

Between the Physical and the Virtual: The Present Tense of Virtual Space

Dr Andrew Burrell

University of Technology Sydney

School of Design

Design, Architecture and Building

PO Box 123

Broadway 2007

NSW, Australia

Author Biography

Andrew Burrell is lecturer in Visual Communication, School of Design at the University of Technology Sydney. He is a practice-based researcher and educator exploring virtual and digitally mediated environments as a site for the construction, experience and exploration of memory as narrative. His ongoing research investigates the relationship between imagined and remembered narrative and how the multi-layered biological and technological encoding of human subjectivity may be portrayed within, and inform the design of, virtual and augmented environments.

E-mail: andrew.burrell@uts.edu.au

ORCID: <https://orcid.org/0000-0002-1690-7542>

Between the Physical and the Virtual: The Present Tense of Virtual Space

Keywords

virtual environments, Installation art, Design Research, physical and virtual space

Introduction

This paper explores a position, or way of thinking about virtual environments and how they might be used to create new spaces, not as an alternate reality, but as an integrated part of reality—regardless of this reality being physical and/or digital.¹ Virtual environments, as described in this paper, can be seen as an extension of reality—the physical and the virtual sitting side by side with one, more often than not, bleeding into the other. The virtual is not separable from the physical and vice-versa. This paper will demonstrate that while the way we access virtual environments varies depending on the technology we are using, that this technology does not wholly define the underlying nature of—or the affordances offered by—the material space of virtual environments. This position is informed by traditions that stem from processes and ideas around materiality, poetics and philosophy rather than being a position that is technical or hardware-specific in nature. Hardware is secondary to this discussion—the means to an end. The technologies we use to access virtual environments are constantly changing, and while not excluding the differing material affordances offered by different access technologies, this paper is concerned mostly with the affordances offered by the virtual environments themselves, hence the examples cited span both time and access technologies.²

At the centre of this position is an ongoing investigation into narrative spaces in immersive virtual environments, stemming from the author's background in interactive Installation art and informed by a deep, practice-based understanding of this space. A central premise of the paper is informed by Robert Morris' seminal text, "The Present Tense of Space" (1979), as well as the way in which artists and designers have understood and explored the relationships between physical and virtual space via creative practice. In developing this premise, this paper explores spatial affordances shared by both physical Installation art practice and contemporary virtual environment-based projects. It will also point to the fact that a viewer of a virtual environment, more often than not, will come to an understanding of virtual environments as phenomenologically real spaces, and how critical art and design practice utilises this phenomenon. A tripartite relation will be shown to form between the viewer, the physical and the virtual. As Denise Doyle points out, the viewer (who of course remains very much physical) becomes a traveller 'through the imagined and virtual spaces that are not physical, yet are encountered as real' (Doyle, 2016: 26). Perhaps the most eloquent phrasing of this position is found in Proust via Deleuze, and still holds true despite the dramatic shift in context:

The virtual is opposed not to the real but to the actual. The virtual is fully real in so far as it is virtual. Exactly what Proust said of states of resonance must be said of the virtual: "Real without being actual, ideal without being abstract"; and symbolic without being fictional. Indeed, the virtual must be defined as strictly a part of the real object – as though the object had one part of itself in the virtual into which it plunged as though into an objective dimension. (Deleuze, 2011: 208-209)

It would then be no leap at all to suggest that to understand a virtual environment it must be encountered on its own terms—those of being *fully real*—an understanding that happens via an encounter with, or experience of, that particular virtual environment. It is interesting to note, that in one of the first in-depth discussions on Installation art practice, Julie H. Reiss alludes to a problem that this author faces in the current discussion:

Spectator participation is so integral to Installation art that without having the experience of being in the piece, analysis of Installation art is difficult. (Reiss, 2001: xiv)

Due to their digital and distributed nature, this would not at first appear to extend to art and design using virtual environments as the material of their critical, creative practice, as they are often assumed highly accessible. What we find, however, is that due to hardware accessibility, models of scarcity enforced by the art market³ or the handcrafted, one-off nature of many of the interfaces created for these works (with the intent that they are displayed in a museum or gallery setting), many of these works are not as accessible as they may first be understood to be⁴. Therefore, the choice of works discussed here has been mediated by the fact that I have experienced the works first-hand—this first-hand experience of the works being deemed necessary to speak to them from a position that this paper’s framing demands⁵. This position also necessitates a movement to the first person voice.

In bringing these works together, a narrative will be formed—beginning with Morris and then moving forward by way of a discussion around a series of projects, including two of my own works. This will echo Morris’ stated goal with his essay, to “Make a narrative, claim a development in retrospect. Invent history” (Morris, 1978: 70). This narrative will follow a conceptual, rather than chronological framing. This framing can then be applied to creative outcomes in virtual environments far beyond what space here allows the discussion to cover. An introduction to Morris’ notion of *presentness* will be followed by an example of Installation art practice, “20/50” (1987), as a link and contextual framing. I will then discuss a work of my own titled, “until the last beat of my heart” (2006)—an interactive Installation that visibly and conceptually bridges a gap in my own practice between physical and virtual environments as material space. The narrative will then step back in time to Char Davies, “Osmose” (1995), a work many readers will be familiar with that plays a significant role in the historical narrative of virtual environments as the material of critical, creative practice. This informs a discussion of another of my own works, “Loft” (2017) which is a WebVR experience for viewing on screen or VR headset—this work takes advantage of many of the affordances I will have described. This will then open the discussion to a number of contemporary works, leading to a further integration of Morris’ notion of *presentness* into the discussion.

The Present Tense of Space (1979)

“The Present Tense of Space” is an essay by the minimal sculptor Robert Morris, which has been very influential in discourses around sculptural practices, including Installation art. It was first published in *Art in America* in 1978. Its subtitled editorial framing—referring to conceptual sculpture of the 1970s—reads:

Much recent sculpture incorporates multiple views, separate spaces, even protracted distances. Such work creates a constantly changing spatial

experience, extended in time, which the author calls “presentness” and for which he finds antecedents in various past cultures. (Morris, 1978: 70)

Morris’ idea of *presentness* is central to the discussion presented here. Where Morris was interested in finding the antecedents to the sculptural works of the 1970s, I am interested in where this trajectory has led by way of descendants of these works, and the way they deal with space, over time. Indeed, we see that space is central to this work of the 1970s with space being ‘strongly emphasized in one way or another’ in those works (Morris, 1978: 70). A question we might ask is, what can we see of this quality of *presentness*—in space, over time—in a lineage of art and design that begins in Morris’ narrative, through Installation art practices of the 1980s and ‘90s and extending into contemporary explorations of virtual environments? But first we must ask, what is this quality of *presentness* and how did Morris see it acting in the works he describes?

