

IMMANENCE: ENVISIONING MUSIC IN A POST-ANTHROPOCENTRIC WORLD THROUGH VR REPRESENTATION

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ABSTRACT

Immanence [1] is a work created for Renaissance violone, field recordings and electronics. This paper outlines the process of creating the digital animated notation, virtual reality (VR) score for the work. The score also functions as an immersive environment in which the audience experiences the audio-visual work via a VR headset. Additionally, I argue that a VR score that functions as an immersive experience has the potential to reinforce the broader conceptual concerns of a musical work. Moreover, it could further suggest a necessary expansion of the parameters by which we define what music is and how it is represented, leading to new understandings and reflections on VR and musical composition. These ideas are underpinned by a response to Australian musician Jim Denley's provocations on contemporary music making, an ongoing commitment to considerations of post-anthropocentrism and a need to question predominantly humanist tenets that are still embedded across Western art music; the hope being that this paper could provide new methodologies for creating post-anthropocentric musical works.

1. INTRODUCTION

The motivation to create the VR score for this work was to provide a framework and provocation for my own compositional process. The idea was to create a VR score that represented sonic and conceptual parameters that I would like to see encapsulated in a musical work, but also to discover what unexpected, unplanned outcomes might arise from a score that was created in this way. In addition to this, I wanted to explore the possibilities of the VR score as an immersive environment in which to experience the work and whether this could help bolster the conceptual concerns of the piece; by which I mean broader philosophical ideas, beyond the scope of the sonic.

Having an interest in post-humanist and post-anthropocentric theory, VR as a representative medium additionally appealed to me because of its paradoxical nature. In her

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¹ Meta have tried to address this 'missing' element in VR by creating obligatory avatars. These avatars are odd to say the least but more

talk *Bubble Vision* (2018) [2] Hito Steyerl playfully points out the paradox of VR, that the viewer/audience perspective is always at the center of the scene, yet at the same time one's body is missing.¹ I find this paradox fascinating; the centering of the human within the VR medium is unequivocally anthropocentric even if it is merely imitating the way we corporally experience the world around us. Yet, in VR, the user's actual body is not present on the screen, making it simultaneously a curiously non-anthropocentric environment. I was intrigued by the challenge of building on Steyerl's paradox, by creating a work that attempts to subvert the notion of the disembodied human as the central most important figure, situated firmly at the center of every VR universe. I later discuss this idea in reference to the material remnants or artifacts of bodily gestures in the brushstrokes of paintings and the recordings of my own instrumental playing. Therefore, an additional motivation for this project is to create a musical work, aided by the medium of VR, that is post-anthropocentric, the decentering of anthropocentrism. These aims are sharpened by the ideas of Jim Denley and others that focus on challenging humanist notions and anthropocentric assumptions embedded in Western culture.

In this paper I describe the process of creating the VR score for *Immanence* using the animation program Blender [3]. I outline the audio-visual starting points and structure, the process of creating Blender assets, their animation and rendering the score for VR. I also discuss how I interpret the score in performance; as well as the various processing, sound spatialization and audio montage techniques I have employed. Additionally, I outline my efforts to represent the broader conceptual concerns of the composition sonically, and how the immersive environment reinforces this element.

This VR work was created within the confines of a few specific limitations, which I shall briefly outline now. Firstly, *Immanence* was created in 2D and was rendered first in a traditional video format. The issue this presents is that the work has been conceived in a linear form, within a specific aspect ratio. Future iterations of the work in VR would not be limited by these formalistic parameters. Secondly, *Immanence* has also been rendered in a basic VR version. I use the word 'basic' here as I have utilized the most rudimentary process for rendering a 2D work for VR

importantly they still don't address the issue that one's physical body is never present in VR.

goggles. This paper highlights the current early, experimental stage of the work in development and includes the navigation of these certain constraints, which means the work, for now, only provisionally functions as a ‘score’. In future iterations, the VR score can be performed with live musicians and that the VR environment itself will be interactive for the audience, essentially providing the opportunity for the audience to ‘play’ parts of the score themselves.

I hope that this paper might contribute to the growing interest in employing the VR medium in the creation of musical scores and in art-making more broadly. I also hope to present a case for utilizing the VR score as the immersive environment in which to experience the musical work and that this might contribute to expanding the parameters of music representation and our definition of what music is.

