METAPHORICAL METAVERSES
THE CASE OF BUNKER ARCHITECTURE

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VIRTUAL REALITY
METAVERSE
BUNKER
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Drawing on the influential reflections of Paul Virilio and his *Bunker Archaeology*, this paper draws a parallel between the spatiality of the bunker and the cultural discourses surrounding the metaverse. Occupying a liminal position between earth and sky, life and death, the bunker is a highly symbolic space within contemporary visual culture. I will focus on a particular type of bunker that emerged during the Cold War in the United States and has regained relevance in times of ongoing crisis, namely that which mimics everyday life, but is underground. By examining various bunkers and underground dwellings in institutional and counter-cultural contexts, this analysis emphasises the inherent 'virtual' nature of bunkers, symbolising potentiality and survival. As we shall see, the affinity between the underground space of the bunker and the cultural concept of the metaverse lies in their shared promise of escapism – a humanly sustainable alternative for survival in the midst of global catastrophes, whether nuclear, war-related, or environmental.

INTRODUCTION

In this article, I will analyse a particular immersive architectural *topos*, namely the bunker, as a *metaphor* for the 'metaverse'. This singular, not to say daring, parallelism is based on the conviction that the bunker conceals within itself precisely a 'virtuality': a liminal place, situated between the surface and the depths of the earth, designed to protect and to attack, to inspire fear and to promise salvation, the bunker stands out in the panorama of contemporary visuality as a highly symbolic space, at least since the widely discussed reflections devoted to it by the French philosopher Paul Virilio (2008). In the following pages, I will first propose an analogy between the spatiality of the bunker and 'virtuality', understood as one of the cultural dimensions necessary for a full understanding of this singular artefact. I will refer to a specific anthropological and technological aspect of virtuality, namely some of the cultural discourses that have been carried out on the metaverse as an escapist fantasy in times of crisis. This reading of online life will lead me to a particular type of bunker that was first conceived in the United States during the Cold War and has now found a new moment of success as the crisis becomes permanent and structural. I am referring to bunkers which, far from evoking the brutalist forms of war architecture, are simulacra of everyday life, only transported underground. As we pass through several bunkers and underground houses, both conceived in institutional and counter-cultural contexts, we will see that the bunker is, in a sense, always 'virtual'. The bunker is a sign of potentiality: even when decommissioned, it remains as an imprint of impending disaster. It always works, even when completely useless. It is precisely in this, at times dystopian and disturbing, promise of escapism that the affinity between the underground space of the bunker and the cultural idea of the 'metaverse' lies: a simulation of offline –read 'real'– life, a humanly sustainable alternative that makes survival possible in a scenario of global collapse, be it nuclear, martial or climatic.

PAUL VIRILIO'S BUNKER AESTHETIC: FROM DISAPPEARANCE TO VIRTUALISATION

As mentioned above, the French philosopher Paul Virilio, who published *Bunker Archéologie* in 1975, first grasped the aesthetic and political value of the bunker. This unique book was conceived as a catalogue for an exhibition of the same name, held at the Musée des Arts Décoratifs in Paris. The show collected photographs Virilio had taken between 1958 and 1965 of the fortifications known as the Atlantic Wall, creating an intellectual and aesthetic taxonomy that would reveal the political power of these unusual structures. Left unfinished by the Nazi regime, the Atlantic Wall would have been the largest defence apparatus built on European soil: a vast system of coastal bunkers stretching from the Scandinavian coast to France. Indeed, it was not only the Nazi occupation of the coast that aroused the philosopher's interest, but above all the architecture of the bunkers themselves, which seemed to suggest a unique overlapping of imaginaries. Virilio chose to cast an archaeological eye on them, studying them as signs of a lost civilisation, which has certainly not disappeared. In their conformation, these bunkers are traces of the war strategies and the cultural superstructures that led to the catastrophe. Actually, according to Virilio, this warfare architecture is not only shaped by the strict requirements of the conflict, but it is also a reflection of its ideology. One of the key aspects of the bunker's aesthetics, and in our analysis a prelude to the discovery of its symbolic potential, is its peculiar and dual temporality. The ruins of fortifications, oriented towards both past and future, are defenceless remains, museum exhibits, but also compendia, testimonies, manuals for constructing power, which can be repeated in the future. As we shall see, the bunkers 'work' even when they do not, just like the 'metaverse' imagery: even when non-functioning, their existence is enough to evoke scenarios and produce effects that are exquisitely ideological.