Morris points out Rodin’s sculpture of “Balzac” (1892-1897)⁶, as a modernist example, of what a work that exhibits a formal quality of *presentness* to be. His description of this sculpture helps to form a basis for an understanding of this phenomenon. The Balzac, he says, ‘exists within the temporal space it takes to see it’ (Morris, 1978: 75). Or, to put it another way, it cannot be viewed and understood from one viewing position. It takes time to move around it, and it is experienced and understood over that period of time. Rather than existing as a single image of a whole object in our memory, it fragments in the mind. There is also a historical shift taking place where the artwork shifts from knowable object to experience in and over time.

Having no singular profile to give it a definite gestalt, memory can’t imprint it[...]. Located neither within a clear memory nor a literal place, it exists for us within the temporal span it takes to see it[...]. The power of the Balzac is that while patently an object, it so oscillates in the perceptual field of the viewer that he can grasp it only temporally in its perpetually changing aspect. (Morris, 1978, p. 75)

A key thread of Morris’ argument is the relationship between space, viewer and what he calls an *ongoing immediate present*. ‘What I want to bring together for my model of “presentness” is the intimate inseparability of the experience of physical space and that of an ongoing immediate present. Real space is not experienced except in real time’ (Morris, 1978: 70).

From physical space to virtual space, this *presentness* can then be seen to be a feature of a number of central trajectories that move through modern art practice and into postmodernism and contemporary art and design practice. From the avoidance of the object within works of the 1950s and ‘60s and into the land and environment art of the 1970s—what they all have in common is a rejection of the ‘all-at-once’ (Morris, 1978: 72) experience of a work of art, or the work that exists purely as an image in the past tense of memory. In this process, ‘images, the past tense of reality, begin to give way to duration, the present tense of immediate spatial experience’ (Morris, 1978: 70).

20/50 (1987)

As we move into the Installation art practice of the 1980s and ‘90s we see the same concerns in many works. Benjamin Weil points out in 1992 that:

Current artistic production has been developing mainly in the form of environments which require the viewer to go beyond the sole viewing experience. Rather, his/her physical presence in the exhibition space is a focusing point which tends to develop the consciousness of art as a bodily experience. This calls for an understanding of both space and time. (Weil, 1992: 105)

The experience described by Morris of viewing the Balzac is reflected here. We might, for the sake of illustration, take the example of Richard Wilson's 20/50⁷. A work which at first may seem simple and can be described in its entirety with only three short sentences:

It comprises a shallow steel container with an inserted walkway that enables the viewer to enter the Installation. The container is filled with sump oil which acts like a reflecting pool. The density of the oil makes it impossible to estimate its depth. (Oliveira et al., 1994: 77)

We can then think about the experience as one that occurs over time and cannot be experienced in its entirety at any one moment. A description of the phenomenological experience of the work provides an insight into the way it operates in the *ongoing immediate present*: 'standing in the narrow tip of the walkway—wide enough for one person only—we seem weightless, hovering above the oil, which in turn seems to disappear' (Bishop, 2012: 93).

There is a feeling of disorientation as the image of that which is above the viewer, is reflected as if it is below, yet cut in two by the walkway. The reflection becomes a virtual (real but not actual) version of that which is reflected. At any one moment, our understanding of the physical space we are in is tempered by the temporal space we also find ourselves in—fragmented between memory and present experience. While this may appear obvious, this position of the viewer is temporary. It only exists, as the title of Morris' paper suggest, in the present moment. Our understanding soon shifts again after we leave the Installation and memory takes on a different role—one of archiving the experience in the past tense as we connect the remembered fragments into a narrative experience in memory. The actual work is only ever experienced in that present moment—in the *ongoing immediate present*.

Until the last beat of my heart (2006)

In 2006 I created an Installation titled "until the last beat of my heart", and while this feels like a very long time ago, I am choosing it as an example as it exemplifies many of the concerns of this paper. It sits nicely at a moment in time at a quiet crossroads between two eras of hype around technical innovations in Virtual Reality technologies, in particular VR headsets. This is well after the bubble burst on the hype around VR in the 1990s and well before its return with the Oculus Rift DK1 in 2012. This quiet crossroads was, however, still filled with artists, designers and other creative practitioners exploring the potential material space of virtual environments—outside of hype cycles and unencumbered by the demands of cutting-edge technological innovations. This is to say, that while accessible technologies for interacting with virtual environments shift dramatically over time, the approach to working with virtual environments has developed consistently in alignment with the position that virtual environments are distinct from the hardware we use to access them. "until the last beat of my heart" is a fitting work on which to build my discussion of the correlation of concerns

within Installation practice and virtual environments, as it contains within it, elements of both. This is something we will see to be true of all of my examples, yet perhaps not always as overt as we will find it here.

“until the last beat of my heart” is a linear and spatialized narrative conceptualized within a virtual environment, experienced by a viewer in a non-linear, and a-synchronous manner in real time, in a physical environment. Each moment in the viewers’ space and time is related directly to a moment within the virtual space and time of the narrative space.

To describe the viewer’s experience of the work, we can follow their journey. In a physical exhibition space, a wooden scaffolding supports a looped toy train track that a single model train continually makes a circuit of. Its speed never changes and from it can be heard continuously the mechanical whir of the gears that drive it. Positioned around the track are several sensors that recognise when the train is passing that section on the tracks.



Figure 1: Andrew Burrell, *until the last beat of my heart*, 2006. Installation. Dimension variable. Courtesy the author

Within the virtual narrative space, a series of events are mapped out across a twenty-four-hour period. This twenty-four-hour period is then compressed via remapping to a four-hour period to be experienced within the work. As the train moves across a sensor point on the tracks, the system checks the current real-world local time, maps that to the compressed virtual narrative time and plays any relevant moment of narrative audio into the physical environment for the viewer to hear.

The train takes longer to move between sensors on the tracks than the length of narrative fragments, resulting in a situation where only a partial narrative is revealed to the viewer over any period of time spent viewing the work. The experience of immersion within the virtual narrative environment is purposefully fragmentary and must take place over a number of sustained visits to experience in a fuller manner.

This narrative space is quite traditional in its structure. On paper, it takes the form of three chapters with a prelude, two interludes and a postscript. The events taking place in it happen over a twenty-four-hour period and follow the train of thought and experiences of a first-person protagonist. Within the virtual environment created via the content of this narrative, time is kept in two ways. The first traditionally with an electronic voice announcing the progression of time as an amount of time until midnight. For example, ‘16 point 7 hours till midnight’. This announcement is made once per loop of the tracks. The second is less traditional as a sequence of chess moves, that follow an entire game that ends in a stalemate. This inclusion of the chess game defining the narrative is a nod to Pynchon’s “Life a User’s Manual” (1987), which, in itself is something of a literary, networked, virtual environment which can be navigated in both a linear and non-linear ways.

