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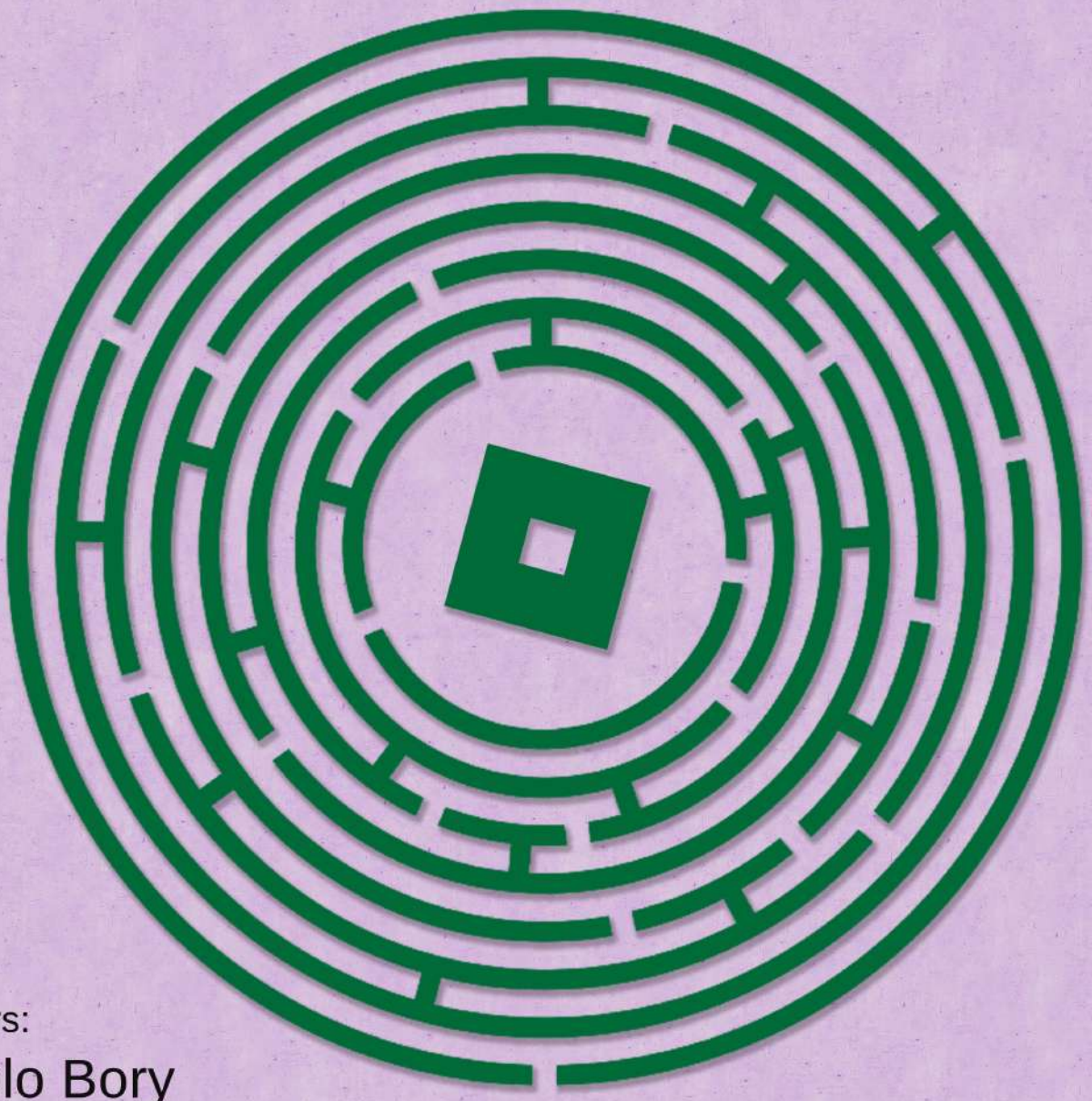
# Imaginary Metaverses

## Contested Narratives Of Immersive And Mixed Realities



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# IMAGINARY METAVERSES
# CONTESTED NARRATIVES OF IMMERSIVE AND MIXED REALITIES

## YEAR 2025 - VOLUME 8

**Editors: Paolo Bory (Politecnico di Milano), Gianluigi Negro (Università di Siena)**

# Introduction: One, none, a hundred thousand metaverses

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The announcement of the metaverse is quite a unique case in digital media history. Unlike previous product launches, the metaverse was introduced not as a stabilized medium or platform but as a promissory assemblage: a future socio-technical system made of interoperable "worlds" and grounded in new and more exciting interactions during working and leisure activities. Facebook rebranding in Meta and the subsequent *Connect* event exemplify a combination of performative futurity with a form of corporational determinism, whereby corporate actors seek to govern expectations by staging futures in advance of their material realization (Couldry & Mejias 2019; Natale et al. 2019).

This mode of announcement is not incidental. Rather, it reflects a broader transformation in how platforms consolidate power by framing sociotechnical horizons before their consequences can be assessed at the public and institutional level. The rapid rise and subsequent decline of the metaverse hype have followed a recurring pattern within platform capitalism: speculative amplification leads to discursive saturation and public underestimation, especially once the gap between promises and reality becomes visible, or, as in the case of the metaverse, the "new" technology remains intangible or even nonexistent. However, the waning of the metaverse hype, clearly replaced by the AI one, should not be interpreted as a total failure: although the material and imaginative construction of the metaverse is less prominent in the public debate, tech corporations are still investing their resources in the heterogeneous realm of augmented/extended/virtual or, as we prefer to call it, mixed reality (MR), searching for the new killer app or device that will convince the userbase to adopt and domesticate MR technologies on a global scale. Furthermore, in some national contexts, the hype around the metaverse is much more stable and persistent than elsewhere, as this issue aims to demonstrate through the contributions of Chinese scholars engaged in the theoretical and political understanding of the metaverse in their country.

In addressing the multiple identities of the metaverse, this issue contributes to the growing body of literature on MR, adopting a multifaceted perspective on the various narratives and imaginaries surrounding the metaverse as a concept, infrastructure, environment, world, or story. From our viewpoint, metaverses are not only singular "worlds" but socio-technical configurations composed of platforms, interfaces, standards, labour practices, governance mechanisms, and communicative strategies that differ depending on each situated context, and especially on the players under scrutiny (e.g., companies, institutions, and users). All these dimensions are deeply interconnected with the way in which metaverses are or can be imagined, promoted and spread locally and worldwide. The upcoming "winning" metaverse, if it ever emerges, will do so at the intersection of technology, practices, and, of course, power (Hesselbein and Bory 2025); but this power, as the collapse of the hype around the metaverse demonstrates, is not only made of money and media influence, but also of imagination (Benjamin 2024) and from the different

expectations and social needs emerging from the pluriverse of the cultural, political, economic and social contexts (Girginova 2025).

Within such a plural and contested landscape, analysing local and national imaginaries of the metaverse is essential for understanding the complex articulation of narratives, infrastructures, and politics. Rather than adopting a Silicon Valley–centric model of platform expansion, metaverse-related developments in countries such as China are embedded in a distinctive constellation of state-led industrial policy, domestic platform ecosystems, and regulatory frameworks, emphasizing different ideas of data sovereignty and cultural alignment (Schneider 2023).

As the article by Jia Dongjia aptly shows, the Chinese metaverse cannot be understood as localized replica of Western platforms; it rather constitutes an alternative trajectory in which immersive media are articulated with national development strategies, besides situated forms of infrastructural governance. In the same vein, the roundtable section that collects insights from Liu Hailong, Ji Deqiang, and Xie Xuefang suggests a de-Westernized approach to the Metaverse, most notably through the examination of the "Chinese-style cultural metaverse". In their view, unlike the Silicon Valley-centric model that frames the virtual as a form of digital escapism, the Chinese trajectory based on techno-nationalism, technical rationality, and market logic, positions MR as a carrier of civilization and a tool of heritage preservation.

This boundary work of the metaverse is pragmatically juxtaposed with the false myth of an endless and unbounded metaverse, as Chris Hesselbein demonstrates in his contribution. The myth of a never-ending space obfuscates the inner dynamics of platform capitalism and vertical control by Big Tech companies. Federico Biggio's contribution helps us to understand the historical and aesthetic trajectory on which this myth has been constructed. These contributions help to deconstruct the myth of limitless and historical imaginaries of virtuality, highlighting how Western narratives (US in particular) obscure the totalizing control and reterritorialization of platform capitalism, emphasizing main trends such as abundance and disembodiment. Fabio Iapaolo and Marcus Pingitore highlight in their empirical analysis how new "worlding" practices at the local level - i.e., in the Italian context - oscillate between community/market-driven needs and the concurrent dependence on platforms and big tech players. Moving again beyond the dominant "big tech" narratives promoted by corporations like Meta, Apple and Nvidia, the authors argue that the Metaverse should not be seen as a single global highway built by a single contractor but as a vast, interconnected series of local neighbourhoods.

Overall, this issue of *Funes* illustrates the contested imaginaries of the metaverse, oscillating between Zuckerberg's utopia (or dystopia) and a complete failure, which confirms the need for a symmetrical and more nuanced approach in analysing such phenomena (Magaudda and Balbi 2024). The metaverse imaginaries are already contributing to the present and future of MR and will likely give rise to unexpected practices and new forms of "worldings", yet to be discovered, but not to be left unexplored in the making.

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# The Neverending Story: Illusions of Limitlessness and Abundance in the Metaverse

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## Abstract

This paper critically unpacks one central narrative feature of the Metaverse, namely its purported limitlessness, endlessness, and abundance, particularly on the level of spaces, objects, bodies, and identities. The primary means through which to present the Metaverse as limitless is by blurring the boundaries between the physical and virtual or the material and immaterial. Once these distinctions have been obscured, the apparent limitlessness of virtual phenomena can be positioned as surpassing the limits of material existence. The Metaverse can subsequently be presented as a world of near infinite possibilities, a future that is only limited by our imaginations. Narratives that represent the metaverse as endless and limitless are far from pointless; their apparent vagueness is precisely the point. Such narratives obscure the harmful actions of 'Big Tech' companies in the present, and mask the totalizing and all-encompassing character of the Metaverse as an attempt to reshape reality.

## Keywords

Metaverse, virtuality, technology, narratives, limitlessness

## Starting point

The Metaverse[1] is – together with the Singularity and Artificial Intelligence – a techno-optimist narrative central to contemporary media and technology discourse. Initially coined by the novelist Neal Stephenson in 1992 to describe a distinctly dystopian world ruled by large corporations that is characterised by economic collapse as well as widespread violence and poverty, the term 'metaverse' has subsequently been taken up by 'Big Tech' corporations to describe their specific Silicon-Valley centric visions of the future. These imaginaries are predominantly optimistic about the future, promising to employ emergent 'metaversal' technologies to achieve widespread psychological, social, economic, and even political benefits while frequently mobilizing fantasies of dematerialization, disembodiment, and decentralization (Carter and Egliston, 2024; Messeri, 2024). For example, Jensen Huang, CEO of Nvidia – one of the largest companies in the world by market capitalisation that dominates the microprocessor industry at the heart of the current AI boom – has stated that the metaverse "is where we will create the future" (Shapiro 2021). Unsurprisingly, forceful academic critiques have been articulated of such utopian (or instead rather

[1] There is considerable variability in whether to pluralise or capitalise the term 'metaverse'. Meta has closely associated itself with the term 'Metaverse' (capitalised and in conjunction with the definite article *the*), most notably through the company's name change from Facebook in 2021, and most major companies involved in metaverse discourse tend to capitalise the term as well. When using the capitalised form here, I am explicitly referring to how the metaverse is conceptualised by such corporate actors. Otherwise, I employ the lowercase form to indicate its broader and more generic connotation.

dystopian) visions of the future and the attempts at constructing the 'metaverse' because of its potential for datafication, commodification, surveillance, and exploitation by 'Big Tech' companies (Hesselbein et al., 2024b; Hesselbein and Bory, 2025; McStay, 2023; Mosco, 2023; Smith, 2024). These critiques thus closely mirror previous issues with datafication and exploitation noted during the rise of digital platforms (Couldry and Meijas, 2019; Nieborg and Poell, 2018; Van Dijck, 2014).

There are three central components found in nearly all Metaverse narratives presented by companies and 'tech' commentators. First, the emergence of the Metaverse is inevitable and inexorable. It is simply the logical consequence of the progression of technology towards higher sophistication and efficiency, an evolutionary outcome that naturally flows from previous inventions such as the computer, internet, digital platforms, and smartphones. Second, the creation of the Metaverse involves the confluence of a wide range of different technologies that, once come together, will produce an entirely new, radically different, and ultimately better society. For example, Virtual and Augmented Reality headsets, digital environments or 'worlds', blockchains and cryptocurrencies, as well as AI, will – it is claimed – revolutionize how we communicate, work, and spend our leisure time. We will be 'more present' and 'connected' with others in and through 'immersive worlds'. In other words, the Metaverse is a world in which the boundaries between technologies have been dissolved and their frictions overcome, thus allowing a plethora devices, systems, and protocols to smoothly and seamlessly interoperate. Following a linear and deterministic logic, these developments will have a straightforward and positive impact on society. Third, metaversal spaces or worlds are presented as seemingly endless or limitless (Beer, 2024) as well as infinite and abundant. Geographical distance, bodily incapacity, material scarcity, and to some extent even temporality, are obviated or overcome. The virtual world of the Metaverse thus surpasses and transcends many, if not all, of the limitations and drawbacks of the 'real' world with its many material constraints. Or, in the words of Mark Zuckerberg during his now (in)famous announcement of Facebook's name change to Meta, "you're going to be able to do almost anything you can imagine" (Meta, 2021c). Only the limits of our imagination, in short, delimit the metaverse. Such metaversal fantasies of infinity and limitlessness are a hallmark of the contemporary technology and media landscape, and are closely connected to the ideology of infinite growth under capitalism (Echauri, 2023).

The appearance of hyped-up narratives alongside the emergence of new technologies is a phenomenon that has long been noted in research on technology and innovation (Bory, 2020; Mosco, 2005; Nye, 1996), as is the sense of disappointment and disillusionment that inevitably follows when such technologies fail to live up to their promises (Borup et al., 2006; Bory, 2019; Galanos and Stewart, 2024). Nevertheless, despite their ups and downs, these narratives matter greatly, not least because this is how inventors and investors garner further financial support for the development of technologies but also because such narratives shape how technologies are culturally framed and eventually used and valued. Narratives of hype are all the more important in the case of highly complex and still-emergent systems such as the metaverse, which – depending on who you ask – may already exist, is about to arrive, will be developed in the near future, or will never exist. In addition to material resources and cultural framing, narratives are also important in that they have an effect on the design and development of technologies, shaping at an early stage what is defined as a design priority or engineering challenge while simultaneously foregrounding

certain concerns while downplaying others. Similarly, such narratives, even if referring to ostensibly unlikely outcomes, can nevertheless be used to shape policy-making endeavours (Martini, 2025). It is for this reason that it is important to analyse the various visions, imaginaries, and narratives surrounding technological developments, particularly ones that have the potential for reshaping society in a profound manner. Even if the most radical or utopian versions of the metaverse do not come to fruition, the resources and efforts spent towards achieving this end are enormous. Such resources could, however, have been put to better use. Before the imaginaries and ideologies of a select group of people get 'baked into' this all-encompassing infrastructure, we have to understand what their implications are and find ways to steer the creation of the metaverse into a direction that is beneficial to more than a select elite of technologists and investors.

This paper seeks to identify and critically unpack one central narrative feature of the Metaverse as it is presented to us by such actors, namely its purported endlessness, limitlessness, and abundance. Drawing on a variety of sources, such as public statements, reports, studies, and presentations by heads of 'tech' companies, consultants, and researchers who are involved in the push towards developing the Metaverse, while also pointing towards several metaverse platforms and technologies as illustrative examples, I examine how the 'metaversification' of spaces, objects, and bodies through techno-optimist narratives[2] is employed to undergird claims about the ostensible limitlessness and abundance of the metaverse. In conclusion, I briefly reflect on the point, or perhaps intentional pointlessness, of such narratives.

## Narrating the Metaverse

Before examining the three central components of metaverse narratives that suggest limitlessness, endlessness, and abundance, it is necessary to briefly outline what I believe is currently the most helpful way to conceptualise the metaverse, particularly at this nascent stage. This admittedly rather broad definition is nonetheless concrete enough to contrast the relatively abstract and forward-looking narratives of limitlessness with their technological and infrastructural underpinnings as well as their potential contradictions and political implications.

A primary category of metaverse technologies encompasses the efforts being made to create persistent and immersive virtual environments, platforms, or 'worlds' in which a range of professional, social, and leisure activities will purportedly take place. This is probably the most common popular interpretation of the term 'metaverse', in part because of comparisons that have been drawn with older virtual worlds, such as Second Life, or contemporary gaming environments, such as the widely popular games Fortnite and Roblox. Another reason for the predominant interpretation of 'metaverses' as virtual 'worlds' lies in the widely reported name change by Facebook to Meta and its subsequent presentation of the Horizon Worlds platform. A secondary set of metaversal technologies encompasses the emerging range of wearable (generally head-mounted) and sensory (i.e. spatially-aware as well as body-tracking) computing devices, prominent examples of which are the Quest headset sold by Meta, the Vive headset produced by HTC, and Apple's recently released Vision Pro. Such technologies are referred to under a range of different

[2] The process of 'metaversification' is certainly not only a narrational one but also a concrete material endeavour (see Hesselbein and Bory, 2025).

names, such as virtual reality (VR), augmented reality (AR), mixed reality (MR), and extended reality (XR), which all denote to the mutual incorporation of physical and digital dimensions of the environment as well as the 'user' or 'wearer' of these devices. These devices all have in common the extension of virtual layers onto the perceptual field for the purpose of enhancing various activities, which can range from gaming and other forms of audio-visual entertainment to attending work meetings and carrying out various professional activities (Hesselbein et al., 2024a). A tertiary and ostensibly more marginal category is that of various 'decentralised' technologies, which includes blockchains, cryptocurrencies, and non-fungible tokens (NFTs), as well as phenomena such as digital twins and virtual influencers. These diverse technologies are sometimes also referred to as 'web3', and are currently characterised by extreme cycles of hype and disillusionment. Moreover, although some deem these technologies central to the development of metaverses (Ball, 2022), others consider their role much less clear (Boellstorff, 2024), and indeed their relevance to all major current metaverse platforms, with the exception of digital twins and virtual influencers, appears quite marginal so far.

All three of these technologies are underpinned by a logic of virtualization, namely the creation of virtual versions of physical systems, objects, people, or processes, and the subsequent blurring of the boundaries between these physical and virtual versions (Hesselbein and Bory, 2025). This blurring of the distinctions between physical and digital or virtual phenomena is central to all metaverse visions. For instance, Pony Ma, head of the large Chinese technology corporation Tencent, has introduced the term "immersive convergence" to describe "a new connection that integrates digital and physical forms, transcending time and space" (Tencent, 2022). Similarly, prominent metaverse investor and commentator, Matthew Ball, states in his widely read and cited book *The Metaverse and How It Will Revolutionize Everything* (2022, 97) that the metaverse "spans both the physical and virtual planes of existence". This suggestion, moreover, is not only made in the context of metaverse platforms or worlds. For instance, Apple describes its Vision Pro headset as "a revolutionary spatial computer that seamlessly blends digital content with the physical world" (Apple, 2023). The narrative of virtualization is a particularly powerful means for blurring the boundaries between the material and immaterial characteristics of spaces, objects, and bodies and representing these as having an endless or limitless character in the Metaverse.

## Spatiality

Overcoming the limits of geographical distance is one of the if not the primary component at the heart of many metaverse narratives. Meta, for example, presents the metaverse as "an embodied internet where you're *in* the experience" (emphasis added), which strongly suggests the confluence or collapse of boundaries between physical embodiment and virtual space (Meta 2021a). In another, more specific instance, Zuckerberg describes this as "instead of looking at a screen, you're going to be in these experiences" (Meta 2021c), thus suggesting that the distance between screen and viewer has entirely disappeared. Once the boundaries between the physical and the virtual as well as between the screen and the body have been overcome, a space of limitless options is opened up. Being inside the metaverse can now be presented as a means to traverse distances in a manner that is qualitatively different to, say, the way one's voice or image may travel via a telephone or video call. It is no surprise then that Zuckerberg often employs geographical metaphors such as 'frontier'

or 'world', and frequently refers to 'teleporting' as a means of getting around the Metaverse. The latter term is commonly understood as the actual, physical transportation of objects or beings from one place to another in science-fiction stories, but in Zuckerberg's narratives is presented as "like clicking a link on the internet", taking you to "whole worlds that you can teleport in and out of whenever you want" (Meta, 2021c). In short, an unrestricted means to travel across space.

Another purported consequence of the dissolution of geographical distance is that "the metaverse will help you connect with people when you aren't physically in the same place and get us even closer to that feeling of being together in person" (Meta, n.d.). This statement is a reference to the idea that VR technologies have the ability to connect people in a more profound and empathetic manner than conventional media can achieve, and therefore of having a specific potential for doing 'good'. This conceptualization of VR as the 'ultimate empathy machine' (Bollmer, 2017) relies on a specific notion of presence and space. Through VR, it is claimed, one can enter a new, immersive space to experience the feeling of 'being elsewhere', and more specifically, a deeper and more profound sense of 'presence' with other people. An underlying assumption that virtual presence in the same space with others will also signify a sense of social connection, engagement or care. That is to say, in addition to overcoming the challenge of geographical distance, now also the problem of emotional distance can be transcended. But the limits of space and emotional connection are not the only boundaries that can be surpassed or overcome, even those of time can be vanquished:

> In the metaverse you'll be able to teleport not just to any place, but any time as well. Ancient Rome. Imagine standing on the streets, hearing the sounds, visiting the markets, to get a sense of the rhythm of life over 2000 years ago. (Meta, 2021c)

The limits of geographical distance are not the only form of spatiality that the Metaverse promises to overcome. Another spatial dimension that is ostensibly altered is that of lived or experiential space. For example, one of the supposed promises of life in the metaverse is its near-infinite customizability, particularly in terms of the spaces in which we spent most of our lives, namely the home and workplace. One's Metaverse home, according to Zuckerberg, will allow you to explore opportunities beyond one's imagination, such as having an "incredibly inspiring view" and "things that are only possible virtually" (Meta 2021c). Similarly, virtual work environments will offer "room customization" and provide "your perfect work setup and you can actually do more than you could in your regular work setup".

More specifically:

> You're going to be able to design it to look *the way you want*, maybe put up your own pictures and videos and store your digital goods. You're going to be able to invite people over, play games and hang out. You'll also even have a home office where you can work. Your home is your personal space from which you can *teleport to anywhere you want.* (Meta 2021c) (emphasis added)

In a similar vein, gaming platforms that are frequently considered as either proto-metaverses or 'microverses' (Evans et al., 2022), such as Roblox and Minecraft, and to some extent Fortnite, allow one to construct virtual worlds with seemingly endless options. Such

platforms, which facilitate the creation of user-generated games or places are often referred to as 'sandboxes' because they focus on creative play rather than overt competition, are often open-ended, tend to lack a strong, centralized structure, and have close to limitless possibilities for creating a wide variety of things, ranging from enormous worlds and structures to avatars and objects (Grimes 2021). An important dimension of virtual worlds, moreover, is that virtual economies are seemingly less constrained by the finiteness of material resources. Similar to 'cyberspace', one of the dominant logics of virtualization is, after all, that this allows one to move beyond the apparent restrictions and limitations of physical reality and to enjoy personalized, tailored experiences in virtual worlds. And the ostensibly freer characteristics of virtual spaces are posited as a powerful alternative for carrying out one's daily activities compared to the limitations set by 'real-world' places or 'meatspace'. Virtual space thus transcends the limitations of the material, embodied world. In other words, the metaverse is framed, particularly in narratives presented by Meta and without even the slightest sense of humility, as being able to fulfil "the ultimate promise of technology, to be together with anyone, to be able to teleport anywhere and to create and experience anything" (Meta, 2021c).

