Action at a Distance

Reformatting the Paradigm of Spectatorship through Virtual Gestures and Audio-Visuals

Leslie Deere

2.

Abstract

Array Infinitive is a practice-based research project that examines audiovisuals and audience experience in virtual reality art practice. This PhD investigates the ways in which audiovisual performance in virtual reality (VR) affects and impacts an audience, and to what degree the audience is aware of the live aspect of the performance whilst immersed in the virtual space. This studio-led work draws upon ambient audio and colourful VR visuals, generated, processed, and 'played' via gesture to a locally networked audience. Acting as researcher, lead artist, composer, and performer, I used improvised hand gestures and bodily movements to create amplified soundscapes and VR particle trails, which were broadcast to audience headsets in real-time.

One aim of this project was to create an altered state of consciousness (ASC) experience through ambient soundscapes and mesmeric VR visuals. These could then be studied to determine whether the audience had an awareness that 'the instrument' (by which I mean sonified and visualised VR-responsive gestures) was controlled by a human. I also expanded the framework of spectatorship through a 'hybrid-audience' when *Array Infinitive* was shown to a larger mixed group. This included observers both within and outside of VR, forming the same collective.

Methodologically, to understand audience experience in the context of this project, I undertook case studies, research studies, and field work to investigate audience response, as well as to gain feedback on the impact of VR audiovisuals, ASC reaction, and gestural performance as a form of instrumentation in VR.

This PhD research project builds upon important contributions to the field of performance research and the notion of 'enchantment' presented by Erika Fischer-Lichte, regarding performance as a spatial, embodied event: something that has energy and sensation.[1] As well as Fischer-Lichte's exploration of 'enlivening' a room into a performance space, she argues that live action extends possibilities of perception and expands the relationship between performer and audience.[2] Throughout this research, I intended to activate dual spatial planes – of both virtual and real-world dimensions; to create a group experience; and to explore affect by way of live audiovisuals. Other referenced research and material includes Maaike Bleeker's 'Corporeal Literacy' and 'Bodymind'[3] concepts, Shi Ke's, *Embodiment and Disembodiment in Live Art*,[4] Mieke Bal's *Endless Andness*[5] and Jonathan Weinel's *Inner Sound, Altered States of*

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1 Marvin Carlson, 'Introduction' to the *Transformative Power of Performance: A New Aesthetics* by Erika Fischer-Lichte, (Routledge, 2008), p. 6. (Routledge, 2008), p. 6.

2 Erika Fischer-Lichte, *The Transformative Power of; Performance: A New Aesthetics* (Routledge, 2008), p. 107.

3 Maaike Bleeker 'Corporeal Literacy' in *Re_Visioning Bodies: Das Neue Alphabet*, 10 (2022), ed., Daniel Neugebauer (Spector Books, 2022), pp. 28-41.

4 Shi Ke, *Embodiment and Disembodiment in Live Art: From Grotowski to Hologram* (Routledge, 2020), p. 210.

5 Mieke Bal, *Endless Andness: The Politics of Abstraction According to Ann Veronica Janssens* (Bloomsbury Academic London, 2013), p. 8.

Consciousness in Electronic Music and Audio-Visual Media.[6] In addition, essays and published papers such as Seigworth and Gregg's 'An inventory of shimmers'[7] and Dr David Glowacki's research into group VR ASC experience[8] were also reference material for the thesis. *Array Infinitive* takes inspiration and points of reference from many artists who work with a variety of media, such as Ann Veronica Janssens, Haroon Mirza, Rashaad Newsome, Pauline Oliveros, Éliane Radigue, Jacolby Satterwhite and Catherine Yass. These artists produce work that is less about what it 'means' and more about what it 'does'.

The outcomes of this research contribute to the field of audiovisual art by way of exploring and expanding the definition of performance in VR and of experimental, improvised live sound-making. The development of gesture-controlled VR audiovisual content for live performance has been established and tested in a variety of settings through this action-research, including both public-facing interactions and controlled research studies. Discoveries revolve around audience experience and affective response to sensory contact through VR, as well as demonstrating the ability of this work to evoke a genuine ASC. The findings of the *Array Infinitive* research project have demonstrated that the fully immersed audience were not aware of the live element of the performance. Participants in VR were not cognisant that there was a performer within their physical environment nor that the audiovisuals were being conducted by a human. The cybernetic is present in this performance piece, through a corporeal, tangible, biological conduit. This work does not employ algorithms or artificial intelligence (AI) to generate content. The majority of the test subjects could not recognise that the shared audiovisual experience was being conducted by a person as part of a live proceeding.

Furthermore, the alteration in perception of human performative manoeuvres was instigated and studied as part of an extended form of spectatorship, which reconsiders the definition of the 'audience' and makes room for paradox within a collective event: a multidimensional encounter that deliberately involves isolation, solidarity, and heterogeneous realities simultaneously.

6 Jonathan Weinel, *Inner Sound: Altered States of Consciousness in Electronic Music and Audio-Visual Media* (Oxford University Press, 2018), p. 7.
7 Gregg, Melissa, and Seigworth, Gregory J., eds., 'An Inventory of Shimmers' in *The Affect Theory Reader* (Duke University Press, 2010), pp. 1-25
8 Glowacki, David, et al., 'Group VR Experiences can Produce Ego Attenuation and Connectedness Comparable to Psychedelics', *Scientific Reports*, 12(1) (30 May 2022), article number 8995.

Conferences

During the PhD, I presented *Array Infinitive* at conferences twice at different stages of the project's development. In the first instance, this research was presented at the Electronic Visualisation in the Arts (EVA) conference in London, which transpired from 5th to 9th July 2021. This was directly before the start of the first set of research pilot tests later that month in Glasgow, which I will introduce in the Methods and Methodology Chapter. Owing to rigid COVID restrictions during the summer of 2021, the conference was a hybrid of in-person and online, with most of the talks being presented over Zoom, including my own. At this conference, I presented a video documenting the creation of *Array Infinitive* and explained the development process. This video is included as part of this thesis submission and accompanying information. There will be a prompt in what follows to indicate when to view this content.

The second conference presentation of *Array Infinitive* likewise took place at EVA London, which occurred between 4th and 8th July 2022. This, however, was an entirely in-person event and I was able to demonstrate the work in situ. In addition, I gave a talk about the project, shared my research findings, and answered questions from the audience.

These conferences correlate to the timeline in the Methods and Methodology chapter and can be found listed in the project development outline.

6.

How to read this thesis

This thesis is divided into sections that include:

Introduction
Archive of Terminology, Thematics, Context
Methods and Methodology
Conclusion

The first few sections including the Introduction and Archive of Terminology lay the groundwork for this dissertation, which leads into more detailed information about *Array Infinitive* as a research project through the Methods and Methodology chapter and Conclusion.

The 'Archive of Terminology' is modelled on *Keywords* by Raymond Williams (1976), and offers a non-linear indexing system. Each section refers to another segment of the chapter, creating a network of sources and layers of repository in which the reader can jump from one to another, if they so choose.

Alongside the sections mentioned above, there are prompts to visit the Appendix, which offers visual representations and documentation to supplement the text.

There are also three videos accompanying this thesis::

1) Project development, a film by Mind the Film;
2) Public Beta at the Centre for Contemporary Art Glasgow, a film by Paradax Period; and
3) PostGrad event at Iklectik Art Lab London, a film by Rupert Earl.

The reader is encouraged to watch the videos after reading the thesis.
There is another prompt for this at the end of the Appendix.

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Acknowledgements

Declaration

I, Leslie Deere declare that the inclosed submission for the degree of Doctor of Philosophy, consisting of a thesis, appendix and supporting video files, meets the regulations stated in the handbook for the mode of submission selected and approved by the Research Degrees Sub-Committee.

I declare that this submission is my own work, and has not been submitted for any other academic award.