Again, for the viewer, at any one moment, their understanding of the physical space they are in is fragmented between memory and present experience—the narrative being revealed to them experienced in that present moment of the *ongoing immediate present*.

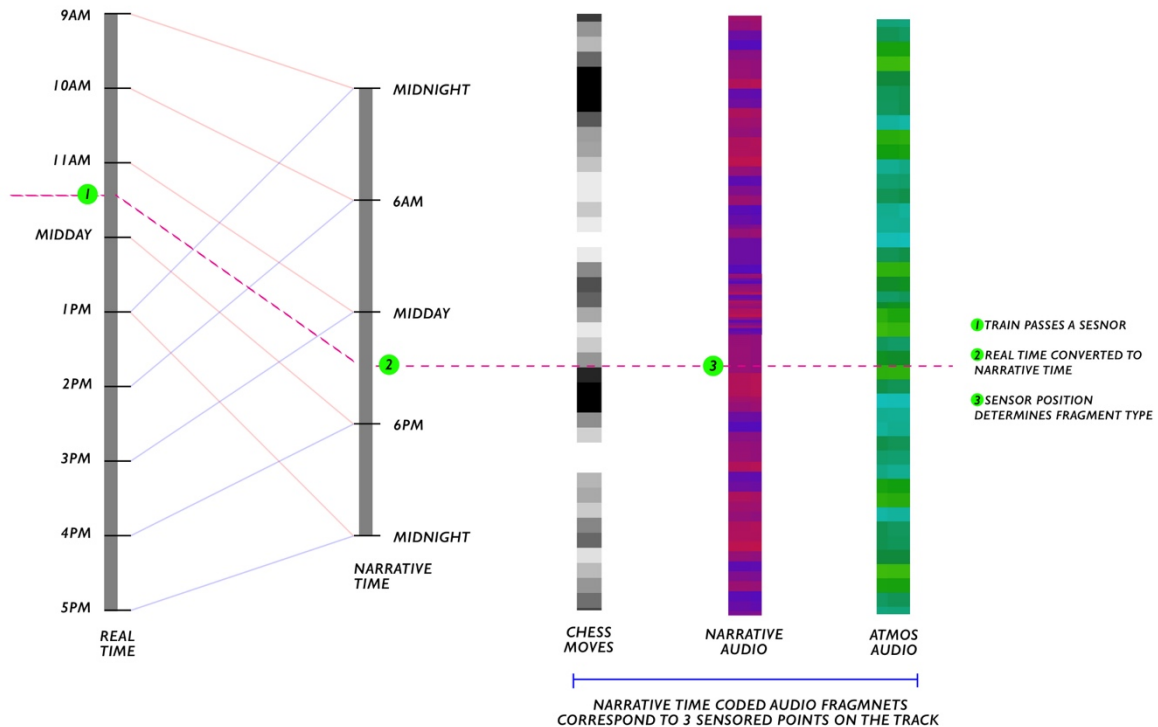


Figure 2: Diagram of the "loft" narrative structure

Osmose (1995)

To develop a deeper context and allow for later discussion, this narrative will now turn to Char Davies' "Osmose".⁸ This work perhaps needs no introduction as it remains, to this day, one of the classics of the genre. Despite the fact that it is the one work I discuss here that I have not personally experienced, it remains hugely influential in my own practice. It represents a deep understanding from the artists about the relationship between the viewer⁹ and their physical presence, in real time, in virtual space.¹⁰

A viewer is placed in a virtual reality headset as well as apparatus to read the rise and fall of their breath. By controlling their breath, they can navigate a series of worlds within the virtual environment, and over time, as they traverse it, they come to understand the logic of these worlds through the narrative they co-create with it. The body is projected into the virtual environment via this breath connection, and we again see in Davies' words a repetition of the notion that the experience is one that happens over time, via exploration; and through this it becomes phenomenologically perceived to be real.

The medium of 'immersive virtual space,' or virtual reality—as it is generally known—has intriguing potential as an arena for constructing metaphors about our existential being-in-the-world and for exploring consciousness as it is experienced subjectively, as it is felt. Such environments can provide a new kind of 'place' through which our minds may float among three-dimensionally

extended yet virtual forms in a paradoxical combination of the ephemerally immaterial with what is perceived and bodily felt to be real. (Davies, 2002: 295)

Interestingly, Davies also emphasises the role of the viewers of “Osmose” not currently experiencing the virtual environment via the headset, in that the *immersant* viewer’s shadow is projected onto a screen, that emphasises their physical presence and their physical gesture. The movement of their body and rise and fall of their breath is magnified in their silhouette as they move through the virtual environment under the power of this breath. As with Rodin’s “Balzac”, there is no definitive view of “Osmose”; it is experienced in the *ongoing immediate present* in which it exists. We also find, as with Wilson’s oil, a reflection of physical reality; in this case, the projected shadow of the participant onto a screen provides a more analogue virtual environment for the work’s secondary audience.

Seventeen Unsung Songs (2007)

Shortly after completing and exhibiting “until the last beat of my heart” I started exploring the possibilities offered by the virtual world of Second Life® (SL)¹¹. In hindsight, SL is often maligned as a mere novelty, yet this author believes that practices shaped in SL (individual, collective and systemic) continue to inform the design and construction of contemporary virtual environments to this day. This initially felt like a large departure from a practice based mostly in physical Installation with digital elements, to working solely in a digital environment. This movement was, however, not as extreme as it may first appear. The virtual spatial affordances offered by this new media could extend those of the physical gallery space, and knowledge of being a creative practitioner in one became central to success in the second.

The user-created virtual environment of SL was in its heyday—a vibrant, and well documented¹² creative community—working at the experimental edges of virtual environments. “Seventeen Unsung Songs”¹³ is a series of works created for SL by Adam Nash (also known by the avatar name of Adam Ramona in SL). In the scale of the representational landscape of SL they are at times monumental and, at other times, intimate interactive virtual sculptures that were activated via an avatar as mediator, controlled via mouse and keyboard via a screen. In many ways, these works move to the extreme edge of the virtual—very much distant from the actual.