**Materiality**

A central component of metaverse discourse, which is closely related to both spatiality and corporeality, is the assertion that the breakdown of the boundaries between physical and virtual phenomena is akin to the transition from material to less material or even immaterial practices. In short, the metaverse allows for largely if not entirely overcoming the limits of material production and consumption. Such narratives are espoused, both explicitly and implicitly, not only by 'tech' companies but also by some academic researchers and consultancies. This has potentially two important implications in terms of interrelated questions surrounding sustainability as well as consumption and their role in framing the metaverse as enabling a limitless and abundant future.

In terms of sustainability, the metaverse can be presented as an important aid in the transition towards more carbon-neutral societies because metaverse technologies might mitigate issues of environmental sustainability (De Giovanni, 2023; Piccarozzi, 2024). For example, such technologies can have the potential to reduce carbon emissions by providing enhanced possibilities for remote work, thus obviating, at least partially, the need for personal travel. Moreover, metaverse development ostensibly enables the substitution of physical goods with virtual ones, particularly in terms of a variety of consumer products such as clothing. Furthermore, metaverse technologies can enhance a wide range of operational processes by, for example, running simulations in digital twins rather than actual physical environments. The creation and implementation of metaverse technologies, it is argued, promises to impose fewer material limits on ongoing technological development, thus enabling the continuation of 'business as usual' and therefore economic growth (Hesselbein and Migliore, forthcoming).

The apparent shift from material to immaterial practices of production and consumption – of virtual 'land', objects, and services, which are all seemingly infinitely expandable, replicable, and usable – has led to intense speculation about the emergence of new categories of assets and therefore property rights and investment opportunities. Sandbox platforms such as Roblox and Minecraft, after all, allow for endless virtual worldbuilding in

a manner that appears entirely unconstrained by the physical world, and have developed thriving internal markets for the sale of digital objects, such as 'skins', accessories, and cosmetics. Moreover, blockchain-based platforms, such as Decentraland and The Sandbox, have sought to introduce artificial scarcity in order to position virtual 'land' and Non-Fungible Tokens (NFTs) as lucrative opportunities for real estate investment and financial speculation. The Metaverse, in other words, promises a world with unprecedented levels of abundance and growth. One of the most notable exponents of this narrative is Marc Andreessen, a hugely successful 'tech' entrepreneur who has played an important role in the digital media landscape of the World Wide Web since the 1990s. Notably, Andreessen is also an early investor in Facebook and OpenAI as well as a slew of cryptocurrency companies. Indeed, he is a particularly important actor in forwarding techno-utopian discourse as well as in shaping technological development as the co-founder of Andreessen Horowitz, an influential Silicon Valley venture capital firm that has invested in a range of metaverse initiatives. Asked in an interview in early 2021 about whether digital technologies might make us "too connected", Andreessen responds, rather tellingly and therefore worth quoting at length, as follows:

> A small percent of people live in a real-world environment that is rich, even overflowing, with glorious substance, beautiful settings, plentiful stimulation, and many fascinating people to talk to, and to work with, and to date. These are also *all* of the people who get to ask probing questions like yours. Everyone else, the vast majority of humanity, lacks Reality Privilege -- *their online world is, or will be, immeasurably richer and more fulfilling than most of the physical and social environment around them* in the quote-unquote real world. The Reality Privileged, of course, call this conclusion dystopian, and demand that we prioritize improvements in reality over improvements in virtuality. To which I say: reality has had 5,000 years to get good, and is clearly still woefully lacking for most people; I don't think we should wait another 5,000 years to see if it eventually closes the gap. We should build -- and we are building -- online worlds that make life and work and love wonderful for everyone, no matter what level of reality deprivation they find themselves in. (Soldo 2021) (emphasis added)

Here, the 'real' or 'material' world is portrayed by Andreessen as essentially limited and fundamentally unequal as well as unfulfilling, whereas virtual worlds are positioned as solutions to such social issues because they will apparently make life and work 'immeasurably richer and more fulfilling'. Metaverse technologies and spaces allow us, in other words, to escape from the natural or 'real' state of inequality towards a virtual world of limitless abundance.[3] Rather than physical assets, virtual 'experiences' are the hallmark of this new economic paradigm. That is, the metaverse is posited as a virtual 'fix' for solving the widespread problems of 'reality', whether these may be the limits of material resources, embodiment, or the failing of social institutions more broadly.

[3] As one might expect, Artificial Intelligence has also been represented as a potential source of infinite abundance. For a specific techno-optimistic perspective on this, coming out of Silicon Valley venture capitalism, see Acharya (2024).

## Corporeality

Whereas as the boundaries between the physical or virtual aspects of spatiality and materiality might appear somewhat easier to blur or collapse, making their differences less distinct and enabling virtual phenomena to be reframed as limitless or endless, this is more difficult to achieve for corporeality. Most of us are under no illusion (yet) that entering the metaverse allows us to forget our bodies or live forever. Indeed, there is a stark contradiction between narratives that describe the metaverse as either an embodied reality or an escape from this (Saker and Frith 2022). The metaverse thus appears in a paradoxical relationship with embodiment because it is as much a place to virtually depart from one's body as it is a place to engage in bodily activities. Many metaverse companies, consequently, seek to blur the boundaries between virtual embodiment and physical bodies and their material limits by employing the term 'experience', which is used to describe both metaversal spaces as well as the activities that take place there. To be more precise, the term 'experience' is employed to cover a wide range of different perceptual moments, emotional states, embodied practices that are enabled by virtual technologies, infrastructures, and environments. What is more, these similar yet importantly distinct meanings of the term are used in a manner that suggests corporeality while nonetheless retaining a crucial and somewhat ambiguous emphasis on intangible aspects or immateriality. The language of 'experience' as employed by Meta as well as other metaverse companies, such as Apple and Roblox, thus subtly elides the boundaries between being embodied or disembodied, between feeling and being, as well as between engaging in material or immaterial practices. In other words, rather than explicitly referring to bodies, which connote material limits, these companies instead refer to 'experiences', which are far more difficult to define, locate, or delineate. In short, virtual experiences, despite being always necessarily embodied, are thus represented as less bounded or materially constrained.

As is the case for spatiality and materiality, the logics of near-endless personalization and customization as well as the purported escape from the limitations physical reality are, in the Metaverse, extended to the body and one's social identity. Although the body has to be "left at the door" in virtual spaces (Penny 1993), one's identity does not. The latter can therefore be represented by its virtual counterpart the avatar. Company discourse about avatars presents this virtual representation of the self as an opportunity for playful experimentation and creative self-expression, above all through digital fashion and accessories (e.g. Meta 2021a; 2021b). At the centre of this new narrative of identity is the avatar, the "living 3D representations of you, your expressions, your gestures that are going to make interactions much richer than anything that's possible online today" (Meta, 2022). Heavily emphasized, unsurprisingly, is that 'users' of the metaverse will have multiple avatars for work, leisure, and whatever, which can be endlessly adapted and customized according to one's wishes. On the Meta Avatar Store, for example, it is claimed that avatars allow one to "be uniquely you" as well as "your authentic self" by "decking out your avatars with clothing from some of the world's leading brands" (Meta 2022). And as Roblox CEO David Baszucki states, "we really believe everyone on our platform will ultimately be who they want to be and who you want to be" (McDowell 2021). In short, the Metaverse is a realm of near infinite possibilities, providing a future "beyond anything we can imagine" (Meta, 2021c).

This utopian vision of the metaverse and its ostensibly transformative significance for embodiment and identity has been circulating within Meta for some time. For instance, just after the famous 2021 Connect conference, reporting emerged about a 2018 pitch sent by Jason Rubin – then still an Oculus VR executive, now the Vice-President of Metaverse Experience at Meta – to Facebook executive board member as well as Marc Andreessen, laying out a similar vision of the metaverse. In his pitch, Rubin describes future occupants of the metaverse as follows: "the only thing she spends as much time doing as she spends in the Metaverse is working, eating, socializing, and sleeping in the IRL [in real life] 'MEATverse'". Note not only how the metaverse is situated as a place where people will spend almost all of their daily time, but also how this disembodied virtual space is juxtaposed with the fleshiness of real life. What is more, Rubin suggests that "I might check in to Facebook multiple times a day, but I will LIVE in the Metaverse, work in the Metaverse, and potentially prefer my time in the Metaverse to my day-to-day grind" (Rodriguez 2021). In other words, the metaverse is as much an escape from one's regular daily life as it is a new, apparently disembodied, and ostensibly better place to inhabit and live.

Rubin's representation of the metaverse as an escape from mundane, embodied reality or 'meatspace' towards some state of limitless possibility harkens back to previous ideas articulated in the 1990s about 'cyberspace' as a disembodied realm in which one can behave and live more freely (Hayles 1999). Indeed, John Perry Barlow's declaration of independence famously claims that "[cyberspace] is a world that is both everywhere and nowhere, but it is not where bodies live", and that here our identities "have no bodies" (1996). It is not difficult to see such cyberspace narratives mirrored in current metaverse narratives. Moreover, fantasies of escaping embodiment and indeed mortality appear widespread among the communities of engineers and entrepreneurs in Silicon Valley (Gebru and Torres 2024; Messeri 2024), and researchers have observed that metaverse narratives frequently contain deep-seated assumptions about virtuality as separated from corporeality (Kalpokas and Kalpokienė 2024). In other words, the metaverse can be understood as the latest iteration in a long series of attempts by 'tech' companies to situate their specific technologies as fundamental to accomplishing a future in which we no longer constrained by materiality, yet this accomplishment paradoxically depends on the very concrete material inputs and outputs of such virtual technologies.

## Endpoint

This paper has sought to critically unpack one central narrative feature of the Metaverse, namely its purported limitlessness, endlessness, and abundance, particularly on the level of spaces, objects, bodies, and identities. The primary means through which to present the Metaverse as limitless is by blurring the boundaries between the physical and virtual or the material and immaterial. Once these distinctions have been collapsed and obscured, the apparent limitlessness of virtual spaces, objects, and practices can be positioned as surpassing the limits of material existence. The Metaverse can subsequently be presented as a world of near infinite possibilities, offering a future "beyond anything we can imagine" (Meta, 2021c). Needless to say, this future world is one which is fundamentally reliant on the various virtual technologies, platforms, and infrastructures that are produced, maintained, and managed by 'Big Tech' companies, and thus exposes anyone who spends

time in these virtual worlds to datafication, commodification, and exploitation by such companies.

Narratives that represent the metaverse as endless and limitless are, however, far from pointless. Indeed, their apparent amorphousness and vagueness is precisely the point. By placing the endpoint of the metaverse in some near or not-so-near future, the totalizing and all-encompassing character of the Metaverse as an attempt to reshape reality appears less concrete and threatening. Perhaps equally importantly, the hyped-up and hyperbolic nature of metaverse discourse serves as an important deflection and distraction from the real and ongoing practices of 'Big Tech' companies, many of them quite harmful already in the present (Beer, 2024). Moreover, the purported limitless of the Metaverse appears to mirror the contemporary 'infinite paradigm' that characterises the broader media landscape (Echauri, 2023). The Metaverse thus bears a strong family resemblance to other contemporary techno-optimist fantasies, such as the Singularity and AI. Whereas the former relies on the confluence of various emerging technologies that will eventually enable us to escape the limits of our mortality, the latter assumes that technology will be able to emulate and surpass human intelligence, and by consequence usher in an era of limitless techno-scientific development and economic growth. Although Metaverse narratives do not yet feature fantasies of immortality, they certainly do contain fantasies of material overabundance. Ultimately, all three narratives can be understood as embodying the technocratic ideal of progress (Marx, 1987), which sees techno-scientific development as progress in itself without answering the crucial question from what or whom these technologies are liberating us. Insisting on making this answer explicit, and tying this to concrete issues in the here and now that concern more than a select group of techno-capitalists, is a crucial starting point for both imagining and creating a better virtual future.

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# Spaces and Imaginaries of the Metaverse
# The Myth of the Virtuality of the Internet at Horizon

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**Abstract**

This article examines how contemporary imaginaries of the metaverse inherit and reshape the twentieth-century myths of virtual reality and the early Internet. Bringing together philosophy, media theory, and sociotechnical history, the paper traces and reframes virtuality and "immersion" as a threshold experience linked to deterritorialization. Adopting a critical and political perspective, the analysis highlights how the metaverse functions as a "third space": an arena of playful interaction and creative experimentation, but also one shaped by technopolitical asymmetries and the remediation of social media logics in immersive 3D environments. Historical parallels with the commercialization of the Web and world expositions reveal how colonial and capitalist tropes persist in promises of frictionless transcendence. The article mobilizes concepts of code/space, smooth/striated space, and user practice to show how platform architectures reterritorialize the "virtuality" they advertise. Ultimately, the paper contends that the myth of the metaverse's virtuality conceals a process of reterritorialization, where the utopian promises of cyberspace give way to the controlled architectures of platform capitalism, turning the dream of virtual worlds into an infrastructural and ideological extension of the Internet's history.

**Keywords:**
metaverse; virtual reality; immersion; third space; Internet.

## Introduction

With the exception of a few contributions — such as those by Lanier (2017) and Rheingold (1992), which focused on the material and technological aspects of VR, or that of Hillis (1999), who emphasized its nature as a cultural construct — discussions on VR, both within academia and beyond, have consistently prioritized the representational performance of technological devices and their ability to create "worlds" that are indistinguishable from the "real" one. This tendency can be traced back to the Platonic tradition of the deceptive image. One of the most emblematic examples of this approach is Chalmers' argument, which defines the experience of being immersed in VR as a real experience — one that should not be considered "second-rate" Chalmers (2022). Drawing on the legacy of thinkers like Gibson (1986), with his theory of ecological perception, and on enactive cognitive science — such as Noë's theory of sensorimotor perception — many scholars, including Chalmers, have explored the idea that immersion in VR can be understood as an environmental experience, indistinguishable from ordinary, "real" experience, insofar as the image perceptually responds to the user's bodily movements.
This contribution seeks to explore how we conceive and make sense of the digital and "virtual" spaces of the metaverse, thus evaluating whether its contemporary "technological imaginary" (Flichy 2001) inherits the topos of virtual reality, formed during the second half

of the 20th century.[1] First, we will examine how the social discourses that have recently revitalized the notion of the metaverse have adhered to this ancient tendency to consider virtual reality as a "reality". In this sense, the metaverse constitutes a paradigmatic case study for discussing the complex issue of the real/virtual dualism — a theme that has always been central to media studies. At the same time, we will claim that, in order to understand how the "virtuality" of the metaverse is nowadays conceived, it is important to bring to the fore the notion of deterritorialization, another major theme in reflections on the virtual (Levy, 1998; Maldonado, 1993; Giuliana, 2024). In the case of the metaverse, the process of deterritorialization is both temporal and spatial, but not identitarian. On the one hand, when entering a metaverse, a "spatial deterritorialization" from the *here and now* toward an alternative and *virtual* reality occurs. At the same time, the metaverse represents a direction toward which the main technology industries tend, a temporal deterritorialization. This assumption is essential when discussing the "metaverse" today, which appears more as an aspirational phenomenon than as a present reality. As Hesselbein and Bory note, "The word 'metaverse' denotes an evolution or transcendence towards a higher order that is above or beyond the current state of the world" (Hesselbein and Bory, 2025, p. 4). On the other hand, however, the metaverse represent a technological evolution of contemporary social media platforms, where the ontological dualism between real and virtual identity is no more felt.

To support these ideas, we will adopt a historical, sociological, and critical perspective to observe how the narratives currently surrounding the metaverse closely mirror those that accompanied the emergence of the commercial internet in the 1990s and the rise of mobile computing in the 2000s, including colonialist metaphors. This deterritorialization, we will argue, cannot be equated with the one typical of contemporary digital culture, which is primarily defined by the virtuality of the Web and the Internet. By inheriting models and forms from social media platforms, the contemporary metaverse departs from the idea of an "alternative" space imagined by Barlow (1996) — one populated by imaginary objects like the "information superhighway" or the "digital library," where nobody knew you were a dog.[2] Theoretically speaking, the technological imaginary of the contemporary metaverse goes beyond (and resolves, in some way) that paradoxical nature of virtual reality that characterized the early imaginary of VR.

## The metaverse as a "reality"

Today, the term metaverse refers to a persistent, three-dimensional digital space that is, supposedly, 'interoperable' and shared (Ball, 2022). In some cases, it is constituted through the remediation of real-world spaces. This perspective is well represented by the idea of the "mirror world": as both Kelly (2016) and Gelernter (1991) have argued, the 'metaverse' can be conceived as a vast, distributed computing system containing a complete replica of reality — a 'downloadable' world that allows individuals to explore reality without leaving their homes, simply by 'traveling' through its digital mirror. Google Earth is a clear example of this approach. According to this view, the metaverse could be said to have "been built"

[1] This study originates within the context of a collaboration with Prof. Paolo Bory and Prof. Chris Hesselbein, whom I would like to thank, at the Department of Design of the Politecnico di Milano, as part of the PRIN 2022 research project "From netizens to metazens: Narratives of virtual worlds and civic engagement in the metaverse." Funded by the European Union – Next Generation EU, Mission 4 Component 1 CUP D53D2301278 0006.

[2] This reflection is valid, of course, in the case of metaverses featuring avatars that reflect the real identity of users, as in the case of Meta's Horizon Worlds.

(or at least to be in the process of being built) through the integration of virtual and physical worlds. This is the view held by authors such as Sonvilla-Weiss (2008) and Arcagni (2023), who reject the idea of the metaverse as an alternative or detached space. Their definition aligns more closely with that of "spatial computing" — that is, a type of human-machine interaction embedded within the physical world. This conceptualization is also well represented by lifelogging projects, augmented reality, or ubiquitous computing — all three centered on a vision of human-computer interaction that is diffuse and environmental. Ultimately, these visions are also those traditionally represented by Stephenson's novel or Gibson cyberspace.

However, the definition of the metaverse remains contested: the term is used to describe vastly different things depending on which social group or corporate actor one considers. Each seems to put forward its own version — different yet equally under-defined — but almost all share a similar ambition of revolutionizing society through metaversal technologies and transforming the ways in which people work, interact, and consume. In short, the term can be made to cover almost anything. Meta's Horizon, Spotify Island on Roblox, as well as the virtual showrooms and storefronts created by companies such as Walmart or Nikeland, or even games like Minecraft (which has existed since 2011), are all virtual spaces that inherit forms typical of video games, where one can fly or perform actions impossible to carry out in the "real world." Unlike the first model of "virtual reality," therefore, this second one is unequivocally unreal.

If, on the one hand, the idea of "virtual reality" — indistinguishable from "real reality" — can be considered an effect of meaning stemming from the common tendency to separate the real from the virtual that has always characterized discourse around digital media, on the other hand, if the contents that populate these environments — however plausible and photorealistic — are semantically unreal, the problem does not arise. From this perspective, it does not matter whether the Panorama or IMAX are photographically realistic, or whether the planetarium reproduces the actual constellation: what matters is the content of these images, their extraordinariness in relation to ordinary experience. The passage is from perception (of the immersive and realistic image) to cognition (of its meaning). For this reason, "virtual reality" has often been defined as a liminal or threshold experience — a connotation that can be inferred as much from a conceptual, symbolic, and interpretative perspective as from a linguistic and semiotic one.

The theme of virtual reality as a threshold has often been associated with the notion of "deterritorialization." The illusion of displacement presupposes change, variation, difference — an extraordinary situation of aesthetic immersion and illusion — as confirmed by the constant association between the meaning and experience of the immersive image, the syntax of deterritorialization, and the shift into another, often aquatic, reality as suggested in Murray's original definition[3]), as well as by the consideration of spaces immediately identifiable as places somehow separated from the world. Referring to the figure of displacement into an aquatic space, for example, Pinotti has described the VR experience as a form of apnea, in which the "respiratory" rhythm governing our habitual interactions with the real world is suspended and replaced by a different rhythm, one that requires the learning of new gestures and new sensorimotor performances (Pinotti, 2021,

[3] Immersion is a metaphorical term derived from the physical experience of being submerged in water. We seek the same feeling from a psychologically immersive experience that we do from a plunge in the ocean or swimming pool: the sensation of being surrounded by a completely other reality, as different as water is from air, that takes over all of our attention, our whole perceptual apparatus… in a participatory medium, immersion implies learning to swim, to do the things that the new environment makes possible… the enjoyment of immersion as a participatory activity. (Murray, 2001, p. 98-99).

*Apnea*, 1). This extraordinariness thus emphasizes the "attractional" dimension of mediation and the artifice underlying it: apnea is not ordinary, just as immersion in liquid is not the natural condition of the human animal (and especially for this reason water both fascinates and frightens, connoting order and chaos, embodying the ambivalence of natural elements, so that even apnea can become an exciting, playful, or competitive practice)[4]. There are several cases, for instance, where VR content is presented with the expression "Meet": for example, Meet Mortaza VR, where the threshold is between a geographical "here" and "there," or Meeting You, where the threshold is between the earthly and the otherworldly dimension.

The threshold experience is also that between the real dimension and "surreality." It is no coincidence that the rise of VR — especially in the vision of figures such as Lanier — took place in the cultural ferment of the 1970s and 1980s, characteristic of the cyberpunk community, from which it inherited multiple references to tropes of mind expansion, science fiction, hacking, alternative music, alternative health, drug culture, and sexuality.[5]

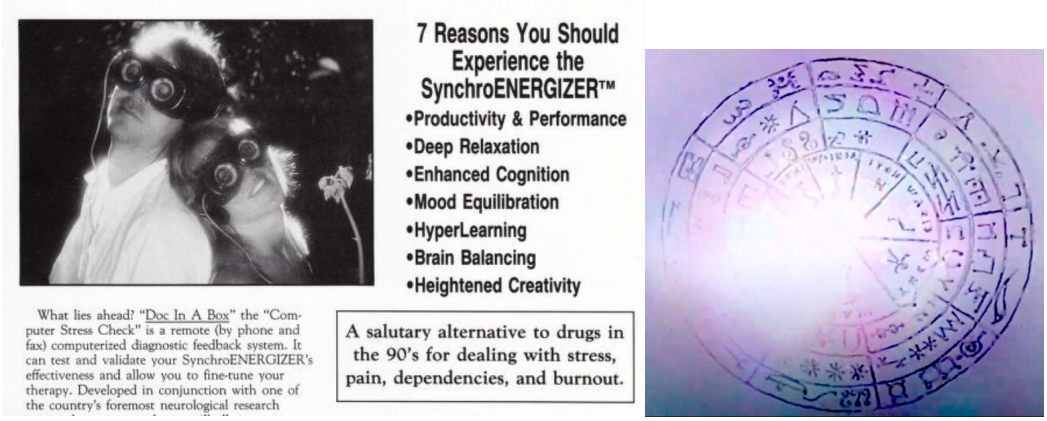


Image 1 - Left: SynchroEnergizer advertising, *Mondo 2000*, 1990; Right: a still from *The Lawnmower Man* (Leonard, 1992).

But the parallel between VR and esoteric culture can be traced in several contexts — from the success of meditation applications to those documented by Davis (Davis, 2015) in relation to techno-paganism, or to the references in cult films such as *The Lawnmower Man*, where the visuals displayed to the character through the VPL device recall the aesthetics of esotericism and alchemy.

Another topic is represented by the meaning of the notion of the virtual, no longer as a "threshold experience" but as a "becoming," linked to the idea of virtual technologies as future-oriented — no less destabilizing and extraordinary[6].. Chesher (2003), for instance, analyzing discourses around virtual reality (VR), highlighted the numerous metaphors —

[4]The history of immersive media is filled with digital artworks that feature the aquatic trope (from Char Davies's Osmose to the works of Chatonsky). For a reflection on the experience of aquatic and liquid spaces, see the volume curated by Roelens e Erchadi (2023).