2. BACKGROUND

I have a background as a double bassist and this instrumental practice has evolved into what is currently a composition and performance practice of enmeshed but disparate elements. The instrument at the center of this practice is the Renaissance precursor to the double bass, the violone. Drawing on musique concrète and improvisatory sensibilities I have become increasingly focused on the deconstruction and reconfiguration of instrumental performance using this instrument. This has evolved into experimenting extensively with augmenting the ‘natural’ acoustic sound of the instrument through electronic devices, granular processing, and extended technique. As an extension of this performance practice, I also create compositions through the process of slicing and manipulating samples of the instrument and collaging these to create audio-montages with other elements such as electronics and field recordings.

Musically *Immanence* does not depart from these approaches but rather utilizes the VR score to build on, expand and stretch these sonic ideas further and into new territories. Before I continue, it is worth mentioning that in no way am I attempting to argue that musical works need to be accompanied by a visual element. I believe quite the opposite and very much agree with the point Francisco Lopez makes when he insists that the audience wear blindfolds at his performances [4] and with Cat Hope when she states, “showing the score as a piece of music unfolds in performance detracts from the privileging of sound that a performance of music requires” [5]. This will always be an important stance when it comes to the presentation of musical works, and I will myself continue to make music that exists purely in the sonic domain. In this paper, however, I am exploring another, additional way in which to make and experience music, with the aim of stretching the term ‘musical work’ to encompass more than just sonic material, in this case an audio-visual experience. The act of labelling a work, that is experienced in VR, a musical composition privileges sound over vision as so much of the time it is the other way around, “as vision is almost never a mere accompaniment to the auditory” [6].

Another aspect to this work is the desire to subvert humanist notions that are often entrenched in western art

music. The impetus for this came from Jim Denley’s provocation:

With human-induced ecological crisis, we face a crisis in music making — the narcissism we display in our self-referential temples, imagined engagement with place and anthropocentric music rituals, has lost all currency. Implicitly we understand we can’t keep putting ourselves at the center (...) genuine new music, in our age, should provide alternatives to an anthropocentric world view. [7]

We are on the brink of existential catastrophe. Never has it been more important than it is now to question anthropocentrism and to think critically about the values that are reflected in our cultural works. Perhaps VR could provide an opportunity to create new ‘temples’ that are not the ‘self-referential’, ‘narcissistic’ spaces that Denley so deplors, but that are altogether different; spaces that are consciously constructed so as not to perpetuate humanist music rituals. In this work I attempt to represent these ideas sonically, aided, I believe by the medium of VR.

Immanence’s success as a post-anthropocentric work also relies on the incorporation of field recordings, specifically those of the Australian bush and in a way follows on from Lindsay Vickery’s response to Bailie’s question, “if we are not to simply present the sounds of the world to an audience as a kind of musical fait accompli [...], what in fact are we to do with them?” [8]. Vickery proposes to “enter into a compositional and performative interaction with the recordings” [9], an idea I have interwoven into the composition of *Immanence*. I would argue that incorporating field recordings of the ‘natural’ world, the more-than-human world, into our musical works foregrounds the sounds and subjects of more-than-human others and thus contributes to the process of decentralizing ourselves and creating works that could be more post-anthropocentric in sensibility. Rosi Braidotti captures this idea in the following, “post-anthropocentrism displaces the notion of species hierarchy and of a single, common standard for ‘Man’ as the measure of all things. In the ontological gap thus opened, other species come galloping in” [10].

3. CREATING THE SCORE

The score for *Immanence* is both prescriptive and evocative. As Cat Hope points out, “composers engaging with animated notations seek something of a half-way place, where the most controlled and free can come together” [11]. This balancing act was central to the creation of this score and underpins the processes I describe in the following.