Signed: Date: 31st October 2023

Student: Leslie Deere

Chapter One

Introduction

Array Infinitive is a new work examining the role of audiovisuals in virtual reality art practice. This work uses gesture as a method of processing audiovisual content, which augments a perception-altering experience and initiates new heterogeneous subject positions in a multidimensional environment. The project, created through action-research, focuses on amplified audio and virtual reality (VR) visuals generated, processed and 'played' via gesture to audiences. *Array Infinitive* has seven VR scenes, visually minimal and geographic, which travel up the colour spectrum from red to violet. Sonically, the soundscapes are ambient and reference long-form drone music, minimal composition, and improvised sound-making. When there is an amalgamated audience, which includes spectators in full VR and observers not in VR at all, I have created the descriptive term 'hybrid-audience'. The PhD is a studio-led research project that aims to test and respond to the following key questions:

– In what ways can we develop a language of, and articulate, affect in art while establishing an archive of work that explicitly aims to create an altered state of consciousness (ASC) experience?

– How can we explore and reimagine the infrastructure of spectatorship and group experience through a 'hybrid-audience' encounter of VR performance?

– What are the potentials of gestural audiovisuals expanded into virtual space, and how are live sound-making and performance redefined through this process?

For this project, I have acted as researcher, lead artist, composer, and performer. When performing – or activating – the *Array Infinitive* environment, I used hand gestures and bodily movements to create sounds and visual VR particle trails, which broadcast to audience headsets in real-time. This research project was underpinned by my extensive experience and professional practice in dance, sonic art, and visual art: I merged these disciplines to create a new, multifaceted work.

Since 2015, my professional practice has focused on gestural audiovisuals. In the first iteration, this embodied method of improvised sound-making was achieved with a Kinect gaming camera. The catalyst for this PhD project was an earlier piece of mine entitled *Modern Conjuring for Amateurs*. The work explored gestural sound using a Kinect, which tracked my movements and triggered an audio response. The performance tapped into long-form minimal ambient sound-making as a way of exploring mesmerism, or the 'affective sublime', which I will elaborate on in the contextual section of this thesis. *Modern Conjuring* took inspiration from turn-of-the-twentieth-century technology and practices such as the theremin, the phonograph, wireless technology such as the radio, and spiritualist séances. The Kinect was originally designed as a competitor to the Nintendo Wii, with a natural user interface (NUI), and motion sensor

that freed players from hand controllers. Clara Rockmore, a major reference for this work, was an early-twentieth-century theremin virtuoso. As if by magic, Rockmore harnessed the strange instrument to conjure mysterious futuristic sounds out of thin air, without actually touching it. *Modern Conjuring for Amateurs*, as a title for my project, referred to the 1940 book of magic tricks of the same name by JC Cannell, vice-president of the Magician's Club in London.

Modern Conjuring was created through the Sound and Music organisation's Embedded Residency award at the London Music Hackspace (2015-2016). The work premiered at the Whitstable Biennale (2016) and has been performed internationally. Along with my movements and live soundscapes, colourful solid silhouettes could be seen projected behind me during the performance, mimicking my gestures. The decision to include this element came through a mentor day provided by the residency with artist and musician Christian Marclay. We agreed that including a visual element such as this, a disembodied silhouette that was clearly 'doing' what I was doing, would indicate to the audience that my movements were controlling the sound.

Modern Conjuring marked a significant turning point in my creative practice, whereby I combined my background in dance with sound art, fusing the two into a new live sound-making format. Up to that point I had worked sculpturally or with installation.

Figure 1 and 2
Modern Conjuring for Amateurs,
live at FORTHWITH Art, Music, Tech Festival, Winnipeg, Canada, 2019, photos by Karin Wassinberger

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Modern Conjuring raised questions relating to traditional aspects of the audience/performer relationship. In conventional performance of varying types including musical, theatrical or dance, generally speaking, there are performers and audience members, separate and defined. How does that change when approaching a work that intends to create an affective sublime, mesmerism, or altered states? How does a more conventional format hinder audience immersion, and what are further uses of technology that can help redefine the audience/performer dynamic in terms of subject position and perspective? What are the possibilities for gestural audiovisuals and improvised sound-making with VR technology, and how can this experimental format be harnessed for performance art and multimedia installations? Finally, might there be applications for this type of artwork to reinvent conceptions of the meditative or the therapeutic?

This PhD project takes this area of enquiry in my art practice around affect and gesture-controlled sounds and images into the virtual realm. It does so through VR performance, with a focus on exploring audience affect, ASC, and the architecture of spectatorship - including individual agency and group interconnectivity.

Erika Fischer-Lichte's exploration of presence, embodiment, corporeality, and spatiality of performance is a central point of reference for the research. Fischer-Lichte suggests that 'moments of enchantment' emerge within a performance space.[9] During the 'activation' of a room into a performance space, live action and movement extends possibilities for perception and expands the relationship between performers and audience.[10] Through this research I aimed to 'activate' dual spatial planes – of both the virtual and of the physical world; to create a multidimensional group experience; and to explore affect. There is a collapsing and reshaping of the audience/performer encounter in this work, which offers new ideas about an audience: what an audience is, what an audience does, and what an audience comprehends. This research is also informed by the virtual reality and immersive performance chapter of Shi Ke's *Embodiment and Disembodiment in Live Art*, which approaches VR as a transcendental format capable of maintaining autonomy, while quoting Donna Haraway's assertion that 'the boundary between science fiction and social reality is an optical illusion'.[11]

Alongside this, Maaike Bleeker's ideas surrounding the 'bodymind' and 'corporeal literacy' are salient to the physical dimensions of perception and sensing, through a form of co-creation: a kind of interfacing of our bodies with the world we encounter, including our coevolution with technology.[12] This research also draws on both Mark Hansen's work around technological affect and Jonathan Weinel's research in the book *Inner Sound, Altered States of Consciousness in Electronic Music and Audio-Visual Media.*

9 Fischer-Lichte, p. 9.

10 Ibid, p. 107.

11 Donna J. Haraway, 'A Cyborg Manifesto: Science, technology, and Socialist-Feminism in the Late Twentieth Century', p. 149.

12 Maaike Bleeker, 'Corporeal Literacy' in *Re_Visioning Bodies: Das Neue Alphabet*, 10 (2022) ed. Daniel Neugebauer (Spector Books, Leipzig, 2021) p. 29.

Gregory J. Seigworth and Melissa Gregg's expertise in affect theory and their 'mattering maps', which include attention, mood and orientation, have provided further valuable context to this research.[13]

Array Infinitive looks at the potentials and possibilities of performance in VR as a tool or means to evoke an altered-state experience, to explore the 'affective sublime' and to traverse dimensional realities as part of a collective[14]. Something interesting ensues when a crowd is made up of people in a separate virtual environment – one that is beyond the physical reality, and people that are not – who are seeing events unfold in the room before their eyes. I suggest through the research that this opens up another invisible landscape for participants involved, one of Fischer-Lichtean enchantment and multidimensionality. A defining aspect of this work in particular is the live element and closed network design. Currently, *Array Infinitive* does not live on the internet. The only group of people that experience this piece are amongst one another, in a shared space at the same time, as is the case with live rather than recorded or streamed theatrical or musical performance. This research is original in terms of its experimentation with instrumentation and playability, both in the method of play and also the context, in that the work blends experimental and improvised live sound-making with real-time VR visuals – all of which are activated through gesture. This research advances the field of audiovisual performance and gesture-based sound and image-making. At the same time, the project melds visual fine art practice with VR. In particular, it brings together abstract or graphic image-makers and minimalist visual artists who explore perspective-shifting, the metaphysical, notions around activation, and the experiential. *Array Infinitive* takes inspiration and reference from many artists who work with a variety of media such as Ann Veronica Janssens, Rashaad Newsome, Haroon Mirza, Pauline Oliveros, James Turrell, Jacolby Satterwhite, Éliane Radigue, and Catherine Yass. Focus has been placed on artists who produce work that is less about what it 'means' and more about what it 'does'.

In the first version of this research project, I created a performance experience, operated through an offine local network, amongst four participants and one performer. The performer acted as 'the broadcaster', whilst all were fully immersed in VR via headsets. There was the possibility of re-orienting this project for online use, but that was not the focus of this particular body of research. The offline version presented potential issues regarding audience numbers when considering pandemic restrictions, and also the amount of equipment available. However, exploring experiences with people together in a shared space was a welcomed approach after the global lockdown.[15] This PhD began before COVID-19 and finished after the pandemic had officially ended.