[5] "[…] the component of social criticism is dropping away, and the enthusiasm has been transformed into entrepreneurial fervour. Cyberpunk defines itself as marginal, esoteric, oppositional – a counterculture. As such it must keep moving, redefining itself, shifting its identity. There was a tension between the oppositional and peripheral nature of cyberpunk and the VR marketers' goals of breaking into mainstream. While cyberpunk had energy and imagination, mainstream industry had capital." Chesher (2003)

[6] Vitali-Rosati observes that it is precisely the notion of the virtual (even before that of immersivity) that identifies a process of deterritorialization: it evokes the sea and all the challenges this space poses to humans—who, after all, are living beings evolved on land. As an aquatic space, the virtual challenges, at least within the realm of digital technologies, our notion of space: there is no longer a territory. (Vitali-Rosati, 2012).

such as the myth of the American frontier — employed to legitimize VR as a significant and inevitable technological progression. Hillis (1999), in the same direction, noted that cyberspace and VR are both metaphors and configurations of the "promise of an escape from History with a capital H": "Cyberspace not only suggests that an ideal existence must necessarily be mediated by technology, but also continues and intensifies a long-standing project aimed at modifying, through the use of technology, subjectivity and the meaning of what it is to be human" (Hillis, p. XVII). This reading of the cyberspace becomes even more understandable if placed within the sociopolitical context of the 1970s and the typically postmodern rethinking of the role of institutions that characterized that period. Kroker, for instance, defined VR as having "always been about the mass emigration of genes from the old world of the human body to the new world of digital reality" (Kroker, 1993, p. 39). In more recent times, anthropologist Bell has proposed a similar analogy between the myth of the metaverse and the "new worlds" promised by the development of electrical technologies at the end of the nineteenth century, showcased in the context of world exhibitions such as the *Great Exhibition of the Works of Industry of All Nations* (London, 1851), the *Exposition Universelle* (Paris, 1889), and the *World's Columbian Exposition* (Chicago, 1893). She simultaneously highlights the parallel between immersion in VR and the immersive environments staged in the context of these exhibitions (Bell, 2022).

The same process can be understood with reference to identity. Gualeni and Vella (2020), drawing on the philosophical traditions of existentialism and hermeneutics, and in particular on authors such as Sartre and Plessner, argue that in the face of the impossibility of identifying a stable foundation for one's individual existence — namely, a reliable set of values or a defined sense of self — individuals develop an existential need to create something of themselves: to become, through free self-determination, a particular kind of being. Rather than considering virtual worlds as independent existential domains requiring total psychological and cognitive involvement, these can be understood as technically mediated tools for temporarily adopting new perspectives, experimenting, and reflecting on one's possibilities and their meanings. In virtual worlds thus conceived, aspects of real life and relations of power can be replicated, questioned, or even subverted.

These examples make it possible to argue that virtual reality is a typical case in which we can identify that interpretative mechanism through which a space acquires meaning on the basis of its opposition to its contrary, to the other, to what lies outside it. In this sense, what is important to stress is that VR constitutes a form of symbolic experience that inherits the ancestral human desire to transcend earthly reality — while the differences in perception between "real" and "transcendental" experience are not particularly relevant.

And yet, even if the contents are unreal, the imaginary of virtual reality has often associated the technological apparatus with the ability to create and open up spaces indistinguishable from real ones. The 360-degree headset, in particular, has been imagined as capable of configuring "another" body — an avatar — whose experiential form is normally associated with illusion (unlike the first model of HCI, in which it is the user's "real" body that experiences both real and digital contents).

These reflections help to highlight the paradoxical dimension of the "common sense" of virtual reality, insofar as they both emphasize the medium and the transition toward another experiential dimension, and at the same time identify this as "reality." As noted by Lévy and Maldonado, the problematic nature of the expression "virtual reality" stems from its oxymoronic character: it semantically combines the idea of "virtuality" — of transformation, heterogenies, deterritorialization, presupposing knowledge and, therefore, the extraordinariness of experience — with the idea of reality, which can be defined as an

ordinary condition, characterized by a biological-cultural determination underlying signification and, to some extent, "automated," at least more so than the process that prompts a subject to undergo an aesthetic experience.

The case of the metaverse is particularly emblematic for discussing this (ancestral) paradox, since it has, on the one hand, carried forward the myth of VR as a virtual experience (both synchronically and diachronically), partly recalling the origins of the Internet, the playful and utopian flavour of early online communities, and the renewed centrality of the avatar. As already mentioned, the metaverse is often associated with the form of a new video-game format — relatively recent, considering that the term MMORPG (massively multiplayer online role-playing game) was first used in 1996 by Electronic Arts — that seems to promote an experience situated in an "other" space. This idea is particularly evident if one considers Fortnite's island, which recalls management games such as Tropico. These experiences resemble those of theme parks, which in turn share many cultural forms with the carnival: the attraction component — referencing the "cinema of attractions," the fairground spaces where cinema was born, and virtual-reality technology — is especially strong here. This connection is explored in Lisa Messeri's studies on the uses of virtual reality in Los Angeles (Messeri, 2024). More specifically, Messeri proposes to move beyond the reality-virtuality dualism by adopting the notion of "un-reality," drawing on fantastical places such as theme parks, which are not virtual in a synthetic or digital sense at all.

To be in the world of the unreal is to experience the fracture of reality. The unreal holds both possibilities and threats, prompting people to ask what collective action and change might look like when the idea of "the collective" can no longer be taken for granted. In this fragmented reality, it has become frustrating to see that traditional civic-action strategies are ineffective, as they rely on norms and assumptions that no longer apply. (Messeri, 2024, p. 7)

On the other hand, however, the technological imaginary of the metaverse has also been enriched by a series of ideas — more problematic in certain respects — of an "ordinary metaverse," set against the notion of an "other" metaverse: such as the recurring associations with the idea of the "mirror world" (Gelernter, 1991; Kelly, 2016) or the "digital twin" evoked in Meta's promotional videos, where photorealistic images falsely anticipated the new stage of Facebook/Meta and of social media platforms — spaces that are anything but extraordinary.

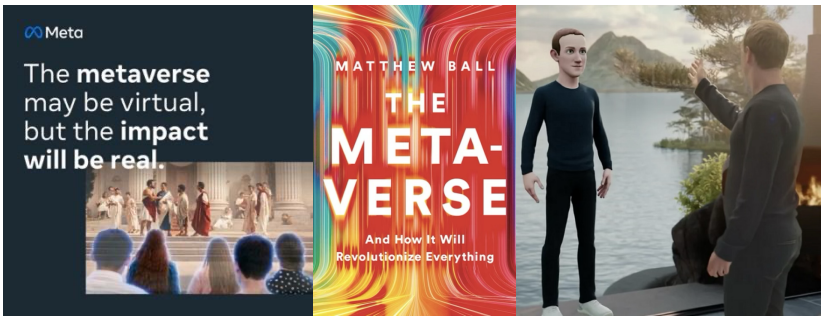


Image 2 - Figures of the imaginary of the metaverse: an image from Meta's advertising campaign (2023); the cover of Ball's book, a milestone for the business community; a still frame from Zuckerberg's presentation of the metaverse


Image 3 - Figures of the imaginary of the metaverse: a screenshot from Fortnite showing the countdown preceding an in-platform event.

However, Bory and Hesselbein argued, the real question is not merely whether the current metaverse corresponds more closely to the first or the second definition. Rather, it is a matter of understanding whether the values associated with the spaces of today's metaverses — such as *Fortnite*, *Roblox*, or *Minecraft* — are interpreted in connection with notions of virtual reality and cyberspace, as detached spaces, or whether other formulations are possible — for example, one that brings them closer to the digital platforms that currently dominate the online experience. In this direction, the authors propose a critical and political perspective.

## The political dimension of virtual spaces

Several scholars in the second half of the twentieth century offered reflections, concepts, and theoretical frameworks to interrogate the political nature of space. De Certeau (1990), for instance, showed that space is not merely a geometric dimension generated and determined by strategies of power, but rather the outcome of everyday practices ("tactics") that traverse, reinterpret, and rewrite it. Along these lines, Messeri suggested adopting the notion of "third space" to capture both the entertaining and the political dimensions of virtual reality. Messeri suggested to adopt such notion to describe the entertainment and political nature of virtual reality. Originally introduced by Oldenburg, the notion of the "third place" refers to social spaces distinct from the home (the first place) and the workplace (the second place), and designed to offer an alternative to the serious, rational environment of work. Homi Bhabha (2004), from a postcolonial perspective, proposes instead that the third place be interpreted as a space where different communities bring their own readings of the same environment — a postmodern approach. This concept partly aligns with Arturo Escobar's *Design for the Pluriverse* (2018) and even resonates with certain theories in quantum physics (which often accompany narratives about virtual reality, such as the three-body problem).

From this perspective, the metaverse, as a third place, is primarily characterized as a space dedicated to leisure. Its playful and aesthetic dimension, its intersubjective character, and its pluralistic, heterogeneous nature are pivotal to this understanding. From a historical standpoint and taking into account the role of attractional components in the evolution of technologies and cultural habits, one could say — using Mosco's terminology — that since contemporary web culture has become *banal* and incapable of producing sublimation, the metaverse as a third place serves to renew collective passion for platforms. This idea is

further reinforced by the fact that Facebook chose to launch the metaverse at one of the company's worst-ever moments.

However, if the metropolis is already the result of space generation through strategic planning, this applies only from an organizational and infrastructural point of view. In contrast, the space of the metaverse is generative and technological determined in an ontological sense. Its source code generates a series of computational operations at various interface levels, ultimately resulting in a three-dimensional environment — the interface itself. In this case, however, space is not 'appropriable' in the same way as that of the third space: today's metaverses are nothing like the participatory spaces of the early internet's virtual communities. The metaverse spaces of today are primarily created and owned by corporations such as Epic Games, Meta, or Roblox. Two theories of digital space can help us highlight this issue, which is above all political. The first is technopolitical in nature. In *Code/Space*, Kitchin and Dodge (2011) describe how software code creates spaces: the code/space entity, they write, emerges through a process of transduction when software and the spatiality of everyday life become mutually constituted — that is, produced by and through one another. In this view, spatiality is the product of code, and code exists primarily to produce a particular spatiality. In other words, there is a dyadic relationship between code and space (Kitchin and Dodge, 2011, p. 17). The authors give the example of airport boarding zones, which would fall into chaos without the software managing them.

The second theory is philosophical. To describe internet spaces, Ugo Volli (2021) referred to the distinction between "smooth spaces" and "striated spaces" proposed by Deleuze and Guattari in *A Thousand Plateaus*. "Smooth" space is nomadic or rhizomatic — like the sea or the desert — where the path is not predetermined and aimless wandering is the fundamental mode. "Striated" space, on the other hand, is that of a journey guided directly toward a goal along fixed channels: railways, highways, commercial flight paths. Internet theorists, as Volli notes, have often interpreted users' online activity in "smooth" terms, for instance by speaking of "surfing" or "navigation," imagining a total freedom of curiosity, as if being connected to a computer were the contemporary equivalent of Baudelaire's *flâneur*. In reality, those who manage the medium (internet providers, legal regulators, software publishers, platform operators) constantly attempt to limit this freedom — by retaining the "navigator" within controlled spaces or making them passive to their suggestions, guiding them along "information highways." In short, they strive to *striated* cyberspace.

If we look to the case of the metaverse, we have to notice that spatial enunciation in the metaverse cannot be as invisible as the everyday spatial practices described by de Certeau. Institutional determinism affects not only the evolution of media but also the conditions of experience — for instance, during the Travis Scott concert in *Fortnite*, it was impossible to fight in certain parts of the island.

These issues strongly resonate within the scientific community of developers and designers, who are deeply concerned about the remediation of social media logics within 3D worlds accessed through VR technologies. Above all, the integration of Generative AI into the management of human-VR interaction heightens the risks of exploitation of creative labor, privacy violations through biometric data harvesting, and the erosion of trust through data contamination and misinformation.

## Conclusions

In summary, although the social construction of the metaverse echoes the processes that shaped the emergence of the Internet and virtual communities, it is essential to highlight some key differences with this historical and technological model.

From a theoretical perspective, the metaverse appears to update — or rather, weaken — the meanings of the notion of the virtual as developed throughout the 20th century. The idea of the virtual as potential (a view that resonates with Pierre Lévy's thinking), commonly associated with the anonymity of the first virtual communities, is now countered by the concept of the digital twin. In this sense, the metaverse continues along the trajectory of social networks, in sharp contrast with the avatar–virtual community model of the early Internet. Indeed, they are precisely the narratives of business actors that accompany and financially propel the concrete development of the metaverse. They try to situate the metaverse within this historical evolution in order to frame and justify its technological development and cultural relevance, as well as to attract further investment (Hesselbein & Bory 2025, p. 12).

From a socio-cultural standpoint, the question also arises regarding the role of the fantastic. In the metaverse, the fantastic is not tied to the prophetic narratives that have historically accompanied media development, as Natale and Balbi explain (Natale and Balbi 2014). Rather, it functions as a driver toward unreality, following Messeri's framework, and is closely connected to the well-established industries of video games and theme parks.

From a sociotechnical perspective, it is also important to emphasise that the relationship between code and space is not inherently deterministic. Even in metaverse environments — particularly on Roblox — it is users who create environments. For at least a decade, it has been common to speak of "user-generated content", and it is reasonable to argue that many metaverses rely on actual games or experiences created by users. To support this line of thought, it is helpful to recall Michel de Certeau's provocative and anti-deterministic perspective, according to which a place is a static concept — defined by geographical coordinates and organized according to institutional logic — while space is a practised place, made dynamic through the actions, movements, and interactions of individuals. However, contemporary software for creating virtual worlds and metaverses, while facilitating and democratizing rapid 3D modelling through user-friendly development kits (SDKs), often leads to an abundance of homogeneous and low-quality content (sometimes referred to as "AI slop").

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# From Technological Utopia to a New Carrier of Civilization: Discourse Generation and Cultural Practice of Chinese-style Cultural Metaverse in the Global Context

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## Abstract

In the global wave of digitalization, the metaverse has shifted from a speculative concept toward a concrete arena for cultural, technological, and social experimentation. While much scholarship focuses on Western, technology-driven models, this paper examines the emerging paradigm of a Chinese-style cultural metaverse, in which digital tools are applied to preserve heritage, reframe cultural narratives, and foster international dialogue. Drawing on an interdisciplinary framework that combines cultural semiotics, the sociology of technology, and policy analysis, the study analyzes three representative case studies—the Dunhuang murals, *Digital Central Axis* in Beijing, and the *Black Myth: Wukong* game project. Through these examples, the paper argues that the Chinese cultural metaverse illustrates both opportunities and limitations in integrating cultural continuity with digital innovation. By situating these practices within global debates on the metaverse, the paper contributes a non-Western perspective to ongoing discussions about how digital environments can function not only as sites of technological experimentation but also as carriers of cultural and civilizational values.

**Keywords:**
Cultural Metaverse; Digital Heritage; Virtual-Physical Interaction; Civilization Dialogue; Global Digital Culture

## Introduction

Since its popularization in science fiction and the technology industry, the concept of the metaverse has often been framed as a technological utopia. From Neal Stephenson's Snow Crash to Mark Zuckerberg's rebranding of Facebook as Meta, the metaverse has frequently been imagined as a parallel virtual world where blockchain, cryptocurrencies, and neural interfaces promise to transcend the limits of the human body. Scholars such as Katherine Hayles have noted that this framing reflects a broader digital savior complex, the belief that technology alone can resolve social and cultural challenges by offering a disembodied form of digital immortality.

While influential, this Western, Silicon Valley centered narrative is neither the only nor the inevitable way of imagining the metaverse. In recent years, Chinese cultural institutions, policymakers, and creative industries have developed a different set of practices, often described as a cultural metaverse. These initiatives employ digital tools not simply to create parallel digital realities, but to preserve and reinterpret cultural heritage (Zhan & Sun,2022; Xie & Zhang,2024), re-engage collective memory (Hu & Huang,2025; Huang, Xia & Tie, 2023), and promote cross-cultural dialogue (Qian & Chen,2023; Zhao & Wei, 2022). Examples include the Dunhuang Academy's blockchain-authenticated digital murals, the

interactive exhibitions of *Digital Central Axis* in Beijing, and the global circulation of games such as *Black Myth: Wukong*.

This paper asks: How should we define the Chinese-style cultural metaverse? What are its practical characteristics? And what global value might it hold in the current climate of civilizational tension? Addressing these questions is important because most metaverse research remains focused on technological or economic dimensions, with limited attention to cultural and civilizational perspectives.

To explore these issues, the study adopts an interdisciplinary framework drawing on cultural semiotics, the sociology of technology, and policy analysis. It focuses on a small set of representative case studies to illustrate both the potential and the limitations of China's approach. The paper proceeds in four steps: (1) reviewing existing literature and defining the concept of the Chinese cultural metaverse; (2) outlining the methodological approach; (3) analyzing selected case studies; and (4) discussing the broader implications for global digital civilization.

## Literature review and research issues

The global development of the metaverse has been accompanied by competing narratives about its purpose and value. In Western discourse, the metaverse is often conceptualized as a technological utopia—a fully immersive, data-driven world that promises liberation from material constraints. This vision, rooted in Silicon Valley's techno-humanist ideology, emphasizes individual autonomy, virtual property, and digital immortality (Hayles, 1999). Scholars in digital culture studies have critiqued this approach as a continuation of technological determinism, in which social progress is assumed to follow from innovation itself (Srnicek, 2017; Fuchs, 2022).

In contrast, recent Chinese academic and policy discussions have proposed the concept of a "cultural metaverse"—a digital ecosystem where culture, rather than technology or capital, constitutes the central organizing principle (Xie & Gao, 2023; Zhang & Liu, 2024). Rather than treating the metaverse as a "virtual parallel world," Chinese scholars tend to describe it as a continuation of civilizational development through digital media. This perspective draws inspiration from Qian Xuesen's 1990s translation of "Virtual Reality" as *Lingjing* (Spiritual Realm), which implies that virtuality should extend, rather than escape, the real world (Wang, 2023).

Within China, the National Cultural Digitization Strategy (2021-) has further institutionalized this approach by encouraging integration between cultural preservation and technological innovation. A growing body of domestic research has explored how digital museums, immersive exhibitions, and AI-driven heritage reconstruction can strengthen cultural continuity while contributing to the digital economy (Su, 2024; Zhao, 2022).

Despite these valuable contributions, two critical limitations remain.

First, much of the existing Chinese-language scholarship employs normative or ideological language, framing the "Chinese-style cultural metaverse" as inherently superior to Western models. This has limited its impact within global academic discussions.

Second, few studies provide empirical or comparative analysis linking Chinese practices to broader global metaverse debates. The relationship between technological innovation, cultural authenticity, and civilizational dialogue therefore remains underexplored.

To address these gaps, this study situates the Chinese-style cultural metaverse within international scholarship on digital heritage, cultural governance, and media technology. Works by Bolter and Grusin (1999) on remediation, Jenkins (2006) on participatory culture, and Parikka (2020) on media ecologies offer valuable frameworks for understanding how digital systems transform cultural memory. Building on these insights, the paper examines how Chinese cultural and creative industries interpret and apply similar principles within their own philosophical and institutional contexts.
Accordingly, the research focuses on three interrelated questions:

Q1 Definition: How can the "Chinese-style cultural metaverse" be conceptualized as a model of digital civilizational development?
Q2 Practice: What specific characteristics and mechanisms define its practical operation?
Q3 Global relevance: In what ways might these practices contribute to cross-civilizational understanding and dialogue in the digital age?

## Research Perspectives and Methods

The study adopts an interdisciplinary qualitative approach to examine how China's emerging "cultural metaverse" integrates technological innovation with cultural continuity. The methodology combines three complementary perspectives: cultural semiotics, the sociology of technology, and policy analysis. Together, these frameworks allow the research to explore both symbolic meaning and institutional structure in the development of the Chinese-style cultural metaverse.

### 1. Cultural Semiotics

This dimension focuses on how traditional cultural symbols are digitally reconstructed and reinterpreted in virtual environments. It examines how meaning is generated when heritage artefacts, visual motifs, or philosophical ideas are translated into digital form. By analyzing semiotic transformations in digital exhibitions and immersive media, the study evaluates whether these virtual expressions preserve, distort, or expand cultural significance.

### 2. Sociology of Technology

From a sociological perspective, the metaverse is viewed as a socio-technical system shaped by the interactions between state institutions, industries, and users. This part of the analysis explores how technological infrastructures—such as VR platforms, blockchain authentication, and AI-driven content creation—mediate cultural participation. Attention is given to the ways in which digital tools enable or constrain the public's engagement with heritage and identity formation.

### 3. Policy and Governance Analysis

The study also situates the Chinese cultural metaverse within the broader framework of national digital governance. It examines how government strategies, such as the National Cultural Digitization Strategy, influence metaverse development and regulate emerging issues related to intellectual property, cultural authenticity, and data ethics.

## Case Selection and Analytical Process

Given the wide range of metaverse-related projects in China, the study employs a purposeful sampling strategy. Three representative cases were selected according to their cultural significance, level of technological integration, and international visibility:
Dunhuang Digital Murals Project: a model for blockchain-enabled heritage authentication.
The interactive exhibitions of *Digital Central Axis* in Beijing: an example of AR/VR-mediated cultural preservation and public education.
*Black Myth: Wukong*: a commercial cultural product that reinterprets classical mythology through digital storytelling.
Each case is analyzed through three guiding questions:

- What cultural narratives are being translated into digital form?
- What technologies and institutional frameworks enable these translations?
- What tensions or limitations arise in the process?

The analysis relies on textual interpretation, media observation, and policy document review. Primary materials include project reports, media coverage, official digital platforms, and academic commentaries. These are triangulated with secondary literature in English and Chinese to ensure analytical rigor and cross-cultural comparability.
In summary, the methodological design emphasizes balanced interpretation rather than ideological evaluation. By combining cultural, technological, and policy-oriented perspectives, the study aims to reveal both the achievements and contradictions within China's cultural metaverse practices, contributing to a more globally informed understanding of how digital technologies reshape civilizational expression.

## The Definition of the Chinese-Style Cultural Metaverse: A Digital Continuation of Civilization

The term "Chinese-style cultural metaverse" refers to a framework in which digital technologies are applied to the preservation, reinterpretation, and dissemination of cultural heritage. Rather than creating an entirely virtual parallel world, this model treats the metaverse as a continuation of civilization—an evolving medium for transmitting cultural memory and fostering civilizational dialogue in the digital age.
Philosophically, this perspective builds on long-standing Chinese ideas about the interdependence of the virtual and the real. Classical concepts such as the unity of heaven and humanity (天人合一) and the mutual generation of being and non-being (有无相生) suggest that the virtual world is not separate from the physical one but represents a different mode of perceiving and expressing reality. The scientist Qian Xuesen's translation of "virtual reality" as Lingjing ("Spiritual Realm") captures this continuity: technology serves as a tool for extending human creativity and cultural meaning, not for escaping the real world.
In this sense, the Chinese-style cultural metaverse may be defined as a "culture-centered, technology-enabled, and reality-linked" system that uses digital media to reactivate cultural heritage, reinterpret traditional values, and encourage new forms of participation. It

emphasizes reproduction rather than replacement: technology is valued as an instrument for sustaining cultural vitality, not as an autonomous force of progress.
The defining features of this model can be summarized in three interrelated dimensions:

**Cultural Essence and Philosophical Foundation**

The Chinese cultural metaverse derives its core logic from an understanding of culture as a living continuum. It's a process through which digital innovation serves the transmission of civilizational meaning. Digital reconstructions, such as virtual exhibitions of Dunhuang murals, are conceived as means to extend cultural life across time and space. They aim to evoke recognition and emotional connection, enabling users to engage with cultural heritage in immersive, participatory ways. Anchored in the dialectical underpinnings of Chinese philosophical thought—most notably the interdependence of being and non-being (you wu xiang sheng, 有无相生) and the holistic unity of humanity with the cosmos (tian ren he yi, 天人合一)—the Chinese-style cultural metaverse reframes virtuality not as a detachment from the tangible world but as a dynamic, tech-enabled conduit for amplifying cultural cognition and creative articulation.

A representative case that embodies this principle is the *Digital Dunhuang* project. For over three decades, the Dunhuang Academy has employed digital technologies to protect and reinterpret the ancient murals of the Mogao Caves, which face severe deterioration due to natural and human factors. By combining AI-based digital restoration, 3D laser scanning, and VR/AR virtual exhibition technologies, researchers have achieved millimeter-level precision in mural reconstruction. The project not only realizes the "digital immortality" of endangered art but also transforms static relics into dynamic media for cultural participation and education.
For instance, the *Digital Dunhuang* Resource Library and the newly launched Digital Cangjing Cave Database allow global audiences to explore, annotate, and co-create content derived from the murals. Visitors can virtually navigate the caves, engage in interactive storytelling, and experience the artistic *aura* (lingyun, 灵韵) of the murals without endangering the originals. As Professor Fan Jinshi has emphasized, while murals cannot live forever physically, they can achieve continuity through digital spirit, which is a manifestation of the Chinese cultural worldview that culture transcends materiality.
Through this integration of technology and tradition, the Digital Dunhuang initiative demonstrates how the Chinese cultural metaverse embodies a philosophy of renewal rather than replication. Technology becomes a vessel of cultural vitality, echoing the Confucian ideal of "carrying forward the Way" (cheng dao, 乘道) through adaptive transformation. The project exemplifies how the Chinese-style metaverse operationalizes its philosophical foundation: merging technological progress with moral, aesthetic, and civilizational meaning to ensure the ongoing life of culture in digital form.