3.1 Paintings by Julian Aubrey Smith

As a starting point and path into the animated notation process, I worked with visual artist Julian Aubrey Smith on selecting works of his to base the score and digital animation on. I chose works that both encapsulated sonic ideas that I was interested in exploring and that presented new threads of enquiry to work with (Fig. 1). Furthermore, I

was drawn to the painterly quality of the works. The brush strokes exhibited a ‘handmade’ element that were the material remnants of a gesture, and this felt like the perfect counterpoint to the digitally rendered world of the animated, VR score. Musically, I was interested in two ideas that were foregrounded for me in these paintings. The first being the concept of the ‘portal’ and the subsequent transformation; the transition from one place into another. The second aspect was the motif of the crumpled foil; a material form bearing the remnants of an action, as with the brushstrokes that were the materialization of a gesture. These were themes I wanted to explore musically and thus were elements that the score needed to feature and accentuate. Additionally, these material ‘remnants’ of bodily gestures (that I later echo on the violone) possess a kind of synchronicity with the missing body of the VR user; we know it is there or has been, but it is no longer visible nor a part of this particular VR universe. All that remains are its traces. I feel this element not only alludes to a type of decentering of the human, but also to a world where human beings are either no longer dominant or even present.



Figure 1. Julian Aubrey Smith. *Double Demi 1*. (2017)

3.2 Post-Anthropocentric Sensibilities and Representations

I have touched on some of the aspects I have included in *Immanence* that I believe assist in conveying the broader conceptual concerns of the composition but, aside from the use of VR and field recordings, there is another key aspect. The final component that I felt was necessary to include, was to create a sense of alienation for the audience; to construct an atmosphere where human ontologies weren't central to this VR universe. In other words, to create that feeling one has when stepping into the bush, the rainforest or any other environment not yet dominated by human beings, to replicate that feeling of curiosity, awe but also alienation

that one might feel upon entering an environment such as this (Fig. 2). There are other VR/AR projects with similar aims, one such example is *Gardens of the Anthropocene* (2016) [12], which Lili Yan et al. describe as “appealing to the emotion of human vulnerability [...] presenting the erratic growth of mutated plants that outgrew buildings and fed on road signs beyond the control of humans” [13]. These concepts and requirements, combined with the other ideas mentioned previously, helped to guide the decisions when building the score in Blender.

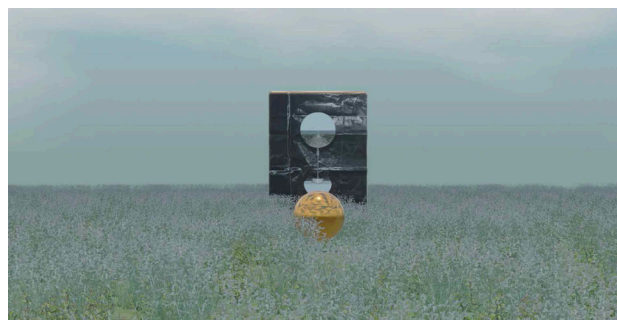


Figure 2. Chloë Sobek. Still from *Immanence*. (2022)

3.3 Blender Assets, Animation and VR Rendering

The first assets I created were rectangular blocks to ‘map’ the photographs of Smith’s paintings on to (Fig. 3). This is not the most straight forward process, as each image is added as a material and each material needs a system of nodes for it to be mapped with the right dimensions and coordinates to the object. I also created ‘slabs of stone’ that would represent the division of one space from the next.

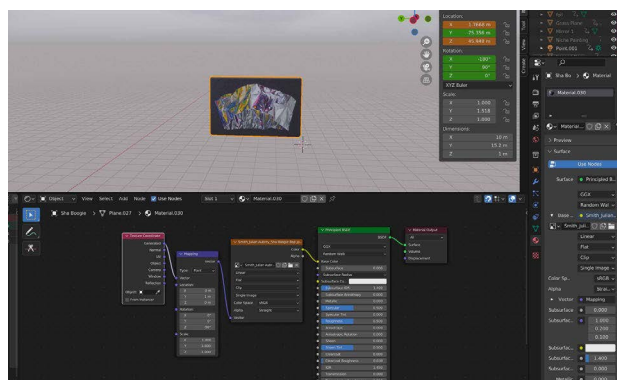


Figure 3. Chloë Sobek. Still from Blender Session. (2022)

Next, I worked on the assets, which were to become the animation environments or ‘scenes’. Firstly, a grassy landmass (Fig. 4), which also involved nodes to map the different grass onto the plain. Then a sky and horizon through a plugin that could be imported into Blender. This brought a ‘natural’ looking light to the scene. Another environment consisted of a mirror like surface floating in the atmosphere, easily created by building a plain and adjusting its material properties to have a reflective surface. The final scene was again a landmass with foliage surrounded by a turquoise body of water, which was created from a plain that is again put through a series of nodes. The aim here was to create environments that were somewhat familiar

but also strange; every element looks a little unreal and kind of kitsch.