13 Grossberg, Lawrence, interviewed by Gregg, M., and Seigworth, G.J., 'Affect's Future; Rediscovering the Virtual in the Actual' in Gregg and Seigworth, eds., *The Affect Theory Reader* (Duke University Press, 2010), p. 310.
14 Sarah French. & Zoë Shacklock,, 'The Affective Sublime in Lars von Trier's Melancholia and Terrence Malick's The Tree of Life', New Review of Film and Television Studies, 12 (2014), 39-356.
15 Katherine Tooley, 'Make Contact: The re-emergence of the experience economy', PowerPoint presentation, Vice Media Group Information Desk (2021), <https://www.vicemediagroup.com/wp-content/uploads/2021/04/VMG_MAKE- CONTACT_EXPERIENTIAL-WHITE-PAPER_2021.pdf> [accessed 1 May 2022].

This impacted the project research and development, which I will explain further in the methodologies section of the thesis. The potentials of distanced connection through VR were bypassed here in favour of group exploration of a different kind, which started from the basis of being in the same physical space at the same moment in time.

A key area of inquiry looked at the extent to which audience members were aware of a human component: the performer, who acted as 'conductor' for the VR experience. As the four participants sat fully immersed visually in VR headsets, there was action, live gestural instrumentation, and dance-like movement happening right in front of them, which they did not see. The sound, however, was amplified into the room through speakers. The separation of VR visuals and amplified sound (as opposed to headphones) was purposeful as an intended cohesive element for the audience.

The second version of this research project created a hybrid-audience: *Array Infinitive* was opened to a larger group, where those in full VR and those that were not shared the space together. This scenario provided the framework within which I will expand and investigate notions of spectatorship. The performer in full VR, the immersed VR audience, and audience members not in VR were all present. This iteration involved projections so that those not in VR could get a glimpse of what was happening virtually. Those in VR were visually isolated from the group, while sharing the same physical space as everyone else. For this version of the work, I want to suggest that the event space became 'multidimensional', meaning that different realities were being generated and experienced simultaneously. The gaze meant different things to different audience members. The status of being an 'observer' in this version had different meanings depending on the specific perspective of each of the groups in the room. Thus, the architecture of spectatorship was transformed and reorganised through this happening. This project in its hybrid-audience format was an experiment in setting up multiple subject positions that had different dimensions and had the potential to create different senses of agency. *Array Infinitive* revealed a form of audience infrastructure that allows us to ask questions about an assembly of people, which includes individual isolation within the group while also being part of a collective.

I developed the third version of this project during a residency award towards the end of the PhD. Here, I used the gallery as a more casual workshop, rather than a performance space with tech assistance and set run-times for the VR experience. There was a large wall projection and speakers to demonstrate the work in situ, as well as other elements that pertained to the research such as relevant journal articles, literature and also the costume, which I would discuss with visitors as and when they arrived. During this iteration of the work, I allowed visitors to step into my role as the performer, thus opening up a new participatory element of *Array Infinitive*. This final field study was significant to the overall research and presented key new discoveries pertaining to this project's analysis of the audience.

Array Infinitive asked its participants to engage in a form of 'giving in', 'letting go', or 'feeling beyond'. The group aspect of this work was multifaceted in that everyone was 'giving into it' together, but in different ways. Creating a group experience that involves isolation is paradoxical. To add to this, the group was isolated in different ways. The project revealed who can see (and sense) what. This work asked the audience to find an understanding of their place in the world by being both inside and outside, isolated and part of a group, all at the same time. It explored the schema of spectatorship by way of a generated self-reflexive experience that homes in on peoples' understanding of themselves and their willingness to be affected. This process prompts the question: does *Array Infinitive* create an atmosphere, and can we enter it together?

The aim of this research is to understand the ways in which VR technology can be harnessed and used to explore mutually altered states, and to discover the phenomenological, affective, and experiential aspects that emerge from the experience. The 'performer', 'ambianceur', 'guide', or 'conjurer' is the link between worlds. Participants made references to shamanism during field studies, including shamanic practitioners and teachers who experienced *Array Infinitive*. Although not rooted in or directly referencing shamanic practice, it is relevant to mention that the performer in *Array Infinitive* wears a costume, which explicates the performativity: the costume becomes a sign of hybridity and a signifier of Fischer-Lichtean enchantment.

In addition to the above areas, I have looked at how successful the affective intention could be through this VR experience to affect an audience, and how that fits into an archive of work that explores similar themes. *Array Infinitive* creates a tool to generate altered states of consciousness in art. Through this project, I veer away from cultural tropes surrounding VR, whilst contextualising the work amongst a collection of practitioners, theorists, and artists whose work activates or engages with altered states of mind. How do we categorise this kind of work, and are the means currently available to measure it adequate or applicable?

While remote group gaming and online VR activity offer opportunities to connect with people around the world through internet access, this work has established a space for offline experience that could then be taken into a variety of situations, such as galleries, project spaces, music venues, theatres, movement and yoga studios, retreat centres and beyond. In classrooms or youth clubs it could create a playfully meditative experience for students and young people. This could sit alongside larger institutional iterations that incorporate dance and audiovisuals as part of a programme exploring post-digital performance or participatory art. The project is distinctive in the ways it creates a new and original application for technology that is typically used for other purposes, i.e. gaming or entertainment.

This thesis presents a thematic foundation and contextual framework for the research, referencing study around ASC and audiovisual work, VR art, and multidisciplinary artists exploring similar themes.

Key pilot test and research study findings will be presented here as well as feedback from participants and audience through a variety of field work. The methodology section focuses on the development of this project, followed by reporting of key demonstrations, case studies, pilot tests, formal research experimentation, and public performance.

Array Infinitive was completed through a technical development sponsorship and as part of a team effort. Stuart Cupit and Solarflare Studio sponsored the technical direction and lead VR development. Chris Speed contributed by way of Unity development and Ross Flight designed the gestural interface that uses spatial XYZ data to trigger sounds. As the prototype developed, I formulated the methodological framework through supervision demo sessions; peer demo sessions at the Glasgow School of Art; and field studies and research studies at the Centre for Contemporary Arts (CCA) in Glasgow and Iklectik Art Lab in London. This framework consisted of gathering qualitative data through self-report forms and oral feedback, as well as the 11D-ASC and the Modified Tellegen Absorption Scale (MODTAS) questionnaires to measure ASC response. The 11D-ASC[16] and MODTAS[17] are an established self-report tool to measure ASC and are utilised for clinical peer reviewed medical, psychological and scientific testing. The *Array Infinitive* demonstrations, studies, and research series each contributed to qualitative data collection. This evidence has formed the basis for analysis of audience feedback, outlines the fundamental discoveries of the research, and has contributed significantly towards the thesis. In addition, I consulted with Dr David Luke of the University of Greenwich, co-founder of Breaking Convention (a biennial multidisciplinary conference on psychedelic consciousness and research), who has extensive experience in ASC measurement in clinical psychological, psychedelic, and artistic capacities, and we have evaluated study data for this dissertation.

Through this practice-based research, I assert the role of 'affectivity' in art and performance, in a general sense and specifically in relation to VR. This thesis presents evidence of altered states through VR audiovisual performance and positions *Array Infinitive* in a lineage of perception-bending artwork. This includes a 1960s canon including Optical Art and Exploding Eye films, which sought to give impressions of movement, vibration, or to elicit a hypnotic effect. In addition, this research is linked to minimal and experiential work that creates its own atmosphere, such as that of Haroon Mirza: work that could be associated with VR by way of mood-altering characteristics, but not thought of in terms of wearable technology. This PhD project presents a digital reimagining of the minimalist and abstract paintings and anagogic communications of Agnes Pelton and Hilma af Klint: visionary artists who claimed to channel transcendent messages and images through their work. Pelton and af Klint are both included to make specific reference to the act of improvisation, which is a key aspect of *Array Infinitive*, and suggest that embodied improvisation is a form of channelling, or what Henry Flynt refers to as being a 'non-representational conduit' or creative force. In this sense, I link af Klint's work with musicians who use improvisation as a para-language. Contemporary artists who combine VR and improvised dance, such as Jacolby Satterwhite and Rashaad Newsome, are also reference points for this research project.