**Technological Mediation and Innovation Logic**

The model operates through a reciprocal relationship between cultural demand and technological development. For instance, 3D scanning and VR visualization allow museums to preserve artefacts that might otherwise deteriorate, while AI-assisted content creation supports creative reinterpretations of traditional stories. Projects such as *Black Myth:*

*Wukong* exemplify how commercial game design can simultaneously promote cultural visibility and innovation. The technological logic of the Chinese-style cultural metaverse rests on the dynamic interaction between technological mediation and cultural innovation. In this framework, technology is not an external driving force imposed upon culture but a mediator of meaning—a medium that enables culture to regenerate within digital environments. This approach transcends both technological determinism and cultural essentialism, proposing instead a co-evolutionary model in which digital innovation and cultural inheritance shape one another.

A vivid manifestation of this mediation is found in the development of the digital game *Black Myth: Wukong* (Heishenhua: Wukong), a landmark in China's digital cultural production. Created by the Game Science studio, the game adapts the classic *Journey to the West* narrative into a 3A-level interactive world, combining cutting-edge rendering technologies with the expressive aesthetics of traditional Chinese art with great success of over 28 million copies sold globally within months of release.

From a technological perspective, as Zhu Xiaofeng (2024) notes, its production integrated cinematic-quality motion capture, real-time ray tracing, and Unreal Engine 5's nanite and lumen systems to achieve film-level visual fidelity. The workflow was accompanied by narrative localization, which is a commitment to rendering cultural depth through technology. The games embody the innovation logic of the Chinese-style metaverse: technological precision serves as the vessel for cultural resonance. The development team used 3D-scanned reconstructions of heritage sites, such as the Yungang Grottoes, Shuanglin Temple, and the Hanging Temple, to create immersive spaces where ancient architecture and mythic imagination coexist. In this sense, *Black Myth: Wukong* does not merely simulate tradition but digitally reactivates it, transforming static cultural symbols into interactive experiences. As Li Junxin (2025) observes, this process achieves the "creative transformation and innovative transmission" of traditional culture, making mythological imagery accessible to global audiences through an emotionally engaging, game-based medium.

Equally significant is the game's philosophy of interactive narrative. The player, referred to as "the destined one" (tianming ren,天命人), navigates moral and existential dilemmas mirroring classical Chinese concepts of fate, self-cultivation, and transcendence. The branching storyline and adaptive gameplay structure exemplify how technological interactivity mediates philosophical reflection—the metaverse as an arena for moral inquiry and aesthetic contemplation. Through interactive immersion, sound design and narrative further deepen this effect. Traditional instruments such as the *guqin*, *xiao*, and temple bells create a sonic atmosphere resonant with spiritual contemplation. The script's use of classical Chinese diction and chapter-style storytelling transforms the philosophical triad of Confucian ritual (li), Daoist harmony (he), and Buddhist compassion (bei) into experiential gameplay. *Black Myth: Wukong* transforms the Confucian-Daoist-Buddhist synthesis of *Journey to the West* into a living discourse of digital civilization. This synthesis of virtual realism and artistic stylization achieves the Confucian-Daoist-Buddhist aesthetic of "harmony between the real and the imagined" (实与虚, 情与景). In this way, *Black Myth: Wukong* enacts technological mediation as cultural semiotics: every visual, auditory, and interactive layer encodes a worldview, turning digital play into an act of philosophical engagement.

Furthermore, the production process itself reflects collaborative technological innovation, which is a convergence of artistic, computational, and philosophical disciplines. The game's art design drew from traditional ink painting and stagecraft, while its soundscape integrated *qin* melodies, Buddhist chants, and modern electronic music. This fusion of sensory registers aligns with the Chinese aesthetic ideal of *he er bu tong* (harmony without uniformity), translating cultural philosophy into digital form.

Through *Black Myth: Wukong*, the Chinese-style cultural metaverse demonstrates that technological mediation is not a neutral conduit but a creative principle. It fuses material innovation with symbolic expression, generating a feedback loop between algorithmic precision and aesthetic imagination. By turning ancient narratives into interactive experiences, it redefines technology as a cultural language—a means by which tradition not only survives but evolves within global digital modernity. In this sense, technology becomes the medium of civilizational continuity: a means by which Chinese philosophical, aesthetic, and emotional worlds enter global digital discourse.

## Value Orientation and Civilizational Dialogue

The cultural metaverse promotes values of inclusivity, collective memory, and intercultural exchange. Initiatives like the Digital Central Axis project in Beijing or the Sino–French collaborative performance 20,000 Leagues Under the Sea use digital tools to foster cross-cultural participation. In this way, the Chinese-style metaverse contributes to global dialogue by offering a practical example of how technology can mediate between heritage preservation and cultural exchange.

A paradigmatic example of this value orientation is the *Digital Central Axis* (数字中轴·小宇宙) project in Beijing. Developed collaboratively by the Beijing Municipal Cultural Heritage Bureau, the Beijing Central Axis World Heritage Application Office, and Tencent, this initiative represents the world's first immersive digital heritage experience created with gaming technology. Over three years of development and 542 iterations, it digitally reconstructed the 7.8-kilometer-long Beijing Central Axis—from Yongding Gate in the south to the Bell and Drum Towers in the north. By integrating high-definition photogrammetry, procedural generation (PCG), AI-based modeling, and cloud gaming. The result is a hyper-realistic, explorable digital environment encompassing 2.2 million buildings, 300,000 trees, and over 15TB of 3D data assets. The project's philosophical core lies in its threefold articulation of the Central Axis's value, the physical axis (material heritage and urban morphology), the historical axis (civilizational continuity across dynasties), and the conceptual axis(the Chinese worldview of balance, harmony, and centrality). By translating these intangible concepts into interactive experiences, the *Digital Central Axis* transforms abstract heritage value into an embodied, participatory narrative. Users can experience imperial processions, ritual spaces, and architectural symbolism through interactive storytelling, puzzle-solving, and time-travel simulations, reinterpreting the moral order of the "center" (zhong) as both a spatial and ethical principle of Chinese civilization. In the virtual re-creation of the Central Axis, users encounter a spatial philosophy rooted in *zhongzheng hehe* (中正和合, centrality and harmony), where the balance between heaven, earth, and humanity is expressed through urban geometry. The project links ancient civilization ideals with modern public ethics, transforming technological experience into civic consciousness. The integration of the "Digital Watchman" system allows citizens and visitors to become co-stewards of world heritage: by scanning QR codes

and uploading field observations, they actively participate in conservation monitoring. This redefines public heritage participation from passive spectatorship to active co-creation, aligning with UNESCO's "Operational Guidelines for the Implementation of the World Heritage Convention" emphasizing *Outstanding Universal Value* (OUV) and community involvement. It also builds international bridges—cooperating with digital heritage experts from UNESCO, ICOMOS, and European digital twin projects—showing how Chinese urban heritage can inspire new frameworks of global cooperation in digital heritage protection.

From a civilizational perspective, this case embodies the Chinese metaverse's value orientation toward mutual learning among civilizations. The *Digital Central Axis* narrates Chinese urban philosophy—rooted in ritual, order, and moral harmony—through global digital languages of visualization and interactivity. In doing so, it transforms China's heritage narrative from an object of national pride into a platform for global understanding. The immersive digital reconstruction of the Central Axis not only preserves history but reactivates it as a living, dialogic space—where users from any culture can explore the moral geometry and humanistic wisdom of Chinese civilization.
In short, the Chinese-style cultural metaverse does not claim to replace other models but offers an alternative way of integrating technology with cultural meaning. Its significance lies in demonstrating how digital technologies can function as civilizational carriers—tools for connecting the virtual and the real, the local and the global, and the past and the future.

## The Practical Characteristics and Logic of the Chinese-Style Cultural Metaverse

The development of the Chinese-style cultural metaverse reflects an ongoing effort to integrate digital technologies with cultural interpretation and social participation. Rather than viewing technology as an autonomous driver of change, this model treats it as a medium that strengthens cultural expression and civilizational continuity. Its practical characteristics can be understood through three interrelated aspects: heritage-based innovation, technological mediation with humanistic focus, and participatory collaboration. These features do not suggest a closed or unique model but illustrate one approach among many to exploring the interaction between culture and technology in contemporary society.

### Digital Heritage Reconstruction: Extending Cultural Lifespans through Technology

A recurring theme in recent cultural-technology initiatives in China is the use of digital tools to renew and communicate historical and artistic traditions. The emphasis is on how technology can support the preservation, documentation, and reinterpretation of cultural materials. At its foundational level, Heritage-Based Innovation means to use digital tools to preserve and reconstruct cultural heritage that is vulnerable to time or physical degradation. High-precision scanning, 3D modeling, and blockchain verification enable the creation of "digital twins" of artifacts and monuments, ensuring that cultural memory can be transmitted to future generations.
For instance, the Dunhuang Digital Murals Project, developed in collaboration with technology companies, employs blockchain certification to verify and archive digital replicas of ancient Buddhist art. This approach not only protects the originals from damage

but also creates an open-access digital database for global scholars and artists. Through high-resolution scanning, AI-assisted mural restoration, and VR exhibition platforms, the project provides digital access to the Mogao Caves' mural heritage. These techniques enable researchers and the public to study and experience cultural artefacts that are otherwise fragile or inaccessible. The project shows how immersive media can complement traditional conservation, allowing long-term preservation and broader dissemination.

Such practices reflect a wider international trend in heritage management that uses digitization not as an end in itself but as a method for adaptive cultural transmission—linking historical documentation with contemporary educational and research uses.

## Cultural Value Translation: Reinterpreting Tradition through Digital Media

Beyond preservation, the cultural metaverse facilitates the reinterpretation of traditional cultural symbols within contemporary contexts. It means to attempt to balance technical innovation with interpretive meaning. In this context, "technological mediation" refers to how digital systems shape cultural expression, audience experience, and aesthetic communication.

The digital game *Black Myth: Wukong* is a relevant case. Built with advanced rendering technologies such as Unreal Engine 5 and Nanite micro-polygon modeling, the game translates the classical narrative Journey to the West into an interactive form. Its design combines motion-capture realism with stylistic references to Chinese visual art and mythology. Players engage with themes of moral choice and transformation through gameplay rather than textual exposition.

This approach aligns with global discussions on how digital games can function as vehicles for cultural storytelling and ethical reflection. The case illustrates how production pipelines, artistic direction, and narrative design together create a form of technological humanism—using digital media to explore ideas traditionally expressed through literature and art.

Similarly, the *Digital Central Axis* project in Beijing applies game-engine and AI-assisted modeling to heritage interpretation. By reconstructing the 7.8-kilometer historical axis of the city in an interactive environment, it enables users to experience spatial, architectural, and historical information simultaneously. The project's structure of three interpretive "axes"—physical, historical, and conceptual—illustrates a systematic attempt to link digital representation with cultural analysis.

## Civilizational Dialogue: Building Bridges across Cultures

At its highest level, the cultural metaverse functions as a platform for intercultural communication. By linking digital heritage initiatives to global networks, it supports collaboration and dialogue among diverse civilizations and concerns participation and collaboration among public institutions, private companies, and individual users. This participatory emphasis is consistent with current international practices that view cultural heritage and digital innovation as shared responsibilities.

The *Digital Central Axis* project in Beijing exemplifies this process. Through advanced 3D reconstruction and cloud-based interaction, it transforms the city's historical central axis into a global digital heritage site where users from around the world can participate in virtual tours and co-creation activities.

Within the *Digital Central Axis* initiative, the "Digital Watchman" system allows citizens and visitors to record field observations and report preservation issues through a mobile platform. The mechanism complements professional heritage monitoring by integrating citizen input into data collection. In addition, open competitions such as the Beijing Central Axis Cultural Heritage Inheritance and Innovation Competition invite students, designers, and technologists to contribute digital modeling, creative design, and educational applications.

These forms of participation expand the scope of cultural production from institutional curation to distributed collaboration. They also correspond with UNESCO's guidelines for community engagement and capacity-building in heritage management.

## The Logic of Integration: Culture Driving Technology

Across these layers, the Chinese-style cultural metaverse follows a culture-driven innovation model, in which cultural demand guides technological application. This reverses the common pattern of "technology seeking purpose" and instead positions technology as a responsive instrument of cultural need. The process generates both tangible outcomes—such as digital archives, exhibitions, and games—and intangible effects, including renewed public interest in heritage and enhanced national cultural confidence.

Taken together, these practices suggest that the Chinese-style cultural metaverse operates as a hybrid framework linking cultural conservation, digital innovation, and public involvement. Its practical logic can be summarized as follows:

- Use of digital technologies for systematic preservation and documentation;
- Application of interactive and immersive media to reinterpret historical materials;
- Inclusion of multi-stakeholder collaboration in content creation and dissemination.

Rather than proposing a single model, these examples contribute to the broader global discussion on how metaverse-related technologies can support cultural sustainability. They illustrate one pathway for integrating technical progress with interpretive and educational goals, showing that the metaverse concept can function as a cross-cultural platform for the preservation and re-contextualization of heritage.

Together, these layers demonstrate how China's digital cultural initiatives aim to balance innovation with tradition—offering a pragmatic, culturally rooted model of metaverse development that emphasizes shared heritage over technological spectacle.

However, this model also faces notable limitations. For example, the commercialization of digital collectibles risks turning heritage into speculative assets, while aesthetic simplification can dilute cultural authenticity. Moreover, the governance of intellectual property and data ethics in virtual environments remains underdeveloped. Recognizing these tensions is essential for assessing how sustainable this model can be as it continues to expand.

## The Global Value of the Chinese-Style Cultural Metaverse

In the current global context—marked by cultural fragmentation, digital inequality, and renewed debates on the "clash of civilizations"—the Chinese-style cultural metaverse offers a distinctive perspective on how technology can serve as a bridge rather than a boundary between cultures.

The discussion of the Chinese-style cultural metaverse gains significance not as an alternative to other models, but as a case study in how digital technologies can mediate between local cultural traditions and global networks of communication. Its global value lies in the potential to contribute practical and conceptual insights to three ongoing international conversations: the sustainable digital preservation of heritage, the integration of cultural diversity within global media ecosystems, and the use of immersive technology for intercultural education and dialogue.

## Digital Preservation and Knowledge Sharing

Projects such as *Digital Dunhuang* demonstrate how long-term digitization can support both local conservation and international access to cultural resources. The open-access *Digital Dunhuang* database, which contains high-resolution imagery and metadata for thousands of murals, has become a shared research platform used by scholars and institutions worldwide. It offers a model for addressing challenges common to heritage conservation globally balancing physical preservation with public engagement and remote accessibility.

In this sense, the project contributes to the broader global effort to standardize digital archiving practices, similar to initiatives at the British Museum, the Smithsonian Institution, and Europeana. Its value lies not in technological exclusivity but in the way it coordinates cross-disciplinary collaboration between cultural institutions, engineers, and educators. The approach highlights how heritage digitization can combine scientific precision with interpretive transparency, contributing to the formation of interoperable cultural databases across regions.

The Dunhuang Digital Archive demonstrates how open access blockchain systems can allow international scholars to participate in digital restoration and annotation. Instead of centralizing ownership, this approach promotes shared stewardship of cultural resources. Similarly, collaborative initiatives such as the "Digital Silk Road" employ digital platforms to connect museums and archives across Asia, Africa, and Europe, encouraging equitable cultural exchange and joint preservation efforts. By enabling distributed participation, these projects move beyond narratives of technological or cultural dominance, supporting a more pluralistic and networked form of cultural globalization.

## Cultural Diversity and International Communication

One of the most pressing challenges of digital globalization is the homogenization of culture under the influence of mass platforms. The Chinese cultural metaverse provides an alternative strategy by emphasizing the digital representation of local and minority cultures and explains how technology can preserve diverse cultural expressions that might otherwise disappear.

Digital cultural production in China, including works such as *Black Myth: Wukong*, has attracted a large international audience. Its global reach demonstrates that locally grounded

narratives can resonate across cultural boundaries when mediated through advanced production and interactive design. The game's success provides empirical data for the study of cross-cultural storytelling in digital media—how narrative adaptation, aesthetic translation, and player interaction shape global perception of traditional literature and mythology.

The game's use of cinematic techniques, motion-capture realism, and multilingual distribution shows that cultural specificity can coexist with global market standards. From a comparative perspective, it aligns with the trend of regionally distinctive digital games—such as Japan's Ghost of Tsushima or Poland's The Witcher series—that integrate local mythological content into globally accessible formats. The Wukong case therefore contributes to a broader comparative understanding of how national or regional traditions are reinterpreted through interactive media in a globalized industry.

This approach aligns with international efforts such as UNESCO's Digital Cultural Diversity Initiative, reinforcing the idea that technological advancement should enhance, not erase, cultural plurality. It also raises critical ethical questions about authorship, authenticity, and ownership that demand global dialogue and co-governance.

## Immersive Heritage and Cross-Cultural Learning

Cross-cultural communication often suffers from what media scholars call a "cultural discount"—the reduced appeal of cultural products across different contexts. The cultural metaverse helps to mitigate this gap by transforming traditional symbols into immersive, emotionally engaging experiences that transcend linguistic and contextual boundaries.

The *Digital Central Axis* project extends this discussion into the field of urban heritage and public education. By creating an interactive digital reconstruction of Beijing's historic axis through game-engine technology, the project enables virtual exploration of an urban heritage site that has been inscribed on the UNESCO World Heritage List. The integration of multi-language narration, historical visualization, and participatory tools—such as the "Digital Watchman" system—supports not only domestic engagement but also international understanding of East Asian urban planning traditions.

At the 2024 Beijing Culture Forum, the project was presented as a case of how digital twins and immersive visualization can enhance global collaboration in heritage management. It suggests that the Chinese example contributes to a growing set of global methodologies for combining technical modeling with educational storytelling. Through interactive storytelling and participatory engagement, this project encourages empathy rather than exoticism, illustrating how digital media can nurture shared understanding among different cultural audiences.

From a research standpoint, the global relevance of the Chinese-style cultural metaverse lies in the transferability of its technical and institutional experiences. It shows several features: Interdisciplinary collaboration between cultural heritage experts, software developers, and communication scholars; public-private partnerships that integrate governmental cultural agencies with technology companies; Attention to accessibility and participation, using cloud computing and mobile applications to lower entry barriers; Alignment with international frameworks, particularly UNESCO's guidelines for digital heritage and community participation. These practices position the Chinese experience as part of a global dialogue about the responsible application of immersive and interactive

technologies in culture and provide empirical examples and operational lessons relevant to other societies exploring similar intersections of technology, heritage, and communication.

## Conclusion and Discussion

This study has explored the development of the Chinese-style cultural metaverse as a model that integrates technological innovation with cultural inheritance and examined how digital technologies in China are being used to preserve, reinterpret, and internationalize cultural heritage. Together, these examples illustrate a consistent logic: the Chinese-style cultural metaverse evolves through collaboration between cultural institutions, technology industries, and diverse user groups, aiming to translate historical knowledge into accessible digital forms.

First, the Chinese-style cultural metaverse is defined not as a "virtual parallel world," but as a continuation of civilizational experience through digital means. Its conceptual foundation rests on the philosophical principle of the interdependence of the virtual and the real, where technology functions as a cultural instrument rather than an end in itself.

Second, its practical form can be understood as a three-tier system encompassing: (1) digital heritage reconstruction. Heritage-based innovation shows how digitization and immersive technologies can extend the life of historical materials without detaching them from their cultural meanings. The *Digital Dunhuang* initiative demonstrates how large-scale digitization supports both research and public education while addressing conservation constraints. (2) cultural value translation. Technological mediation with humanistic orientation highlights how interactive and immersive media can serve interpretive as well as technical purposes. In *Black Myth: Wukong*, advanced game engines and visual design are combined with narrative traditions, producing a hybrid form of digital storytelling that links moral reflection and entertainment. (3) civilizational dialogue.
Participatory collaboration underscores the growing importance of shared governance and user involvement in cultural projects. The *Digital Central Axis* project in Beijing integrates public participation into the management and interpretation of a world heritage site through accessible cloud platforms and interactive tools.
Case studies such as the Dunhuang Digital Murals, the Palace Museum Virtual Exhibitions, and the *Black Myth: Wukong* project show how digital platforms are being used to extend cultural lifespans, reimagine traditional narratives, and promote international cultural exchange. These cases all demonstrate the core logic of the Chinese cultural metaverse: using technology as a medium to preserve culture rather than replace reality, with three primary objectives: extending cultural longevity, reconstructing traditional narratives, and promoting international exchanges.

**Three-Level Practical System of the Chinese Cultural Metaverse**

| Level | Core Concept | Case | Description |
|---|---|---|---|
| **Digital Heritage Reconstruction** | Extending the life cycle of historical materials through digital and immersive technologies without compromising cultural significance; | *Dunhuang Digital Murals* | Large-scale digitization supports academic research and public education, easing pressure on physical heritage conservation; |
| | Support research, public education, and address protection constraints | *Palace Museum Virtual Exhibitions* | Extending the Life of Cultural Heritage by Digital Technology |
| **Cultural Value Translation** | Human-oriented technology mediation, interactive media or immersive media with both interpretive and technical purposes; Linking Moral Reflection and Entertainment Function | *Black Myth: Wukong* | Combining advanced game engine, visual design and the narrative tradition of Journey to the West, it forms a hybrid digital narrative form, which integrates moral reflection and entertainment experience; Reinterpretation of the Connotation of Traditional Narration |
| **Civilizational Dialogue** | Participatory collaboration model, emphasizing shared governance and user participation in cultural projects; Promoting international cultural exchange and heritage co-creation | *Digital Central Axis project in Beijing* | The public participation is integrated into the management and interpretation of the world heritage through the cloud platform and interactive tools; Promoting International Cultural Exchange and Dialogue among Civilizations |

Third, at the global level, these practices contribute to the broader conversation on digital humanism by emphasizing inclusive governance, emotional resonance in cross-cultural communication, and ethical approaches to cultural diversity. The Chinese experience demonstrates how digital technology can be aligned with social responsibility and cultural continuity rather than pure commercialization or technological determinism.

From a conceptual standpoint, these cases demonstrate how the metaverse can function as a cultural mediation framework rather than solely a technical innovation. The examined projects show that immersive technologies can sustain multi-layered relationships between documentation, representation, and public engagement. This suggests a potential methodological contribution to global heritage and media studies: the metaverse can serve as an analytical category to study the integration of digital production, aesthetic experience, and cultural continuity.

These findings also reinforce international discussions on digital sustainability—how virtual reconstructions, open data archives, and interactive design can support the long-term accessibility and relevance of cultural assets. By aligning with existing UNESCO frameworks and comparable international projects, these cases provide reference points for collaborative research across regions.

The reviewed initiatives suggest practical directions for cultural institutions and policymakers. First is integration of digital infrastructure and heritage policy. It means to establish technical standards and metadata systems that ensure interoperability and long-term maintenance of digital cultural assets. For instance, by referencing UNESCO's *Charter on/Guidelines for the Preservation of the Digital Heritage*, we could collaborate with technical institutions to establish unified metadata standards for digital cultural assets. Furthermore, integrating digital heritage preservation into national cultural digitization plans (such as the *National Cultural Digitization Strategy Outline* mentioned in the paper) and creating dedicated funds to support long-term maintenance would be beneficial. This will address the research question of "how to achieve digital sustainability of cultural heritage" and provide solutions to the pain points of isolation and easily outdated of digital assets.

Second is cross-sector collaboration. It means to build stable partnerships among museums, universities, and technology firms, with each party responsible for content operation, academic support and technology research and development, to pool expertise and resources. It is important to ensure that cultural institutions take the lead in content review, avoid cultural distortion caused by technology dominance, and realize the synergy between technology and culture.

