Foreword.
Real Space – Virtual Space: From *Sound Helmets* to VR Headset*

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Can we really make a distinction between real and virtual space? Today, the multitude of digital devices that surround us makes space an increasingly layered and complex dimension to inhabit. In this context, we aim to explore a particular dimension of the experiential space – the architectural and urban one– to better understand how emerging *media* engage with these fields, fostering a productive exchange of ideas and further dissolving the boundaries between them.

Nevertheless, the modification of space through media to alter its aesthetic perception and meaning is not limited to new technologies. One of the primary inspirations for this volume, which also informed the choice of its title, is the seminal work of Italian architect and designer Ugo La Pietra, who curated a part of the XVI Milan Triennale in 1979. The group exhibition, titled *Spazio Reale-Spazio Virtuale. Lo spazio audiovisivo* [*Real Space-Virtual Space. The Audiovisual Space*], explored the intrinsic duality of television through a range of installations. The focus extended beyond the artefactual image and its content – the proto-virtual space transmitted electrically by the device – to encompass the ways in which this space, predominantly situated within the domestic sphere, acquires the capacity to transcend the screen. The need to create alternative, self-contained environments where individuals were exposed to a wide range

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of sensory stimuli and compelled to rethink the conventional perception of space was already evident in the architect's projects between 1967 and 1970, *Le Immersioni* [*The Immersions*]. This series of installations comprised a variety of micro-environments, which visitors were encouraged to enter either with their entire body or just with their head. Even in works that required a high degree of immersion, such as *Uomouovosfera* (1968) and *Immersioni Ambienti Audiovisivi* [*Immersions Audiovisual Environments]* (1969), where participants entered a semi-opaque sphere – the perception of the outside was disrupted and deferred, but never completely eliminated. A similar phenomenon occurred in the most renowned devices of the series, the *Caschi sonori* [*Sound helmets*], created in 1967 for an exhibition at the Galleria Cadario in Milan (subsequently installed as part of *Ambiente Audiovisivo* at the XIV Triennale in 1968).

These works were not merely an exercise in aesthetic experimentation. They also conveyed a compelling social and political message. In the context of the era, this aspect was a crucial driving force behind the creative process. Indeed, certain works, such as *Immersioni nell'acqua* [*Immersions in Water*] (1969), were performed in the streets of the city, directly inviting passers-by to engage with the work and contribute to their own experience of the urban environment. La Pietra's work, which preceded the advent of the technologies we now call "new" or "immersive" media, underscored the spatial, architectural, and urban dimensions of audio-visual forms, thereby establishing theoretical and practical models that redefined the relationship between the virtual and the real.

Inspired by these critical perspectives, this volume aims at investigating how contemporary apparatuses create an artificial space of their own in dialogue with the design and experience of architectural and urban space, fostering productive contaminations and intersections. Of particular note is the impact of virtual reality (VR) technology, which effectively challenges the conventional status of the image, presenting itself as an actual space (Pinotti 2018). Indeed, the image appears as *unframed* and experienced without any form of mediation, in a single word: an *an-icon* (Pinotti, Cavaletti 2020; Pinotti 2021). It occupies the experiencer's entire field of view: thanks to the headset users are totally enclosed in the digital realm, inhabiting images and even interacting with them. The spatial experience created by these devices, as well as the identity and performativity of the participants, must be redefined and negotiated anew (Hofer et al. 2020; Champion 2019).

The crucial feature of VR is that, unlike other kinds of visual representation, it has to do directly with the production and the representation of space in an immersive way. It must be stressed that here the word "space" does not mean just a measurable extension, an aseptic background hosting objects and people. The experience of space claimed by VR is in many ways similar to that of our every-day life, which has also been conceptualized as the primary and paramount dimension of our existence (Merleau-Ponty 1945; Bollnow 1963). In

this light, phenomenology speaks of *lived space* [*Lebensraum*]: the space we "feel" when we enter a room, or when we orient ourselves walking across the streets of a city, or simply when we relate to the objects around us. The space in which we move, interact and have immediate experience of the world. In a way VR too offers this kind of experience, albeit in a digital realm, eliciting in the user a vivid *sense of presence*, yet excluding the body immediately. So, in this light, it is necessary to establish an aesthetics of virtual space (Champion 2021a; Tavinor 2021; Bandi 2021b) in order to undertake an exhaustive investigation of this specific experience.