16 Erich Studerus, Alex Gamma, and Franz X. Vollenweider, 'Psychometric Evaluation of the Altered States of Consciousness Rating Scale (OAV)', PLoS ONE, 5 (2010).
17 Graham A. Jamieson, 'The Modified Tellegen Absorption Scale: A clearer window on the structure and meaning of Absorption', Australian Journal of Clinical and Experimental Hypnosis, 33 (2005), 119-139.
18 Henry Flynt, *Three Essays on Spirituality in Art* (João Simões, 2020), p. 92.

Array Infinitive explores aspects found within phenomena such as Catherine Yass' notion of the 'psychology of space'. This concept means that the audience is tangibly impacted by seeing or being with the work. In addition, notions of 'the encounter', embodied affectation, and a happening are relevant here: these all describe an active form of viewership and participation that enable the works to 'come to life'. The thesis references art that is 'energised' by the encounter and has a durational quality, such as the 'Endless Andness' of Ann Veronica Janssens or the evocatively sensorial characteristics of James Turrell. Temporal and experiential, these works and this PhD research share a corporeal, real-time aspect. They aim to elicit an aura by creating conditions within which the audience can be with the artwork and enter into an immersive state through and with it, transmuting sense data into the form of conscious experience. As well as visual artists, this research aligns with composers and sound artists who explore long-form drone or ambient composition. Musicians such as Éliane Radigue, Pauline Oliveros, and CC Hennix all investigated the affects of sound and the subtle nuances that grow apparent through concentrated listening to repeated tones, sounds, and phrases. The interest of these composers aligns with the focus of this thesis. Each has either a meditative or metaphysical aspect to their practice, which ultimately creates an Illuminatory Sound Environment (ISE)[19] or 'mirror of the mind'[20] through the act of Deep Listening.[21]

Finally, I note that, notwithstanding recent VR development, this research is not involved with gaming or typical usages of VR technology. VR is a rapidly developing medium, despite having been in use for more than thirty years. During this PhD, Facebook renamed themselves Meta and attempted a rebrand as the forerunners of 'social VR'. During the 2020 COVID-19 lockdown, I became involved with AltSpace VR, an online platform hosted by Microsoft that offered meditation and group conversations in the virtual space. AltSpace has been acquired by Tripp, a company aiming to be the leader in extended-reality wellness experiences designed for mind–body health. Taking part in the AltSpace online group VR activity was a key addition to my research at a time when strict physical constraints were in place geographically. Meta aims to transition us further to aggregate lives where we are living and working through VR.

While understanding the political aspects of big tech and its role in society is important, it is beyond the scope of this research. The practical use of Oculus Quest headsets (owned by Facebook) could be construed as political. Interestingly, I seem to be one of a small number of people that never engaged with Facebook, having never set up a personal Facebook account. Tech politicisation is not the intention here, and the decision to move away from a mixed setup of HTC Vive and Oculus GO VR equipment to a full Quest platform was directed by lead developer Stuart Cupit via my sponsor Solarflare Studio. It is also important to note that, throughout this research, I have been aware of academic Eleanor Dare and her work around feminism in the tech and VR space and the implications of big tech on society.[22]

19 ISSUE Project Room, 'Catherine Christer Hennix & Henry Flynt: "The Illuminatory Sound Environment"', <https:// issueprojectroom. org/event/catherine-christer-hennix-henry-flynt-illuminatory-sound-environment> [accessed 4 January 2022].

20 Julia Eckhardt, *Eliane Radigue: Intermediary Spaces* (2009), p. 10; Éliane Radigue, 'The Mysterious Power of the Infinitesimal', *Leonardo Music Journal*, 19 (2009), 47-49.

21 Pauline Oliveros, *Deep Listening: A Composer's Sound Practice* (Deep Listening Publications, 2005).

22 Dare, Eleanor, 'Diffracting Virtual Realities: Towards an a-effected VR', *Performance Research*, 25(5) (2020), pp. 101-106

Chapter Two

Archive of Terminology

This chapter presents a non-linear network of references: an index of philosophical, artistic, and thematic material, which forms the contextual basis for *Array Infinitive*. Keywords are compiled into a glossary, which turn into an archive of onomastics and short essays exploring core themes.

This chapter takes inspiration from Raymond Williams' *Keywords* (1976) and presents information in grouped sections that are linked together. These sections are organised into four categories: Perceptual, Supernal, Intranautical, and Empirical. Associations are made to the diverse elements of *Array Infinitive* that consolidate as a singular piece, whilst operating in a multimodal framework. This part of the thesis reproduces a 'pluriform' concept through codewords and resourcing, creating a network of information and a schema of ideas and references.

Each section within this chapter unfolds as follows: they begin with a segment focusing on the relevant thematic, followed by information on practitioners whose work is then traced to events that are applicable to each theme. Each section includes keywords drawn from the overarching context of the thesis, followed by writers and makers who have developed key theories. Each section ends with an analysis of a notable work to further explicate the theme. This chapter concludes with three conference studies that helped further contextualise the research through group and assembled forms of learning. My experience as an audience member and witness to different approaches and processes impacted my research on collective experience and is included in this glossary.

Keywords Section Overview

Perceptual

This grouping presents keywords that focus on a feeling-based dynamic. Consideration is given here for what is known to be 'the affective', or qualities, processes, theories and artworks which explore that which moves an audience emotionally.

Keywords: *Perceptual*

LESS ABOUT WHAT IT 'MEANS' MORE ABOUT WHAT IT 'DOES'

AN INVENTORY OF SHIMMERS

FORMLESSNESS AS A PORTAL

A COLOUR EVENT

yellowbluepink

IGNITION OF NEW POTENTIALS

Supernal

Keywords in this section set out to articulate 'that which is on high', empyrean or intangible. Meditations, writing and artworks that focus on what could be considered supernatural, or an extension of our normal human abilities, senses and processes.

Keywords: *Supernal*

THE METAPHYSICAL, THE METABOLIC

SLOW AND LOW

I AM RADIO

WE HEAR IN ORDER TO LISTEN

Mirror Me

THE MAGIC'S IN THE MOVEMENT

Intranautical

How do we define and talk about introspection, the internal voyage or aspects of experience that explore subjective expansion through personal exploration, reflection or different forms of awareness? That is the focus for this category in the archive.

Keywords: *Intranautical*

FLASHBACK

THE RESPONSIVE EYE

THE CINEMATIC BRIDGET RILEY

TURN ON TUNE IN

RAVE, REARRANGEMENT AND THE SENSES

Chamber for Endogenous DMT

CO-PRODUCING A SHARED REALITY

Empirical

Putting the previous categories into objective articulation is the purpose of this section. How is perception, the supernal or intranautical made manifest? Viewing these parameters through an experiential or empiric lens concretises the ideas into form.

Keywords: *Empirical*

HOW DID NEO LEARN KUNG FU?

ACTIVATE ENVIRONMENT: LET AUDIENCE DISCOVER

EASTER EGGS

ENCHANTMENT AND THE PERFORMATIVE TURN

SPACE IS THE PLACE

Stalking the Trace

CREATION CAN BE A TRANSLATION

Be-Ing the Audience Member: Conference Studies

Keywords: Perceptual

Activate   Command energy forth so that something is energised, functioning or initiated.

Affect   A force of encounters that provokes feelings which pass through the body.
A blurring of the boundaries between subject and object. The in-betweenness of isness.

Affective sublime   A moment or experience analogous to exaltation or rhapsody.

Affective turn   An alteration in understanding through inquiry into the nuanced correlations of various social and cultural components, discursive practices, the embodied human experience as both the individually cultivated but also historically relevant affects and emotions.

Becoming   Bringing something into being, crystallising, moving forth to existence.

Coevalness   From the same moment in time at a specific moment in time.

