Virtual Dwelling: Immersiveness, Atmosphere and Spatial Presence^{*}

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Abstract

The concept of dwelling is an integral aspect of human spatiality. In the present era, virtual and augmented reality prompt us to explore novel approaches to spatial habitation. In one instance, this entails complete immersion in an artificial milieu, whereas in the other, it involves the incorporation of new content into our experience. This raises the question of how human spatiality is reconfigured through these media. When viewed through a VR headset, also architecture dematerialises while opening up to infinite creative possibilities. It is possible to inhabit an artificial space that will (or will never) be built, experiencing not only its design vision but also its perceptual dimension.

Keywords: Dwelling; Lived Space; Atmosphere; Virtual Housing

Abstract

L'abitare è un aspetto integrante della spazialità umana. Oggigiorno la realtà virtuale e aumentata ci spingono a esplorare nuovi approcci nell'abitare lo spazio. In un caso, ciò comporta la completa immersione in un ambiente artificiale, nell'altro l'incorporazione di nuovi contenuti nella nostra esperienza. Ciò solleva la questione di come la spazialità umana venga riconfigurata attraverso questi media. Attraverso un casco VR, anche l'architettura si smaterializza, aprendo infinite possibilità creative. È possibile abitare uno spazio artificiale che

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sarà (o non sarà mai) costruito, sperimentandone non solo la visione progettuale ma anche la dimensione percettiva.

Parole chiave: Abitare; Spazio vissuto; Atmosfera; Dimore Virtuali

1. Being Immersed

Over the last fifty years, virtual spaces have multiplied out of all proportion, so much so that a great number of products involving the use of different devices with a wide variety of functions are now grouped together under this term. Undoubtedly, the global health emergency led to a growing familiarity with virtual space and, at the same time, to a heightened critical awareness of these dimensions. We have all experimented with new virtual places, so as to have the impression, even for a few minutes, that the space available to us was not confined to the walls of our own homes but could be expanded beyond them. In these circumstances, it has become even clearer how such dimensions can represent a real window on the world, a chance to recreate situations, optimise performances, and carry out activities that previously we could only perform in person.

In this perspective, it becomes evident that positioning a hyphen to separate the terms in the title of this volume, Real Space-Virtual Space, becomes increasingly precarious. On the other hand, that so-called real space was permeated by multiple virtualities was already clear from the arguments developed by Virilio (1980; 1984) and Baudrillard (1995). A more methodical investigation has been developed by Paul Lévy, who in *Becoming Virtual* (1995) further complicates the question. He in fact argues, following Gilles Deleuze, how much the virtual implies a constant displacement (Lévy 1995, 26) and the continuous reconfiguration of one's presence, in terms primarily of corporeality. The first thing to ask ourselves, in fact, is "Where are we?" when, for example on a video conference platform, we remain connected, perhaps even for several hours. The solution is not simple. The most immediate answer is limited to logging our geographical location. However, in such situations, this does not seem to adequately describe the place we actually occupy, the "Where" of our experience. In fact, through the screen, another space opens up in the image in which we immerse ourselves and which to all intents and purposes we inhabit, but without abandoning our actual physical location. This is one of the "dilemmas" that has always accompanied the experience of digital space: a sort of obligatory bilocation that negates neither one nor the other space, without affirming the existence of a third.

This becomes even more evident thanks to virtual reality (VR) devices that exacerbate this aspect through their *immersive capacity*, i.e. allowing users to be almost totally absorbed by the image, leaving only a slight trace of the physical space: once the helmet is on, I can continue to move (in limited fashion) in the

space around me, but my movements will be mirrored in the digital world generated by the headset. Given its peculiarity, this type of environmental imagery is defined by Andrea Pinotti as "an-icon" (Pinotti 2017; 2021). However, while it is true that, as Wiesing also argues, "so-called immersive imagery is not reinventing immersion" (Wiesing 2014, 142), it is also true that unlike other devices¹ virtual reality aims at an almost total degree of immersion. One could say that it is by its very nature immersive.²

If we genuinely treat these images as real spaces to be explored, traversed, in which we even meet other people, it is essential to ask ourselves, from a perceptual point of view, what kind of aesthetic experience they call for. Although, in fact, through this technology one is at close quarters with a display on which the digital content is exhibited in pixels, an experience is generated that no longer corresponds to simple image consciousness. In short, an-icons do not behave like the images we usually encounter. In fact, they ask us to inhabit them.