Nash’s works embody the beyond-dimensional layers of perception[...]Nash’s interest lies in the energy of the virtual space and of the avatar playing within it. His visions both fill the space and deny it exists. They refer to the avatar as an active, creative agent of change who may perform and create and delete on the artist’s stage with potent and joyful autonomy. (Dethridge, 2007)

Take for example, the work (one of the Seventeen Unsung Songs) “Disaccumulator”:

The work Disaccumulator encouraged the user to collaborate with the work to create audiovisuals. Disaccumulator is empty until it senses the presence of an avatar, at which point it constructs itself dynamically by spawning up to a hundred rectangular tiles within a three dimensional volume of space. These tiles are self-responsible for choosing their colour[...]angle of rotation[...]and pitch of sound[...]The work then begins dropping balls from above itself at

random intervals. These balls, when they collide with the tiles, cause the tiles to play the sound it chose when spawning. The user is able to climb through and within the resulting assemblage, which also causes the tiles to sound, as well as to rearrange the formation of the tiles which in turn causes change in the overall audiovisual nature of the assemblage. Each experience of Disaccumulator is unique to that particular instance[...]The resulting work is always a collaborative improvisation between the user and the work. (Nash, 2020: 62)

“Disaccumulator” and the other works in the series explore the formal qualities of the virtual environment. They give primacy to the basic building block of the 3D world – the primitive objects—cubes, spheres and other basic solids and musical scales. On the one hand these primitives always remain the thing that they are, a representation of a cube in 3D space, for example. Yet when brought together they become spaces for collaborative play and exploration. In this case, the act of interacting with the sculptures—a necessary process to understand them in any way past a superficial pattern of colour and sound—creates the *presentness* that we are coming to see a common affordance of works in virtual environments.

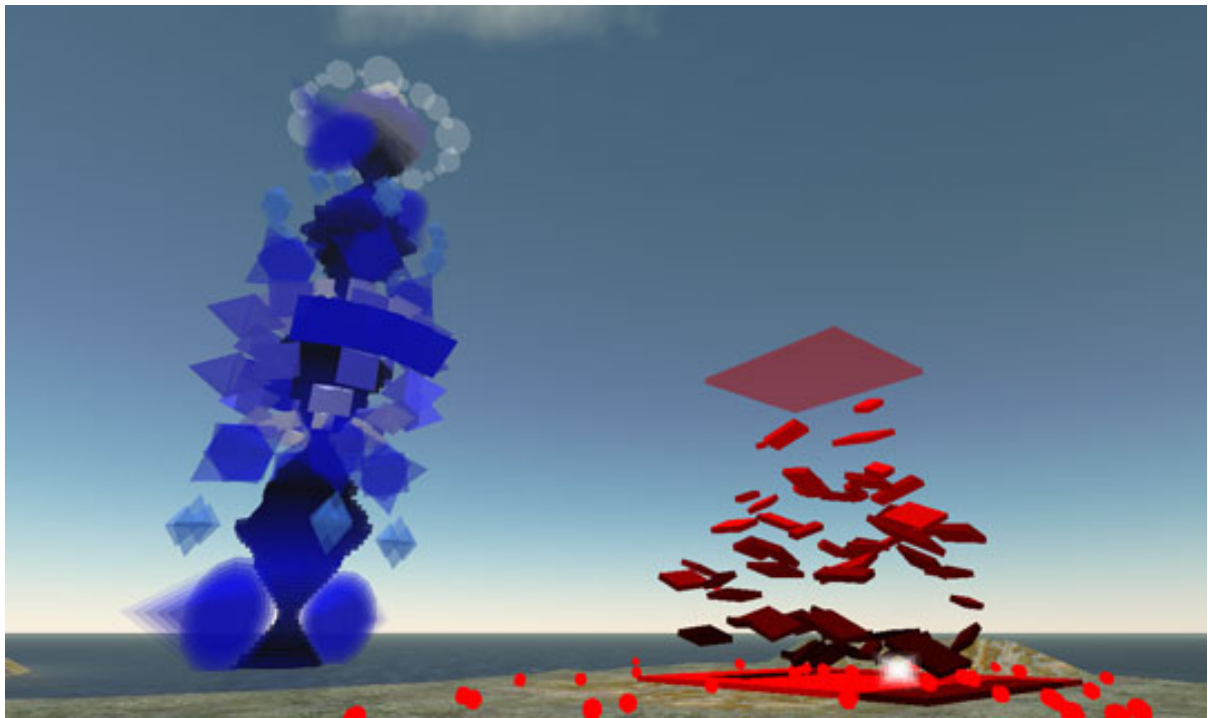


Figure 3: Adam Nash, *Seventeen Unsung Songs (detail)*, 2007, virtual environment, Second Life[®], Courtesy Adam Nash. “Disaccumulator” can be seen on the right.

During this time, I was also creating works in SL¹⁴. However, despite never having access to what was at the time extremely expensive (or simply unavailable) technology, I was very much enamoured with the idea of headset-based access to virtual environments. It felt very much like this was a technology that had had its day; a failed dream of the past that never really made it past the original hype. 2012, however, brought the Oculus DK1 and a few years following, other similar accessible technologies via mobile-based VR. “Loft” was an outcome of my experiments in using these early second-era-VR headsets as a means of

access to the virtual environment, experiments very much informed by what I had learnt in SL.

Loft (2017)

“Loft” is a WebVR narrative experience, created for the 2017 ACM SIGGRAPH Immersive Expressions online exhibition. It is designed to be viewed in a VR headset, including mobile-based VR. It consists of a self-contained environment that plays out for the viewer based on its own logic. With limited agency granted to them, the viewer’s experience will initially feel like one of pure observation. However, as the world unfolds around them, they will find that their point of observation, and how they choose to navigate the space, will make critical differences to how they experience the narrative and logic of this world.

“Loft” uses the same narrative structure, and indeed the same narrative fragments contained in “until the last beat of my heart”; ultimately the two works allow an audience entry into a shared virtual environment, that (at least) poetically has existed for the 12 years between the creation of each of these works.