As a liminal space, the bunker is always paradoxical: indestructible but without foundations, hyper-modern but with

disturbingly primitive features. Only a few years after the end of the conflict, the Nazi bunkers began to subside, sinking into the dunes of the Normandy beaches, remaining as empty shells, ominous relics of a recent past, unwittingly monumental. In Virilio's words:

> Anachronistic in normal periods, in peacetime the bunker appears as a survival machine, as a shipwrecked submarine on a beach. It speaks to us of other elements, of terrific atmospheric pressure, of an unusual world in which science and technology have developed the possibility of final disintegration. (Virilio, 2008, p. 39)

The visual and intellectual trajectory traced by Virilio ends precisely with the presentation of an 'aesthetics of disappearance': in this category fall the bunkers designed by the Nazis to blend in with civil and even ecclesiastical architecture, but also all the structures that nature is slowly reclaiming. Let us not forget that bunkers, however resistant, are structures without foundations: here they disappear, sink under the sand, tilt like a shipwreck, or are exposed, naked, by the erosion of the dune that was supposed to hide them. Virilio's work presents reflections of extraordinary topicality, both political and ecological. On the one hand, it brings us back to the modernity of the bunker, a structure designed to ensure survival in the event of a third world war, but also in the event of an environmental catastrophe. The shift of the war scenario from the horizontality of the battlefield to the three-dimensionality of the skies, as well as outer space, leads back to the identification of the threat at the atmospheric, and therefore climatic, level[1].

THE RHETORIC OF THE METAVERSE: GOING ONLINE AND GOING UNDERGROUND

Far from being a mere military device, the bunker turns out to be an ideological instrument, almost a propaganda statement. The same can be said of the metaverse, which at present is more a chapter in recent cultural history, a declaration

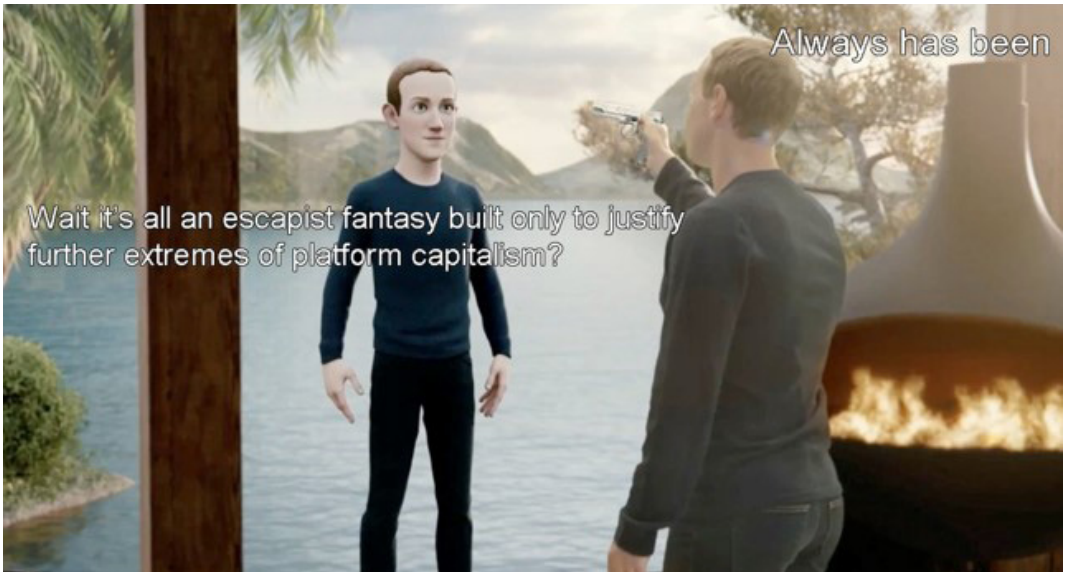

Fig. 1 everestpipkin [@everest], *Always has been*, 2021, October 28, [Tweet]. Twitter. https://twitter.com/everestpipkin/status/1453805028968390665/photo/1 \. Meme on Mark Zuckerberg.
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of intent, than an actual reality. To be more precise, if we understand the metaverse as an online simulation of 'real' life, accessible simultaneously to multiple users who engage in activities comparable to those of their everyday existences, then the metaverse has already existed for decades, in the increasingly sophisticated forms of Massive Multiplayer Online Games (MMOGs). However, in this context I will focus more on what the metaverse 'could'be or 'will eventually' be in the commercial and ideological debates that surround it, as I will treat this cultural object like the bunker, as an ideological standpoint that works even when it does not.