This forces one to broaden the discourse towards an analysis of spatial experience, since in many ways in the an-icon one is led to behave as if one were inside a real place³. In fact, the essential and defining distinction between VR and other forms of visual representation is that it deals directly with the immersive creation and representation of space. And this is a characteristic which makes this tool of increasing importance in certain fields, such as architecture, art or game design, all of which call for a far-reaching relationship between the experiencer and the surrounding environment. This technology makes the image an integral part of our sensory field, taking up a large part of it, to the point of almost completely overlapping with it. While there are clearly substantial differences between virtual and physical space, both must be understood as lived space (Lebensraum): the place where experience "happens," which acquires meaning through our acts, through our gaze and movements. VR, as an environmental image, also falls within this definition, since it realises a space in the encounter with the experiencer who is called upon to inhabit it, and which is only realised in the moment in which we do so, i.e. live it (leben).

¹ In fact, many devices, from the oldest to the most contemporary, have sought to arouse in viewers the sensation of being surrounded by the image, evoking the idea of an "elsewhere" (Grau 2004). These include both analogue images and digital environments explicitly designed to elicit that kind of sensation, such as panoramas or the more recent *Caves*, but also media that are not explicitly immersive but can be considered as such, e.g. television.

² On the topic of immersion and media see: Liptay and Dogramaci 2016; Lombard et al. 2015; Slater 2018. For a brief research framework on the issues of immersivity and presence see: Calleja 2011, 17-35.

³ From this point of view, the phenomenological perspective can offer a tool to address the essence of the experience of spatiality, bringing out some useful structures to describe virtual space. Specifically, this question – whether and how one can actually talk about the experience of space in VR – was developed in Bandi 2023.

2. Being Virtually Attuned

This idea, is in my view, intimately connected to that of inhabiting. To inhabit a place means first of all to consider what that place leaves us with and how that place makes us feel. In other words, it means being able to grasp what many scholars have defined as the atmosphere of a space. At the heart of this body of theory is the notion of Stimmung (mood), that is, what creates the experience of atmosphere in all its ambivalence: it exists as a relationship between subject and object, without belonging to either, as Simmel pointed out in his famous essay on landscape (Simmel 1913). What the philosopher describes in relation to perception is not limited to physical space, or rather, it can not simply be reduced to this. The landscape is in fact framed by the individual who endows it with a particular emotional connotation. The issue here is the human being's ability to resonate with the surrounding environment, highlighting the complex interaction between bodily modalities and context: atmospheres are actually a matter of music, as we can see from the verb stimmen, which means "to be tuned." Hence expressions such as "emotional tonality," "intonation," "tuning" and other related terms. In fact, we experience this on a daily basis: the moment we cross the threshold of an environment, we immediately perceive something indefinable that characterises it. Think, for example, of how the feeling of a room can vary according to the colour of the paint on the walls, the materials chosen for the furnishings or the use of light: an environment can be warm and welcoming, or gloomy, unwelcoming, and so on. According to Griffero - who picks up the threads from the thought of one of the fathers of atmospherology, Hermann Schmitz - atmospheres can be defined as "spatialised feelings," that is, what defines the specific emotional quality of a given lived space (Griffero 2010, 36). Naturally, from this perspective, sensory experience calls necessarily for the presence of corporeality, the sounding board of the atmospheric qualities of the environment:

We sense what kind of a space surrounds us. We sense its atmosphere. This has consequences for the perception of architecture: if it is true that architecture creates spaces, then to evaluate them one must go inside these spaces. One has to be bodily present. Of course, one will then also consider the buildings and their structures, judging their scale and content, but to do so one needs not be present. (Böhme 2017, 74)