Compelling   Conjuring intrigue through enchantment or reverence.

Deixis   Generalising language for a time, place or person.

Digital affective   Influencing perception through digital methods or means.

Endless andness   (Mieke Bal) A boundlessness of concept and experience.

In-betweeness   A liminal space, or schism between planes of existence.

Mattering maps   (Lawrence Grossberg) Will, attention, moods and orientation are nodes on the substrate of affect, which combine to create delineations of sense, significance and meaning.

Portal   An opening or ingress, either metaphorical, metaphysical or literal, whereby passage can be made from one place or state to another.

Virtual reality (VR)   An experience that involves simulated visual or audio-visual content, creating a sense of immersion into another world.

Yassed out   The affective impact of watching Catherine Yass' film *Lighthouse*, shorthand for a state of mind based upon experiencing this artwork.

Less About What It 'Means' And More About What It 'Does'

We can consider affect to be a by-product of experience, whether a physical encounter involving spatial contact, a 'taking-in' of something (e.g., an idea), or 'being moved' by visual or auditory stimulus, which changes how we feel.

Looking at new media and technology's capacity to produce **affect,** Mark Hansen's writing approaches digital art by way of **affect** and sensation. His work theorises an evolving human experience which is actively engaged in an **affective** co-evolution with technology.[23] Hansen highlights the relationship that digitisation presents between cybernated imagery and an internal corporeal sense of its genesis, motion, or tendencies. He suggests that we give digital information a structure that ultimately transforms the disembodied or formless into a more objective form that has inherent human meaning.[24] Looking closely at the human body and computer-generated imagery, Hansen argues that there is an ongoing human framework for the stream of media we encounter.

When analysing Hansen's work, in her essay **'The Affective Turn',** Patricia T. Clough adds that focus must be placed on the ways in which technology enters the human subject, i.e. through the body, thus 'tingeing or flavouring the embodied perceptual present'.[25] In speaking about Hansen's work, Clough argues that further notions of digital art allow for the experience of **affectivity**, and even require it, by way of an expansion of the senses and an awareness of the body's own affective indeterminacy. For Hansen, according to Clough, there is an intrinsic link between subject and technology that can be explained as bodily **affectivity.**[26]

Another text on **affect** and embodiment (which is addressed more fully in the following section) is by Bruno Latour. As mentioned *in The Affect Theory Reader*, when presenting at a conference Latour asked the audience to write down the antonym of the word 'body'. The two responses he found most intriguing were 'unaffected' and 'death'.[27] Latour asserts that liveness or being alive is **activated** by the body, and thus having a body is a lesson in **affectation** by way of other entities, humans or nonhumans.[28] And furthermore, the choice not to engage in such 'learning', as Latour puts it,

23 Mark Hansen, *New Philosophy, New Media* (MIT Books, 2019), <https://mitpress.mit.edu/books/new-philosophy- new-media> [accessed 11 March 2019].
24 Patricia T. Clough, 'The Affective Turn' in *The Affect Theory Reader*, eds. Melissa Gregg and Gregory J. Seigworth (Duke University Press, 2010), p. 211.
25 Clough, p. 212.
26 Ibid., p. 212.
27 Bruno Latour, 'How to Talk about the Body? The Normative Dimension of Science Studies', *Body & Society*, 2004, 10 (2-3), p. 204; Gregory. J. Seigworth and Melissa Gregg, 'An Inventory of Shimmers' in *The Affect Theory Reader*, p. 11.
28 Seigworth and Gregg, 'An Inventory of Shimmers', p. 11.

renders humans insensitive, mute, or dead.[29] In this framework, the human body is an interface which becomes more describable through learning to be **affected** by new and different elements.[30] In other words, 'being there' counts.

Lawrence Grossberg has written on **affect**'s future and references Raymond Williams' 'structure of feeling'.[31] This can imply a reading between the lines: a form of trajectory which is based upon something that may not be articulated in a fully analysed form, hence the term 'feeling' as opposed to 'thinking'.[32] Grossberg often correlates **affective** theories with popular music. He considers popular music to have relied upon structures of feeling more than other forms of media culture.[33] His work explores cultural studies, pop culture, and youth politics in the United States. Grossberg has written at length on the 1960s and researched the notion of **affect** as something which enabled music that was not originally political to galvanise a community and to affliate it with political positions. Grossberg studied **affect** in terms of generational identity, whereby a series of cultural events formulated a 'coherent configuration of generational existence', which is something beyond identity.[34] This raises questions of how to define **affect** in correlation with the mechanisation of **affect**, the territorialising, coding, or stratifying of **affect**, and the ways in which that connects to a bigger totality.[35] Theoretical discovery or development in this area may mean denouncing certain philosophical or political assumptions, but may contribute to further knowledge and imagination and to the actualisation of the virtual future – thus supporting the possibility that another world is possible.[36]

See: Metabolic

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[29] Ibid.
[30] Ibid.
[31] Lawrence Grossberg, 'Rediscovering the Virtual in the Actual' in *The Affect Theory Reader*, p. 310.
[32] Oxford Reference, Structures of Feeling, <https://www.oxfordreference.com/view/10.1093/oi/authority.20110803100538488> [accessed 12 May 2019].
[33] Lawrence Grossberg, 'Rediscovering the Virtual in the Actual' in *The Affect Theory Reader*, p. 310.
[34] Ibid., p. 338.
[35] Ibid.
[36] Ibid.

An Inventory Of Shimmers

In an interview conducted by Gregory Seigworth and Melissa Gregg, editors of the *Affect Theory Reader*, Grossberg focuses on will, attention, moods, and orientation as integral parts of affect, which he calls '**mattering maps**'.[37] Grossberg veers away from purely emotional definitions of **affect**, and instead views emotion as a philosophical articulation of **affect** – an ideological attempt to make sense of affect.[38]

Marie Thompson and Ian Biddle write helpfully on **affect** through the lens of sound and music. They ask what **affect** is – how do we quantify **affect** in context of music and sound? **Affect** is less about what something 'means' and more so about what something 'does'.[39] Thematically, these notions are borrowed from Patricia Clough's '**affective** turn' and orients this within 'the experiential' – that which involves a relationship between entities, or bodies, of all kinds – including human, animal, technical, and inorganic. The vibrations and variations of feeling that the experiential generates can have an impact while bypassing conscious knowing.[40] The experiential will be explored more deeply later in this chapter.

In *Sound, Music, Affect: Theorizing Sonic Experience*, reference is given to Seigworth and Gregg's notion of '**in-betweenness**' as a catalyst for **affect**, whereby there is a reverse flow of directionality that occurs between bodies and bodily drives, creating a visceral undulating field of possibilities and '**becomings**' between human and nonhuman (Deleuze)[41] - or what Massumi calls 'In Event'.[42] Seigworth and Gregg place emphasis on Spinoza and suggest that he shifted away from 'what does music mean' to 'what does music do?'.[43] Sound undeniably has the power to produce **affective** contours in our experience when we 'use' music to conjure a certain mood or ambience as a form of 'mood-managing'.[44]

37 Ibid.
38 Ibid.
39 Marie Thompson and Ian Biddle, *Sound, Music, Affect: Theorizing Sonic Experience* (Bloomsbury, 2013), p. 6.
40 Ibid.
41 Seigworth and Gregg, 'Inventory of Shimmers', p. 6; Thompson and Biddle, p. 7.
42 Thompson and Biddle, p. 9.
43 Ibid, pp. 18-19.
44 Ibid., p. 11.