Mark Zuckerberg's rhetoric about the metaverse seems to have come out the loser, maybe precisely for its similarity to the bunker framework. Indeed, the infamous rebranding of Facebook to Meta in October 2021 was greeted with great sarcasm. The social media giant's name change to Meta was immediately commented on by hundreds of memes online, ironically joking that the corporation had chosen to dive into the metaverse instead of addressing the numerous security and transparency issues that have dogged it in recent years. In this regard, one meme in particular strikes me: it belongs

to the 'always has been' family, which exploits the *topos* from science fiction in which the protagonist is the victim of a plot that is revealed at the end, when it is too late. In the meme, posted on the former Twitter, now X, by the account Everest-pipkin, Zuck kills his avatar, who has suddenly realized that the metaverse is nothing more than "escapist fantasy only to justify further extremes of platform capitalism" (Figure 1). Even in instant public discourse, the metaverse is hailed as an escapist, deceitful exit strategy, an elsewhere to hide in when the world as we know it is being destroyed by the same platforms that are trying to provide us with the solution[2].

This unsettling framework is echoed by Meta itself – and frankly, I cannot decide how consciously or not– in the infamous advertising for the headset Meta Quest 2 for the 2022 Super Bowl. In the one-minute advert, the main character is an animatronic dog playing in an animatronic band of animatronic pals in a pizza chain. The setting is clearly inspired by Chuck E. Cheese, an American chain of children's restaurants established in 1977 by Atari co-founder Nolan Bushnell, a pioneer of arcade games. The restaurants became famous for their animatronic shows, which were inspired by the idea, similar to that of amusement parks, of bringing the game-like experience into the real world. In recent years, since 2017, with the end of the arcade, the company has started a process of rebranding, gradually dismantling its animatronic singing bestiary: the stages give way to dance floors and the robots now seem a thing of the past, a memory for the parents and grandparents of the children who are the current customers. Let's get back to the Meta advertisement: as happened with Chuck E. Cheese 'performers', our animatronic dog is left without a reason to exist after the closing of its restaurant chain – it is not temporary, as the sign states very clearly that it is 'closing forever'. He is finally thrown away and almost on the verge of being destroyed in a scrapyard when he is narrowly rescued and transferred to a museum, where a young man who happens to be using a Meta Quest 2 headset, while leaving the facility,

has him put it on. So here is our little mechanical dog who, thanks to virtual reality and, above all, to Meta's metaverse platform, Horizon Worlds, can return to play with his friends in a digital elsewhere where everything has remained the same: the neon lights, the 1980s songs and, most importantly, his distant friends are now gathered. "Old friends. New Fun" states the slogan. The ad has generated considerable discussion, but its tone tends towards the dark rather than the alluring (Roth, 2022). From my perspective, I am interested in showing how the Meta ideology aligns seamlessly with the unsettling escapism inherent in the metaverse. The central concept is quite simple: the metaverse serves as an antidote to our nostalgia, or rather as an elixir to help us endure our bleak and lonely present. Traditional face-to-face social interactions are becoming a thing of the past, as this 'new fun' takes root elsewhere. It allows us to leave our decaying world behind and find solace in a place where we can once again indulge in our remembrances. After all, why worry about climate change or societal collapse when we can just forget about it and put our headsets on?

That the metaverse would serve as an alternative place, a refuge in the event of ecological breakdown, is a perspective that pop visual culture has already explored: an obvious case in point is Ernst Cline's novel *Ready Player One*, from which Steven Spielberg derived the film of the same name, which effectively described the metaverse as a habitat necessary for survival in a dystopian age of ecological catastrophe. In the gloomy future the novel depicts, the co-creator of the VR simulation OASIS leaves the company as his metaverse "had become a self-imposed prison for humanity", "a pleasant place for the world to hide from its problems while human civilization slowly collapses, primarily due to neglect" (Cline, 2011, p. 120). Indeed, the problem whether these dreams about the metaverse would fall into escapist fantasies was discussed in scholarly debate in the same period. In 2010, game studies scholar Gordon Calleja warned against an overly simplistic division between the real and

the virtual, particularly with regard to the alleged escapism practised by the gamer community. According to Calleja,