In light of the preceding considerations, it seems appropriate to enquire whether it is likewise reasonable to conceptualise the notion of an atmosphere in virtual worlds, and more specifically in those that afford a high degree of immersion. This question has been the object of debate in the field of game studies for a number of years. Felix Zimmermann (2022) edited, together with other scholars, a volume laying the foundations for an atmospherology in digital games. He analysed, among others, some reviews of *Assassin's Creed Syndicate* (2015), the video game set in London during the Industrial Revolution, and showed how the word "atmosphere" appears repeatedly in the thousands of reviews left by users:

[...] these few comments paint a vivid picture of a term that is used regularly, nonchalantly and - as it seems - without needing any further explanation. This colloquial use of the term and the seeming omnipresence of conversations about atmospheres - think about commentators lamenting the lack of atmosphere in football stadiums emptied by pandemic restrictions - has given atmospheres their reputation of being "mere linguistic phenomena" or "a mere metaphorical way of speaking. (Zimmermann 2022, 244)

Therefore, even in the context of video games, where the degree of immersiveness may vary depending on the device utilized⁴, scenarios are capable of conveying an atmosphere effectively. This is particularly the case in virtual reality, where users experience a greater degree of bodily involvement, resulting in the digital world acquiring different emotional tones that aim to convey the qualitative fullness of an experienced space.

It is evident that VR is not merely a technology that provides a means of visual representation. Indeed, it affords the user the opportunity to engage with the image, to select a particular point of view and, in many cases, to navigate within the environment, in a manner that is analogous to being in a physical location. Furthermore, a variety of sensory experiences are involved, with vision being the primary sense, but hearing also plays a significant role. Indeed, there are some VR experiences that are specifically designed to facilitate this kind of engagement. For example, Notes on Blindness: Into the Darkness (Arte, 2016) brings a different kinaesthetic capacity into play, within an artificial space that is visualised little by little, and never completely. The work, based on the audio diary of the writer John Hull, who became blind in 1983, in fact proposes the paradoxical experience of translating blindness into images. To do so, the virtual space acquires depth from sounds. The narrative is divided into chapters; the first of these begins in the dark with the sounds of footsteps, a rustling of newspaper pages, a swoosh of birds, a child's crying. These are heard and rendered into an image as evanescent, luminous objects: starting from the darkness that surrounds the user completely, they gradually begin to appear, until, placing

⁴ Various devices, from the oldest to the most contemporary, have sought to elicit in viewers the sensation of being surrounded and elsewhere (Grau 2004). These devices include both images or environments explicitly designed for that kind of sensation, such as panoramas or the more recent *Cares*, and media that are not explicitly immersive but can be considered as such in an indirect way, such as television. However, if one can speak of degrees of immersion, virtual reality aims at a total immersion of the user – at least visually – that makes it distinct from other media. In other words, unlike other images, virtual reality is constitutively immersive.

themselves at different points in the scenario, they slowly form a multi-layered map. This experience allows us to observe in retrospect the progressive transition between the perception of a simple digital image and the creation of a real space in which we gradually gain a sense of immersion. In such instances, it becomes clear that VR cannot be reduced to the mere presentation of content, as the various applications aim not only at the elaboration and enjoyment of possible scenarios – e.g. the exact shape of a building, the precise size of a room, etc. – but much more.

In addition to auditory perception, the haptic and tactile dimensions are also to some extent recreated. Sometimes this occurs through feedback from the controllers (in experiences involving their use), and at other times it is achieved by utilising the eye as a conduit for alternative stimuli. In the same way, the tactile aspect of vision is a phenomenon that occurs in everyday perception (for instance, we can anticipate the softness of a fabric simply by looking at it or perceive the temperature of a material based on its visual appearance) but this capacity is particularly challenged in immersive environments, where vision must compensate for the limitations of other senses.