Third is public participation. It means to design inclusive platforms that balance professional curation with user-generated input, ensuring both accuracy and engagement. For example, developing low-threshold interactive tools and opening diversified interactive channels to balance professional content and user-generated content. A typical example is the material open platform "ip.e-dunhuang" (https://ip.e-dunhuang.com) of the Digital Dunhuang project, which specifically sets up a "Co-created Works" module to encourage users to generate content based on digitized Dunhuang materials. These materials are reviewed by cultural relic experts before being made available to the public on the online platform. This kind of "participatory cooperation" mode promotes the transformation of cultural heritage from passive protection to active co-creation.

Last one is international exchange, meant to encourage comparative research and co-production projects that link digital heritage sites across countries. Particularly, we can promote the joint development of cross-border collaborative projects, such as establishing an open and shared joint database for digital murals or opening the technical standards for Dunhuang mural restoration to serve as a reference for global digital heritage conservation. These measures correspond with the global transition toward networked cultural ecosystems in which preservation, education, and creative industries increasingly overlap.

While the analyzed cases offer valuable insights, several limitations remain. The empirical scope is largely confined to high-profile projects with substantial institutional support, which may not represent smaller-scale or community-based initiatives. Future research could examine how local museums, independent developers, or non-profit organizations adapt metaverse technologies under different resource conditions. Besides, the current model still faces challenges related to commercialization, authenticity, and governance. Overreliance on market mechanisms risk turning heritage into speculative assets, while digital standardization may reduce the diversity of aesthetic expression.

Moreover, issues of data governance, intellectual property, and long-term access require continued evaluation. As digital platforms evolve, ensuring open standards, transparent data management, and cultural sensitivity will be crucial for sustainable development. International collaboration requires clearer frameworks for intellectual property, data ethics, and equitable participation.

Future research should therefore pursue three directions: First is comparative analysis. Systematically compare Chinese metaverse practices with similar initiatives in other regions to evaluate differences in governance, ethics, and cultural outcomes. Comparative studies across different regions would help identify shared challenges and diverse strategies in using immersive technologies for cultural purposes. Second is empirical research. Incorporate quantitative and ethnographic data to assess audience engagement and public perception. Third is governance innovation. Explore mechanisms for shared management of digital cultural resources, including cross-border regulations and standards for authenticity verification.

By addressing these challenges, future scholarships can move beyond national or ideological framings toward a globally dialogic understanding of digital civilization—one in which cultural diversity and technological progress advance together. The Chinese-style cultural metaverse, in this sense, represents not a fixed model but an evolving practice that invites international cooperation in shaping a more inclusive and ethically grounded digital future.

The Chinese-style cultural metaverse, as analyzed through the examples of *Digital Dunhuang*, *Black Myth: Wukong*, and *Digital Central Axis*, demonstrates one evolving approach to connecting technology and cultural heritage. Its global value lies in contributing empirical evidence and institutional experience to the broader debate on how immersive technologies can support cultural continuity, education, and dialogue.

By situating these practices within international frameworks, this study emphasizes that the development of digital culture is a shared global process. The interaction between local experience and global exchange will continue to shape how societies document, interpret, and transmit their cultural knowledge in digital form. In this context, the metaverse is not an endpoint but an ongoing experimental space for collaboration among technologists, scholars, and the public.

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# Making Worlds, Worlding Metaverses
# A Comparative Study of Metaverse Developers and Users in Italy*

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**Abstract**

This article examines how the metaverse is locally enacted and imagined in Italy, offering a situated perspective that moves beyond dominant corporate framings. While existing research has documented how platform power around the metaverse is consolidated by firms such as Meta, Apple, and Nvidia, far less attention has been paid to actors, practices, and contexts that remain largely *off the map* of both global metaverse narratives and the critiques directed at them. Drawing on ethnographic fieldwork that combines in-person and in-metaverse research with Italian developers and user communities, the study explores how the metaverse is defined, practised, and made meaningful within Italy's mid-level innovation economy. Through the notion of worlding, we trace how global metaverse narratives are appropriated, modified, or unevenly engaged with in practice, giving rise to a plurality of actually existing metaverses shaped by divergent temporalities, value regimes, and infrastructural dependencies. In doing so, the article contributes to decentring dominant imaginaries of digital futures by showing how the metaverse takes form through situated negotiations within – rather than outside of – global platform power.

**Keywords:**
Metaverse; Worlding; Italian developers and users; Actually existing metaverses; metaverse operative imaginaries

## 1. Introduction: The Metaverse Is Dead, Long Live the Metaverse!

When Mark Zuckerberg delivered his landmark metaverse keynote, he appropriated and reframed the term 'metaverse' to announce what he described as the "next chapter of the internet" (Zuckerberg, 2021). Zuckerberg's vision has since lost much of its momentum, and the metaverse – at least in the capital-M form most closely associated with Meta – has been widely dismissed as a "digital delusion" (Murray, 2025) or even declared dead (Kobie, 2025). While such claims may well apply to Meta's branded version of the metaverse, they do not fully capture how the metaverse persists and is reconfigured under new forms and names. Recent market analyses project substantial long-term growth in metaverse-related industries (e.g., PS Market Research, 2023; IMARC Group, 2024), and major technology firms remain actively engaged in building the infrastructures, platforms, and standards

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through which the metaverse continues to be developed, including Meta itself alongside initiatives such as Nvidia's Omniverse and Apple's spatial computing ecosystem.

Against this backdrop, the tension between declining public enthusiasm for Meta's metaverse and ongoing development at Meta and elsewhere underscores that the metaverse is not a singular or settled object. Rather, it constitutes a contested and plural sociotechnical domain, one shaped by competing technologies, corporate strategies, and investment trajectories. As the concept has moved beyond Meta's original framing, it has come to encompass a heterogeneous constellation of technologies, platforms, and projects. As a consequence, today 'the metaverse' refers less to a unified platform or corporate vision than to a range of developments across virtual reality (VR), augmented reality (AR), extended reality (XR), spatial computing, wearable technologies, gaming ecosystems, and digital twins – often in overlapping or hybrid forms (Boellstorff, 2008; Castronova, 2005; Evans, 2019; Harley, 2024)

Yet, this apparent diversification should not be mistaken for a corresponding dispersal of power. Despite the increasing plurality of metaverse discourses and initiatives, and the growing number of actors involved, the metaverse – understood here as a sociotechnical and economic domain – remains, in practice, highly concentrated (Ball, 2022). Control over core infrastructures, platforms, and capital continues to be exercised by a small number of Big Tech firms (Smith, 2024). This structural concentration has, in turn, shaped the trajectory of much critical scholarship on the metaverse, which has largely focused on the ambitions and influence of dominant actors such as Meta, Apple, and Nvidia (e.g., Blackman & Harley, 2024; Egliston & Carter, 2020, 2024; Mosco, 2023; Smith, 2024). While this body of work has productively foregrounded concerns around platform expansion, datafication, surveillance, and the normative imaginaries promoted by Big Tech firms (Hesselbein, Bory, & Canali, 2024; Lupinacci, 2023), it has left other dimensions comparatively underexamined – particularly how the metaverse is taking shape across a wider range of actors, scales, and geographies.

To fill this gap, this article advances empirical and conceptual understanding of the metaverse by examining how it is talked about, built, experienced, and anticipated in Italy – a mid-level innovation economy embedded in global circuits of capital and expertise, yet shaped by small enterprises, research and development laboratories, and user communities. Drawing on ethnographic fieldwork that combines in-person and in-metaverse encounters (Boellstorff et al., 2013) with participants in Italy's metaverse ecosystem, this study focuses on two key groups: developers and users. By *developers*, we refer broadly to start-up founders, software engineers, digital strategists, marketing analysts, and other professionals involved in the conceptualisation, production, and circulation of metaverse-related technologies and imaginaries. By *users*, we refer to individuals who actively participate in metaverse platforms and the Italian communities that have formed around them. Although this developer–user distinction does not fully capture the heterogeneity of the actors involved and has been problematized in technology studies (e.g., Turkle, 1984), we adopt it as a pragmatic heuristic to structure data collection and analysis, while remaining attentive to different forms of engagement and expertise both between and within these groups. Importantly, invoking these categories does not imply that developers and users occupy symmetrical positions within a single technological system, nor that they map onto a simple producer–consumer relationship. Rather, our material shows that developers and users largely operate in distinct domains that intersect only intermittently: the former primarily within business-to-business (B2B) circuits, and the latter through consumer-facing

platforms such as VRChat, Spatial, Bigscreen, and Horizon Worlds. Nevertheless, this disjunction proves analytically generative, as it helps show how, in the Italian context, the metaverse materialises across multiple, partially disconnected sites of production and use, within which its meanings, forms, and futures are continually enacted, negotiated, and reworked in practice.

By focusing on these local enactments and imaginaries (Taylor, 2004), our aim is to shift analytical attention away from singular, monolithic understandings of the metaverse – both conceptually and operationally – and toward the more heterogeneous ways in which it comes to *matter* in contexts outside dominant centres of platform power. Importantly, although our approach resonates with recent calls to *decentre* metaverse research beyond Big Tech–centric frameworks (Girginova, 2025), it should not be mistaken for an account of 'alternative' or oppositional metaverse projects. The Italian case examined here does not constitute a space apart from dominant Big Tech–led metaverse initiatives, nor does it necessarily represent a politically oppositional formation. In this respect, it differs from activist interventions that explicitly seek to reimagine the metaverse as a more inclusive, intersectional, or decolonial environment (e.g., Ramírez et al., 2024), as well as from artistic or independent endeavours that "often purposefully forgo direct economic functions" (Girginova, 2025, p. 301). Instead, the metaverse in Italy takes shape through engagements that are simultaneously peripheral and structurally dependent on Big Tech–dominated ecosystems. As we shall see, developers pursue profit-oriented, primarily B2B applications by developing proprietary metaverse experiences and products, while remaining structurally dependent on partnerships with major hardware and software providers. Users, in turn, engage primarily through consumer-facing platforms such as VRChat and Horizon Worlds, accessed via devices and operating systems controlled by large technology firms.

The rest of this paper is organised as follows. Section 2 reviews existing debates on the metaverse, situating our contribution within broader efforts to expand analytical focus beyond global technology corporations. Section 3 introduces the Italian case and outlines our methodological approach. Sections 4 through 6 present the analysis, organised around three themes: the definitions of the metaverse in circulation; the material platforms, communities, and practices through which it is enacted (*actually existing metaverses*); and the expectations that shape its development and imagined future (*metaverse operative imaginaries*). Section 7 concludes with reflections on the implications of our study for understanding the metaverse as an evolving sociotechnical formation and its contribution to broader debates about digital futures.

## 2. Situating the Metaverse: From Global Visions to Local Worldings

In recent years, the metaverse has generated a substantial body of commentary, marked by both fascination and scepticism. Across academic, journalistic, and industry contexts, early debates largely centred on the *grand narratives* promoted by major technology corporations. A central concern has been how the metaverse is framed as both a technological rupture and the inevitable successor to the mobile internet – an imagined evolution that would further entrench Silicon Valley's dominance *in* and *through* "persistent and immersive virtual environments or 'worlds' in which a range of professional, social, and leisure activities will purportedly take place" (Hesselbein et al., 2024, p. 780)

Critical scholarship has challenged these claims by demonstrating how libertarian "imaginaries of deterritorialized life" (Lynch & Muñoz-Viso, 2023, p. 67) that underpin metaverse discourse function to naturalise and consolidate platform power (Egliston &

Carter, 2020; Lucia et al., 2023). Mosco (2023) situates such imaginaries within a longer genealogy of the "digital sublime" (Mosco, 2005), which the metaverse reprises by promising transcendence and socio-political renewal, while obscuring the infrastructures and power relations that sustain it – from energy-intensive data centres to proprietary standards and governance protocols. A salient example can be found in Meta's promotion of the now-discontinued Oculus Rift headset, which Egliston and Carter (2020) characterise as the production of *Oculus imaginaries*. While these imaginaries position immersive technology as a domain of connection and creative freedom (Lucia et al., 2023), they simultaneously function to enrol users into Meta's vertically integrated hardware–software ecosystem, thereby consolidating forms of platform lock-in. Blackman and Harley (2024) similarly examine the visual imaginaries mobilised within Apple's Vision Pro campaign, showing how its promotional repertoire idealises affluent, able-bodied users, while normalising monetisable forms of data capture and spatial mediation.

Alongside this discursive critique, research across media sociology, platform studies, and science and technology studies has increasingly turned to the metaverse's material, spatial, and infrastructural dimensions. This includes analyses of how corporate visions materialize through what Hesselbein and Bory (2025) term *metaversification*, producing the "geographies of the metaverse" that Jones (2023) conceptualizes as spatial formations constituted through technological, infrastructural, and political-economic relations. Within these formations, technological experimentation is closely intertwined with data extraction, extending and intensifying established regimes of commodification and surveillance (Hesselbein et al., 2025; Lupinacci, 2023). This material orientation is especially evident in studies of *enterprise* or *industrial* metaverses (Abraham et al., 2022). Focusing on what he calls the 'metaverse-industrial complex', Smith (2024), for example, shows how Nvidia consolidates infrastructural power by leveraging its dominance in GPU manufacturing and embedding its proprietary Omniverse platform across industrial workflows, thereby positioning itself as a critical – and increasingly unavoidable – intermediary.

Collectively, this scholarship has significantly deepened understanding of the economic and infrastructural concentrations of power underpinning the metaverse. At the same time, however, its predominant focus on global corporations risks reinforcing the very totalising assumptions it seeks to critique by recentring these actors as the primary locus of analysis. In response, recent work has called for more local and situated perspectives on the metaverse (Ramírez et al., 2024). Girginova (2025) captures this shift, arguing that "instead of starting with Meta's all-encompassing vision of the metaverse […] we ought to consider other temporal visions and combinations of technological metaverse assemblages in their own right" (p. 302). Taking up this call, our study explores how small enterprises and user communities in Italy negotiate meanings, uses, and aspirations around the metaverse through their everyday activities. In so doing, our aim is not only to document these initiatives, but also to use them to reconsider what the metaverse *is*, *does*, and *might become* when approached from perspectives other than those of global corporate production.

To conceptualise this plurality, we turn to the notion of *worlding*, which offers a way to understand how different metaverses – and we use the plural intentionally – are articulated in discourse, enacted in practice, and projected into imagined futures. Although the term has multiple genealogies, from Heidegger's (1971) phenomenology to postcolonial theory (Spivak, 1988) and feminist thought (Haraway, 1991), we employ it here in a deliberately double sense. First, worlding – sometimes used interchangeably with 'worldbuilding' (Martin & Sneegas, 2020) – refers to the creation of *imaginary worlds* "with coherent

geographic, social, cultural, and other features" (Von Stackelberg & McDowell, 2015, p. 25). Understood in this way, worlding functions as a speculative or escapist practice (Tolkien, 1983), opening up space for re-envisioning social life. Second, worlding designates an epistemic and political process through which particular discourses and practices attain global authority and circulation, crystallising as taken-for-granted reference points against which alternative possibilities appear marginal or peripheral (Burns et al., 2021). Worlding, in this sense, is not merely about the fabrication of worlds, but about the production of what comes to count as *the* world (McCann, Roy, & Ward, 2013).

Corporate metaverse visions such as Zuckerberg's illustrate the articulation of these two senses of worlding particularly clearly. When he claims that "while this may sound like *science fiction* … a lot of us will be *creating and inhabiting worlds* that are just as detailed and convincing as this one" (Zuckerberg, 2021, 09:21, emphasis added), he carries over the fantasy of speculative worldbuilding into a concrete technological project, or what Alvarez León and Rosen (2025) describe as *virtual landmaking*. Importantly, as these claims circulate across media and industry discourse, they also participate in the epistemic sense of worlding by presenting a particular vision of the metaverse as universal and inevitable, thereby marginalising other possibilities.

At the same time, worlding is not confined to Big Tech. Beyond the visions advanced by major technology firms like Meta, smaller enterprises and user communities in our study also engage in world-making through their development, use, and imagination of immersive technologies. In doing so, they articulate their own understandings of what the metaverse is for, how it should be used, and the kinds of futures it might enable. Importantly, although these engagements unfold within ecosystems structured by dominant platforms and infrastructures, they cannot be reduced to Big Tech–centric visions alone.

It is from this perspective that we approach our analysis as an exercise in "provincializing" (Chakrabarty, 2000; Burns et al., 2021) dominant metaverse discourse. Focusing on the case of Italy, we foreground actors and contexts that typically remain 'off the map' of both dominant global metaverse narratives and the critiques directed at them. This enables an examination of metaverse understandings, practices, and imaginaries from underexplored vantage points, both geographically and in terms of the actors involved. In doing so, we do not seek to advance a normative critique of hegemonic metaverse models, nor to evaluate alternative ones. Rather, our study entails approaching the metaverse from new "loci of enunciation" (Sheppard, Leitner, & Maringanti, 2013), attending to perspectives articulated by actors marginal to prevailing metaverse debates. Importantly, what renders our case study 'provincial' should not be understood as denoting separation or autonomy, but as reflecting uneven visibility and access to resources in relation to Big Tech firms. As Italian developers and users work out their visions in and through their everyday practices, they remain largely dependent on Big Tech–controlled infrastructures, platforms, and hardware. These dependencies both enable and constrain local practices and imaginaries, giving rise to locally specific ways of making and experiencing metaverses that resist simple centre–periphery or corporate–countercultural distinctions.

Exploratory in orientation, our analysis adopts an ethnographic and descriptive approach, in which both talk and material artefacts – such as platforms or applications in use and development – are treated as discursive formations in their own right, insofar as they give material form to particular understandings and expectations of the metaverse. We thus approach worlding as it unfolds across three interconnected registers. The first is *definitional*,

involving the conceptual and discursive work through which actors articulate what the metaverse is – or is not – and, in doing so, turn definition itself into a site of negotiation. The second is material-practical, asking which metaverses developers are building and users are experiencing in the Italian context, and how these diverse, *actually existing metaverses* take shape through technologies, applications, and everyday engagements. The third is imaginary-ideological, concerning what we conceptualise, following Meyer (2025), as *metaverse operative imaginaries* – namely, the "ideological fantasies generated by technological possibilities" (p. 4) that shape both current developments and collective expectations, as well as the perceived impediments to their realisation. These three registers structure the analysis that follows, corresponding respectively to Sections 4, 5, and 6 of the article. In the next section, we outline the methodological approach that grounds this analytical framework.

## 3. Methodological Framework

Our methodological approach draws on principles of multi-sited and connective ethnography (Marcus, 1995; Hine, 2015). Fieldwork unfolded along two parallel strands – one centred on developers and one on users – which proceeded separately while informing one another throughout the study. We refer to this arrangement as a *dual-track design* to indicate that these groups do not necessarily inhabit the same settings or organise their practices around the same concerns. This approach enabled us to trace how the metaverse circulates across multiple sites of technological development and everyday use, while attending to the different forms of expertise and engagement that shape its local enactment.

### 3.1 Sampling Strategy and Sample Composition

Our sampling strategy followed directly from this dual-track design. Because developers and users engage with the metaverse in different ways and in largely separate settings, we sought participants who could speak to these distinct modes of involvement. Our aim was not to build a strictly symmetrical comparison between the two groups, but to capture the heterogeneity that exists both between and within them, spanning organisational and professional perspectives, as well as creative experimentation and everyday participation. To do so, we began with a purposive selection of key figures whose experience was directly relevant to the study (Bryman, 2016), followed by snowball recruitment through which the sample grew via participants' interpersonal networks (Biernacki & Waldorf 1981).

*Developer sample*

The developer sample represents a cross-section of Italy's innovation ecosystem, including start-ups and established firms working in market research, XR development, digital transformation, medical technology, cultural promotion, and academic research. We concentrated on senior figures – CEOs, CTOs, founders, and marketing managers – not to privilege managerial viewpoints, but because these actors shape investment decisions, establish partnerships, and articulate strategic narratives about the metaverse in the Italian context. Focusing on leadership inevitably narrows the view of everyday development practices, and we acknowledge this as a limitation. Our goal, however, was to understand how organisational visions of the metaverse are formulated and circulated, and this level of seniority offers insight into those processes.

*User sample*
The user sample was constructed through a two-phase process combining digital observation, purposive selection, and snowball recruitment. Initial observation in Facebook and Telegram groups enabled us to identify key informants, including community managers and experienced users, selected for their expertise, influence, and willingness to facilitate access. Through their networks, we recruited participants from six Italian virtual communities spanning gaming, social, creative, and cultural domains. The final sample included content creators, environment builders, and active users, selected to reflect diversity in gender, age (from digital natives to older technology enthusiasts), community affiliation, and technical proficiency.

## 3.2 Data-Collection Methods

Our data were generated through two principal methods – semi-structured interviews and participant observation – conducted between 2024 and 2025.

### Interviews

We conducted 24 semi-structured interviews – 12 with developers and 12 with users. This balanced design ensured analytical parity between the two groups, consistent with Guest et al.'s (2006) guidance on thematic saturation and variability. Interviews typically lasted about one hour, allowing participants sufficient time to articulate their experiences and perspectives. The interview protocols were designed to enable systematic comparison, while remaining sensitive to the distinctive forms of knowledge in each group. Rather than imposing a rigid structure, interviews took the form of guided conversations organised around four thematic areas identified through preliminary fieldwork and engagement with the literature: definitions of the metaverse, current practices and experiences, future imaginaries and aspirations, and perceived constraints and resource needs. Questions were adapted to match each group's expertise and vocabulary, allowing discussions to unfold in a participant-led manner.

### Participant Observation

*Developers*
Participant observation focused on business and industry events where developers from small start-ups and established firms presented their work, debated technological directions, and connected with peers. These settings offered insight into professional networks, entrepreneurial initiatives, and academic–industry collaborations, and facilitated interview recruitment through direct engagement with presenters and attendees.

*Users*
User observation consisted of three complementary components designed to capture different modalities of metaverse engagement. The first involved digital observation in Facebook and Telegram groups, tracing how users make sense of their metaverse activities through exchanges about hardware, troubleshooting, and platform preferences. The second entailed avatar-mediated participation in *Second Life* (Boellstorff et al., 2013),

recognising that many Italian users – especially older cohorts – continue to regard long-standing virtual worlds as integral to what the metaverse is. The third component involved immersive VR ethnography using Meta Quest 3 headsets within platforms such as Spatial, VRChat, and Bigscreen, providing phenomenological insight into embodied virtual experience. Following Kozinets' (2022) framework for immersive netnography, this tiered approach illuminated complementary dimensions of user engagement, from discursive construction to embodied practice.

## 4. What counts as 'the Metaverse'?

Systematic comparative analysis of how developers and users define and delimit the metaverse reveals that what constitutes 'the metaverse' in the Italian field is not a matter of discovering essential properties, but an ongoing process of boundary work performed by differently positioned actors. Through examination of definitional practices across 24 interviews, we identify a pattern in which strong agreement around a shared core coexists with deep differences over what qualifies as a genuine metaverse experience. The same technological assemblage accommodates divergent interpretations of its purpose and trajectory, reflecting the heterogeneous positions of actors within Italy's metaverse ecosystem – a peripheral innovation context where global technological paradigms meet local appropriations.

### 4.1 Shared foundations: core definitional dimensions

Although these attributes are articulated through registers reflecting each group's relationship to metaverse technologies, both developers and users demonstrate striking convergence around three core dimensions that anchor their definitions, namely immersivity, sociality, and persistence.

Immersivity emerges as non-negotiable across both groups. Users frame immersivity through phenomenological language emphasizing embodied co-presence: *"The metaverse is a persistent online digital universe composed of virtual worlds and social VR platforms – an immersive, three-dimensional environment experienced via an avatar in co-presence"* (U3).[1] Developers articulate immersivity by specifying technological modalities and claiming experiential enhancement: *"The metaverse is any immersive reality platform – be it augmented, virtual, or mixed – where you can experience a reality superior to the real one through virtual elements [...] where you live, not just play or work"* (D4).