> Actions that take place within the marked area of the game, if this exists, are interpreted differently from actions outside that area. In digital games, the distinction is void because the only space that one can act in is traversable space. (Calleja, 2010, p. 341)

In support of his thesis, Calleja references Massive Multiplayer Online Games (MMOGs), including precursors of the current metaverses such as *Second Life* or *World of Warcraft* (Malaby, 2009; Corneliussen & Rettberg, 2011). In these simulation environments, as noted by Nick Yee (2006), players invest innumerable hours in activities that might be considered repetitive and not particularly enjoyable, resembling real work more closely. This challenges the conventional notions of the 'magic circle' theory and the rhetoric of the 'frontier', as these concepts do not seem to align with the anthropological observations of cyberspace usage. According to Calleja, it appears that online gamers do not merely seek refuge in virtuality; instead, they inhabit it in ways remarkably similar to the real ones. They actively work within it, engage in production and trade, and communicate as they would in the physical realm. "The clear demarcation of game space from non-game space becomes even more problematic when contemporary developments in digital games […] are considered" (Calleja, 2010, p. 342).

It is interesting to note how this tendency to create doubles, uncanny duplications of the actual state of things, has been at the centre of the latest and somewhat odd book by Canadian activist and thinker Naomi Klein (2023), entitled precisely *Doppelganger*. In Klein's words, "if Mark Zuckerberg's plans for the 'Metaverse' proceed as he hopes, with all of us represented by personalized animated avatars to our banks and our friends, this is only going to get more confusing". She is referring to a near future in which "this kind of live-action fakery [will be] a pillar of mass culture" (Klein, 2023, n.d.): not just digital doubles,

as they already exist, but a whole series of misrepresentations that will ultimately blind us to reality. According to Klein, a Mirror World already exists: she is alluding to the right-wing social networks, news platforms and websites that contribute to the construction of a distorted world view characterised by conspiracy theories and negationism. Again,

> When reality starts doubling, refracting off itself, it often means that something important is being ignored or denied –a part of ourselves and our world we do not want to see– and that further danger awaits if the warning is not heeded. (Klein, 2023, n.d.)

Mutatis mutandis, perhaps it is precisely through Klein's suggestion and her reading of the 'double' that we can revisit the bunker, whose aesthetic was first introduced to us, as we have noted, by Paul Virilio. In particular, I would like to focus on a specific type of bunker, built not to resemble one, but rather to provide an alternative in the event of nuclear or environmental fallout: the underground house, a *doppelgänger* of a real home. This is an architectural typology that became popular in the United States during the Cold War, permeating both the channels of institutional communication and the more unconventional counterculture. Indeed, at least as far as the Western context is concerned, the idea of the underground dwelling seems to be associated with survival strategies, both of the hippy and the rich, in case of ecological disaster.

Particularly in the United States, the trend towards bunker architecture was characterised by a certain degree of 'virtuality': designed to resemble houses on the surface, these spaces were, like aquariums or dioramas, virtual off-line reconstructions of 'idyllic' scenarios, simulations of everyday life to be activated in the event of fallout. These bunkers are different from the scary monsters and exotic creatures that Virilio captured on film. Instead, bunker houses were proposed as an attractive alternative to the dangers of the outside world. 'Reality' or 'normal life' would become something to be artificially constructed underground.


2 GRIT News Section July 10, 196

GROUND VIEW: This is a ground-level view of the Jay Swayze home in Plainview, Tex. The living quarters are all underground. The rock structu a huge firep den of the h

JUST LIKE MOLES

Texas Family Thrives In Underground Home

"When we first moved in, we used to go up and see what the weather was like," said Mrs. Jay Swayze. "Now we've gotten so accustomed to it that some days we don't even go up and look around."

airplane or storm if they ar directly above our fireplace."

Insurance rates are only about one-eighth of those fo ordinary homes of comparable cost. This is because the atomi

Fig. 2 Detroit Publishing Co., *Shooting from hunters' blind by shore*, 1900-1920. Library of the Congress. Retrieved from https://www.loc.gov/item/2016816199/.