The mere fact that these circumstances are, so to speak, capable of reconfiguring the ways in which one interfaces with the world is, however, still not sufficient to speak of atmospheres. While there may be differences of opinion among scholars regarding the specifics of this concept, there is a consensus that *Stimmung* is generated through a sensible exchange between the subject and the environment, as previously stated. If the relationship with the environment can only be multisensory – as Merleau-Ponty held – the inseparable interweaving of sensory channels finds its meaning, not only ideal, in corporeality. If, therefore, it seems almost obvious that in the concrete world, *physical presence* is a necessary condition for the perception of atmospheres (as Böhme's assertion above affirms), in the virtual world this raises a thorny question. The reconfiguration of our bodily mobility and proprioception, which the virtual reality headset imposes, entails a distinctive mode of spatial habitation.

Rather than accepting the impossibility of establishing an analogy between physical and virtual atmospheres in the absence of a tangible bodily counterpart, as evidenced in the perception of the concrete world, I propose reformulating the question in a different manner. In such digital simulations, the atmosphere is experienced as a "spatialised feeling," which encounters another kind of feeling, namely "spatial presence" (Schubert 2009). This issue has been the subject of long-standing debate in discussion of immersive environments. It is in the interplay between these two concepts that I believe we can identify a promising avenue for describing the aesthetic experience of virtual reality space.

There are several theoretical models of this issue, but they are largely in agreement that spatial presence is determined by the cognitive awareness of the space within a virtual space. More precisely, the process is described by Schubert in two stages. Initially, the user constructs a mental model of the simulated space. Subsequently, she/he accepts this spatial situation as a primary egocentric frame of reference (Schubert 2009). These steps are both regarded as unconscious processes. However, the actual issue lies in the transition from an unconscious state to a state of awareness, which then allows for action and interaction with both objects and the environment. To bridge this gap Schubert proposes to define this *being there* (Minsky 1980) as a cognitive sensation: "A feedback of unconscious process of spatial perception that tries to locate the human body in relation to its environment" (Schubert 2009, 170).

These feelings - the spatialised feeling of atmosphere and spatial presence as a cognitive feeling – are, despite their different natures, inextricably linked. If I were to attempt to articulate the sensation of being present in a virtual reality environment, I would posit that we feel present to the extent that we perceive and engage with the qualities of our surrounding space. Similarly, the experience of physical space cannot be reduced to a mere state of "being." This same phenomenon occurs in the context of immersive environments. In these scenarios, therefore, we position ourselves emotionally, thereby playing out our role as human beings within the world. Consequently, virtual environments can be considered as spaces with which we relate and which evoke genuine moods. One might consider, for example, the case of a funeral service taking place within a virtual world or the much-discussed incident of sexual assault that occurred this year within a metaverse (Conte 2024). Such events evoke a more direct and authentic emotional involvement on the part of the users, who are not merely pretending to experience distress, but are genuinely affected. Likewise, the virtual space, in its formal and aesthetic structure, does not have a neutral connotation; rather, it elicits a certain affective response, which may be more or less explicit and evident. To give one example, the environments traversed in the escape room Alice VR (ARVI Lab, 2021) evoke the dreamlike and vaguely unsettling quality portrayed in Carroll's novel. Similarly, in Remember This Place (Liras, 2023), an experience that straddles documentary and fiction, the landscapes traversed convey not only the fragility of life in Palestine but also the aridity of the climate and the oppressive atmosphere of temporary housing.

3. Virtual Housing

Given that inhabiting a place entails the ability to perceive its atmosphere, it is intriguing to highlight the original connotation of the term, which directly relates to the concept of habitation. As Bachelard (1957) recalled, the life of the human being begins in the womb of the home, which is a privileged place where the act of dwelling commences. The meaning of this act is defined by the *con-fused* relationship established between the body of the individual and the dwelling⁵. In light of the increasing prevalence of diverse housing solutions in online realms, it seems pertinent to examine the interrelationship between the concept of home and virtual spaces, with a particular focus on recent cases.

The first is *VR Akové*, an application developed by AARP Innovation Labs in 2020, which enables users to experience a virtual environment resembling an ordinary house. Indeed, this software replicates a real home in a virtual domicile designed so that family members residing in disparate locations can come together and engage in the exchange of experiences and content. It is evident that the interiors can be tailored to suit individual preferences, and a wide range of activities, including yoga and chess, can be undertaken in the dwelling's living room. Despite its inception during the pandemic, a period when direct contact was arguably more crucial, it is noteworthy that this experience (as evidenced by the testimonials on the company's website) fostered closer engagement with the device particularly among older people. Furthermore, the application was presented as the inaugural "Social App for Families" (Alcove VR, n.d.), thereby explicitly indicating that it was designed not only to allow users to spend time together with others, but also to employ the VR headset to recreate and delineate a home as a safe place to meet with loved ones.