This potential of VR environments is obviously fundamental for architecture, so much so that these technologies increasingly represent a powerful tool for architects and planners to rethink design in unprecedented perspectives (Bandi 2021a, Parker et al. 2021; Vilar et al. 2022; Vegetti 2022). These devices allow professionals, but also universities and academies, clients and citizens, to *quasi*-live the project, not only visualising it but inhabiting its space. In short, virtual realities change the way we represent and also our relationship with this representation.

Jaron Lanier, one of the pioneering figures in the development of virtual reality, has famously referred to this technology as "a shared dream" (Lanier 2017), underscoring its inherently dreamlike and imaginative dimension (Grossi 2021). This view of virtual reality as a space where the boundaries of the real and the imagined blur offers profound implications, especially when considered in the context of heritage and visionary architecture. Virtual reality can act not only as a medium of creative expression but also as a *poietic collector* – a repository for unrealized, forgotten, or utopian architectural projects. It has the capacity to breathe new life into structures demolished or impossible-to-build, allowing them to "exist" in a virtual world. A fascinating example of this is the project *Dream Builders* by Femme Fatale Studio – which was installed during the conference.[1] It draws inspiration from Étienne-Louis Boullée's *Cenotaph for Newton*. Boullée's 18th-century design for a colossal monument dedicated to Isaac Newton is an iconic unrealized architectural project, a bold expression of Enlightenment thought and a utopian vision of space, scale, and geometry. Femme Fatale Studio has transformed this visionary monument into an immersive experience. Through the lens of virtual reality, the awe-inspiring grandeur of Boullée's cenotaph can be experienced as a shared dream – a virtual environment where users can explore and interact with an architectural masterpiece that only existed on paper.

Projects like this demonstrate the profound capacity of virtual reality to engage with heritage in ways that traditional media cannot. By creating immersive

1 Dream Builders VR: https://www.femmefatale.paris/project/batisseurs-reves-vr (Accessed on: 30.10.2024)

spaces, VR not only preserves historical ideas but also invites a new form of interaction with cultural heritage. It opens a dialogue between past and present, engaging with the architectural avant-garde of bygone eras and allowing these ideas to transcend their temporal and material constraints.

Beyond the headset lies the tangible city, where the physical and virtual worlds are becoming increasingly intertwined. In this evolving landscape, the relationship between the real and the virtual is not merely incremental; rather, it is deeply entangled and reflexive, as observed by Milgram and Kishino (1994). With the advent of augmented reality (AR) and mixed reality (MR) technologies, the boundaries between these two realms are becoming ever more porous. These technologies are capable of embedding digital objects directly into our urban environments, altering how we perceive and interact with the city (Bandi, Pinotti 2023). This fusion serves practical purposes – such as improving route-planning, providing real-time information, or offering enhanced architectural visualization (Duarte and Álvarez 2021; Sharma 2021) – while simultaneously encouraging new forms of artistic and creative expression (Kot 2021; Pirandello 2023; Shokrani et al. 2021).

This transformation not only enhances the utility of urban spaces but also redefines our understanding of them. As Manovich (2006) suggests, augmented reality contributes to the creation of a *new poetics of space* – a digitally infused landscape where physical reality and virtual elements coexist and interact in meaningful ways. In this augmented space, architecture, technology, and human interaction form a dynamic interplay that opens up new possibilities for experience and engagement.

These concepts hold particular significance for the conservation and enhancement of architectural heritage. By leveraging AR and MR, we can create immersive and interactive experiences that breathe new life into historical sites and buildings. For instance, visitors to a monument might encounter digital reconstructions that allow them to see how the site looked in different historical periods (Brusaporci et al. 2017), or interact with virtual elements that create new forms of urban storytelling and cultural memory (Modena, Pirandello, Pinotti 2021), thus enriching their understanding of the site's cultural and historical significance (Champion 2021b). Moreover, these digital interventions contribute to a broader dialogue with theoretical frameworks such as mediascapes (Appadurai 1996; Casetti 2018) and media cities (McQuire 2008). Both of these concepts highlight the intricate relationship between urban landscapes and media technologies, emphasizing that cities are no longer just physical entities but are increasingly shaped by the flow of information, images, and digital experiences (Verhoeff 2012; 2020; Montani et al. 2018) transforming our perceptions of them.