VIRTUAL SPACES: THE UNDERGROUND HOME ENTERPRISE

The 1964-1965 New York World's Fair –dedicated to *Peace Through Understanding* (Cotter & Young, 2004)– was the first institutional advertisement for this particular type of bunker, perhaps the most 'virtual' or 'metaverse-like'. Planned in the second half of the 1950s and early 1960s, the fair was strongly influenced by the climate of the Cold War: there, the visitor would find the a complete display of the

Underground Home, a project to transfer all the comforts of a luxury mansion into an underground dwelling designed to survive a nuclear fallout. According to Isaac Asimov (1964), who visited the Fair and wrote an article on the New York Times imagining its 2014 edition, the "underground house […] is a sign of the future". Indeed, the fair featured a pavilion by the Underground Home Corporation, owned by Jerry Henderson, the millionaire founder of the famous Avon cosmetics company. *Underground Home* exhibited a real bunker designed by the architect and former military serviceman Jay Swayze[3] (1980), who was the creator of the Atomitat, an underground house he built for his family in Plainview, Texas, in 1962 (Figure 2). The exhibition was accompanied by a brochure which could be considered an ideological manifesto for underground living. According to Henderson, living underground was the answer not only to nuclear fallout, but also to pollution and, in general, to all the inconveniences of living 'outside': a dream of a life that could be totally controlled, a simulacrum of reality to be completely manipulated at the will of its inhabitants. The brochure explained how "a few feet underground can give man 'an island unto himself'; a place where he (sic!) controls his own world – a world of total ease and comfort, of security, safety and above all, privacy". All technical details and construction information are set out: the domestic space is enclosed in a 'shell', and "the living area is divided into 'exterior' and 'interior' areas". The external simulation becomes just another element of the 'décor', which "can be blended with a favourite 'outside' view; the time of day or night may be 'dialed' to fit any mood or occasion". The technical means to achieve this result, introduced by Swayze, are the *Murals of Light*: luminous walls which, at least in the intentions of their designers, can reproduce any lighting condition, depending on the time of day, but also on the season. "Underground, one is free of the outside climate, and health no longer depends on it" (Underground Home, 1964a).

The most famous outcome of the propositions of the Fair, is the Underground House in Las Vegas, which uses all the best practices presented in New York. It is the perfect synthesis of the dystopia of the metaverse and the imagery of the bunker. Designed as the family mansion of Jerry Henderson, who lived there with his second wife, Mary Hollingsworth, the subterranean dwelling is a lavish abode with a spacious floor area of over 15,000 square feet. Its opulent interior is meticulously decorated with simulated natural elements, such as an artificial garden, with fake trees and rocks, as well as meticulously crafted and immersive scenic embellishments. In addition, the ambient lighting is adjustable to replicate different times of day, while a constellation of twinkling stars adorns the ceiling, artfully mimicking the night sky. This subterranean sanctuary offers an array of recreational amenities, including a four-hole putting green, two hot tubs, a sauna, a sizeable dance floor, a well-stocked bar, a barbecue area and a swimming pool. The residence comprises two bedrooms and three bathrooms, supplemented by an additional *casita* to accommodate guests.

The house is now owned by a company specialising in cryonics[4] and is up for sale: its absurdity and paradoxical location, both geographical and temporal, make it a concentration of unsettling feelings. This particular ambience has been captured in a very interesting series of photographs by Juno Calypso, who has created a series of self-portraits impersonating a creepy inhabitant of this peculiar and defunctionalized house. The woman Calypso impersonates is like an ornament, a decoration in an over-decorated house that serves as a symbol of an artificial life, "a life in plastic". Her project is entitled *What To Do With A Million Years* (Calypso, 2018), with reference to the uncanny link of the U-House with cryonics, but also its peculiar time collocation: between past and present, life and death.

As mentioned earlier, at a similar time to the emergence of the Henderson project, underground living was

also being embraced in counter-cultural circles as a distinct response to the same challenges. In the event of societal collapse, caused not only by war but also by issues such as overpopulation and pollution, moving underground represented a more nature-integrated lifestyle. In this scenario, the pursuit of ideals of control gave way to a desire to break free from consumerism, enabling the creation of self-sustaining communities capable of surviving the downfall of capitalism. Among these attempts, there is Mike Oehler's 1978 self-published *The $50 and Up Underground House Book*. Oehler's manual provides practical information on how to imagine alternative housing solutions that are sustainable, affordable and long-lasting, following in the footsteps of other famous DIY manuals, such as the series of 'dome cookbooks' popularized by Stewart Brandt's *Whole Earth Catalog* (1968-1972)[5]. The book is a political statement about what a true Underground House is, according to counter-culture: definitely not a bunker. In Oehler's colourful words, if you are thinking of building a bunker:

> You won't really want to design and build a home which is integrated with nature. What you want is a concrete bomb shelter buried so that you may save your own fat ass during atomic attack. You don't want a home which is a growing, living thing, which has light and air and views. (Oehler, 1978, p. 5)

The U-House is "not a cave either" (Oehler, 1978, p. 9). In the event of nuclear war, the U-House can bear the weight of the trees and ruins that might fall on it.

