse could only be called when the different immersive platforms were connected by allowing switching from one to the other as if one were within the same system. Otherwise, we would witness the coexistence of multiple metaverses (multiverses), each closed.

We are still in an indecipherable and fragmented territory where different experiences coexist, but no general

interoperability exists. 'Decentralized' platforms such as *Decentraland* or *The Sandbox* are recorded. At the same time, *OVR* and *Somnium* are actual virtual territories. *OpenSea*, on the other hand, is a transactional platform for purchasing items for environment platforms. Discord, in turn, is a platform for communicating in these metaverses. To support the economy of decentralized platforms based on blockchain technology and thus cryptocurrencies, there are real crypto wallets (wallets) such as *MetaMask* and the more famous *Ethereum*. *Meanwhile*, blockchain is bidding to become the technology that can authenticate digital identities, and NFTs are looking with interest at physical assets as the most promising horizon.

Web3, as a new paradigm, should realize precisely this system in which the various metaverses appear to you just as individual pages and sites present themselves to the user on the Web today simply by invoking a search. Imagine that our Google identity that superintends our browser searches and the use of the attached functions is now an avatar with which to move, no longer between pages but between immersive, interactive, participatory, and shared spaces.

If this is the Metaverse then we are still a long way from having the Metaverse. To make this possible, we need protocols, standards, conventions, new uses and technologies, different and more precise infrastructure systems, and norms of access and use. Not to mention, each proprietary system is willing to technologically, economically, and culturally enable communication with other systems. So-called 'walled garden' systems that belt out their users, actions, data, histories and assets they may have acquired are more attractive to industry groups because they allow them to hold their attention and facilitate engagement, profiling and marketing operations. Hazan points this out very well:

> Interoperability is built into platforms that use blockchain. There are other platforms, however, that have the ability to leverage walled gardens to store the value produced by users within them, and also because it is easier

> to create qualitatively successful environments that way. We are probably faced with two scenarios: some will focus on interoperability, which is preferred by both users and brands; others will focus on walled gardens by offering an optimal experience in return, as was the case with iOS, for example. To be successful, however, the impact on the user must be of a similar level to that produced by, precisely, the first iPhone. [my translation from Italian[4]] (Signorelli, 2022)

Roblox, for example, contains virtual worlds but, in turn, has clear and precise boundaries of its own world. This photographs the current situation in which interoperability is still a somewhat distant and unknown horizon. However, there is already a system and a spatial logic of computing called the Metaverse. We are in a Multiverse situation, a co-presence of proprietary metaverses with different rules. Some are deprioritizing to "federate" and constitute broader platforms of immersive experience, others are configuring themselves as specific and identity-driven, and that (at least in words) proposes to open up to forms of mutual participation (this is the case of *Horizon* by *Meta*).

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NOTES

1 The Italian text of the quotation is as follows: "Il pensiero scientifico e tecnico emerge sotto condizioni cosmologiche che si esprimono nelle rela-zioni mai statiche tra gli umani e i loro ambienti" (Hui, 2021, pp, 27-28).
2 The Italian text of the quotation is as follows: "Entro un decennio probabilmente ciascuno di noi avrà una 'controfigura digitale', un partner di IA che sarà ancora più indispensabile di quanto lo siano oggi gli smartphone. La vostra controfigura digitale non avrà bisogno di muoversi fisica-mente insieme a voi: con ogni probabilità vivrà da qualche parte nel cloud,

proprio come fa già gran parte dei vostri dati. Ne vediamo i primordi negli assistenti virtuali come Siri, Alexa e Google Assistant" (Domingo, 2008, p. 35).

3 The Italian text of the quotation is as follows: "Una rete di massima scalabilità e interoperabile di mondi virtuali 3D renderizzati in tempo reale, che possono essere vissuti in modo sincrono e persistente da un numero effettivamente illimitato di utenti con un senso individuale di presenza al loro interno, e che garantiscono la continuità dei dati relativi a identità, storia, diritti, oggetti, comunicazioni e pagamenti" (Ball, 2022, p. 55).

4 The Italian text of the quotation is as follows: "L'interoperabilità è integrata nelle piattaforme che utilizzano la blockchain. Ci sono altre piattaforme che invece hanno la possibilità di sfruttare i walled garden per conservare al loro interno il valore prodotto dagli utenti, e anche perché in questo modo è più semplice creare degli ambienti qualitativamente riusciti. Probabilmente ci troviamo di fronte a due scenari: alcuni punteranno sull'interoperabilità, che è preferibile sia dagli utenti sia dai brand; altri invece punteranno sui walled gar-den offrendo in cambio un'esperienza ottimale, com'è avvenuto per esempio nel caso di iOS. Per avere successo, l'impatto sull'utente dev'essere però di livello simile a quello prodotto, per l'appunto, dal primo iPhone" (Signorelli, 2022).

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