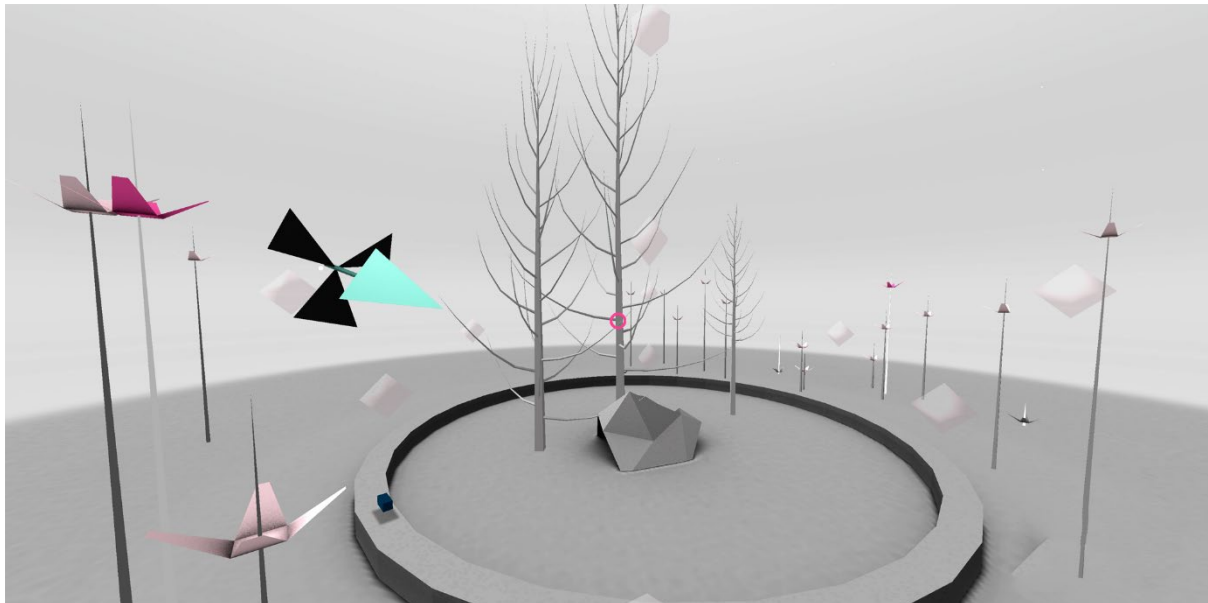


Figure 4: *Loft*, Andrew Burrell, 2017, virtual environment, courtesy the author

The world of “Loft” is generated in real time. When a viewer enters the virtual environment, it is sparse and empty, occupied only by a large, and solid-looking ring casting a shadow on the ground in front of them. Graphically the world is rendered abstractly, though strong signifiers of the physical world exist within this abstractness. As with Nash’s work in SL, an emphasis is placed on a viewer recognising the basic geometry from which the world is comprised. An audio cue is the first event a viewer will perceive, a sound of blades cutting the air. Then over their heads will fly an abstracted flying machine/creature. Up until this moment, their only agency has been to look around. Their position is fixed in space and they are unable to move.

Once the flyer has well and truly entered the space of the central virtual environment, another sound becomes apparent, the ticking of a clock. This sound is emanating from the small rectangular prism following the central ring, as if a train car on rails—a reference to the train

circling the tracks of “until the last beat of my heart”. Then a matrix of octahedra—of an approximate size of the viewer’s head—fade into view. These give the viewer the ability to move through the contained environment by using their gaze, directed at one of these points, which engages a slow drift toward that position. Using this system, they can move in a constrained yet self-determined manner.

While this is taking place, the viewer will notice that geometric plants are beginning to grow and flower in the space, and as these flowers appear, the flyer is drawn to them. Each flower it visits is then imparted with a spatialized audio fragment that contains part of a larger narrative, that is linear in its underlying nature. Within the virtual environment, the viewer’s movements mix the audio, allowing them to construct their own version of the spatial narrative. While in the physical environment, the viewer need only turn their head or rotate their body to bring their gaze onto each octahedron, their phenomenological experience is of moving large distances within the virtual world.

“Loft” shares an interesting quality with “until the last beat of my heart”, in that they both use technology that provides access to a virtual environment, that in turn generate a unique virtual environment by way of evolving narratives. The generative systems behind them influence and build the narratives created with the additional input of the viewer. While the material qualities of the hardware that provides this access is fundamentally different for each work (and hence influence both the creation and viewing of the work) there is much shared in the affordances of the underlying virtual environments.

The virtual environment of “until the last beat of my heart” exists, as we have seen, as a narrative that as a whole inhabits a very particular time frame that is delivered to the viewer as fragments in real time. In contrast, in “Loft”, the virtual environment is reconstructed from these fragments in real time as the viewer literally floats in space, building a narrative from the fragments being dispersed around them by the flyer dropping them at individual flowers. It is the case that in both of these works, which are very much informed by interactive practice, the viewer remains an observer; interaction comes about via the presence of the viewer—and their unique position in time and space—rather than direct physical interaction (as interaction might be defined traditionally) with the system. As is the case with “Osмосe”, the world unfolds as the physical presence of the viewer pushes through the invisible membrane that divides the physical and the virtual.

In the discussed projects, the reader will notice the emergence of a central role of narrative in constructing virtual environments, above and beyond the material affordances of the technology (software or hardware) used to access them. This fundamental role of narrative is central to my argument alongside the relationship between virtual and physical space and the real-time experience of these. In “Loft” we see the “collaborative improvisation between the user and the work” (Nash, 2020: 62) that is evident in “Seventeen Unsung Songs” creating a central narrative that the viewer can then explore in the *ongoing immediate present*.

Crows are Chased and the Chasing Crows are Destined to be Chased as well (2016)

In contemporary Installation/virtual environment practice, the tripartite relationship between the viewer, the physical and the virtual can be seen playing out in the large scale, multi-projection works of teamLab. One such work, experienced at Mori Art Museum, Tokyo, is “Crows are Chased and the Chasing Crows are Destined to be Chased as well, Blossoming on Collision - Light in Space” (“Crows are Chased”). In this work, the viewer is immersed

within a nondescript physical environment while the narrative of the virtual environment takes form, via projection, quite literally, around them. The viewer finds themselves central to a creation story unfolding before them—they are invited to enter into this virtual story space and experience the narrative in real time, and from within.

To experience this work, the viewer enters a large empty room, with a group of other audience members. The room is white—the white cube of the gallery—the walls of which become the projection surfaces on which the immersive virtual environment will come to life. Once the group has gathered to view the work, the lights dim and the walls are filled with what may be stars or lights reflected on the surface of water. Orchestral strings start to play, filling the space. Branches rendered in Japanese calligraphy fall into view, or is the audience rising into the trees? The world is slowly spiralling around the viewer. A number of crows, also rendered in a calligraphic style, can be seen sitting on a branch, perhaps watching the viewers as the viewers watch them. These crows have three legs, and as the tempo of the music changes, one of them takes off and turns into streams of pure projected light:

The crows chase one another and in turn become chased themselves. When the chased crows crash into one another, they scatter, turning into flowers[...]The crows are also aware of the viewers and attempt to fly around them, but when they crash into a viewer, they scatter, turning into flowers in the same way.