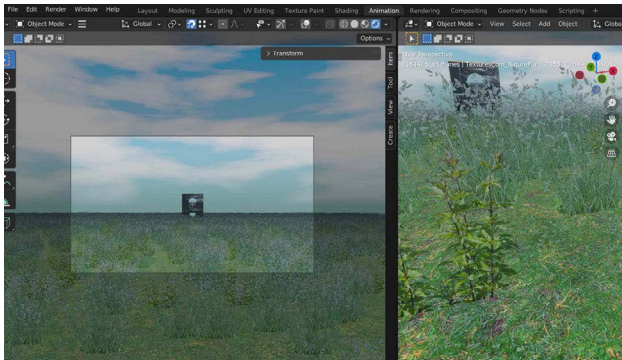


Figure 4. Chloë Sobek. Still from Blender Session. (2022)

The final Blender assets were objects that needed to exhibit seemingly autonomous behaviours. Again, to reinforce the idea that this VR universe possessed its own undisclosed system of operations and relations. I created a golden sphere, that reflected the grassy landmass around it, a series of crumpled, cardboard like cubes and a silvery, mottled asymmetrical object (Fig. 5) and (Fig. 6). These were simply adapted from the in-built Blender objects like the cube and spheres. I sculpted and stretched them and adjusted their material properties to be reflective or mottled, again through nodes. I also ‘pulled’ pieces of crumpled foil out from Smith’s paintings (through photoshop) and used them as ‘autonomous’ objects as well.

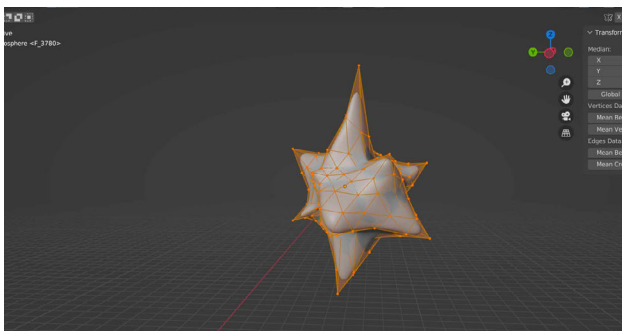


Figure 5. Chloë Sobek. Still from Blender Session. (2022)

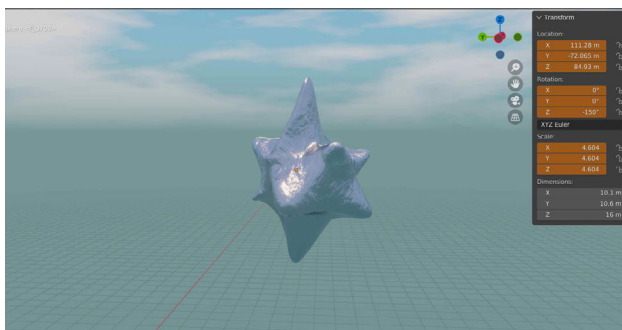


Figure 6. Chloë Sobek. Still from Blender Session. (2022)

With the Blender assets built I started the animation process. This aspect was perhaps the most important with regard to ensuring the Blender work functioned as a score.

The animation process was slow and involved moving each object individually then inserting keyframes (Fig. 7), including the camera (aspect) and lights. Every decision in the animation process/score creation was made according to three distinct parameters. These were the concepts gleaned from Smith’s paintings, the sonic elements I wanted included in the work and post-anthropocentric sensibilities and representations.

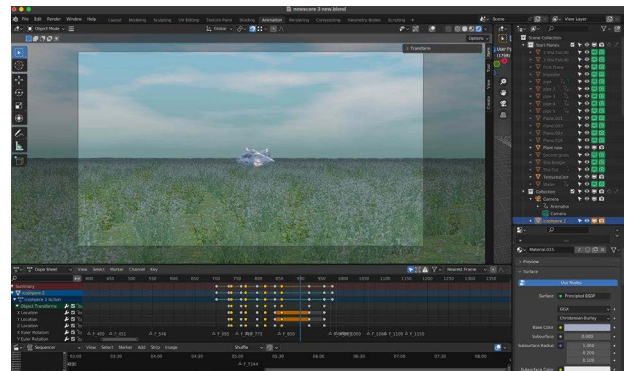


Figure 7. Chloë Sobek. Still from Blender Session. (2022)

