METAVERSE AND 'THE ITALIAN JOB': CLOSED AND OPEN MODELS OF VIRTUAL WORLDS IN CULTURAL HERITAGE DOMAIN

1. Introduction: rise and fall of a dream

In 2021, the social networking giant, Facebook, announced a dual and sensational operation: on one hand, the acquisition of Oculus, one of the major producers of 'Head Mounted Display' devices, and on the other hand, the change of the company's name to Meta. The public perception of this move was a clear intention to enter the metaverse world with its own technology and a significant market impact. However, just two years later, Meta announces 10,000 layoffs. While the world prepares for the commercial explosion of the metaverse, this news seems like a cold shower for the prospects of this sector. Was it a massive mistake? A terribly overestimated idea? The answer is probably more complex, involves the very meaning of the term 'metaverse' and has a significant impact also on the prospects of 3D assets in the fields of Cultural Heritage and entertainment.

To better understand such a concept, we need to take a step back and ask ourselves what we mean by 'metaverse'. The Oxford Dictionary defines it as «a virtual-reality space in which users can interact with a computer-generated environment and other users»: it is a very essential and neutral explanation, that does not fully explore the meaning of these experience and its origins. Exploring the historical roots of this vision, akin to a dream of recreating and interacting within world scenarios, is truly captivating. While the notion of fantastical realms existing parallel to reality has been ingrained in human civilization since its inception, serving as the essence of art and innovation (Antinucci 2011), the earliest semblance of shaping virtual environments, closely resembling modern digital realms, is evident in the 1940 novel *Morel's Invention* by Adolfo Bioy Casares. What's intriguing is how the novel envisages the construction of virtual scenarios in an era predating digital technologies, harkening back to the industrial settings of the 1930s. Here, the main character, stranded on a deserted island, finds himself in a gripping yet limited interaction with peculiar characters, unable to fully engage, even in pursuit of a romantic interest, until the environment around him eventually unveils as a virtual reconstruction of a past celebration.

This example underscores that the aspiration for interactive and participatory virtual worlds predates the advent of computer science. However, the earliest blueprint for a metaverse, as understood today, emerged in Neil Stephenson's 1992 novel *Snow Crash*, where a global metaverse serves as the

parallel playground of a reality dominated by corporate giants. This narrative was conceived at a time when the technical feasibility of such an environment was foreseeable to scholars, though not yet realized. Indeed, roughly a decade later, the renowned metaverse platform *Second Life* emerged, quickly gaining popularity alongside various other open and closed environments. *Second Life* arguably reached its zenith of fame and communication around 2010, yet during the pandemic, the platform experienced a resurgence, currently boasting approximately one million active users. Subsequently, a new era dawned, where video games adopted fully immersive, multi-user dimensions, blurring the lines between gaming and the metaverse.

One of the most prominent examples of such applications is Minecraft, whose features facilitated its integration into educational and Cultural Heritage contexts. In 2021, renewed interest in the metaverse concept surfaced following Facebook's announcement to embark on a new project in this direction, rebranding the company as Meta, as referred above, and outlining ambitious plans in this realm.

2. Two parallel models: the 'Italian job'

From that moment on, there has been a growing general interest in the metaverse, of which Facebook's move is only seemingly the cause. In fact, since the birth of *Second Life*, many things technologically changed. The growth of Head Mounted Displays and the explosion of cryptocurrencies drastically increased both the attractiveness and engagement of the virtual experience, as well as the economic volume it can generate: after the success of *Second Life*, in the 2000s, the idea of replying such an operation in our time, with immersive devices and cryptocurrencies sounded to many players as a delicious business. But probably not everything went as planned.

This process led to a dual outcome. While, as we have seen, two years later, Meta announces 10,000 layoffs, during the same period in Italy, a series of metaverse examples spread, focused on Cultural Heritage. A summary list of the most significant cases can help us better understand this phenomenon. In most cases they are characterized by a dimension halfway between archeology and entertainment, to the point that it is easier to find news about them in the general press than in the scientific one, which is a significant fact of the popularization effects of the activity of research.