These articulations of immersivity extend to ongoing debates about hardware requirements, revealing how peripheral innovation contexts navigate between technological aspirations and material constraints. Users engage in heated debates about whether metaverse experience requires VR headsets or can be achieved through screen-based platforms. While many consider VR optimal for achieving full immersion – *"VR is the primary way to feel it 'all around'"* (U1) – others defend the experiential validity of screen-based access based on community practices: *"Many metaverse residents don't consider it a metaverse if there isn't the possibility to use VR. Yet there are communities born without headsets even in a world created for VR"* (U3). This position draws authority from phenomenological evidence: *"VR certainly gives you an experience that is exponential compared to computers... Yet no one more than*

[1] All interviews were conducted in Italian. The excerpts cited here and throughout were translated into English by the authors.

*us, Second Life residents, can understand how much even with a computer you can have an immersive experience... I remember them as real-life experiences"* (U3). The claim that screen-based virtual experiences can produce memories phenomenologically equivalent to physical presence challenges dominant assumptions about immersion requiring head-mounted displays, revealing how Italian users appropriate global technologies through situated practices that prioritize experiential outcomes over hardware specifications.

Avatar-mediated presence emerges as crucial to immersive experience. One user establishes the avatar as an absolute requirement: *"I'd really put a veto on this – you couldn't conceive of a metaverse if you enter in a Doom-style mode where you never see yourself"* (U3). The ontological status of virtually worlded relationships emerges as a central phenomenological concern, particularly regarding the reality status of digitally mediated social bonds. During an interview conducted within a virtual environment using the Bigscreen platform, one participant articulated this tension between virtuality and reality by directly referencing the interviewer's avatar presence: *"The metaverse is a virtual reality... it's a reality but it's virtual, in the sense that for me you are a person. Right now, I see an avatar, so I don't see a physical person, but I see an avatar. I see the person projected in the metaverse, but I respect you as if I were seeing a real person, because for me behind this avatar clearly there's a person. So I live the metaverse as a reality, virtual, but it's a reality. Instead of going to the bar to drink with my real friends, I come here and talk with my virtual friends... but they are my friends"* (U10). This testimony reveals how sustained virtual inhabitation transforms mediated presence into genuine social reality, with relationships formed through avatars experienced as ontologically equivalent to physical-world friendships despite participants' explicit acknowledgment of their virtual character.

Sociality constitutes another fundamental dimension. One user deploys an evocative aquatic metaphor – a constant in the imaginary of immersiveness (Murray 1997; Pinotti 2025) – describing the Metaverse as *"a puddle of water – people walk past and ignore it; under the microscope it teems with life; once you step in you find a world that is alive 24/7"* (U8). Developers specify technical affordances enabling social interaction: *"I'd define it as a digital virtual world you can enter with technological devices ... to experience firsthand social interaction, entertainment, cultural deepening"* (D7). Persistence proves crucial to both groups' definitions, though users emphasize what we term "inhabited persistence" – not merely technical availability but actual community vitality creating reasons to return. One user articulates this distinction bluntly: "If I log in, take a look, and leave – that isn't a metaverse to me" (U7). Another user states categorically: *"It's fundamental that it is persistent. If I have an application on a USB flash drive ... for me that is not a metaverse. In those virtual places, anyone must be able to enter 24/7"* (U3). Developers echo this emphasis on continuous accessibility: *"the key principle is that this environment was not designed exclusively for you, but is accessible by anyone at any time"* (D2).

### 4.2 Divergent purposes: market viability vs. community inhabitation

Beyond shared definitional foundations, developers and users attribute fundamentally different values to metaverse technologies, revealing structural tensions between market-driven and community-oriented worlding practices. Developers' definitional work also reveals different concerns about market viability and sustainable business models. The most significant divergence concerns the consumer versus industrial bifurcation. One developer articulates this split: *"Right now there are two types of metaverse. A metaverse connected more to consumers ... We however work on another type of metaverse, the industrial metaverse, where we're vertical on products, training, digital twins, data interpretation"* (D1). Another provides a frank

assessment: *"What happened in recent years is that the metaverse, understood as a B2C virtual world where people enter and spend time, has gradually fallen into disuse – it hasn't caught on as imagined. What has caught on is application of these technologies in B2B contexts"* (D8).
Another topic, only touched upon by developers, is temporality. One articulates: *"In B2B it means people use them for limited time, for well-defined objectives or activities – I go to the office, put on a headset for meeting, finish meeting, remove headset"* (D8). This task-oriented conception contrasts sharply with users' vision of persistent inhabitation. Industrial metaverses operate by different success criteria. Return on investment becomes the primary metric: *"At a professional level these technologies have very practical utility... First, you can do things you otherwise couldn't; second, you get huge cost savings"* (D1).

### 4.3 Peripheral dependencies: hardware constraints and corporate infrastructures

Hardware friction emerges as a dual constraint in developers' accounts, limiting both their technical ambitions and user adoption potential. One developer diagnoses the consumer adoption challenge: *"Current VR headsets are very mature, work very well, but haven't demonstrated having characteristics to truly create user dependence and become necessary devices like mobile phones ... then stickiness in consumer usage habits isn't there"* (D8). He describes how the adoption pattern repeatedly fails: *"The trend is always the same. You play at the beginning and become passionate. During Covid I played because I was locked at home. It was super cool. Then ... at a certain point I stopped using it and now it lies in the drawer"* (D8). Another developer elaborates on technical limitations: *"Everything we do is limited by technology. We could do incredible things but unfortunately can't because we must interface with a device. An XR tool must be easy to use and easy to access; if those two rules aren't met, it can't be sold on the market"* (D2). A third one acknowledges multiple hardware barriers: *"There are three main factors: battery duration, motion sickness, and overheating. After an hour/an hour and a half, the device starts heating up and becomes uncomfortable on the face"* (D1).
These technical limitations affect Italian metaverse practices across both B2B and B2C contexts. For developers, hardware constraints determine which client solutions prove commercially viable. For users, device costs and comfort issues shape adoption patterns and community participation. Unlike Silicon Valley contexts, where developers might access prototype hardware or influence manufacturer roadmaps, Italian actors must adapt to devices designed for global markets, accepting technical limitations and release schedules determined elsewhere. This peripheral positioning means innovation occurs through creative appropriation of existing platforms rather than through direct technological development – Italian developers and users work within hardware capabilities determined by Meta, Apple, Microsoft, and other major corporations, rather than defining those capabilities themselves.

### 4.4 Epistemic ambivalence: pragmatic use despite definitional scepticism

Despite differences between users and developers in their understanding of the fundamental dimensions of the metaverse, both express deep scepticism while continuing to use it. This shared ambivalence reveals how peripheral innovation contexts negotiate with globally circulating concepts that may not accurately describe local practices yet prove strategically necessary for market positioning and community visibility.
Developers express frustration: *"I've stopped trying to define it ... the term has slid into marketing"* (D8). One offers a sharp historical perspective: *"I've been digesting all metaverse hype somewhat reluctantly for ten years. Those defined as metaverses already had labels before – they were called virtual social worlds"* (D8). Even more provocatively: *"Bulk of users are gamers and they're not there to be*

*in the metaverse – in fact, if you told them they're in the metaverse, they'd be offended and leave"* (D8). Some users express similar discomfort: *"Like trying to define a mythical creature – it doesn't exist"* (U4); *"I've never liked calling it the 'metaverse' – it feels tied to what Zuckerberg wants"* (U11).
This epistemic ambivalence reflects more than semantic disagreement. For Italian actors, "metaverse" serves as a strategic term enabling market participation and community formation within globally structured ecosystems, even when it poorly describes actual practices. Developers employ it when pitching to clients who recognize the term from international discourse, despite preferring more precise technical categories. Users deploy it when establishing community identity within platform architectures designed around global corporate visions, despite reservations about corporate associations. The term's contested status thus reveals how peripheral innovation contexts must navigate between local practices and global frameworks – using terminology shaped by Silicon Valley narratives to describe Italian formations that diverge from those narratives in fundamental ways.

Beyond shared foundational agreements and strategic ambivalences, the divergences reveal how differently positioned actors appropriate shared technologies toward distinct ends. Users privilege inhabited persistence and social vitality as markers of authentic metaverse experience, while developers prioritize market viability and functional utility as criteria for sustainable implementation. The definitional landscape thus reveals not a coherent object called 'the metaverse', but rather a contested field where multiple metaverse-visions coexist, sharing vocabulary, while pursuing purposes that sometimes align, sometimes diverge, and sometimes generate tensions requiring negotiation. What developers dismiss as unmarketable social experimentation may constitute precisely the community formation sustaining user engagement; what users experience as corporate enclosure may represent economic infrastructure enabling platform viability, though not necessarily on terms users endorse. The metaverse thus emerges through ongoing negotiation between economic necessity and social possibility: neither purely market-driven nor entirely autonomous from economic imperatives.

## 5. Actually existing metaverses

Having examined how developers and users define the metaverse through competing criteria and thresholds, we now turn to how these definitional tensions materialize into concrete platforms, communities, and practices. To do this, we will retrieve the concept of *actually existing metaverses* which does not refer to one empirical condition, "but rather designates multiple and uneven social and technological arrangements" (Gabrys et al., 2024, p. 213) that may or may not counteract dominant visions. The Italian case presents particularly revealing terrain where global technological aspirations meet local formations, producing hybrid arrangements that illuminate the processes through which diverse metaverses are actively made – or *worlded* – through situated practices, rather than predetermined by design specifications. Its landscape of actually existing metaverses manifests the asymmetry between developer and user orientations identified in definitional discourse. Indeed, while developers translate their B2B definitional priorities into industrial applications driven by immediate return on investment requirements, users engage in sustained worlding practices that create social environments oriented toward leisure, creativity, and community formation.

### 5.1 Big Tech ecosystems: partnerships and local adaptations

These divergent worlding practices unfold within shared infrastructural dependencies that complicate narratives of peripheral autonomy. Both developers and users indeed operate within ecosystems dominated by a small number of global technology corporations, whose hardware and software choices fundamentally shape local possibilities.

Italian developers articulate their dependency through direct partnership relationships with Big Tech platforms. One describes how big tech corporations structure the sector: *"We are partners of all these companies ... whether in development programs, as partners, or even as resellers, because we resell both Meta and Pico products, which are currently the two most commercially widespread visors"* (D1). Another confirms this integrated supply chain: *"We have been hardware suppliers for about a year now, because we were chosen by Meta as its official reseller for Italy and recently, in 2024, also by Pico and Pimax"* (D5). These partnerships position Italian firms simultaneously as clients, distributors, and advocates for Big Tech platforms, creating economic interdependencies that structure development priorities. The hardware provision role proves particularly significant, as developers cannot pursue industrial metaverse applications without access to devices manufactured exclusively by Meta, Apple, Microsoft, and their competitors.

Corporate investment decisions function as market signals legitimating continued commitment to immersive technologies. One developer articulates this dependency explicitly: *"Big tech plays a central role [...] First, because they invest billions every year in these technologies, and this helps us create a base for our clients, saying: these big tech companies are investing, you understand it will certainly be a sector that won't have a beginning and end in the short term"* (D1). When hardware manufacturers cease production of specific devices, peripheral actors face immediate constraints. Microsoft's termination of HoloLens production exemplifies this fragility: *"Microsoft ... has discontinued the holographic visor it had on the market, the HoloLens ... it came out of the market, no longer commercialized ... and this certainly is missing from the market at the moment"* (D1). Italian developers faced constrained options, awaiting alternative manufacturers. Another developer positions Apple's Vision Pro launch through similar logic: *"If Apple came out [...] with this move it gave a helping hand to all those who believe in the world of headsets to have one more hope for the future. Because if Apple came out, there's a light at the end of the tunnel that tells you you're doing the right thing*" (D2).

Users experience comparable dependencies, yet mediated through hardware ownership, rather than business partnerships. Ethnographic observation revealed how Meta's market dominance produces linguistic and cultural effects extending beyond technical specifications. In community names and everyday discourse, 'Meta' often serves as shorthand for VR technologies as a whole, a synecdoche in which a corporate brand stands for the broader ecosystem of immersive technologies. One user describes Meta's strategic positioning: *"Meta has made the operating system open source, which will have the same impact as Android ... Samsung and others are building their hardware using Meta's operating system. This move by Meta has brought others to react"* (U8). Yet this infrastructural centrality generates ambivalence rather than passive acceptance. While Meta Quest devices dominate Italian VR communities as the most accessible entry point, users voice unease about corporate consolidation. Some community names explicitly incorporate 'Meta' not in celebration but as a territorial marker acknowledging inescapable corporate presence.

Beyond hardware dependencies, developers navigate regulatory constraints specific to peripheral contexts. Many described regulatory uncertainty as a persistent challenge, noting

that the absence of clear frameworks often left their work in a legal grey area. Others pointed to sector-specific restrictions that delimited what could be built or displayed. This became especially apparent during a professional event where a speaker from the gambling industry reflected on the tension between creative experimentation and compliance. Although companies were free to explore new forms of storytelling, their possibilities remained narrowly defined by Italy's stringent regulation of the field.
These regulatory constraints ultimately shape the conditions under which peripheral actors operate, as local experimentation must contend with state and sector-specific regulation that structures what can be built, distributed, and experienced.

### 5.2 Developer platforms: industrial applications and task-based implementations

Developers create industrial metaverses as business solutions focused on specific tasks and measurable efficiency gains. Service providers structure their offerings into distinct operational categories responding to client needs. One describes this taxonomy: *"We divide client needs into 5-6 macro-categories. First is virtual environments – an office, a training room, or something explorable like a museum. Second is digital twins, faithfully reproducing an object in a virtual environment"* (D5). Digital twin applications illustrate how developers prioritize commercial utility. The same practitioner explains commercial use cases: *"Digital twins get requested for purely commercial purposes – reproducing a product catalogue to show people virtually. Imagine a design brand going to a trade show, bringing a headset, and in the headset I see the catalogue, touch objects, dismantle them, rotate them, configure colours"* (D5). Another describes prototyping applications: *"An automotive company needs to prototype components. Until a few years ago, they did it with 3D printing, so wasted plastic material, lost time. You'd pass it to the style office and they'd say 'go back'"* (D1). Virtual prototyping eliminates iterative physical production cycles, generating measurable cost savings.
The pandemic accelerated recognition of these solutions' utility, transforming abstract possibilities into deployed infrastructures. One reflects: *"The pandemic forced those uninterested in these worlds to fully understand how to apply them. From a technological standpoint, it created tremendous awareness"* (D3). This awareness translated into expanded service portfolios across multiple application domains, from virtual showrooms to collaborative design environments. These implementations materialize the task-oriented, time-limited engagement model characteristic of industrial metaverses, creating virtual environments measured by efficiency improvements rather than social inhabitation.

### 5.3 User communities: social platforms and sustained inhabitation practices

User practices demonstrate persistent commitment to worlding virtual spaces through social and creative engagement operating according to fundamentally different logics. The Italian user landscape reveals sophisticated community structures evolved organically through years of experimentation. VRChat emerges as the dominant platform for Italian social interaction, hosting communities that have developed distinctive Italian spaces within globally accessible virtual environments. Italian users also engage Spatial for temporary event-based activities such as art exhibitions and conferences, Bigscreen for shared viewing experiences, and Meta's Horizon Worlds, though these platforms support episodic engagement rather than the sustained inhabitation characteristic of VRChat communities. Local alternatives such as Xjoy exist but face adoption challenges against established global platforms.

Community formation depends on consistent gathering spaces that transform abstract virtual environments into meaningful places. Regular participants describe how organized events follow predictable rhythms. One community manager describes their schedule: *"We have a games event every single Saturday, except once a month when it's replaced by the music event, where we present four Italian and international DJs and where not only Italians come but Italians and all Europeans*" (U9). The same community organizes biweekly exploration events: *"Every other Friday there's a much more serious event, where we all go together to explore maps created by community users themselves, or we look at avatars created by community users, or particularly interesting public worlds created by others, to see together"* (U9). These structured yet varied event formats illustrate how communities transform platforms into inhabited places through predictable social rhythms and collective practices.

A further consideration concerns place, which complicates the common claim that the metaverse transcends geography. While virtual platforms may appear to exceed locality, what emerges instead is a sense of place understood as cultural rather than strictly spatial proximity. This is evident in the ways Italian users organise their activities around shared language, humour, and habit. Events frequently unfold in settings where Italian serves as the default medium of interaction, and schedules are adjusted to local and European time zones.

Beyond cultural localisation, platform affordances enable specific worlding possibilities that distinguish metaverse sociality from other forms of online interaction. VRChat's portal mechanics allow fluid transitions between virtual spaces, enabling spontaneous group navigation across multiple worlds. Users report extended engagement sessions where temporal awareness dissolves, with participants spending hours in virtual spaces without conscious awareness of time passing. This reconceptualization of presence through virtual inhabitation indicates fundamental shifts in how participants understand social space and co-presence.

Social infrastructure emerges as a critical technical requirement enabling sustained community formation. Participants emphasize the necessity of presence awareness systems, such as friends lists and status indicators that reveal which community members are online and where they are located within the platform. Without such infrastructure, users report difficulty maintaining spontaneous social connections, reducing engagement to pre-scheduled appointments that fail to generate the organic community vitality characteristic of persistent virtual worlds. One interviewee with both professional and community participation experience articulates this principle: *"To create communities in the metaverse you need to provide a recurring, familiar, warm place, with real expectations, welcoming also in the sense that it must resemble something already known, so bars, restaurants, karaoke nights"* (D4).

User worlding practices crystallize into distinct yet overlapping activity modalities. Social entertainment dominates, organized around leisure rather than productivity. One participant articulates this orientation: *"We gather exclusively for fun, gaming, and conversation"* (U10). Creative production represents another major modality, encompassing world-building as both personal expression and economic activity. Platform affordances enable informal pathways from hobbyist creation to monetization. One describes this trajectory: *"It can be a good work opportunity. In fact, with the world I created, I then got equipment for VR through metaverse work; it didn't even take much publicity, just posting some worlds on social media, in groups talking about headsets, and that was enough to get contacts"* (U5). World building frequently maintains ludic motivations, even as it generates economic value. Another user describes an ongoing playful project: *"I'm building a world for fun. Today I'm building the barbershop, because*

*I put in the pharmacy and we need the barbershop for the old folks. It's an ironic and comic thing, but there's also a part of the real world there, something colourful for Italy"* (U8). These practices demonstrate how creative worlding operates across leisure/labour boundaries, with users fluidly combining expressive, social, and economic logics within the same platform-based activities.

Avatar embodiment emerges as a crucial dimension of user metaverse practices in Italian VR communities. While the importance of avatar-mediated presence was noted in definitional discourse, its full significance becomes evident through observed identity practices. Some users leverage virtual spaces to express identities constrained in physical contexts. One explains: *"Many were already, in the real world, people who were in the furry community or people who have gender dysphoria. I, for example, am theoretically on the non-binary spectrum, so I have an agender avatar"* (U9). Beyond identity expression, VR's proprioceptive affordances enable distinctive forms of embodied exploration. Another describes this embodied experience: *"In VR you move with your avatar. I'm moving my arms, but what I see in front of me isn't my usual body, it's an avatar, something I chose, something I can change whenever I want ... I've always been a very sensitive, playful guy. But in real life, I'm a guy with broad shoulders, 1.80m tall. I started wearing this aesthetic on VRChat because I think it's a manifestation of my inner being. If I had to imagine a person with my character who isn't physically me, I'd imagine them like this"* (U11). Avatar choices reflect not only identity expression, but also platform-specific technical considerations, with users selecting avatars based on animation quality and movement aesthetics regardless of gender identification.

The contrast between developer and user implementations across platforms, communities, and practices illuminates how competing definitional frameworks translate into divergent worlding practices. On the one hand, Developers world industrial metaverses through task-oriented implementations measured by efficiency gains, creating virtual environments for time-limited professional activities structured around specific objectives and return-on-investment metrics. On the other hand, Users world social metaverses through sustained community formation measured by relational density, creating virtual places for open-ended inhabitation structured around leisure, creativity, and identity exploration. These parallel worlding processes produce actually existing metaverses that share technological substrates, while serving fundamentally different purposes organized around incompatible temporalities and success metrics. Developer implementations optimize for brief, instrumental engagements where participants enter to accomplish defined tasks and exit upon completion. User practices optimize for extended, expressive engagements where participants inhabit spaces precisely because objectives remain open-ended and emergent through social interaction.

## 6. Metaverse operative imaginaries

Although differences and variations exist in definitions and material practices, developers and users broadly converge on a future-oriented technological aspirations for immersive technologies – hardware miniaturization, AI integration, visual improvements, and platform interoperability. Yet this technological consensus masks divergences regarding what these technologies should ultimately enable and for whom. These *operative imaginaries* function as generative forces shaping resource allocation, development priorities, and

community formation, even as they encode fundamentally different visions of value, utility, and legitimate participation.

### 6.1 Hardware miniaturization and current adoption barriers

Hardware miniaturization emerges as a first shared aspiration across both groups, bridging the B2B/consumer divide documented in previous sections. For example, one developer projects a near-term trajectory: "*Within three years the headsets will become glasses, with prescription lenses inside and you'll see holograms and you'll see people on the street all with glasses moving their hands"* (D3). This vision naturalizes ubiquitous AR through imagined spatial normalization – streets populated by gesture-performing users – positioning wearable computing as inevitable sociotechnical evolution. Users echo this hardware trajectory while articulating divergent assessments of current affordability. One frames miniaturization as aspirational: *"My hope is creating a slim headset that gradually approaches the size and price of a pair of glasses"* (U7). Another contests accessibility narratives: *"Stand-alone headsets now have a quite accessible price, they cost much less than certain phones"* (U11). These formulations reveal internal user disagreement regarding whether economic barriers constitute present constraint or resolved precondition, a tension reflecting heterogeneous purchasing power within user communities.

Both groups recognize miniaturization aspirations through explicit acknowledgment of multidimensional adoption barriers current VR headsets constitute. Developers identify hardware invasiveness as a threshold issue: *"Wearing a smartwatch is identical to wearing a normal watch, wearing a headset instead is something invasive in all effects"* (D5). Another describes temporal limits of embodied tolerance: *"I'm not a fan of headsets ... after a while they bother me, I want to take them off ... Maximum 20 minutes, then I have to take it off"* (D2). Users echo these physiological constraints through experiential accounts. One emphasizes weight and thermal discomfort as deterrents to sustained engagement: *"Many times I just don't feel like getting into VR. Why? Because I don't feel like putting the headset on, because it's heavy. It's starting to get hot now, so it's uncomfortable"* (U11). Developers further diagnose social-cultural barriers beyond hardware. One positions public derision as cultural rather than technical obstacle: *"If I go around with a headset they make fun of me, if I go around with a phone, there was never a temporal moment where phones were derided. That unfortunately is an obstacle that isn't of technology but of culture"* (D4). The glasses imaginary thus addresses sociotechnical configurations where hardware materiality intersects bodily comfort and public acceptability, recognized across both constituencies as prerequisites for mainstream adoption.

### 6.2 AI integration, interoperability aspirations, and visual fidelity

AI integration represents a second shared priority, though articulated through different registers. Developers frame AI as infrastructural: *"AI will help us generate commands through our voice ... Interactions with the virtual world become simpler, more intuitive, with less effort"* (D1). Another envisions ambient computational layer: *"AI for data analysis of everything you look at, and spatial computing technologies telling you where things are located – these two technologies together can do great things"* (D2). Users articulate AI as an assistive entity: *"An AI assistant could build, for example, a simple avatar, a simple map, or generally just assist you within these virtual spaces"* (U9). The same user extends this: *"I imagine it as a drone that follows you, helps you, you ask it things even while talking with other people and it assists you"* (U9). Where developers imagine AI as distributed infrastructure, users conceptualize it as a discrete agent, a distinction reflecting broader

patterns wherein technical producers emphasize system architecture while users foreground situated assistance.

Cross-platform interoperability emerges as a third shared aspiration, particularly articulated by users. One user describes an expansive vision: *"I imagine the metaverse of the future like the Internet, the network of networks, where we enter, we're ourselves, we have our identity everywhere we go"* (U8). This imaginary positions seamless identity portability and asset mobility across platforms as fundamental to metaverse viability, drawing explicit analogy to internet protocols enabling cross-platform communication. Yet users recognize significant obstacles to realizing this vision. One explains technical incompatibilities: *"This is possible only if platforms all run on the same engine and the same base ... Between one platform and another there are differences in managing materials, shaders"* (U9). Another acknowledges economic barriers: *"For platforms it will never happen ... Those who have competitive advantage will never share it with anyone else"* (U4). This tension between aspiration and constraint reveals how interoperability functions as operative imaginary—shaping desires and expectations – while remaining structurally improbable given competitive dynamics among platform providers.