Each aspect covered in the following provides the directives for the musical interpretation that will be discussed in the next section. The first and second painting in the score both depict what could be perceived as portals into other places (Fig. 8). In response to this, the animation starts in one environment with the first painting being gradually revealed from behind the ‘slabs of stone’. As the painting is revealed the viewer moves closer and closer towards the ‘portal’, eventually travelling through to the other side. In the next painting we see a golden sphere mimic this movement by emerging from the portal and transitioning through the space towards the viewer.

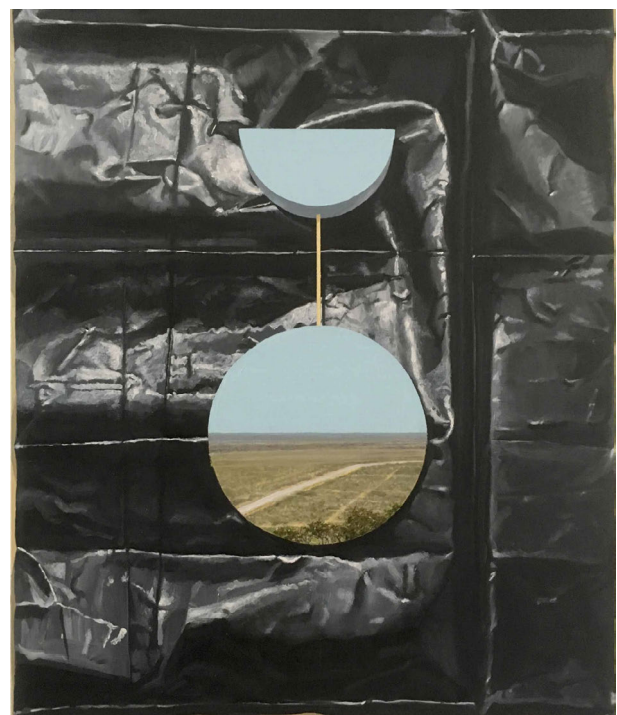


Figure 8. Julian Aubrey Smith. *Double Demi 2*. (2017)

The remaining paintings in the score feature more specifically the crumpled foil motif, which were highlighted through ‘extracting’ parts of the paintings and animating them. I also highlighted the brushstrokes in the paintings as, having mentioned previously, these were an important feature of the work. I emphasised these by bringing the camera aspect very close to the paintings to capture the brushstrokes in detail.

In addition to the concepts the paintings introduced to the score, I added audio-montage and sound spatialisation. Audio-montage was represented by the layering and existence of the different Blender assets in the scene. Sound-spatialisation was represented by the immersive environment. Here VR being a completely 360-degree, immersive environment was paramount. Sound spatialisation can in VR be represented spatially as it is heard, this is a unique aspect of a VR score and very much one I did not utilise enough in this work. I animated some of the objects so their behaviour in space could be followed sonically and I animated the camera view at points to encourage a shifting or swirling of the sound across the stereo field. This resulted in interesting sonic outcomes. I used some electronic sounds that were texturally dense, with a harshness that, coupled with the whirling camera view, is almost sickening.

The final task was to utilize remaining aspects of the animation to reflect post-anthropocentric sensibilities and representations. I did this by inserting unexpected aspects to the camera animation like ‘whirling’, or dropping, or floating in space. At one point being propelled through the foliage and eventually being lowered into the water. These elements were intended to create a sense of uncertainty, surprise and even lack of control for the audience.

With the animation complete, it was rendered for VR. This was done through Blender, then eventually through ‘Spatial Media Metadata Injector’. I would not recommend this process as it took a lot of computer processing and trial and error. For future projects I would use a program like Unity or Unreal.

3.4 Designing the Directives of Musical Interpretation

As mentioned earlier the score involved the balancing of prescriptive elements and more open, evocative directives. The instructions were as follows:

- The overarching concept behind the score is to create a post-anthropocentric sensibility, in other words, to capture a somewhat alien environment, a world eerily absent of any perceivable human life. The score attempts to replicate a feeling of curiosity, awe, but also the alienation one might have when walking into the wilderness or any other environment that is not yet dominated by human beings. This overarching concept and aesthetic influenced the creation of the score and should thus influence the musical interpretation of the score.
- The visual aesthetics and evocative quality of the score should match the sonic interpretation.
- The content of the paintings needs to be responded to sonically.