To offer a real-world example: mystical moments are created on a dance floor, when rhythm and sound become an **affective** glue while, at a rave, dancing in unison amongst other bodies in a feedback loop between DJ and crowd.[45]

Through this contextual theory, we seek to understand how different modes of agency and non-agency – of the conscious, pre-conscious, and post-conscious – are understandable through the lens of sound and audiovisuals[46] or an exploration of what Jonathan Sterne calls the 'audiovisual litany'[47] or a bringing forth of the relationship between the intimate interiority of hearing and the wider exteriority of vision.[48]

See: Encounter

45 Ibid.
46 Ibid., p. 16.
47 Sound Studies academic Jonathan Sterne suggests that philosophers often engage in an 'audiovisual litany' which is traditionally part of the 'metaphysics of presence' and idealises hearing to seeing for its intimacy and ability to rouse internal experience. Robin James, 'Look Away and Listen: The Audiovisual Litany in Philosophy, *Sounding Out!*, (5 March 2018) <https://soundstudiesblog.com/2018/03/05/look-away-and-listen-the-audiovisual-litany-in-philosophy/> [accessed 12 October 2021].
48 Ibid., p. 19.

Formlessness As A Portal For Adventures In Dazzlement

The work of artist Ann Veronica Janssens and the study of her practice in Mieke Bal's *Endless Andness: The Politics of Abstraction According to Ann Veronica Janssens* focuses in further on the experience of the **affective**. Janssens sets out to expand the bounds of perception through her work, to multiply the participation of the senses in perception, and to turn the minimal or mundane into an 'adventure of dazzlement'.[49] Janssens uses light, colour, sound, and sculpture to explore the experiential and the **affective sublime**. Foregoing representation or figuration in a more traditional sense, Janssens creates a kind of **portal** through her work, which acts as a way for people to pass from one reality to another.[50] To briefly mention another artist whose work could be considered both formless and experiential, James Turrell also creates minimal installations using light and colour, which explore a version of the **affective sublime**. The act of passage through **portals** within artworks is participatory through the experience of being: with the work, amongst other experiencers, at a certain moment in time, in a spatial environment, and on an emotional plane. Bal references Johannes Fabian's 1983 participatory observation, which he termed **coevalness**. Building on Janssens' work, **coevalness** is central to this project and evokes a sense of awareness: a consciousness of space, time, other people and an artwork.[51]

On the theme of performance and performativity, Bal draws a distinction in that performance is doing something for the sake of doing it and performativity is something that brings about a change despite both terms being derived from the verb 'to perform'.[52] I will turn to performance again in more detail later in this chapter, but here I delve into the concept through installation rather than through embodied performer/audience interaction.

Bal discusses this idea through a specific work of Janssens' called *Mist Room*. In this work, visitors walk into a room filled with saturated colourful mist in low lighting, sometimes seeing other people, sometimes not, as they are subsumed in a candy-floss haze of rich colour. Bal brings up the idea of duration as well as the question of subject – the spectator is looking, but the 'work' made them do it, hence the work is performative.[53] Bal goes on to place significance on the term **'deixis'** as a useful concept to encompass art that is not traditionally figurative, yet also not traditionally 'abstract'. **Deixis** explores the interaction between viewer, space, and other people in a shared physical location through this type of visual representation and experiential encounter.[54]

49 Mieke Bal, *Endless Andness: The Politics of Abstraction According to Ann Veronica Janssens* (Bloomsbury Academic London, 2013), p. 8.
50 Ibid.
51 Ibid., p. 9.
52 Ibid., p. 11.
53 Ibid., p. 11.
54 Ibid., p. 12.

A performance is a temporal action – taking place across time, whereby the performative exists and is made in the wake (or **in-betweenness**) of duration.[55] Bal goes on to state that time **affects** ontology and defines existence as ephemeral, but adds that a performative ontological indeterminacy takes time as well, thus anchoring the performative work in time, even if the 'thing' that constitutes its reification exists in space.[56] Bal correlates perception with the performative, and considers perception to be a preceding element of performativity.
I understand this to mean that we should look at what art 'does' as opposed to what art 'says'.[57]

Bal poeticises the experience of art: for both the viewer and maker, there is a need to remain loyal to oneself and be adventurous enough to live temporarily and ephemerally in the life of the other, altering oneself in the process.[58] These notions are relevant to *Array Infinitive* as a co-created experiential and **affective** event.

Bal considers the French poet Paul Valéry's definition of poetry, viz., as resting in 'the harmonious change between the expression and the impression',[59] to be an apt description for art – as the notion of impression transfers the stakes of the piece from the artist to the work's impact.[60] This captures the overarching theme of Bal's work: the idea of 'spacing', the space we share, experiments in perception whereby something different altogether may occur each time the work is experienced – this concept of non-restrictiveness is an **endless andness**.[61] Form and formlessness in one direction and theatricality in the other pull 'unknowability' to an earthly plane. This in turn exposes that which is mysterious or ambiguous to a kind of ecstatic access, what Deleuze calls 'the fold' [62] or what philosophers call 'correlativism' in a concrete, literal, and bodily way.[63]

55 Ibid., p. 13.
56 Ibid.
57 Ibid., p. 14.
58 Ibid., p. 16.
59 Paul Valéry, '"Poetry and Abstract Thought" (The Zaharoff Lecture for 1930 at Oxford University)', trans. Charles Guenther, The *Kenyon Review*, 1954, 16 (2/Spring), p. 226.
60 Bal, p. 16.
61 Ibid., p. 25.
62 Giles Deleuze *The Fold* (Continuum Books, 1993)
63 Bal, pp. 26-27.

A Colour Event

There is great focus placed in **endless andness** on colour and pace. These aspects can be considered mood-**affecting** and, as a participatory experience, become exhilarating.[64] Bal goes on to suggest that these particular aspects – pace, colour, and mood, establish a philosophy of endlessness, which includes a refusal of the line dividing material objects which restricts that **endlessness**.[65] The infinitely additive logic of Janssens' art is its **'andness'** – its abstract relentless echo of an 'and' and its refusal of constraints in this echo.[66] The 'Colour Speak' section of the **'And-ness'** chapter raises the topic of serendipity, as colour can be subject to serendipity, as well as specifying, refining, and embracing.[67] *Serendipity* is also the title of an Ann Veronica Janssens' solo show at the WIELS Museum in Brussels in 2009, which included sculpture, sound, light works, and projections. In the catalogue, Bal's text for the show describes serendipity as 'The miracle of being where you are'.[68] This concept is fruitful, describing minute moments of awe, or surprising and charming encounters: sunlight through tree leaves on an autumn morning shimmering in the wind; or neon reflecting on water that floats and bobs in inky clusters. Newton's Opticks is cited in 'Colour Speak', as are Kandinsky and Goethe, who mapped the perceptual impact and language of colour. Janssens' inherent interest is in perception through presenting colour as detached from any visible support.[69] Turrell's work also correlates to this idea. Humans are semiotic beings, accustomed to finding meaning in the things around us. When form stops providing representational meaning, all that remains to ascertain meaning is colour.[70] By looking at colour in relation to art other than painting, a space opens up where colour can emerge, detached from any visible support. This can occur in experiences of VR. The central issue surfaces in this 'lack of support'. What does the viewer have to do to see it, and how does the space equally participate in the creation of a 'colour event'? Janssens turns to these formless ways of realising artistic expression. She is not a painter – instead, she works with light and abstraction, and her experiments with colour are new explorations of **'andness'**.[71]

See: James Turrell

64 Ibid., p. 223.
65 Ibid.
66 Ibid.
67 Ibid., p. 234.
68 Ibid., p. 11.
69 Ibid., p. 236.
70 Ibid.
71 Ibid., p. 239.

Figure 3.
Ann Veronica Janssens, *yellowbluepink*,
installation Wellcome Collection London,
light, mist, photo by Ann Veronica Janssens

yellowbluepink

The idea behind Ann Veronica Janssens' installation *yellowbluepink* was to create a
suspension of colour, a **compelling** encounter of being subsumed in light and vibrant
hues. This is one of the aims of *Array Infinitive*. Is it possible to experience 'being' in
a certain colour? Similar to the previously mentioned Mist Room, **endless-andness**,
as Bal puts it, was rendered manifest through similar methods for *yellowbluepink*.
This work created an experiential yet sometimes disorienting physical environment
comprised of colourful mist. Walking into this mist, visitors stepped into an immaterial
cloud-like void. Similar to Janssens' work, *Array Infinitive* sets out to initiate an
awareness of environmental perception, which heightens chromatic sensation
or what Bal calls a 'colour event' through the use of saturated colours.