Visual fidelity improvements constitute a fourth shared priority, though with divergent teleologies. One developer envisions photorealistic convergence: *"The evolution will surely be at quality level, so increasingly we won't distinguish real from digital"* (D1). Users, on the contrary, contest this trajectory: *"The graphics should increase – not too much though – because the real world we already all know about; making super-realistic worlds would also remove that VR effect somewhat"* (U7). This position suggests that users value virtual environments whose appeal lies partly in their aesthetic difference from physical reality rather than in perfect simulation of it. Where developers imagine convergence toward unified mixed reality eliminating virtual/physical boundaries, users express preference for maintaining aesthetic differentiation that signals immersive mode-shift.

### 6.3 Material constraints and pragmatic compromises

Yet, these shared aspirations confront persistent material constraints that fundamentally limit present implementations. One developer articulates this frustration explicitly: *"All the work we do is limited by technology, it's absurd [...] Everything we do isn't helped, it's limited by technology. We could do incredible things, but unfortunately we can't because we're working with or must interface with a device"* (D2). This acknowledgment reveals how developers' visions of photorealistic convergence and seamless experiences remain constrained by hardware computational limits, forcing continuous compromises between visual fidelity, performance, and accessibility. The tension between imaginaries and material realities gives rise to development practices oriented toward pragmatic optimization rather than ideal implementation, as developers design not for what immersive experiences might become, but for what current devices can realistically sustain.

These patterns illuminate how sociotechnical imaginaries (Jasanoff & Kim, 2015) function as boundary objects, enabling coordination around shared technological trajectories, while also encoding fundamentally different visions of value, utility, and legitimate participation. While developers and users converge on hardware miniaturization, AI integration, and visual improvements as necessary evolutions, they diverge on what these technologies should enable and for whom. Developers' infrastructural orientations reflect professional imperatives that prioritize scalability and market viability, whereas users' agent-oriented framings emphasize experiential immediacy and community persistence. This asymmetry reveals how operative imaginaries both facilitate and constrain possibility: consensus

around technological forms coexists with contestation over social purposes. Rather than representing mere differences in preference, these divergent visions constitute competing imaginaries of the future, actively shaping which metaverse possibilities become materially realized and which remain deferred.

## 7. Conclusions

This article set out to examine how the metaverse is *worlded* – defined, enacted, and imagined – by developers and users in Italy. Rather than treating the metaverse as a single technological object or a coherent corporate project, our findings show that it materialises as a plurality of *actually existing metaverses*, emerging through situated practices that are shaped by different temporalities, value regimes, and infrastructural dependencies. The Italian case thus illustrates how immersive technologies take form not at the margins of global platform power, but within its uneven extensions, where local actors actively negotiate meanings and uses without escaping structural constraints. Across the study, a recurring distinction came up in both discourse and practice. Developers generally oriented their work toward what they described as an industrial or enterprise metaverse, with task-based environments built for training, simulation, digital twins, and process optimization, and assessed in terms of efficiency, cost reduction, and return on investment. Users, by contrast, enacted a more social metaverse, centred on persistent inhabitation, recurring events, and the ongoing work of maintaining communities across social VR platforms, most notably VRChat, and to a lesser extent Spatial, Bigscreen, and Horizon Worlds. These orientations should not be taken as competing models of a single system, nor as symmetrical positions within a shared ecosystem. Rather, they point to coexisting worlding practices that draw on similar technological substrates, while pursuing different purposes and temporal logics. This asymmetry helps explain why enterprise-oriented implementations rarely appeared in user accounts, and why social metaverse practices were often dismissed by developers as commercially marginal. Industrial metaverses are typically closed, access-restricted, and episodic, intersecting only minimally with the open-ended spaces where users build relationships and cultural routines. Conversely, user-driven social worlds generate value primarily through durational presence and relational density – forms of worth that are difficult to translate into the metrics that govern B2B development. What emerges is not a binary opposition between production and use, but a partial disconnection between domains that are often conflated in abstract discussions of 'the metaverse'.

Despite these divergences, developers and users articulated strikingly similar *operative imaginaries* regarding the future of immersive technologies. Both groups converged on expectations around lighter and less invasive hardware, greater comfort, more intuitive interaction, AI-assisted creation and navigation, and improvements in visual quality. At the same time, they shared frustrations with current limitations, including headset weight, heat, motion sickness, battery life, and uneven accessibility. These convergences indicate that disagreement does not centre on technological trajectories as such, but on what those trajectories are ultimately *for*: scalable professional solutions in one case, and richer forms of sociality, creativity, and embodied presence in the other.

Situated in the Italian context, these findings highlight how local metaverse practices and imaginaries are inseparable from global infrastructures. Rather than overtly resisting dominant metaverse narratives, Italian actors engage with them through selective

reworkings in practice. Developers tend to translate the metaverse into task-bound, time-limited industrial applications – such as digital twins, training environments, and virtual showrooms – whose value is assessed in terms of efficiency gains and return on investment. At the same time, users inhabit a different metaverse, grounded in durational sociality, recurring events, and shared cultural reference points that render platforms such as VRChat meaningful as places rather than products. While remaining deeply dependent on infrastructures controlled by major technology corporations, these practices reshape what the metaverse becomes by aligning it with locally situated rhythms of work, leisure, and community, giving rise to an uneven assemblage shaped by constraint, friction, and partial appropriation through everyday use.

Seen in relation, our findings also caution against reductive formulations that map developers onto industry and users onto sociality as fixed or exhaustive categories. Our fieldwork revealed a plurality of motivations, practices, and meanings within each group, as well as moments of overlap – such as user monetisation through world-building or developers' recognition of community dynamics – even if these intersections remain structurally limited. Rather than a simple ratio between industrial and social logics, the metaverse appears here as a field of partial connections, in which different forms of value coexist without converging into a unified model.

This study has several limitations. Empirically, it focuses on a relatively small sample within a single national context and privileges senior developer perspectives, which limits insight into everyday production practices. Platform coverage reflects the commercial platforms and virtual worlds most prominent within our user sample, rather than the full range of platforms in circulation. Analytically, our developer–user distinction, while heuristically useful, inevitably simplifies more hybrid forms of participation that merit further attention. Future research could extend this approach by comparing multiple peripheral or mid-level innovation contexts, examining, for instance, how different regulatory regimes shape metaverse worlding – an aspect we were only able to address in a limited way given the scope of our empirical material. Longitudinal studies would also help trace how current operative imaginaries evolve as hardware, AI integration, and platform governance change. Finally, closer attention to hybrid actors – such as user-creators, community entrepreneurs, or technical workers embedded in social worlds – could further complicate the boundaries between production and use highlighted here.

By foregrounding situated practices and plural enactments, this article contributes to scholarship that approaches the metaverse not as a singular future to be realised or resisted, but as an uneven sociotechnical formation already being lived, negotiated, and made meaningful in practice. The Italian case demonstrates that understanding what the metaverse is becoming requires attention not only to dominant corporate visions and infrastructures, but also to the everyday worlding practices through which these are appropriated, modified, or unevenly engaged with.

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# Disentangling the China Metaverse

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This insight section originates from a two-day workshop organized at the Università Federico II of Naples involving three scholars with expertise in the construction of the Chinese Metaverse. The following Q&As aim to trace continuities and changes in the perspectives of Chinese scholars from different backgrounds (ranging from cultural studies to philosophy of communication and political economy) regarding the emergence of MR and metaversal technologies in the People's Republic of China, also emphasizing the different trajectories that the metaverse is following, not only at a technological level, but also from a historical, economic, and cultural perspective.

> *Q1 China's engagement with the Metaverse is driven by a combination of technical rationality, techno-nationalism, and domestic market logic. From your perspective, how do these three drivers interact and influence the actual development priorities and policy frameworks for the Metaverse in China, and which factor, if any, holds the most sway in shaping its trajectory today?*

**JD**: The three driving forces are always intertwined. However, concerning China's societal transformation amidst the changing world geopolitics, techno-nationalism is becoming more important to consolidate domestic consensus and to secure international competition. It is indeed an effective tool to legitimize most policy initiatives. Besides, the market growth and sustainability are also at stake since China's economy is facing some challenges from inside and outside; meanwhile digital economy plays a key role in bringing market dynamics into this system, including offering more but precarious job opportunities, boosting domestic consumption, and bridging China with global markets via diverse e-commerce channels. Thus, I think the techno-nationalist mindset is of great

importance for today's policy making in China, but the market logic is also critical as it relates to problem-solving in the real economic process.

**XX:** The advancement of China's metaverse is the outcome of dynamic coupling among three driving forces: technological rationality, technological nationalism, and domestic market logic. Through the interaction of policy guidance, technological breakthroughs, and market demand, these forces jointly shape a development trajectory characterized by independent innovation, scenario implementation and cultural value. It can be described as independent innovation as the core, scenario implementation as the focal point, and cultural value as the orientation.

The three driving forces exhibit an interactive mechanism. Technological rationality as the foundational support, emphasizing instrumental attributes and efficiency orientation, enhancing productivity through technological innovation while focusing on breakthroughs and integrated applications of core technologies such as blockchain, AIGC, and XR. Technological nationalism supports independent innovation and the pursuit of international discourse power, leveraging policy guidance and resource allocation to promote the autonomy of key technologies and the export of cultural values. Domestic market logic acts as the demand anchor, driven by user needs to propel consumption upgrades and industrial transformation, facilitating technology implementation and business model innovation while feeding back into policy adjustments and technological iteration.

This interactive mechanism has influenced development priorities and policy frameworks. In terms of development priorities, it has achieved a shift from technology-driven to scenario-based leadership. At the technological level, policies focus on addressing weaknesses and building an ecosystem, while also planning for AI ethics and governance. At the application level, priority is given to low-risk, high-value scenarios such as culture and cultural tourism, exemplified by Shanghai's "Cultural Tourism Metaverse Action Plan," which promotes related projects to meet market demands while strengthening cultural identity. At the industrial level, efforts are made to cultivate a collaborative ecosystem of "technology-content-hardware," with platforms like Tencent and NetEase integrating technologies to form commercial closed loops. In terms of policy frameworks, a three-tier system of "national strategy + local practice + industry self-regulation" has been established. At the national level, the top-level design of building a digital cultural powerhouse incorporates the metaverse into the realm of new productive forces. To accelerate the development of new industrial frontiers and competitive advantages, five government agencies including the Ministry of Industry and Information Technology (MIIT), Ministry of Education (MOE), Ministry of Culture and Tourism (MCT), State-owned Assets Supervision and Administration Commission (SASAC), and National Radio and Television Administration (NRTA) have jointly launched the "Three-Year Action Plan for Metaverse Industry Innovation Development (2023-2025)". This initiative focuses on building an industrial metaverse and empowering manufacturing sectors through integrated innovation in next-generation information technologies. The plan outlines 14 key tasks across five dimensions: establishing advanced metaverse technology ecosystems, developing industrial metaverse platforms, creating immersive digital lifestyle applications, building comprehensive industrial support systems, and establishing secure and

trustworthy industrial governance frameworks. At the local level, a pattern of "east, west, south, and north" has been formed through differentiated distribution. At the industry level, self-regulatory norms and technical standards are synchronized to promote compatibility between domestic technological self-discipline and international rules.At the local level,

Policy tools integrate technical rationality and market logic, becoming the core force shaping China's metaverse development path. Specifically, it lies in leveraging the strategic orientation of policies, the centralized allocation capacity of resources, and the anchoring effect of cultural values to build a metaverse narrative system based on China's cultural characteristics, ensuring that in global competition, we not only follow the technological frontier but also try to emphasize cultural value innovation.

**LH:** The primary driver behind the development of the metaverse in China is the demand for economic growth. However, in today's complex society, the causal relationship between technology and the economy has become increasingly indirect, leading to a widening gap between ultimate determinants and immediate decision-making factors. For instance, although the specific economic benefits of metaverse technologies remain uncertain at present, optimism and positive expectations toward such technologies have attracted substantial speculative investments.

Due to the lack of a clear trajectory for technological development and economic monetization, culture has emerged as a significant short-term influence guiding technology policy. Particularly noteworthy is the phenomenon of *scientism* that took root in China since the early 20th century—a widespread belief in the intrinsic link between scientific advancement and national strength. During the same period, a collective psychology of catching up with and surpassing Western civilization also took shape. This mentality emphasizes imitation and adoption of cutting-edge global technologies and strives to avoid missing out on any developmental opportunities. As a result, policy formulation in frontier technology often prioritizes symbolic advancement over pragmatic market evaluations.

Such techno-nationalist sentiments and related cultural influences have led to a top-down, ideology-driven approach in shaping China's policies on emerging technologies, which are frequently detached from their market evaluations. However, policy-making does not entirely overlook the gap between technological potential and practical applicability. Instead, the dominant cultural paradigm creates a demonstration effect, rapidly facilitating a nationwide environment that is friendly to technological adaptation. This is often achieved through local government-led investments designed to align institutional conditions with the requirements of technological deployment.

Therefore, in the case of cutting-edge technologies such as the metaverse and artificial intelligence, the most influential factors remain the imagination of technological futures held by political elites, as well as cultural undercurrents like techno-nationalism.

> *Q2 The concept of a "Chinese-style cultural metaverse" emphasizes the deep integration of traditional Chinese culture with modern digital technologies to foster unique experiences and disseminate national culture. This is also confirmed by the same translation of the word 'Metaverse' into 元宇宙 Yuanyuzhou, which substantially differs from the original English*

*version. Could you elaborate on specific, tangible examples of how this cultural integration is being achieved in practice, and what are the most significant challenges in ensuring that these digital interpretations genuinely convey the depth and authenticity of traditional Chinese culture?*

**JD**: Chinese culture is a very stable system, as well as its narratives. However, I am not going to say that any technical revolution will fall into a Chinese characteristic approach, which merely emphasizes China as an exception and undervalues the commonalities between China and other countries or cultures. Perhaps, it is because of the massive application of Metaverse technologies in the exhibition of traditional Chinese culture online (e.g. museum) and offline (e.g. lantern festival), we can easily find the connection between Metaverse and traditional culture. But it has to be noticed that the Metaverse has been used in modern and urban settings as well to showcase future visions and even construction plans. Arguably, the Metaverse fits the development agenda well for both the government and industries. Therefore, though used widely in relation to traditional culture, the Metaverse is not considered only as a tool for cultural inheritance, but as a catalyst for boosting national and local economy, optimizing political performance via appealing to cutting-edge technologies, and expanding the market scale. Therefore, due to the pragmatic approach to using these technologies, the depth of Chinese culture conveyed by them is often overlooked.

**XX:** The integration of traditional culture with modern digital technologies has given rise to numerous practical applications across multiple fields. In the digital revitalization of cultural relics and heritage, Dunhuang's "Digital Sutra Cave" employs 3D laser scanning and VR/AR technologies to replicate the murals of the Mogao Caves, while AI restoration algorithms recover faded details. Users can virtually explore the "Dunhuang Manuscripts" in 360 degrees, creatively recombine mural elements, and achieve a modern transformation of traditional cultural symbols. The Palace Museum's "Digital Artifact Repository" utilizes high-precision digital modeling to construct a 3D model library of artifacts, complemented by AR technology to launch interactive e-publications. Visitors can "touch" virtual artifacts through AR glasses, watch restoration animations, and experience historical scene transitions, turning static relics into dynamic narratives.

Immersive innovations in cultural tourism also stand out. The Hangzhou Asian Games' Digital Torchbearer program generated 100 million digital torchbearer avatars using blockchain technology, achieving a virtual-physical ignition of the main torch tower via AR. The avatars incorporated cultural elements such as Liangzhu jade cong and West Lake landscapes, conveying the Eastern philosophy of "eternal renewal"[1] and marking the world's first large-scale AR-interactive sports cultural event. Suzhou Bay Digital Art Museum's "Journey Through a Thousand Miles of Rivers and Mountains" employs 8K ultra-high-definition projection and motion capture to transform the Northern Song Dynasty painting *A Thousand Miles of Rivers and Mountains* into an interactive immersive space. Visitors can participate in the painting's scenes through body movements, experiencing the aesthetic "mood" of traditional landscape painting and elevating the experience to homo sapiens wandering within the artwork.

[1] "Eternal renewal" means the concept of life and things continuing and repeating, reflecting the profound understanding of nature and life in eastern culture.

In the innovative development of IP and digital assets, Sanxingdui's "Digital Artifact NFTs" issued blockchain-based digital collectables of bronze masks and sacred trees, paired with AIGC-generated virtual narratives. These digital collectables preserve the original patterns of the artifacts while using virtual homo sapiens to explain ancient Shu civilization, making archaeological achievements accessible to younger audiences. Henan TV's "Metaverse Opera" applied motion capture and holographic projection to adapt the *Tang Palace Night Banquet* dance into a virtual homo sapiens performance, creating a metaverse stage with VR devices. The virtual performers' costumes replicate Tang Dynasty attire, and their movements incorporate elements of opera, bringing traditional art into the view of Generation Z in interactive and shareable forms.

The ultimate goal of the cultural metaverse lies in achieving innovation for civilizational inheritance, rather than technology-driven showboating. The essence of China's cultural metaverse is technology as the vessel and culture as the soul, yet in practice, it faces the dilemma of a soul without a vessel. The greatest challenge in preserving the depth and authenticity of traditional culture stems precisely from this disconnect. In the short term, it is necessary to coordinate commercial value and cultural value to prevent the instrumentalization of technology from diluting the cultural core. In the long run, it is necessary to build a support system composed of three aspects: a traditional culture database, a cultural interpretation model, and an ethical review mechanism, so as to ensure that digital technology becomes a carrier of activating rather than alienating traditional culture.

**LH:** In Chinese culture, the concept of the "metaverse" is relatively new, and there is no directly equivalent term in the Chinese language. As such, the Chinese term "元宇宙" (yuányǔzhòu) was coined to correspond to the English concept of "metaverse." Nevertheless, subtle cultural differences persist in the process of conceptual travel and translation. "Metaverse" was once translated as "超元域" (chāo yuán yù), but this term was abandoned due to its excessive abstraction. In other words, both translators and the public prefer a term that evokes a sense of familiarity and resonance among speakers.

In the Chinese term "元宇宙," "元" (yuán) corresponds to "meta," while "宇宙" (yǔzhòu) corresponds to "verse." The character "元" in Chinese not only conveys a sense of transcendence but also carries meanings related to origin and primacy—it refers to what is fundamental and essential. This differs slightly from the English notion of a realm beyond or parallel to the physical world. The Chinese term even implies that this world is more fundamental and original than the real one.

The word "verse" originates from "universe," which derives from the Latin "universus," combining "uni" (one) and "versus" (turn), originally describing all things turning into one unified whole. On the other hand, "宇宙" (yǔzhòu) is deeply embedded in Chinese cultural imagination. This term dates back to the pre-Qin period: "宇" (yǔ) refers to all spatial dimensions (east, west, south, north, up, down), while "宙"(zhòu) refers to all temporal dimensions (past, present, future). Thus, the Chinese concept of "宇宙" constitutes a space-time continuum rather than merely a spatial structure. Moreover, unlike a unified

spatial framework, "宇宙" inherently encompasses the possibility of multiple parallel space-times.

Traditional Chinese conceptions of time are not linear but cyclical, evolving through alternating periods of order and chaos, as captured in sayings such as "long united, must divide; long divided, must unite" and "thirty years east of the river, thirty years west of the river." This reflects the rhythm of agricultural society, where activities were organized according to annual cycles, reinforcing a circular view of time and mode of thinking. Although the introduction of Buddhism brought some linear concepts of past, present, and future, the Buddhist notion of "reincarnation" further strengthened this cyclical understanding of time.

This traditional perception and structure of time and space in Chinese culture make it more receptive to the recombination of time-space and parallel realities. For example, contemporary Chinese web literature frequently features time-travel plots—modern people travelling to the past, ancient people coming to the present, and even cross-gender transitions—all reflecting a flexible conception of time and space in Chinese culture and a greater openness to virtual worlds.

> *Q3 Chinese understanding of virtuality not as a mere illusion, but as confirmed by previous studies, inspired by Chinese scholars and scientists like Qian Xuesen "another possibility of reality" or "a vibrant experience, a third mode of being", which can even enrich life and impart moral significance by presenting alternative possibilities. How does this profound philosophical perspective, which views the virtual as inherently linked to and capable of transforming reality, influence the overarching purpose and design philosophy of the Chinese Metaverse – moving beyond purely recreational or economic aims – particularly in its potential to offer deeply enriching life experiences, foster personal reflection, and serve educational or societal functions that might diverge significantly from typical Western virtual paradigms?*

**DJ**: Virtuality is also reality. Chinese philosophy always underlines the dialectical way of thinking. I believe that building a virtual world is not only mirroring the real world, but also reminding people who live in the real world of some important issues, including the meaning of life, family, and the importance of adhering to ethical principles. One typical example is the story of *Journey to the West*. The Palace in Heaven is both a projection of the imperial power system on the earth and a dominator of the human society under the highest power of Buddha. Another example is the movie about *Nezha*. In that story, the virtual world inside a traditional Chinese painting is also a real world for physical and spiritual training. There is always a channel connecting the virtual and real worlds. Thus, for Chinese people, the Metaverse seems technically far away but spiritually inside of us. It is a medium for self and group reflection, which may differ from those in Western societies.

**XX:** The overarching goal of China's metaverse is to transition from technological empowerment to civilizational dialogue, transcending instrumental rationality. Its core lies in promoting cultural heritage innovation and upgrading social governance through the deep integration of virtual and real worlds, rather than merely pursuing technological

breakthroughs and economic benefits. In the pursuit of cultural sovereignty, many Chinese scholars regard the metaverse as a carrier of "new forms of digital civilization," emphasizing Chinese-style cultural innovation. For instance, Qian Xuesen proposed the concept of "spiritual realm" by integrating VR technology with Zhuangzi's philosophy. Regarding social value, it adheres to "prioritizing social benefits," such as prioritizing virtual human technology in public services to embody "technology for good."

The Chinese metaverse has developed a three-stage interactive design concept that seamlessly integrates the virtual and the real. From the philosophical perspective of the intrinsic connection between the virtual and the real, it creates a closed loop of reality anchoring, virtual expansion, and feedback to reality. Real anchoring requires designing virtual scenarios based on authentic cultural resources to avoid detachment from reality; virtual expansion breaks through time and space constraints through virtual technology, creating a "realistic possibility"; while feedback into reality transforms virtual experiences into concrete actions and value recognition, as exemplified by the "Digital Torchbearers" initiative at the Hangzhou Asian Games.

The specific functional potential of China's metaverse is reflected in the integration of deep experience, personal reflection and social empowerment. Deep life experiences enable users to transition from observing to participating, with the help of XR, AIGC, and other technologies, to achieve cultural immersion. Through virtual scene construction, personal reflection builds a valuable dialogue space to guide users to internalize the collision between traditional culture and modern values. In terms of educational and social functions, the metaverse can be used to re-present educational scenarios, promote the implementation of functional features such as experiential learning and co-created governance, and realize a paradigm innovation from pure knowledge transmission to comprehensive ability improvement.

The metaverse in China differs from the Western virtual paradigm to some extent. China pursues the unity of cultural inheritance, social progress, and the free and comprehensive development of individuals through the path of coexistence between the virtual and the real. This difference stems from the philosophical tradition of the unity of the Dao and the vessel in China, and is expected to provide an alternative possibility of non-Western centrism for the development of the global metaverse.

**LH**: Qian Xuesen translated "virtual reality" as "Lingjing" (灵境), considering it "distinctively Chinese." Although ancient China did not possess the technology to realize virtual reality as we know it today, it harbored a rich tradition of imagination and conceptions pertaining to virtual experiences. Among these, the notion of "huan" (幻) stands out as one of the most distinctive and enduring. "Huan" in Chinese carries derived meanings (衍生) such as illusion (幻觉) and magic (幻术), yet at its core, the concept is intimately connected with "nothingness" (虚无), "reality" (真实), and "transformation" (化). Primarily, "huan" refers to a subjective experience distinct from the everyday real world—an experience so vivid that it supplants reality and becomes a new form of truth. Tracing its origins, "huan" is often associated with changes in the environment or the subject: either the environment induces illusions, or the subject enters the body of another

person or an animal. It is this very process of transformation (化) that alters the experience of reality.