- The work must include fielding recordings of more-than-human sounds.
- Each distinct place in the score needs to be accompanied by different sonic material.
- The transition between spaces needs to be represented sonically through the merging of material or ending it abruptly.
- The movement of objects and the camera aspect can be accented or accentuated by the spatialisation of the sonic material at will.
- Brushstrokes and crumpled foil are akin to sounds being physically created on an acoustic instrument and therefore there should be an instrumental element throughout the piece.

4. INTERPRETING THE SCORE

The interpretation of the score did not unfold in the traditional sense of being performed in one live take but instead relied on various recording practices and musical collage techniques and therefore had to be planned out to a degree. I recorded my own interpretation and presented it as an audio-visual experience in a concert environment. I did this so that the work could be experienced succinctly; all elements contained within the VR headset. In future iterations it would be interesting to perform the score live while the audience experienced it in VR.

Observing the score instructions, I interpreted the score in the following ways, dividing the approach into three categories again. The paintings and accompanying animation, the specifically musical elements, and the post-anthropocentric, evocative elements. There are four distinct ‘spaces’ in the score and each of these were divided by either symbolic ‘stone walls’ or a transition represented by a sort of ‘falling’ through space (transitioning through ‘portals’). Musically each space was distinguished by unique sound worlds that were created by crafting the sections separately then collaging them together or ending a sonic segment abruptly. Notions of transformation and ‘the portal’ were represented by sounds that, as mentioned, either morphed and shifted at their transition point, bleeding into each other but remaining distinctly different or ending abruptly with a recurring drum motif. The recurring crumpled foil and brushstrokes in Smith’s work (the remnants of a gesture or action) were represented in the violone parts. Though temporal objects, the violone sections mirror this ‘remnants of action’ idea in the sense that the sounds cannot be disentangled from the bodily gesture that created them. As mentioned earlier I also incorporated elements of sound spatialisation that at times followed the movement of the objects or that highlighted that 360-degree environment with the sound being spatialised around the audience.

Finally, it should be mentioned that my attempt to sonically represent post-anthropocentric sensibilities (just as was the process of representing these sensibilities visually) is merely a starting point and these approaches are experimental at best. Here I outline the ways I went about doing this. The score depicts a simultaneously familiar and unfamiliar space, with intangible logic, slabs of stone, strange

portals, autonomous objects. There are landmasses of luscious foliage and turquoise waters with strange tentacular objects that rise to the surface. These informed the musical interpretation; a field recording of fruit bats, an explosion of seemingly symbolically significant drums, heralding something unknown, undisclosed. A feathery bass drone accompanies the eerie sounds of violone harmonics and horsehair against the wood of the instrument, which morph into the somewhat alarming sounds of a Kookaburra. It is worth mentioning that the field-recordings are unmistakably Australian sounds, more specifically, sounds from Yarra Bend Park and the Mornington Peninsular in Victoria. This means the field-recordings are very much situated in these distinct places. This is in stark contrast to the very unspecific, dislocated, even generic visual VR world that is the score, further emphasizing that sense of discomfort and dislocation for the audience. The work also opens with the drum motif, designed to startle, and create a sense of discomfort from the beginning of the piece. This is followed by the disembodied sound of fruit bats, spatialised as if they are swarming and whirling around behind the viewer, yet never visible. Towards the end of the work, in response to the animation dragging the viewer through foliage and eventually descending into the water, I included a section in which I had layered several violone improvisations over one another. I processed this with a type of granular synthesis. The effect is that of something broken, like a recurring but inconsistent glitch, adding to the chaos and discomfort as the work drew to a close and the audience are gradually submerged in a body of, now swamp green water.