The artwork's center is gradually aligned to the position of the viewers standing in the installation. If all viewers gather in one place, the border between the walls and floor dissolves, the real physical space disappears, and the viewers become immersed in the artwork. The lines that the crows trace then appears to be drawn three-dimensionally within the space, and the boundary between the bodies of the viewers and the work disappears.
(teamLab, 2016)

While “until the last beat of my heart” invites us to continually return to its space to build up our understanding of the narrative, and “Osmose” allows a viewer to explore at their own pace, “Crows are Chased”, like “Loft” asks us to experience the narrative for a very specific amount of time. The experience of “Crows are Chased” is very much an event that exists within the confines of the narrative as it is told. In a traditional cinematic experience, such an event would happen as a re-presentation of captured past event. Yet the immersive nature of “Crows are Chased” and the agency offered via the subtle interactions, means this work is experienced in the *ongoing immediate present*. The viewers experience in real time of their physical space overlapping with the projected virtual narrative space developing around them.

Ixian Gate (2015)

Regarding the conceptual content of her work, artist Jess Johnson is quoted to say, ‘Most of what truly interests me has an awkward fit with language’ (Bentley, 2015). Johnson is an artist whose primary material is drawing in the expanded field¹⁵, and whose drawings are often installed in custom-built rooms, wallpapered with patterns drawn from her works, creating immersive analogue virtual environments. These Installations are very much experienced in and over real time, and they seem to hint at vast virtual worlds that exist just below their surface. Therefore, it feels inevitable that Johnson’s practice has expanded to

include digital virtual environments. In collaboration with Simon Ward, Johnson's first foray into this material space was "Ixian Gate"¹⁶.

Viewed through Oculus Rift headsets, Ixian Gate (which includes the tessellated patterns, otherworldly figures and humanoids that recur across the artist's oeuvre) takes the form of a ride, with viewers positioned on a virtual floor tile that moves them through the space. The experience is not easily described; it involves the body and how we inhabit it – or leave it – as we succumb to an immersive, 360-degree animated realm. (Bentley, 2017)

After donning Oculus Rift headsets, viewers navigate an alternate reality while standing on a hovering tile that moves them through space, magic carpet style. The experience is not easily described; it involves the body and how we inhabit it – or leave it – as we succumb to an immersive, 360-degree animated realm populated by Johnson's sand worms, humanoids and Masonic architecture. As viewers slip away from their physical body, their experience of Ixian Gate can become disorienting; an effect Johnson is not averse to cultivating in her viewers, especially as they begin to question their own perception. (Bentley, 2015)

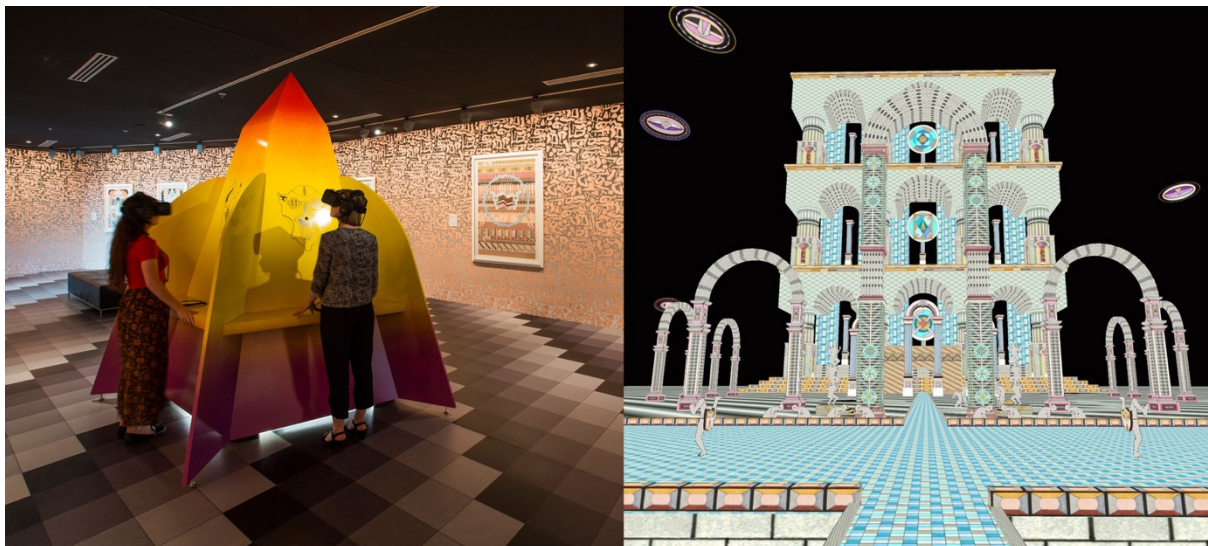


Figure 5: **Left**, Jess Johnson, *Wurm Haus*, 11 framed drawings, printed wallpaper, flooring, mdf sculpture, Oculus Rift headsets and technology, National Gallery of Victoria (International), Melbourne, Australia. **Right**, *Ixian Gate* (Still), 2015, Jess Johnson & Simon Ward, Virtual Reality animation with audio, 5:35 Developer: Kenny Smith Sound: Andrew Clarke. Images courtesy Jess Johnson

For the viewer, the experience of "Ixian Gate" operates in a similar way to "20/50" where in this case we feel weightless, hovering above ever-shifting architecture built from drawings, driven forward on the rails we are bound to, and we find we shift between the reality of the physical and the reality of the virtual. Like "Loft" we are bound to the rules of movement through the world; our strongest sense of agency in this world is to look, to observe and in doing so making choices that will also affect what it is that we do not look at, that we do not observe. The viewer builds their experience in the present from the narrative they piece together, over time, from the choices they have made in where and what they look at during their journey. Their present experience of the work built from the phenomenologically real experience of the virtual environment—in real time.

Edge of the Present (2019)

A final example that I will bring into the discussion is “Edge of the Present” a work by Alex Davies, Michaela Davies and Jill Bennett.¹⁷ This work brings together physical and virtual worlds in a way none of the other projects described here do, and as such gives us another possible insight into the real-time experiential nature of virtual environments. In this work, we are again invited into the white cube of the traditional gallery space. This time, however, we are alone and there is a prominent door and a number of windows opposite our entry point. We experience this work via room scale VR in a Vive headset and the opening and closing of the door and windows is tracked by Vive tracker devices. In the virtual world we are in a one-to-one mapping of the physical room we are in. We can reach for the door handle we see in the virtual world and find our hand on the door handle in the physical world. Very quickly the two merge—which is reminiscent of something said of Johnson’s “Ixian Gate/Wurm Haus” Installation, in that it works to ‘generate a cleverly tailored slippage between the real and virtual worlds’ (Bentley, 2015); this may also be said of Davies work, but here the slippage is complete as the two worlds combine into one.