The Mapod4D framework (https://www.mapod4d.it), spread in 2021 thanks to ArcheOs Tec, and developed by R. Taglioretti (Taglioretti *et al.* 2021), is a system for the development of a 'multiverse of metaverses' focused on anthropology, history, art and culture and connecting different projects; MetaHeritage (https://www.metaheritage.it) by 7emezzo.biz (Maccaferri 2022), created for Cultural Heritage according to an exponential
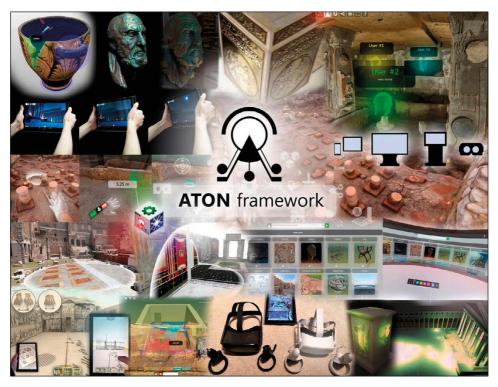
Fig. 1 – A representative image of the ATON web framework.

development model, is based on a series of archaeological sites used as meta-worlds; RealVerso Lucanum (https://lucanum.it/realverso-lucanum), created in 2022 by iinformatica enterprise (Pizzolla 2023), is conceived as an ethic metaverse, enhancing territorial experience and local habits of Basilicata, using technology as a public shelf of values connected to social responsibility; MetaEffect (https://www.spatial.io/s/Meta-Effect), is a virtual exhibition held in the metaverse, focused on art and Artificial Intelligence (Ambaglio 2022). ArcheoVerso (https://archeo3d.digilab.uniroma1.it/archeoverso) (Malatesta *et al.* 2023) is a platform created by University la Sapienza, aimed at best practices for creation and interaction of immersive and augmented reality applications and sustainable metaverses, by delivering high-quality content and promoting a hybrid model that combines online activities with real-world site visits. Aton (https://osiris.itabc.cnr.it/aton; Fig. 1), by CNR ISPC (Fanini *et al.* 2019, 2021) is a multi-platform and multi-function tool which allows to create places for discussion, virtual visits inside archaeological landscapes or presentations for multimedia contents.

Obviously, compared to a network giant, these are examples on a diametrically different scale, but they serve as an example of the contrast between an overestimation of promises on one hand, and a creative flourishing on the other.

3. Uniqueness and multiplicity

Meta's experience was not a failure, but rather the lack of development of a market over time and to the extent hoped for. The reasons for this phenomenon probably lie in various directions: first and foremost, engaging with a metaverse requires the audience to have skills that are not as simple as those needed for social media, where merely writing and taking photos will suffice. Users capable of creating 3D digital models or even just interacting in a complex interactive environment are not as numerous, and those who do exist are already largely engaged on other platforms in a market that, if not saturated, is already quite populated. Existing metaverses have grown gradually, fueled by a self-perpetuating cycle that slowly captures their users' attention. Attempting to create new ones from scratch is likely a risky endeavor.

A second issue is the need, on immersive VR platforms, for leisure time entirely dedicated to navigation, whereas normal online activities can often occupy overlapping moments with daily commitments. While web browsing and social media involve information transmission without eliciting strong emotional responses, the metaverse seeks to maximize 'embodiment', enhancing the virtual world's sensory impact. Consequently, emotional engagement in the metaverse correlates with the level of interaction and, more importantly, immersion. Head-Mounted Displays (HMDs) emerge as the optimal medium for experiencing the metaverse, whereas mobile devices or displays serve as fallback options. Nevertheless, whereas mobile devices seamlessly integrate into various everyday activities without requiring full attention and immersion, HMDs demand dedicated, uninterrupted time. However, beyond such aspects, there is a crucial one that needs to be emphasized, alongside the others: the deployment of forces by Meta, and the similar interests of other large economic groups, aim at a monopolistic idea of the metaverse: a large, exclusive container without communication with other similar realities, minting its own currency, for an increasingly dominant market. The Italian case, on the other hand, in its articulations, shows us an opposite model, made up of different, small interoperating realities.