5. CONCLUSIONS

Immanence has demonstrated that a VR score has the potential to provide new and interesting representational structures for creating musical compositions and that these can be both prescriptive and more open and evocative. The use of VR in this project has also facilitated new ways to incorporate visual work such as paintings into a musical score and respond to them in an immersive way. A VR score can be a richly generative immersive space in which to score sound spatialization, especially for headphones since the score can visualize the placement of the sound in a 360-degree environment. I have also argued that the VR score can simultaneously act as an immersive environment in which the audience can experience, and potentially interact with the work. This could contribute to the development of future musical rituals, spaces and ‘temples’ that have the potential to call in to question existing, possibly outdated models. *Immanence* has also demonstrated how utilizing the VR score additionally as an immersive environment in which to view the piece can assist in communicating the broader conceptual concerns of a musical work. Cat Hope defines animated graphic notation as “a predominantly graphic music notation that engages the dynamic characteristics of screen media” [11]. Perhaps we could expand this definition and state that animated graphic notation is also something that engages the evocative potential of 360-degree environments and can even provide a new space or ‘temple’ in which to experience musical works.

My definition of animated graphic notation therefore is: ‘Animated graphic notation is a form of graphic, musical notation that employs the kinetic elements of screen media as a set of directives, but can also be the very 360-degree domain in which to experience the musical work itself’.

One of the limitations of this project is that it is yet another musical work with a substantial visual component; the danger being that this could potentially distract from the sonic element, which is intended as the focus of the work. However, VR is a digital technology that is becoming ubiquitous and is, therefore, a medium worth experimentation and exploration, even for artists working with sound. Mark Zuckerberg states, “there are 200 million people who get new PCs every year, primarily for work. I do think that [...] you’re going to be able to do pretty much everything and more you can do on PCs on VR” [15]. As Cat Hope states, “animated notation leverages the contemporary digital technologies that are already a large part of our lives” [11]. As Meta aggressively pushes their VR agenda, we need ways to contemplate and conceptualise both the positive and negative aspects of this technology. Exploring the potential of creating musical scores in VR and experiencing musical works in these types of immersive environments is certainly a starting point in this process.

Acknowledgment

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6. REFERENCES

- [1] C. Sobek, “Immanence,” (2022). [Video]. Available: *Immanence Non VR Version.mp4*
Immanence VR Compatible.mp4
- [2] H. Steyerl, “Bubble Vision,” *YouTube*, Jan 31, 2018. [Video file]. Available: https://www.youtube.com/watch?v=T1Qhy0_PCjs
- [3] The Blender Foundation, “Blender,” [Online] Available: <https://www.blender.org>
- [4] F. Lopez, “Interview for DB magazine,” June 2004. [Online] Available: http://www.franciscolopez.net/int_db.html
- [5] C. Hope, “Electronic Scores for Music,” *Computer Music Journal*, vol.41, no. 3, Fall 2017, pp. 21–35.
- [6] C. Cox, *Sonic Flux: Sound, Art and Metaphysics*. University of Chicago Press, 2018.
- [7] J. Denley, “Hollis Taylor’s Absolute Bird ‘Moving beyond being quite obsessed with ourselves’”, [Online] Available: <https://www.australianmusiccentre.com.au/article/hollis-taylor-s-em-absolute-bird-em>
- [8] J. Bailie, “Squeezing out the music from real sound”. Interpretations. Q-O2 Winter, 2014. [Online] Available: <http://www.q-o2.be/uploads/interpretations.pdf>

- [9] L. Vickery, "Notational Strategies for Integrating Live Performers with Complex Sounds and Environments," in *Proceedings of the International Conference on New Tools for Music Notation and Representation (TENOR '20/21)*, Hamburg, 2020/21.
- [10] R. Braidotti, *The Posthuman*, Cambridge, UK: Polity Press, 2013.
- [11] C. Hope, "The Future is Graphic: Animated notation for contemporary practice," *Organised Sound*, vol. 25, no.2, 2020, pp. 187–197.
- [12] T. Thiel, "Gardens of the Anthropocene," (2016).
- [13] L. Yan, M. Colleni and B. Litts, "Exploring the Rhetorical Affordances of Augmented Reality in the Context of the Anthropocene," in *Proceedings of 6th International Conference of the Immersive Learning Research Network (iLRN 2020)*, Online June 21–25, 2020.
- [14] A. Heath, N Patel, "Mark Zuckerberg on the Quest Pro, building the metaverse, and more," Oct 2022. [Online] Available: <https://www.theverge.com/23397187/mark-zuckerberg-quest-pro-metaverse-interview-decoder>.