See: Metaphysical

Ignition Of New Potentials

Figure 4.
Catherine Yass, *Lighthouse North West,*
duratrans transparency in lightbox, 2011

Figure 5.
Catherine Yass, *Lighthouse*, Catherine Yass,
film, 12 mins 44 secs duration, 2011, photo Alison
Jacques Gallery

Lighthouse, a twelve-minute film by Catherine Yass, features images of the Royal Sovereign
Lighthouse, located in the English Channel. At the top of a single concrete pillar is a square white
cabin with a rooftop helipad. The deserted structure, isolated in the middle of the water,
is the subject of Yass' perspective-bending image manipulation: the viewer witnesses this curious
structure from near and far, above and below, upside down, through sweeping and swirling camera
shots that dip down into the water and become subsumed in darkness. As the New York Times
art critic Ken Johnson wrote: 'Ms Yass specialises in the sublime experience of terror and beauty
that long ago galvanised Romantic imaginations. The lighthouse featured in this work becomes
becomes a lonesome beacon of human consciousness in the midst of infinite oblivion'.[72]
There is a sense of the otherworldly with this film that aligns with my theorisation of virtual space.

I first saw this work at Alison Jacques Gallery in London in 2012. It was the opening and turnout
was good. In the gallery, lightboxes with film stills inside them glowed blue as a precursor to the
film. The film itself was projected onto an entire wall surface, consuming one's visual range with
its constant dynamic motion, causing the viewers to experience its dips and dives, its bending
and curving. Yass describes the saturated blue-black colour of the footage to be a 'happy
accident', which was ultimately an effect of incorrectly loaded 35mm film.

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[72] Ken Johnson, 'Catherine Yass's Film 'Lighthouse' at Galerie Lelong', The New York Times (17 February 2012)
<https://www.nytimes.com/2012/02/17/arts/design/catherine-yass-lighthouse.html> [accessed 4 October 2022].

The pace of movement within the film, the colour, the changes in perspective, and the disembodied gaze **activate** the experience and are influential on the viewer. This work had a major impact on my creative life; it was the moment where I understood the phenomena of **affect**. From then onward, I have followed the '**affective turn**' in my practice. A friend and I affectionately coined the term **'Yassed out'** to describe the **affective** impact of watching the film. The emotional atmosphere in the gallery was transformed by the film. This was the first time I had experienced such a tangible impact of art on an audience, from something seemingly so simple – a film of a lighthouse in the middle of the ocean.

Keywords Supernal

Alchemy of the psyche	(Henry Flynt) A new explanation for the term 'spirituality'.
Being or be-ing	Existing in this moment, an awareness, a focal-point of consciousness.
Channel	A band of frequencies or physical object related to transmission that acts as a connective conduit.
Channelling	The directing of something somewhere, as in the act of sending a message or the creation of an idea into form.
Co-creation	The act of collaborating on an object, an idea, an ambiance, a moment in time or experience.
Excellences	(Henry Flynt) mortal experience that is beyond the material, and apart from indoctrination, mythology, or superstition.
Illuminatory sound environment (ISE)	(Henry Flynt) - A concept which refers to a psychotropically activated sonic form of agency that transports the listener to an alternate state of mind.
Metabolic	Relating to or affected by metamorphosis.
Metaphysical	Beyond material reality.
Mirror of the mind	(Éliane Radigue) Description of what music becomes from listening.
Non-representational conduit	(Henry Flynt) A channel or duct that moves beyond representation towards a creative force.
Psychic space of the work	(Henry Flynt) The metaphysical place that opens up when music induces an altered state.
Spiritual animation	(Henry Flynt) An evocation, conjuring or eliciting a response, and emotion of the perceiver.
Third ear	(Éliane Radigue) A further, extended, more advanced mode of hearing that is activated by deep listening.

The Metaphysical, The Metabolic: Concerning Experiences That Move Us

How do we approach the otherworldly in non-clichéd ways? Is the language we use adequate to discuss that which borders on the **metaphysical** or the non-quantifiable?

Henry Flynt offers an interesting take on this complicated subject. One of the original Fluxus artists, Flynt was the musician, composer, and philosopher who coined the term 'concept art' in the 1960s. The term 'spirituality' can be problematic. As Flynt remarks in *Three Essays on Spirituality in Art*, spirituality as a term is 'cloying and saccharine and often doesn't live up to its potential – it's typically used in ways that cheapen it'.[73] What is there in our mortal experience that is beyond the material, apart from indoctrination, mythology, or superstition? This is the key question. 'This realm', according to Flynt, 'ought to be able to withstand secular rationalist criticism'.[74] What about dimensionality, or experiences that anyone – and even, conceivably, other living beings – could encounter? This is the focus here and it is not always straightforward. This thing, this 'state of **be-ing**', is not necessarily reproducible at will, making it diffcult to quantify or measure in more scientific terms. Flynt uses phrases such as 'admirable spirituality' and '**the excellences**' as descriptions within his inquiry. '**The excellences**' or spiritual experiences are a heterogeneous beast – they are an amalgam, rather than a singular philosophical conclusion.[75] Spiritual insights or outcomes are, for Flynt, invitations to a special kind of gift, whereby one's only required form of contribution is to be receptive.[76] This echoes the Janssenian notion of perception and sensation during an experience. For Flynt, spirituality is a collection of miscellaneous personal episodes and does not necessarily indicate a 'spirit' or 'divine entity'.[77] Taking inventory of these 'admirable spiritualities', Flynt created a list that includes dreams, morning amnesia, hypnopompic hallucinations, romantic affection, psychedelic trips, phases of the erotic, cosmic perspective, **illuminatory sound environments**, such as those of C.C. Hennix, and art that elicits emotional changes within a spectator's immaterial interiority. This is similar to Jonathan Sterne's interiority and audiovisual litany. This, Flynt suggests, is an '**alchemy of the psyche**'.[78] Catherine Christer Hennix is a Berlin-based Swedish-born experimental composer who frequently worked with Flynt. Flynt coined the term '**illuminatory sound environment**' (ISE) (1978) in response to Hennix's 1976 work *The Electric Harpsichord*.

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73 Henry Flynt, *Three Essays on Spirituality in Art* (João Simões, 2020), p. 11.
74 Ibid.
75 Ibid., p. 15.
76 Ibid.
77 Ibid., p. 151.
78 Ibid., pp. 159-160.

ISE refers to a form of agency that works psychotropically through sound, transporting the listener to an alternate state of mind, the entryways to which are usually closed. ISE employs continuous and frequently cyclic sounds, with all pitches fixed in accordance with standards of 'just intonation'. These sounds are **metabolic** and intended to increase the listener's receptivity and provide portals to unvisited and unmapped sonically-mediated sites and regions of the mind.[79]

Expanding upon this and continuing on the quest for an acceptable definition, Flynt introduces the ideas of composer Iannis Xenakis. For Xenakis, art and music are expressions that can become catalytic forms of sublimation, which have the potential for a kind of exaltation – a shifting in consciousness in a new, albeit fleeting truth, which is immediate, enormous, and perfect.[80] This new axiom is beyond objects, materials, sentiments, or sensations and is what enables art to open up dimensions that religion seeks to approximate, and which some religious people can enjoy.[81]

Abstract work is also mentioned here: abstract cinema, absolute music, and nonrepresentational art. This follows on from Bal's use of deixis discussed in the previous section. Flynt considers works like this to hold a power that can inject the perceiver with emotion.[82] 'The term 'spirituality' is diffcult, but we use it anyway, as it is a signifier that there exists a corner of life that the secular rationalists are afraid of, which does not depend on authoritarianism, sectarianism or pseudo-science'.[83] Music as an art form gets a fair bit of attention in *Three Essays* and this is essentially owing to music's candour as a **non-representational conduit**.[84] This describes its quality of evocation, of conjuring or eliciting a response, and the emotion – or, as Flynt calls it, the '**spiritual animation**' of the perceiver.[85] For Flynt, we must discover spirituality away from brainwashing doctrines or teachings. This enables spirituality to be elaborated in its own right.[86]

When looking at musical art, which aims to reach a primary state of being, trance music is an especially useful point of reference, because it aims to move the perceiver into an altered state.[87] Another type of trance music will be mentioned later in this chapter, but here we focus on the dance genre. Humans have free will and this repetitive electronic club music does not always succeed in captivating its audience.