Figure 6: Davies A; Davies M; Bennett J, 2019, *Edge of the Present, The Big Anxiety*, UNSW Galleries, Art and Design Campus, Paddington, Mixed Reality Installation, Courtesy Alex Davies.

Edge of the Present gives the viewer the power to change their environment by simply opening and closing the physical/virtual door. They are literally invited to ‘invent the next ten minutes’ (Edge of the Present, 2019).¹⁸

[...]the physical room is overlaid by a virtual facsimile which is experienced via the head-mounted display, the architectural features and objects in the environment correspond with forms in the virtual world. These dynamically evolve as the user progresses through the physical space. As the user interacts within the room positive changes occur in the virtual space as a result of their choices these changes are accompanied by other sensory reinforcement for example as a door opens onto a beautiful vista an enveloping breeze intensifies that experience. (The Big Anxiety, 2020)

The breeze spoken of here is created by a fan that is activated in time with the user's interaction, a tactic used by a number of recent head mounted display based virtual environments, used in this Installation subtly and to great effect. This simple intervention of moving what we might consider the immaterial (the air the viewer is in), highlights the physical presence of the viewer as they, during those moments they spend in the Installation, are existing across two realities. For those moments the viewer experiences being part of both the actually real and the virtually real. They form their understanding of these realities from their experience of them in the immediate present, building their narrative over time.

Between the Physical and the Virtual: The Present Tense of Virtual Space

The examples presented here have been chosen to provide a wide variety of possible methods for viewing a virtual environment. The affordances offered by each of these interfaces between the virtual and the physical (the virtually real and the actually real) differ and provide unique ways of interacting with the virtual. The virtual environments themselves are also created and experienced with differing technologies, though each of them share affordances unique to virtual environments.

“20/50” creates a space where the virtual exists, outside of the actual, in the disorienting reflections of the physical, a precursor to some of the virtual experiences created via digital technology that follow. “until the last beat of my heart” uses a train on a looped track as the interface to the virtual space of the narrative that it reveals in fragments over long periods of time. A viewer's main agency is to dedicate time to experience the work and allow immersion to develop over this time. “Osmose” has a head mounted VR display and breath sensor belt as its interface—allowing the viewer to be immersed in what we now see as the hallmarks of a virtual environment—a navigable space rendered in 3D graphics. Again, to experience the virtual environment, the viewer must spend time with the work and learn how to navigate with their breath and explore to reveal the many layers present to them. “Loft” sits somewhere between these two. It uses a VR headset to view and experience the virtual environment. The virtual space of the narrative that it reveals—in fragments—is created without their input, and they must allow its generative processes to play out before they can then use their gaze to navigate through the evolving world.

“Seventeen Unsung Songs”—with its quotidian interface of screen, mouse and keyboard—lays bare the formal qualities of navigable space rendered in 3D graphics, yet creates a complex, interactive experience that could only ever take place, in real time, in a virtual environment. The nature of the shared experience, over a single sustained event in “Crows are Chased” could be compared to one we might have in the cinema, yet our real time experience of the virtual world we are immersed within, highlights how a virtual environment differs from the linear cinematic experience. “Iuxian Gate”, via the *on-rails* experience interfaced via the VR headset reveals what we might suspect lays beneath the surface of Johnson's drawing, and in doing so, it opens up for us many other possible worlds we may imagine. “The Edge of the Present” works with the very qualities of the actual and the virtual we have been exploring and merge them together creating a new space of possibilities.

The nature of the virtual space of each of these works, experienced in real time as a progressive event can be seen as being in a lineage of contemporary sculpture and Installation practice. The notion that the space of a work—experienced in real time as a form of *presentness*, can be manipulated as a material affordance of a work, extends directly from the 1970s sculpture practice outlined by Morris, into Installation art practice of the 1980s and

'90s and now may be seen in the affordances offered us by contemporary virtual environments and virtual reality as a media. I am not by any means trying to impose this as a model onto all works of art and design utilising virtual environments, though I am framing what I consider to be one of the key affordances of the virtual environment as a material for art and design practice. We have seen that the critical, creative practitioners outlined here understand this, either implicitly or explicitly, often via their understanding of these longer histories of material practice.

As was pointed out earlier, a key thread of Morris' argument is the relationship between space, viewer and the *ongoing immediate present* and the notion that 'real space is not experienced except in real time' (Morris, 1978: 70). This idea can be extended directly into virtual space as well. Avoiding the trap of seeing virtual space as somehow anything other than real (real but not actual) we can say that *virtual space is not experienced except in real time*. This is an experience where the viewer shifts into a mode of the first-person singular in the present tense; 'the "I," which is essentially imageless, corresponds with the perception of space unfolding in the continuing present' (Morris, 1978: 72). We could go so far to say that the technologies that enable our access to virtual environments, more often than not force a viewer into this mode of experience—the singular I is reinforced via the technology. Even when this technology is expanded to a dome or CAVE environment, the general experience tends toward, at least where creative works are involved, a solo immersive experience in a shared space (Hendery & Burrell, 2019).

Within the virtual environments discussed in this paper we are asked to find this state of being—this state of *presentness*. There is no gestalt experience of these works, the interaction that takes place within their unique spatial narratives happen as an experience over time, in the present and from the particular moment of *presentness* for that particular viewer. In each of these works, a viewer is drawn into a narrative world, but more often than not, only allowed glimpses of insight into what may be really taking place. For example, as observers in "Crows are Chased" we see and experience time moving on multiple trajectories, we are placed within the memory and imagination-scape of this world, influencing the system itself as it is altered via our very perception of it.

In all of these works, each of which are created with underlying linear narratives, we find the experience of them being anything but linear. As with any spatial and interactive system, the viewer's *presentness*, in real time, completes the work. The viewer is brought into the present of the protagonist — the first person "I" of "until the last beat of my heart" and "Loft" and the group of crows in "Crows are Chased". Their collective *presentness* meet at the "I" of these narrators and the "I" of the viewer and here is where memory and imaginations collide, in this present experience through narrative in space.

While Morris argues that *presentness* in some way precludes memory and imagination from its space, I would argue that *presentness* instead provides a unique moment, where an interface takes place between the two. The fact that the experience of the works I have described exist in the space of the present, should not be read as them being devoid of memory and imagination, but as a site where these two come together, where they exist in their unique present form, that of experience. The present is a moment where memory and imagination collide and *presentness* is a state where experience takes on two trajectories, into the past as memory and into the future as imagination — memory as the past tense, imagination as the future tense of the same thing emerging from experience.

These examples then, form a framework to support the developing argument — that central to the experiential nature of the many virtual environments, is a continuation of Morris’ original notion that “real space is not experienced except in real time” (Morris, 1978: 70) from actual space into virtual space. We come to an understanding that immersive virtual space, experienced in real time, becomes real via the resultant phenomenological experience of *the present tense of virtual space*.