This volume is divided into two sections, *Theory* and *Practice*, on the basis that these are, nevertheless, two aspects of the same entity. Despite this separation, they engage in a dynamic and constructive exchange of ideas.

The *Theory* section opens with an essay by **Scott McQuire** which analyses the ways in which networked digital media are spatially integrated into cities in distinctive historical contexts and how computational processes are reshaping urban space. The media scholar investigates both contemporary practices and the longer history of mediated urban environments in order to identify the continuities and disruptions that are characteristic of the present moment. **Erik Champion**'s contribution analyses the evolution of online 3D technologies over the past three decades, from VRML (Virtual Reality Modeling Language) to the excitement surrounding the "Metaverse" in 2022. The game and media scholar also focuses on how virtual representations of the past connect to the ideas of cultural presence, hermeneutic environments, and immersive literacy, aiming to enhance our understanding of the cultural value of virtual spaces.

In her essay, **Fabrizia Bandi** examines how virtual reality encourages an investigation into the concept of "inhabitation" in relation to spatial experience. She argues that this immersive experience engenders distinctive atmospheres which evoke genuine emotional reactions, thereby challenging the concept of presence in digital environments. The historians of architecture, **Silvia La Placa** and **Massimiliano Savorra,** present an investigation into the potential of digital tools to engage with the history of architecture and the identity of virtual spaces associated with historical monuments. By means of a number of carefully selected case studies, the authors demonstrate the efficacy of digital approaches in the context of cultural heritage research. Furthermore, they address the broader question of how digital humanities and architectural history are advancing this field, discussing key methodologies and practices. The contribution of **Fabrizio Banfi** examines the impact of Building Information Modelling (BIM) technology on our perception of buildings as digital entities comprising all their components and information. This transition from two-dimensional computer-aided design (CAD) drawings to three-dimensional models has facilitated interdisciplinary collaboration and enhanced the sharing of diverse content. BIM is also employed in the context of historic edifices through heritage building information modelling (HBIM), which facilitates novel avenues for disseminating cultural heritage data.

The essay by **Matteo Vegetti**, opening the second section of the volume, *Practices*, bridges the gap between theoretical framework and practice. The philosopher examines the theoretical underpinnings and methodology of an experimental course on the *Phenomenology of space*, specifically designed for architects and interior designers, at SUPSI (University of Applied Sciences and Arts of Southern Switzerland). The course employs virtual reality to facilitate students' immersion in the perceptual and cognitive effects of spatial forms, colours,

materials, and light. The interview with the architect Valentina Temporin, co-founder of **ULTRA**, together with John Volpato, explores the intersection of architecture and virtual reality. Initially used for project presentations, VR soon became central to their work, particularly with *Osaka '70*, a project that reimagines Maurizio Sacripanti's unrealised kinetic architecture. This project, created during the pandemic, evolved into a multi-user experience, enhancing the social and interactive potential of VR. Notably, a dedicated contribution to *Osaka '70* is also included in this volume, highlighting its significance. Finally, the contribution presented by the architect **José Pareja Gómez** outlines the activities of the ZHVR Group, which was established in 2014 as a division of Zaha Hadid Architects. The group's work focuses on the integration of virtual reality in architectural design, with the objective of redefining the conceptualisation and experience of spatial environments.

In conclusion, a close reading of this collection of essays reveals that the hyphen separating "real space" from "virtual space" in the title should not be regarded as a mere hiatus; rather, it serves as a crucial expression of a continuum – a dynamic interplay that reflects an ongoing process of hybridization and fluidification. This relationship signals the emergence of a concept designated as "transarchitecture," previously theorized by Novak (1994), which reconfigures the boundaries between reality and virtuality.

This conference, from which we now present the proceedings, was set in the context of this transformation. It encompassed a diverse range of activities that spanned theoretical investigation from different fields of study and practical experiences in virtual reality. The objective was also to bridge the gap between theory and practice, in order to illuminate the ways in which the convergence of physical and virtual space not only redefines spatial experiences but also challenges traditional notions of presence, perception, and interaction in the built environment. Ultimately, this publication is intended to foster a dialogue that inspires innovative thinking and encourages the creation of spaces that transcend conventional categories, thereby enriching our understanding of both the real and the virtual.

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