The second case study, which is of a completely different nature, concerns Krista Kim's entirely virtual home, her 2020 *Mars House* (Fig. 1).

The artist launched the project as a meditative design space, in which to rediscover psycho-physical well-being through the practice of meditation. While this is not the first instance of an online property sale⁷, the financial value of this transaction – the purchase raised the exorbitant sum of USD 500,000, the first ever sale of an NFT file on SuperRare (see Notaro 2022; Parker 2021) – is a notable aspect that merits attention. It may be considered an investment, analogous to the purchase of other virtual works, or alternatively, a harbinger of a more far-reaching trend. In light of this case, it is pertinent to question whether such a striking sale should be compared to the purchase of a physical property where one actually takes up residence. It is therefore legitimate to enquire whether it is feasible to inhabit a virtual house and establish the intricate

⁵ This idea became central for Otto Friedrich Bollnow, who in *Mensch und Raum* (1963) describes the phenomenology of this habitat, a reflection largely inspired by the thought of Heidegger and Merleau-Ponty. The latter, in particular, made great strides with his phenomenology of corporeality, which emphasises the role of the human body in the experience and understanding of space. His ideas ushered in a new way of thinking about housing (also fundamental to many architects of later generations), which considers the bodily, sensory and perceptual dimensions of inhabiting a space. Cf. Merleau-Ponty 1945.

⁶ VR ALCOVE. https://www.meta.com/it-it/experiences/alcove/3895528293794893/?srsltid=AfmBOoohglPtO412LE7RpTs5FMtEQ6uwnJrXCf4iXWRpJJPPi_cPAX0z

⁷ The phenomenon has a number of predecessors. One thinks, for example, of the thousands of plots of digital land purchased in one of the first successful digital worlds, *Second Life*, founded by Philip Rosedale in the early 2000s.

spatial and emotional bond that should be forged with one's surrounding environment, although in a digital domain. A similar issue arises in other cases, albeit in a different form. For example, the *Aurora project* (2022)⁸, a complex of nine luxury residences designed by the German NFT consulting studio Shift/Space, represents the inaugural undertaking by a genuine architectural firm in the Sandbox metaverse. Moreover, in virtual environments, digital twins representing identical copies of existing physical structures are also found widely/ commonly found. A notable example is the sale in 2023 of the Sierra Mansion, a villa spanning over 1,000 square metres in Miami. It was conducted by ONE Sotheby's International Realty in collaboration with NFT collector Gabe Serra. The transaction, which exceeded eleven million dollars, was the first of its kind, as the physical building was not the only item sold; its digital twin was also purchased. This identical digital property, created by Voxel Architects, was located in The Sandbox and made the construction of the first "MetaReal" mansion (Casillo et al., 2022).



Figure 1. Krista Kim, Mars House (2020). Courtesy the Artist.

The issue may seem rhetoric, but there are some scholars, such as Jaron Lanier and Frank Biocca (1992), who have argued that a house constructed in a computer-generated environment is not merely a representation, but a genuine residence. This perspective posits that a place can be considered a home simply because it is shared with someone, albeit artificially:

⁸ See the detail of the project in Shift/Space Studio Brings Out Metaverse Residences to The Sandbox with Project Aurora: https://medium.com/sandbox-game/shift-space-studiobrings-out-metaverse-residences-to-the-sandbox-with-project-aurora-e87a60937bbb

If you make a house in virtual reality, and there's another person there in the virtual space with you, you have not created a symbol for a house or a code for a house. You've actually made a house. It's that direct creation of reality; that's what I call post-symbolic communication. That's just a huge uncharted territory. (Lanier, Biocca 1992, 161)