Unlike a simple true-false binary, the Chinese concept of "huan" does not regard illusion as mere sensory deception or environmental unreality. Instead, it perceives "huan" as an alternative, more genuine perception of reality or another possibility of the real. As early as two thousand years ago, Daoist philosophy established an equal status for "huan" and reality. For instance, in the famous anecdote of "Zhuangzi dreaming of being a butterfly", Zhuangzi regarded the experience of being a butterfly in a dream as equal to his experience as a human, thereby reflecting on the "real" self and the world.

During the Wei and Jin periods (220 - 589 a.C.), Buddhist thought entered Chinese intellectual circles, and its doctrine that "form is emptiness" (色即是空) popularized the concept of "huan" even further. While the Daoist notion of "huan" negates the distinction between the real and the illusory, it still acknowledges the existence of an essence and order in the world. Buddhism, however, denies all essence and reality, reducing everything to nothingness. It regards secular life and the real world as "huan"—where illusion is emptiness, and illusion is reality. The concept of illusory emptiness (空幻) breaks down the boundary between reality and virtuality, transcending the true-false dichotomy. "Huan" is neither "being" (有) nor "non-being" (无). This philosophy treats "huan" as a lively experience—a third type of experience parallel to false illusions and everyday life.

In literary creation, the Chinese literati even employed "huan" as a criterion for evaluating the quality of a work. Precisely because "huan" is not real, authors need not worry about invoking unnecessary associations among readers, and can instead create with greater freedom. For example, *Dream of the Red Chamber*r (one of the Four Great Classic Novels of Chinese literature) used dream illusions to depict reality, evading the literary inquisition and political censorship of the early Qing Dynasty. Li Zhi (李贽) of the Ming Dynasty (though many believe the actual author was Ye Zhou（叶昼）, who wrote under Li's name) remarked in a preface commentary on *Journey to the West*: "Writing without *huan* is not writing; *huan* not taken to the extreme is not *huan*. The most illusory matters are the most real matters; the most illusory principles are the most real principles. Thus, speaking of reality is not as good as speaking of *huan*." The story of *Journey to the West* is absurd, yet it contains satire aimed at the real world of the Ming Dynasty.

Since there is no rigid boundary between the illusory realm and reality, the choices made within the illusory realm can impact reality. Conversely, the illusory realm also becomes an important pathway for individual enlightenment and growth. From an existentialist perspective, "huan" allows one to traverse time, space, and subjectivity, compelling the breaking of fixed perspectives to examine life from new angles, revealing its impermanence (being-toward-death), and thus rethinking the meaning and choices of life.

In traditional Chinese thought, "huan" is not unconditional; it requires some medium or technique to be realized. For example, through dreams, magic, conjuring, hallucinogenic plants (such as mushrooms), drugs, smoke, alcohol, and other means, one may escape rational control and enter another world. The discourse on "huan" is often associated with "hua" (化), which has two meanings. The first is an action directly entering the body of

another person, animal, or plant. This concept likely originates from shamanism, once prevalent in China, where shamans would enter the bodies of other animals to gain unique perspectives or abilities. The second meaning is the creation of an illusory realm. Those skilled in creating illusions are often associated with mystical powers; for example, enlightened monks or Daoist priests often used illusory techniques to show people the future or alternative possibilities, thereby leading to enlightenment. One of the most important media for entering illusory realms in ancient Chinese artistry was painting. The Chinese did not regard painting as a static reproduction of reality but saw the painting itself as an illusory realm—a space one could enter. "Huan" was also a key principle in the creation of Chinese landscape painting. Traditional Chinese landscape painting aimed to create an illusory realm that could be entered and traversed imaginatively. It was not merely a realistic depiction of scenery but sought to create an ideal space that was "feasible" (可行), "expected" (可望), "habitable" (可居), and "navigable" (可游). By externalizing human perception, landscape painting guided viewers into the illusory realm, allowing them to travel along the routes arranged by the artist. This was not only enjoyable but also a soul-cleansing spiritual journey. By entering the illusory realm generated within the painter's mind, viewers achieved a fusion of different horizons.

In summary, the Chinese conception of the metaverse presents an alternative perspective distinct from the Western one, thereby enriching the global discourse on the metaverse.

> *Q4 Following Girginova's suggestion (2024) Chinese-style cultural metaverse offers a new perspective for global metaverse development and can inspire other nations in cultural preservation and technological innovation. What are, in your view, the key predicted divergences in values, technological applications, or content presentation between China's approach to the Metaverse and that of Western cultures, and how might these differences shape the future global discourse and potential interconnectedness of virtual worlds?*

**DJ**: Metaverse technologies are used for cultural preservation, economic growth, and social governance in China. To differentiate China from other countries, I suggest focusing on holistic rather than concrete perspectives. First of all, most technological innovations are prioritized to be used for economic development and the improvement of social governance. Secondly, since China is still one of the largest populous countries in the world, popularizing the use of those technologies and securing the equality of technical rights is central to the national policy-making process. Thirdly, as the geo-technical competition escalates, China is likely to adopt autonomous approaches to develop its technical, economic, and cultural strengths, which may lead to a more diverse outcome in the global Metaverse development.

**XX:** There are significant differences between China and Western cultural contexts in terms of values, technological applications, and content presentation in the metaverse. In the dimension of values, China emphasizes "cultural subjectivity" and "social value priority," adhering to the logic of "civilizational continuity" through virtual-physical symbiosis. At the level of technological application, China follows the principles of "independent control and scenario implementation," guided by policies to serve the real economy. In content presentation, China is characterized by "reality anchoring and traditional revitalization," deeply rooted in historical and cultural resources.

These differences have significant implications for the direction of future discussions and the potential connectivity of the global virtual world. In terms of discussion trends, the focus of China's cultural metaverse discussions lies in promoting the deep integration of cultural preservation and technological innovation, providing the world with new ways to sustain civilization, and shifting global discourse from focusing on the latest technological breakthroughs to exploring how technology can empower culture.

Regarding potential interconnectivity, China and the West face dual risks: fragmentation of technological standards and cultural identity. Differences in blockchain infrastructure, digital identity systems, content moderation mechanisms, and other aspects may lead to the formation of "parallel universes" in the future global virtual world, with several distinct metaverse systems coexisting and struggling to interoperate in terms of technical standards and governance rules.

Despite these differences, the interconnectivity of the global virtual world can still be achieved through "cultural inclusiveness + technological collaboration." For example, at the cultural level, establishing a "Metaverse Cultural Heritage Alliance" could promote the sharing of digital cultural resources among nations, fostering mutual learning among civilizations while respecting cultural sovereignty. At the technological level, cross-regional technical standards could be developed to enable blockchain interoperability and mutual recognition of digital identities, avoiding technological barriers. At the governance level, a global "multi-stakeholder collaborative governance" mechanism could be established to balance government regulation, corporate innovation, and user rights.

Although differences exist, future global discussions on virtual worlds must transcend adversarial thinking, integrating cultural diversity into technological innovation and upholding ethical boundaries in commercial development. The insight offered by China's metaverse is that the ultimate value of virtual worlds lies in enriching the forms of Homo sapiens civilization through virtual-physical integration. This vision may propel the global metaverse from a "fragmented technological utopia" toward a "diverse and symbiotic digital civilization community."

**LH**: As mentioned in the previous question, the traditional Chinese concept of the metaverse, represented by the notion of "huan" (幻), does not posit a strict binary opposition between reality and virtual reality. Instead, it remains open to a third type of experience that transcends this dichotomy. As a form of life experience, "illusion" challenges the modern tradition of instrumental rationalism and redefines the virtual: not as an escape from reality, but as an integral part of life experience and a mirror for moral reflection. Of course, one cannot equate ancient concepts with contemporary ones in a simplistic manner. However, these ideas offer an enlightening perspective for rethinking modern views on the metaverse. How to integrate China’s discourse on "huan" into the global discourse of the metaverse remains a question worthy of future research.

China primarily regards the metaverse as a modern technology. Under the belief in scientism, the metaverse is often associated with national strength and future development, which in turn promotes its technological development and application. At the same time, China also views the metaverse as a form of life experience and an ideal state of living. Greater emphasis is placed on user experience, alongside a strong focus on its moral and educational value. For instance, although the technology is not yet widely adopted, some institutions have already begun using it for exhibitions and even cadre training. Both

perspectives are conducive to the promotion and adoption of metaverse technology in China.

During the COVID-19 pandemic, China witnessed rapid growth in online shopping, live streaming, and virtual meetings. There was also widespread acceptance of biometric data collection, such as personal movement monitoring and facial recognition. Many forms of online interaction have persisted beyond the pandemic, illustrating China's generally welcoming attitude toward new technologies. This openness suggests that Chinese society may be relatively receptive to the integration of parallel virtual spaces and real-world environments inherent in the metaverse, thereby facilitating the acceptance of virtual interaction and metaverse technologies in China.

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# Luca Di Majo e Gino Frezza, *Il Metaverso. Profili strutturali, socio-mediologici, economici e giuridici,* Mimesis, Udine, 2025

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*Il Metaverso. Profili strutturali, socio-mediologici, economici e giuridici* curato da Luca Di Majo e Gino Frezza, si presenta come un saggio necessario, non solo per capire l'essenziale, ma per responsabilizzarsi alla conoscenza in materia. Il libro nasce da una ricca giornata di confronti e di studi presso l'Università di Salerno, precisamente l'8 maggio 2024, dove si è puntato alla lettura sinottica del fenomeno metaverso e una presa di coscienza sul ruolo non marginale che deve avere il diritto.
Uscito nell'estate 2025, il testo si propone come un compendio multidisciplinare, frutto di un dialogo tra diverse competenze che convergono e cercano di proporre al lettore un punto di partenza per capire per bene il metaverso. Come da nota degli stessi curatori (2025, p.9), il tema del metaverso è attualmente poco arato, eppure la sua complessità e attualità richiama ricercatori curiosi e dai background accademici diversi. Non si tratta, infatti, solo di un problema tecnologico, ma una questione di civiltà: l'accrescimento di dipendenze e il soffocamento delle libertà, infatti, sono gli estremi di un discorso che oscilla tra apocalittici e integrati, e che vede come oggetto d'indagine qualcosa in continuo divenire. Per questo motivo il metaverso va studiato in maniera interdisciplinare. In tale prospettiva, il libro è stato strutturato in tre sezioni, ognuna particolareggiata da un nutrito numero di contributi.
La sezione uno ha accolto i cosiddetti profili strutturali, ovvero i contributi che specificano ciò che è utile conoscere per comprendere al meglio la struttura del metaverso, le caratteristiche e il funzionamento dei mondi paralleli. Tale sezione ha il merito di riportare la discussione del metaverso alle sue condizioni di possibilità: mondi persistenti, XR come interfaccia e la convergenza con l'IA generativa nella promessa di ambienti più responsivi. La genealogia proposta mette in relazione le esperienze dei mondi virtuali e dei giochi online con le attuali forme di persistenza e sincronizzazione. È su queste premesse che Massimiliano Rak nel primo saggio introduce i tre assi portanti del metaverso: la plausibilità intrinseca dei mondi virtuali, la possibilità giocosa di esplorazione e conoscenza data dagli avatar agentivi e relazionali (Argenton, Triberti, 2013) e la contiguità sensoriale e non necessariamente ludica data dalla realtà estesa.
L'estensione al cosiddetto metaverso industriale e ai gemelli digitali è un secondo punto fermo: qui l'argomento – noto ma spesso trattato per slogan – è ricondotto all'idea che l'informazione possa sostituire parti del ciclo fisico di produzione in modo più efficiente, abilitando design, formazione e manutenzione predittiva su infrastrutture e catene logistiche complesse. Qui, col saggio di Leo Sorge, si va più a fondo, chiarendo i plurimi aspetti del *digital twin* e delle possibili applicazioni proprio nel metaverso industriale (Di

Majo, Frezza, 2025, p.47). Il terzo saggio di Christiano Presutti sottolinea invece come il metaverso sia un concetto in divenire, asintotico, dove ogni mutamento tecnico e sociale ne muta i contorni e la definizione. In particolare, gli eventi dovuti alla pandemia da covid hanno accelerato enormemente sviluppo, ricerca e interesse generale alla tematica, soprattutto nel settore dell'IA e della blockchain. Un controcanto utile arriva poi nel saggio di Francesco Parisi, ossia dalla discussione del rapporto tra immagine, realtà aumentata e ciò che viene chiamato *diaverso,* ovvero la torsione dell'attenzione verso l'aumento del reale più che verso l'evasione nel virtuale. La sezione, infine, si conclude con un altro contributo di Sorge, che si propone come raccordo tra le due prospettive degli autori precedenti e chiarifica come il metaverso debba essere considerato come un processo di negoziazione sociale, politica ed economica dove il *digital twin* rappresenta la perfetta cerniera tra reale e virtuale.

Il libro prosegue poi con la sezione due, che ha accolto i contributi dei cosiddetti profili socio-mediologici. Qui è dove il testo espone la propria postura: l'immersione esperienziale, come spiega Gino Frezza nel primo contributo della sezione, non deve essere trattata come un assoluto tecnico, ma come costruzione storica che ha una genealogia nei media e nelle forme di attenzione e di identificazione cinematografiche. Soprattutto, spiega successivamente Marco Centorrino, non si deve cedere alla tentazione di rinominare Internet come 3.0: bisogna provare invece a circoscrivere ciò che cambia nell'esperienza, nel ruolo degli avatar e nella negoziazione quotidiana di identità e corporeità, che nei contesti immersivi si ridefiniscono senza mai staccarsi dalla pressione degli ambienti sociali d'origine. Si tratta, per l'autore, di un salto qualitativo importante e necessario nell'esperienza e nella governance per il metaverso.

Un'interessante lettura di archeologia dei media viene invece proposta dal successivo contributo di Mario Tirino, che demistifica il metaverso riportandolo a infrastrutture e capitalismo delle piattaforme. L'analisi del Metaverso attraverso la lente teorica di Friedrich Kittler usata da Tirino mette in discussione la narrazione che lo descrive come un'utopia digitale aperta, inclusiva e democratica. Da questa prospettiva, il Metaverso appare invece come la prosecuzione e l'amplificazione delle logiche di potere, controllo e sfruttamento proprie del capitalismo digitale. Piuttosto che costituire uno spazio neutrale di interazione, esso si presenta come un ambiente profondamente plasmato dalle élite tecnologiche, che ne stabiliscono le regole, traggono profitto dalle attività degli utenti e rafforzano il proprio controllo sulle infrastrutture digitali (ivi p.115).

Il valore di questi saggi risiede nella loro capacità di offrire strumenti critici per interpretare il Metaverso non soltanto come un prodotto tecnologico, ma come un fenomeno complesso che coinvolge dimensioni economiche, sociali, culturali e politiche. Frezza, Tirino e Centorrino mostrano infatti come il Metaverso rappresenti molto più di un'innovazione tecnica: esso costituisce un progetto che ridefinisce le logiche dell'economia digitale e le modalità dell'interazione sociale, con effetti che travalicano il campo strettamente tecnologico (ivi, pp. 120-135). Da questa prospettiva, la lettura combinata delle loro riflessioni fornisce un punto di vista essenziale e critico sulle trasformazioni del futuro digitale, oltre le narrazioni promozionali. L'analisi finora proposta si rivela preziosa per affrontare le sfide del digitale con lucidità, senso storico e libertà di pensiero.

Il testo continua con la seconda parte della sezione mediologica che riprende il fil rouge critico con il contributo di Lorenzo di Paola, che propone una mappatura delle opportunità e dei rischi ragionando su dipendenze, potere tecnocratico e derive tecnofeudali, alla cui base per l'autore, ci sono soprattutto le illusioni e le visioni ottimistiche di Pierre Levy

(1994) e altri autori simili, che sono state in parte – o del tutto – tradite. L'approccio di Di Paola è pragmatico: in certi contesti (formazione, riabilitazione) l'immersivo può davvero aiutare, ma gli stessi meccanismi che tengono agganciati gli utenti possono generare dipendenze, spinta alla profilazione e precarizzazione del lavoro creativo. Su questo crinale interviene Josephine Condemi, che sposta l'analisi sul piano sensoriale e usa il gusto per mostrare dove l'immersivo incontra un limite strutturale: non tutto è traducibile in codice e riconoscere questa soglia non è una resa, ma il presupposto per obiettivi e metriche realistici. I contributi continuano con la riflessione di Antonella Napoli, che lavora sull'avatar come tecnica relazionale. L'autrice non lo tratta né come fuga identitaria né come trappola: l'avatar serve a gestire l'identità, modulando prossimità e distanza relazionale a seconda delle norme implicite dei contesti che si abitano.

Successivamente Angelo Romeo affronta l'intelligenza in chiave operativa: i sistemi di raccomandazione e modelli generativi agiscono come dispositivi di montaggio dell'esperienza, riorganizzando memoria, attenzione e attribuzione d'autore. È da qui che nasce, per l'autore, l'esigenza di criteri seri di trasparenza e responsabilità. Luigi Somma invece riporta al centro del discorso il corpo come misura della presenza, altresì il luogo in cui si ridefiniscono i confini tra pubblico e privato, pudore ed esposizione. In pratica, ricorda che ogni promessa di presenza virtuale passa comunque dalla percezione incarnata e dalle regole sociali che la circondano. Ancora una volta, infine, la chiosa di Frezza ricompone i passaggi: l'immersivo va trattato come ecologia socio-tecnica, dove posture dell'attenzione, pratiche e infrastrutture cooperano a produrre l'esperienza, evitando tanto l'enfasi quanto l'allarme.

A questo punto del testo sopraggiunge la terza parte della sezione socio-mediologica dove i diversi contributi si verticalizzano su specifiche aree di applicazione del metaverso. Cristiana Ferrigno prende la sanità come banco di prova concreto: l'immersivo ha senso solo quando migliora davvero l'aderenza alle terapie e la continuità della cura, dentro protocolli affidabili e responsabilità chiare, altrimenti resta un potenziatore dell'attenzione senza valore clinico. Michelle Grillo, invece, mostra che la moda usa avatar e oggetti digitali per sperimentare identità e appartenenze: funziona quando le piattaforme non chiudono l'ecosistema, perché la creatività vive di circolazione, remix e partecipazione delle comunità. Quasi a continuare il ragionamento, Ivan Pintor Iranzo analizza il metaverso dal lato delle immagini: mostra come render, concept art, pubblicità e interfacce costruiscano l'idea stessa di questi mondi, prima ancora della tecnologia. Le immagini non si limitano a illustrare: orientano desideri, progetti e regole, perché funzionano come dispositivi di world-building che addestrano il nostro sguardo su ciò che è possibile e per chi (Di Majo, Frezza, 2025, p. 223). Simona Castellano prosegue con suo contributo, e usa lo sport come cartina di tornasole dell'"esserci a distanza", ovvero, mostra come gli ambienti immersivi intensifichino la fruizione e decentralizzino l'evento (interazione del pubblico, esperienze second screen, stadi virtuali), ma al tempo stesso aprano nodi molto concreti: proprietà e sfruttamento dei dati di performance, uso delle statistiche in tempo reale, nuove forme di trasmissione e diritti connessi. Ne esce un quadro ambivalente, con più coinvolgimento e accesso, ma anche necessità di regole chiare su dati, licenze e responsabilità degli operatori (ivi p. 230).

Marco Navarra sposta poi l'attenzione sui musei, e propone di passare dalla logica della sostituzione a quella dell'integrazione: la mediazione immersiva non rimpiazza l'incontro con l'opera, ma può costruire contesti interpretativi più ricchi e ampliare l'accesso, a condizione che sia il progetto curatoriale a guidare la tecnologia, e non il contrario.

Emanuela Piga Bruni, in chiusura, riannoda il filo: la corporeità resta il criterio di misura etico e politico per valutare ambienti e pratiche e ricordarlo significa chiedere a ogni applicazione in che modo ridefinisce presenza, confini tra pubblico e privato e possibilità di accesso, evitando sia l'enfasi che l'allarme (ivi p. 256). È precisamente da qui che la discussione deve farsi giuridica ed economica, perché ciò che negli usi appare come esigenza di evidenza, apertura, tutela dei dati, cura della mediazione e rispetto dei limiti corporei diventa, sul piano istituzionale, problema di responsabilità, trasparenza, interoperabilità e concorrenza.

L'ingresso nella parte giuridica, l'ultima del testo, rende chiare e visibili le regole del vivere nel metaverso per agire con buonsenso e consapevolezza (Gigerenzer, 2023). Francesca Paruzzo chiarisce che, quando il design orienta in modo prevedibile le condotte, non basta invocare la novità tecnologica: operano doveri di correttezza, informazione e sicurezza e si attivano forme di responsabilità coerenti con l'ordinario diritto dei mercati, senza eccezionalismi. Continuando, Maria Francesca De Tullio porta l'attenzione sulla qualità dei dati in gioco: posture, traiettorie, linee di sguardo sono dati biometrici e prossemici, dunque richiedono liceità effettiva, minimizzazione, sicurezza by design e poteri reali di controllo da parte degli interessati. Il consenso generico, infatti, non regge quando ad essere registrata è la presenza stessa (ivi p. 284). Il nodo del chi decide è affrontato invece da Andrea Venanzoni con la metafora della Cyber-Vestfalia: nello stesso ambiente si sovrappongono leggi pubbliche, standard tecnici e condizioni d'uso, con il rischio di una sovranità di fatto delle piattaforme. La domanda da porsi è come garantire che l'enforcement dei diritti non dipenda dall'arbitrio di chi controlla l'infrastruttura. E la risposta sembra esserci con la proposta di Mario Passaretta: standard aperti e verificabili, interoperabilità che non sacrifichi la sicurezza, responsabilità proporzionata al grado di controllo, valutazioni d'impatto che includano privacy, lavoro, concorrenza, accessibilità e sostenibilità dove l'obiettivo è preservare innovazione e spazio pubblico insieme (ivi p. 336).

Miriam Abu Salem affronta poi il rapporto tra religioni e ambienti immersivi, mostrando come pratiche, luoghi e autorità del sacro vengano rinegoziati quando il culto si sposta in spazi digitali condivisi. Il punto non è "se" la religione possa esistere nel metaverso, ma come: traduzione dei rituali, costruzione di comunità diasporiche, gestione dell'autenticità, cura dei confini tra esperienza spirituale e spettacolarizzazione. Ne derivano questioni concrete: governance dei luoghi simbolici, rischi di mercificazione dell'oggetto sacro, tutela degli utenti più vulnerabili.

Su questa base, Marco Bassini ricolloca il discorso nel telaio dei diritti: la libertà religiosa e la pari dignità non sono sospese negli ambienti immersivi. Servono criteri per bilanciare libertà di espressione, protezione da discorsi d'odio e limiti ai poteri privati che amministrano l'accesso a spazi che diventano, di fatto, luoghi di esercizio del culto e della comunità. La bussola è costituzionale: garanzie procedurali, trasparenza delle regole e controllabilità delle decisioni che incidono sull'esercizio dei diritti (ivi p. 376).

Chiude il volume Anna Papa traducendo questi principi in tutele d'uso: informazione chiara quando il design orienta scelte e percezioni, protezione del consumatore rispetto a offerte spirituali a pagamento o pratiche scorrette, rimedi accessibili contro esclusioni arbitrarie o trattamenti opachi dei dati sensibili. L'ambiente immersivo, anche quando ospita pratiche religiose, resta uno spazio di mercato e di relazione che richiede responsabilità, trasparenza e rimedi effettivi.

In definitiva, il volume restituisce il metaverso per ciò che è: uno spazio civile in cui esperienza, immaginari, mercato e diritto si co-determinano. La tenuta tra i piani è il suo

merito maggiore: le cornici teoriche evitano slogan, i casi d'uso funzionano da verifica, la parte giuridica offre criteri applicabili senza eccezionalismi. Restano cantieri aperti, ma sono aperture di ricerca, non lacune. In questa misura, la tecnica vale solo se sorretta da regole chiare e verificabili e se le promesse di esperienza non oltrepassano i diritti che le legittimano (Floridi 2017). È per questo che il libro risulta utile: consegna al lettore una lingua comune con cui insegnare, progettare e decidere, distinguendo l'innovazione che produce valore pubblico da quella che fa soltanto rumore.

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