> Even if a full sized tree should fall on a U house the survival chances are excellent for there are banks of solid earth on all sides to absorb the weight. If a tree falls on most conventional structures devastation is the result. (Oehler, 1978, p. 14)

Despite being underground, Oehler's project, like many others, envisions the U-House not as a dark, hyper-technological protective cavern, but rather as a human-scale dwelling, one that we might consider more sustainable today[6].

BUNKERS IN THE AGE OF THE METAVERSE

As Daniel South and Nigel South (2021) have recently pointed out, the current era of increasing crises has led to a growing interest in bunkers and underground housing among the wealthier sections of the population. These individuals are increasingly seeking out bunkers or "artificial 'clean', 'green', 'pure', and 'politically free' bubbles and domes"; following a process that has been described as an 'inverted quarantine' or aptly 'bunkerisation' (South & South, 2021, p. 134; South 2019): a process of self-isolation of the healthy and the wealthy from the ill and poor. This contemporary manifestation of bunkerisation is closely intertwined with the libertarian ideals espoused by tech luminary Peter Thiel, co-founder, alongside with Elon Musk, of the tech-giant PayPal. In a notable 2009 blog post, Thiel promptly drew a connection between the 'virtual' alternative to a faltering democratic world, symbolised by the emergence of cyberspace facilitated by cryptocurrencies on the internet, and the prospective expansion into space –ex colleague Elon Musk had founded SpaceX in 2002– as well as the controversial concept of 'seasteading', which envisions the dystopian colonisation of oceanic surfaces.

As we have just seen, the recent expansion of the metaverse is now accompanied by a renewed frenzy for bunkers and underground living among the super-rich. This has happened in the last ten years at least in the heart of the most expensive areas of European capitals, such as London, where luxury basements offer a way to expand with more security and privacy. The reasons, again, seem to lie in escapist fantasy: "Perhaps there is something about the geotropic, burrowing urge that betrays a kind of deep-seated introspection – a desire to dig, to escape further from reality, to retreat into a private fantasy world" (Wainwright, 2012).

More recently, studies have been carried out on the community of the so-called 'preppers': people whose lifestyle and beliefs are shaped by the need to prepare for disaster[7].

Bunkers, or underground houses, are an integral part, if not the heart, of these initiatives, which have been the focus of an extensive study conducted by Bradley Garrett. Among the several communities depicted by Garrett, one seems particular significant for our conceptual framework[8]: I am referring to the *Kansas Survival Condo* (Garrett, 2021a; 2021b). It is the most sophisticated private bunker in the world: a former Cold War US government missile silo transformed into an inverted skyscraper. The project is the brainchild of Larry Hall, who, like Swayze before him, is an ex-government contractor with experience in weaponry. This remarkable underground super-house, if we can call it that, is designed to ensure the survival of 75 people without any contact with the outside world for up to 5 years. The facility includes a variety of dwellings, ranging from ordinary apartments to luxurious penthouses. In this case, the windows no longer face painted murals and neon lights; they now overlook monitors controlled by a centralized electronic system, overseen by Larry Hall himself. The condo also features Kaleidoscope, a basic AI system capable of automatically sealing off sections of the bunker in the event of a fire. It is curiously described as "a secure, self-contained, sustainable architectural experiment – an underground counterpart to the University of Arizona's Biosphere project"[9]. As this brief description shows, the *Survival Condo* reflects contemporary anxieties and conveys them through an outlandish architectural design that incorporates elements of remote control and closed-circuit surveillance into the Underground House formula. In the age of the metaverse, bunkers are indeed integrated with digital devices that guarantee a superior level of control unimaginable at the time of Jerry Henderson's dreams.

CONCLUSION

I hope that the trajectory I have followed so far can make a small contribution to the cultural history of the metaverse.