This affirmation serves to exemplify a broader concept that is closely aligned with the notion of virtual realism9. Proponents of this concept assert that virtual objects and environments are, in fact, real. However, the fact that the two scholars selected the house as their object of study is particularly noteworthy. The variety of objects that can be encountered inside digital worlds is vast. However, if we consider the home in its affective and experiential complexity, it is evident that the experience of one's own home cannot be compared to that of dwellings in the various metaverses. Indeed, if we accept Lanier's argument that the creation of a virtual house is tantamount to the construction of a physical one, then it follows that the experience of inhabiting such a space should be equally authentic. It would be reasonable to expect that one would feel a similar sense of connection to these virtual environments as one would to their physical counterparts. However, the connection one forms with one's own abode is a multifaceted phenomenon that, as Bollnow affirms, is contingent upon the body-home relationship. One can even speak of embodiment, a concept that extends beyond that of mere extension or identification.

Indeed, it is from our nest that we first learn to know the world, and then, in a process that may be likened to that of a Russian Doll, gradually move further and further away to form our own personal topology. So, the relationship between the human being and their home can be described as *prosthetic*, to the extent that the violation of this space can be experienced as a violation of the self. Moreover, this is not a one-way connection. This is not a matter of how an individual affects and constitutes their private space. The home also exerts a profound influence on one's existence, particularly with regard to one's aesthetic relationship with one's surroundings. Indeed, this influence is such that an individual would not exist in the same way in a different location.

From this brief discussion, it can be discerned that there is a fundamental distinction between inhabiting one's own home and experiencing a digital living space. The two experiences cannot be considered equivalent. Nevertheless, the statement by Lanier can be interpreted in a way that emphasises the collective dimension of experiences associated with the concept of "home." This perspective is supported by the examples previously discussed. In particular, *VR Alcore* was conceived with this objective, but the 'residential' projects in the

⁹ David Chalmers' position, referred to as 'virtual digitalism', is noted; according to this, virtual objects are real in that they are digital, since they exist as data and computational processes. See Chalmers 2017, 309-52.

various metaverses can also be interpreted in this way: they create alternative spaces for sharing with others. This vision is consistent with the broader concept of virtual reality that Lanier has espoused in more recent times. Indeed, he characterised this medium as a "shared, waking state, intentional, communicative, collaborative dream" (Lanier 2017, 534) and as an "arbitrary experience, shared with other people, conversationally, under our control" (Lanier 2017, 89). In conclusion, he affirms that VR should not offer a solipsistic experience, but rather one that is shared and capable of evoking a sense of community. This position, with appropriate distinctions, can also be extended to virtual environments that are not fully immersive, such as the various virtual worlds created in online video games, in which the collective dimension is a crucial element.

4. Conclusion

In conclusion, virtual dwelling can result in the generation of novel forms of experience which, in certain respects, can be interpreted in a manner analogous to the experiences of places encountered in the tangible world. The case of atmospheres provides an illustrative example of this phenomenon. Despite the lack of bodily presence in VR worlds, the environmental dimensions acquired by an- icons render them capable of eliciting an emotional response from users, which is shaped by the interaction between them and the computer-generated landscape. The sense of presence that VR requires must also be understood as the potential for individuals to connect with their surrounding space on multiple levels. This includes the capacity to perform actions within the space and to receive information from the surrounding environment, albeit in a sensory modality that differs from physical reality. However, the concept of "dwelling" must be reframed in the context of these virtual spaces, as it is inevitably lost in the transition from its original meaning to a new context. That said, the example of the Mars House, along with other virtual dwellings, illustrates how these spaces can become significant locations for social interaction, where the dimension of community and sharing assumes a central role. This, therefore, suggests that the concept of home can also be extended to digital environments. Finally, through these diverse forms of media, individuals are granted the opportunity to reimagine and reinterpret the contemporary concept of dwelling. This term is not only amplified but also multiplied across various platforms, thereby facilitating and encouraging innovative forms of aesthetic experimentation. As a result, new and diverse approaches to understanding and experiencing living spaces emerge, pushing the boundaries of traditional notions and fostering a richer dialogue between aesthetics and media studies.

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