This situation requires us to make an important consideration, which will affect our way of seeing the Internet, the high-level cultural entertainment, and the opportunities for valorising the Cultural Heritage: the pursuit of 'uniqueness' versus 'multiplicity'. Presently, the most prominent metaverses are closed worlds, forbidding straight exchanges between platforms. This

approach, driven partly by technical constraints, reflects a desire among major players to establish exclusive universes, incentivizing users to engage, create content, and spend within them, fostering a quasi-monopoly. However, an alternative model – where all worlds allow inter-platform travel – is theoretically feasible, aligning with initiatives like the Consortium for Open Metaverse Interoperability, though not actively pursued presently.

Contrastingly, Cultural Heritage projects in Italy appear to lean toward a multiplicity model, advocating for the creation of diverse worlds for archaeological contexts, often utilizing open source code and planning for inter-metaverse exchange. It is in some way the re-proposal of an old paradigm, which sees on one side the monopolistic approach and on the other the open one: two visions that have characterized the world of computing since its inception, if we think of concepts such as open source, open data, open access, etc., which stand in opposition to dominant closed and proprietary models. However, in this case, it is interesting to stress how the need of dissemination, beyond commercial interests, likely steer Cultural Heritage projects towards a more communicative approach, diverging from mainstream trends but presenting an alternative, perhaps more adaptable, model.

4. Metaverse and Cultural Heritage in perspective

It is certainly early to assess what the future destiny will be, however the events of recent years seem to allow us some observations. The first is that the first model did not result in the expected success, that something went wrong and a specific vision of the metaverse business suffered a setback; while the second experienced an unexpected flowering. The second is that the second model undoubtedly lends itself better than others to the transmission of knowledge and culturally qualified entertainment, in the same way as what happened in the television world, in which the advent of the satellite, multi-channel era has allowed the birth of focused networks and specialist programs, in the long run also stimulating generalist channels to incorporate more qualified and qualifying content.

Meanwhile, a further reflection is needed on the subject. The development, albeit slower than anticipated but still growing, of the metaverse (or metaverses) will necessitate the widespread assertion of clear, shared, and realistically applicable regulations for the use of digital assets related to Cultural Heritage and their rights, for any purpose of use. Just as the desire for disclosure has forced the birth of an alternative metaverse model, with realities that arise from below contradicting monopolistic approaches, it is nowadays impossible to ignore the transformations that the new scenario also imposes on the 20th century concept of royalties and concessions. The Italian situation in this regard is particularly complex, due to the overlapping of different and complex laws

over time, and a vision that remained tied to economic models no longer in step with the times (Palombini 2017, 2020); nevertheless, it will be necessary to reach a reasonable synthesis. In fact, with the advent of the world wide web and even more so in a metaverse context, any distinction between personal use, study and research, recreation, or profit loses all meaning.

The opinion of the writer is that there could be few possible options. The first, more linear and realistic, is the free circulation of data for any purpose: a model more lucrative than it seems, as the induced effects in terms of GDP and collective well-being, prove to be quite considerable in contexts that have followed this approach. However, 'soft' forms of remuneration are also conceivable in exchange for the concession of high-definition models (Palombini 2018), but always with a light-handed approach by the State, favoring wide dissemination and renouncing improbable claims of control in favor of enrichment and expansion of cultural offerings, whose impact, in the context of the metaverse, can be significantly multiplied for the collective good. What is at stake is the possibility of a genuine digital democracy, with the creation of numerous high-cultural-content virtual worlds and countless subsequent benefits in education, quality entertainment, plural communication, and civil growth.