It illustrates how certain discourses about online presence, ranging from utopian to dystopian, intersect in a fascinating way with the aesthetics of the bunker. In particular, the underground dwellings I have briefly described seem to suggest a departure from the crisis mentality of the Cold War era. Take the example of the *Survival Condo*, which demonstrates that the response to society's underlying crisis reflects its causes: the militarisation of security, surveillance technology and remote defence systems. It would appear that the ideological elements of the bunker identified by Virilio after the Second World War are being transformed into a new, hyper-technological and highly controlled form. Turning our attention back to the metaverse, or at least one of its potential manifestations, we find a similar future looming. It is characterised by pervasive hyper-surveillance imposed on a population that has made the choice to surrender their ability to correct their mistakes in exchange for the preservation of their lives, willingly submitting themselves to overseers capable of perpetuating the simulation. "The thing the psychologist drilled into me was that my job as the developer was to make this place as normal as possible", Larry Hall (2021b, p. 246) told Garrett, during his visit to the *Condo*. What could be less ordinary than an underground panopticon exclusively for the super-rich, designed for prolonged subterranean living? Without succumbing to technophobic fears, it is important to remain vigilant about the ways in which these military-inspired paradigms encroach on our online habitats.

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NOTE

1 Recently, the literature on the historical and ideological values of bunkers has grown (among others, see Bennett 2011; 2013; 2017), and Virilio's position has been recast as shaped by the impact of the Second World War (Garrett & Klinke, 2019). However, the French philosopher's proposals remain of great importance for the metaphorical and ideological value of these unusual structures, which are not disappearing, but are evolving in response to the features of the current crisis. As we shall see, bunkers are increasingly present in the face of contemporary threats, which, as in Virilio's time, are once again mainly ecological.

2 For a recent literature review on whether or not the metaverse platforms will contribute to carbon emissions significantly, see Kshetri & Dwivedi, 2023.

3 For a reflection on the Underground House and Cold War culture, with particular attention to Swayze contribution to the project, see Boyd & Linehan, 2018.

4 The buyer asked to remain anonymous, but is now credited to be the Stasis Foundation, specialized in Organ Donation and Transplantation, enhanced through cryonics. In the most recent video tour of the house, posted on YouTube channel "Daze with Jordan the Lion," we can see clearly the presence of a cryonics chamber of the company Alcor, alongside with many issues of Alcor's magazine *Cryonics*. See Stasis Foundation at https://www.organstasis.org; Alcor website at https://www.alcor.org/; and the "Daze with Jordan the Lion" video at https://www.youtube.com/watch?v=JqbVd7pwjVg. All links retrieved October 5, 2023. In fact, the photographer Juno Calypso, whose project will be cited in the next few lines, included in her artistic project the informative pamphlets discussing the latest developments in cryonics, immortality and the art of preserving life that she stumbled upon during her visit to the house (Warner, 2018).

5 I started addressing this issue, which is connected to other "virtual" offline architectures, in an article dedicated to U.S. geodesic architecture and its connection to the technoculture from which VR emerged (Fontana, 2023).

6 The scenarios and ideals depicted by Oehler have been reprised by Rob Roy (2006).

7 Prepper culture is an American phenomenon that combines mechanical and practical displays of masculinity with military and weaponry aspects. It has garnered increasing attention in popular culture, notably through reality shows like *Doomsday Preppers* (2012-2014), giving rise to the term 'apocotainment' (Foster, 2014) which characterizes entertainment centred around apocalyptic scenarios and death. On prepper culture see also Nguyen (2018).

8 Advertised as "The Backup Plan For Humanity," the Vivos underground shelter would also be worthy of analysis. In this case, the most striking aspect is the explicit mixture of environmental and millenarian concerns. In fact, Vivos Enterprise presents its bunker as a possible answer to *The Rapture*, Armageddon, the 'hypothesis' of the polar shift or killer planets. See the pages about *Threats*, on Vivos Enterprise website, e.g. https://www.terravivos.com/threatplanetx.php.

9 Built in Oracle, Texas, between 1987 and 1991, *Biosphere 2* –the Earth being Biosphere 1– is a giant 'greenhouse' designed to simulate the possibility of building a self-contained environment in which humanity could survive, both on Earth and on other planets, in the event of ecological collapse. The *Biosphere 2* and the *Survival Condo* share more than a casual affinity: Larry Hall built the *Survival Condo* following the advice of the same psychologist who worked on the experiments at *Biosphere 2* (Garrett, 2021b, pp. 240-241).

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