CREDITS

This paper has been prepared with the research assistance of Ali Chalmers-Braithwaite (University of Technology Sydney). It is based on an original idea presented at “Art Machines, International Symposium on Computational Media Art”, City University of Hong Kong, 2019.

REFERENCES

- Bentley, S. (2017, July 6), *Jess Johnson Ixian Gate* | *NGV*, <https://www.ngv.vic.gov.au/essay/jess-johnson-ixian-gate/>. Accessed 7 December 2020.
- Bentley, S. (2015, December 3), *Jess Johnson: Wurm Haus* | *NGV*, <https://www.ngv.vic.gov.au/essay/jess-johnson-wurm-haus/>. Accessed 7 December 2020.
- Bishop, C. (2012), *Installation art: A critical history* (Reprinting of the ed. 2005). Tate Publ.
- Davies, A. (2019). *Edge of the Present* | *Alex Davies*, <https://schizophonia.com/portfolio/edge-of-the-present/>. Accessed December 11 2020
- Davies, C. (2002), ‘Changing Space: Virtual Reality as an Arena of Embodied Being (1997)’, Randall Packer and Ken Jordan (Ed.), *Multimedia: From Wagner to Virtual Reality, Expanded Edition* (pp. 293–300). W.W. Norton & Company.
- Clemens, J., & Nash, A. (2010), *Seven theses on the concept of ‘post-convergence*, https://www.academia.edu/27057333/Seven_theses_on_the_concept_of_post_convergence. Accessed December 7, 2020.
- Deleuze, G. (2011), *Difference and repetition*, Continuum.
- Dethridge, L. (2007), *Adam Nash (Adam Ramona)—Seventeen Unsung Songs*. https://www.adamnash.net.au/secondlife/unsung_songs.html. Accessed 1 December 2020.
- Doyle, D. (2016), *Travel, space and transformation*. *Metaverse Creativity*, 6(1), pp. 25–36.
- Edge of the Present. (2019), *The Big Anxiety*. <https://www.thebiganxiety.org/events/edge-of-the-present/>. Accessed 1 December 2020.
- Hendery, R., & Burrell A. (2019), *Playful interfaces to the archive and the embodied experience of data*, *Journal of Documentation*, 76 (2), pp. 484 – 501.
- Krauss, R. (1979). *Sculpture in the Expanded Field*. October, 8, pp. 31–44.

Morris, R. (1978), *The Present Tense of Space*. *Art in America*, 66(1), pp. 70–81.

Nash, A. (2020), *The Multi-User Virtual Environment as a Post-Convergent Medium*, RMIT University.

Oliveira, N. de, Oxley, N., Petry, M., & Archer, M. (1994), *Installation art*, Thames and Hudson.

Perec, G. (1987), *Life A User's Manual*, Collins Harvill.

Reiss, J. H. (2001), *From Margin to Center: The spaces of Installation Art*, MIT Press.

teamLab. (2016). *Crows are Chased and the Chasing Crows are Destined to be Chased as well, Blossoming on Collision—Light in Space* | teamLab, https://www.teamlab.art/w/crows_blossoming_on_collision/, Accessed 1 December 2020.

The Big Anxiety. (2020, July 21), *Edge of the Present*. https://www.youtube.com/watch?v=IhtHe8pHGo&feature=emb_logo, Accessed 1 December 2020.

Weil, B. (1992), *Remarks on Installations and Changes in Time Dimensions*, *Flash Art*, 162, pp. 104–109.

¹ While the purpose of this paper is not to define the term virtual environment, it is necessary to state that for this discussion, a virtual environment is a post-convergent, digital, interactive, data environment, often represented via navigable 3D graphics and sound. The nature of virtual environments as post-convergent media is discussed in (Clemens & Nash, 2010)

² See (Hendery & Burrell, 2019) for a fuller discussion on the material affordances offered by the technologies we use to access virtual environments.

³ For example, works disturbed through festivals such as Tribeca Film Festival or Cannes XR are infinitely reproducible as digital files, yet access to these files is restricted via DRM or controlled distribution.

⁴ There are many technologies available to create more accessible virtual environments and artist and designers are indeed exploring these. For example, COVID brought about a resurgence in interest in screen based virtual environments via platforms such as Mozilla Hubs. As have many, the authors own practice has involved re-exploring the potential for smart phones and tablets to allow access to virtual environments, for both ease of accessibility and “COVID safeness”.

⁵ The exception to this rule is Char Davies “Osmose”, which I have never had the chance to experience first-hand, yet it felt remiss to leave this important work out of the current discussion.

⁶ For an image of this work, please see:

[https://en.wikipedia.org/wiki/Monument_to_Balzac#/media/File:2018_Balzac_\(1898\)_1.jpg](https://en.wikipedia.org/wiki/Monument_to_Balzac#/media/File:2018_Balzac_(1898)_1.jpg)

⁷ The title of this work refers to the viscosity of the oil—of which the skilful manipulation of the material affordances gives the work its qualities.

8 Documentation of this work can be found here:

<https://www.digitalartarchive.at/database/general/work/osmose.html>

9 Davies calls viewers or participants in her work *immersants*, a term I am quite enamoured with when describing the viewer in headset mediated engagements with virtual environments, though it unfortunately never moved into popular usage.

10 Given more space, I would also discuss Brenda Laurel and Rachel Strickland's Placeholder here, which I hold in equally high esteem, yet again never had the chance to experience.

11 In Second Life I was represented by the avatar Nonnatus Korhonen.

12 (Doyle & Robinson, 2016) provides a good insight into this period's creative practice in SL, from a practitioner's point of view.

13 Documentation of these works can be found here:

https://adamnash.net.au/secondlife/unsung_songs.html

14 Including "Mellifera" (2009-12) a major mixed reality project with Dr. Trish Adams, funded by The Australia Council for the Arts.

15 A term coined by Rosalind Krauss in her essay "Sculpture in the Expanded Field" which is contemporary with Morris' essay.

16 Documentation of this work can be found here:

<https://www.jessjohnson.org/2016/2/21/ixian-gate-trailer-2015>

17 Documentation of this work can be found here:

<https://www.thebiganxiety.org/events/edge-of-the-present/>

18 "The Edge of the Present" was a collaboration with psychologists, mental health specialists and participants with lived experiences of suicide survival" (Davies, 2019). In an attempt to provide a way past moments of suicidal thinking, viewers are invited to 'invent the next ten minutes' in order to look past 'The Edge of the Present', or that moment of suicidal thinking.