Augusto Palombini
Istituto di Scienze del Patrimonio Culturale - CNR
augusto.palombini@cnr.it

REFERENCES

Antinucci F. 2011, *Parola e immagine*, Roma-Bari, Laterza.

Ambaglio J. 2022, *Meta Effect: la prima mostra d'arte interamente progettata nel metaverso, tra opere di artisti reali e create dall'AI*, «Il Fatto Quotidiano», 23 dicembre 2022.

Fanini B., Ferdani D., Demetrescu E., Berto S., d'Annibale E. 2021, *ATON: An open-source framework for creating immersive, collaborative and liquid web-apps for Cultural Heritage*, «Applied Sciences», 11, 22, 11062.

Fanini B., Pescarin S., Palombini A. 2019, *A cloud-based architecture for processing and dissemination of 3D landscapes online*, in L. Pezzati, E. degli Innocenti, S. Pescarin (eds.), *Digital Heritage Sciences and Infrastructures*, «DAACH. Digital Applications in Archaeology and Digital Heritage», 14.

Maccaferri A. 2022, *Cantieri archeologici aperti per costruire e abitare i metaversi*, «Il Sole 24 ore», 27 ottobre 2022 (https://www.ilsole24ore.com/art/cantieri-archeologici-aperti-costruire-e-abitare-metaversi-AE2jdd9B).

Malatesta S.G., Leopardi L., Marini M.R., Rosati P. 2023, *ArcheoVerso: A cultural metaverse for enhancement, technologies, communities, services*, in *IMEKO TC4 International Conference on Metrology for Archaeology and Cultural Heritage (Rome 2023)*, Red Hook (NY), Curran Associates (https://www.imeko.org/publications/tc4-Archaeo-2023/IMEKO-MetroArchaeo-2023-001.pdf).

Palombini A. 2017, *The rights of reproducing Cultural Heritage in the digital era. An Italian perspective*, «ExNovo. Journal of Archaeology», 2, 49-62 (https://doi.org/10.32028/exnovo.v2i0.389).

Palombini A. 2018, *Riproducibilità a vario titolo del patrimonio: situazione e prospettive*, in M. Arizza, V. Boi, A. Caravale, A. Palombini, A. Piergrossi (eds.), *I dati archeologici. Accessibilità, proprietà, disseminazione, Atti del Convegno (Roma 2017)*, «Archeologia e Calcolatori», 29, 87-92 (https://doi.org/10.19282/ac.29.2018.10).

Palombini A. 2020, *Digitale, patrimonio culturale e legislazione*, in S. Pescarin (ed.), *Videogames, ricerca e patrimonio culturale*, Milano, Franco Angeli, 35-40.

Pizzolla G. 2023, *Il "Realverso" lucano: luogo innovativo e visionario*, «Il Metapontino. it», 5 gennaio 2023 (https://www.ilmetapontino.it/economia/2023/01/05/lintervista-il-realverso-lucano-luogo-innovativo-e-visionario/).

Taglioretti R., Carraro D., Taglioretti V., Mazzucchi A. 2021, *MAPOD 4D: primo esempio di musealizzazione digitale di sepolture utilizzando un multiverso di metaversi*, «Sibrium», 35, 303-327.

ABSTRACT

After the initial enthusiasm for a hypothetical explosion of the metaverse phenomenon, which then waned, a careful analysis can reveal a possible dual model in the planning of this technology. On one hand, a closed, basically monopolistic, approach aimed at market concentration, and on the other a fragmented approach, starting from the bottom, consisting of small interoperating entities. This second model, in recent years, characterized in Italy a series of metaverse initiatives linked to the enhancement of Cultural Heritage and seems to be the most promising at the moment, provided that the longstanding issue of reproduction rights of the Heritage itself is addressed and resolved, preferably with an open approach: a crucial issue in the new digital scenarios.