79 ISSUE Project Room, 'Catherine Christer Hennix & Henry Flynt: "The Illuminatory Sound Environment"', <https:// issueprojectroom. org/event/catherine-christer-hennix-henry-flynt-illuminatory-sound-environment> [accessed 4 January 2022].
80 Flynt, p. 17; Iannis Xenakis, *Formalized Music: Thought and Mathematics in Composition* (Pendragon Press, 1963).
81 Ibid.
82 Ibid.
83 Ibid., p. 91.
84 Ibid., p. 92.
85 Ibid., p. 95.
86 Ibid., p. 130.
87 Ibid., p. 104.

However, when it is successful, when it becomes **metabolic**, the perceiver falls into a **'psychic space of the work'**, which is an end in itself.[88] A relationship is formed between the repetitious sounds and the listener. A kind of artistic communication is created, which instigates a situational emotion amongst those involved.[89] The studies in *Three Essays* contrast European with Eastern spirituality, and Flynt concludes that we need to distinguish between these. However, he also suggests that art can be spiritual without being concrete. Art can enact a transference that inspires catharsis, through the perceiver metaphorically stepping into the artist's voice, message or work.[90]

See: Enchantment

88 Ibid., p. 105.
89 Ibid., p.120.
90 Ibid., p. 132.

Slow And Low

Éliane Radigue is a composer interested in durational composition, meant to open a '**third ear**' and induce another listening space. In her text for the *Leonardo* journal (2009) entitled 'The Mysterious Power of the Infinitesimal', Radigue speaks poetically about sound and instruments:

> *Hollow objects with a skin stretched over cylinders of various dimensions. Strings stretched over resonating chambers with more sophisticated shapes, fitted with sound posts that transmit and hear, animated by "arcs" turned into "bows." And the Path, always more and more the mysterious "Path". Supple and fluid, breath, earth, heat and water, everything at once. The subtle alchemy of sounds becomes wonder, understood.*[91]

Radigue's work is gradual, which allows for a kind of unfolding. This requires headspace, as well as focal points of development, and extended time to help hone the senses.[92] Speaking about Radigue's work in the book *Intermediary Spaces*, is her long-time collaborator, the musician and arts organiser Julia Eckhardt, who notes that Radigue's compositions are easily accessible, without requiring formal training, and go straight to the heart of the listener without needing to be interpreted consciously and as such without segregating body from mind for its impression.[93]

Radigue also considers the idea that music allows the listener to ruminate on their own subjective mood at any given time, and thus becomes a '**mirror of the mind**'. In addition, there is a correlation with our corporeal experience by way of the sound echoing our internal rhythms and neurology.[94]

Corresponding thoughts on this topic can be found in musician, academic, curator, and writer David Toop's *Ocean of Sound: Ambient sound and radical listening in the age of communication* (1995). Toop focuses on vignettes of sonic experiences, conversations with musicians and artists, and travel chronicles that left an indelible mark and an array of various encounters, all of which combine to form an ecosystem of ambient sound happenings. The text combines music critique with personal experience and uses a form of collage to meditate on a broad range of references. These range from an ICA seminar on techno music hosted by *Wire* magazine (1993) that included Fraser Clark and Derrick May's discussion on 'the shamanic', to conversations with Sun Ra about mystic visions.

[91] Julia Eckhardt, *Éliane Radigue: Intermediary Spaces* (Q-02, 2009); p. 10; Éliane Radigue, 'The Mysterious Power of the Infinitesimal', *Leonardo Music Journal*, 19 (2009), pp. 47-49.
[92] Ibid., p. 37.
[93] Ibid., p. 37-38.
[94] Ibid., p. 47.

Toop references KLF's manifesto for ambient music, which was sent out to critics along with copies of their album *Chill Out* (1990). Toop includes the four following points from the KLF manifesto in *Ocean of Sound*:

03. Ambient house is not New Age music.
11. Ambient house does not come to you: you have to go to it.
15. Ambient house is just a Monday night clique in the VIP bar at Heaven.
16. Ambient house is the first major music movement of the Nineties. [95]

In Chapter 8, entitled 'altered states iii: crystal world', Toop discusses the notion of time with the composer La Monte Young. Young suggests that humans have a desire to comprehend our relationship to time, and that this is linked to a universal framework of existence.[96] For Young, humans' conception of time is delineated into sections: humans have an 'understanding of periodicity', such as circadian rhythm, seasonal shifts, or rotations of the stars in the sky.[97] The 'crystal world' section finishes with Young's assertion that: 'Time is really a very important aspect of universal structure. What I have learned is it goes very slowly'.[98] The concept of time and the 'time-based' in relation to music and art is that time is a container that the viewer or listener's journey is encased in: time is a metaphorical capsule pipeline that bridges one place to another. The temporal aspect of *Array Infinitive* is used intentionally as a means to instigate affect. The speed that this 'temporal container' moves at conveys particular modes of listening and **be-ing**, and asks the listener to be transported to another place: an alternative environment where worldly worries and chattering thoughts are set aside, even if briefly, to allow the audience to be fully consumed in the moment.

> *This demand that sound should bow to escapist needs is a rejection of the potential impact in music's unfolding permeability over the past hundred years. Music - fluid, quick, ethereal, outreaching, time-based, erotic and mathematical, immersive and intangible, rational and unconscious, ambient and solid - has anticipated the aether talk of the information ocean.* [99]

> *(David Toop)*

See: Internal experiences of sound
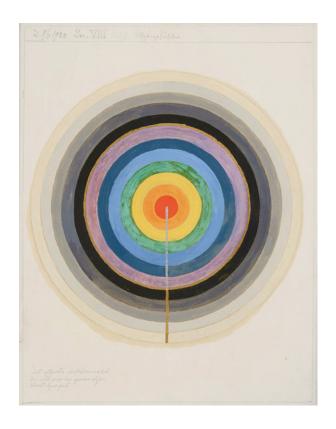
[95] David Toop, *Ocean of Sound: Ambient Sound and Radical Listening in the Age of Communication* (Serpents Tail, 2018 edition), p. 66.
[96] Ibid., Toop quoting La Monte Young, p. 179.
[97] Ibid.
[98] Ibid.
[99] In the final textual passage of the book, David Toop shares his final thoughts on the 'ocean of sound' (pp. 277-278).

I Am Radio

Figure 6.
Hilma af Klint, *Picture of the Starting Point,*
1920, oil on canvas

Hilma af Klint (1862-1944) was an artist who made an invisible world visible. She went about making **metaphysical** concepts, intricate philosophical notions, and revelatory experiences manifest visually through painting.[100] Distancing herself from conventional themes and practices prevalent in her period, she developed an abstract painting practice largely influenced by spiritualism, theosophy, and Rosicrucianism. Her work can be placed in a canon with Jeanne Natalie Wintsch, Agnes Pelton, and Georgina Houghton.

At the age of forty-three, through meetings with a small group of spiritualist women known as 'The Five' who met to communicate with and conjure images from the spirits, Hilma received a message to work 'in service of the mysteries' through her art.[101] Klint would enter into a meditative state to secure the connection with the spirit world.

100 Althaus, Karin, Mühling, Matthias, and Schneider, Sebastian, eds., *World Receivers: Georgina Houghton, Hilma af Klint, Emma Kunz*, exhibition catalogue, Lenbachhaus Munich (Hirmir, 2019) p. 13.
101 Ibid., p. 85.

Johan af Klint asks about the artist's role in this process. Does the artist create the work or is the artist a **conduit** for a higher consciousness? Many people understand af Klint's practice to be one where she **channelled** information onto the canvas, picking up ideas and messages from another realm, like an antenna receiving a broadcast from a different dimension. Af Klint was a pioneer of abstract painting and 'the spiritual' before Kandinsky, Rothko, and even Mondrian. Af Klint used colourful graphic forms, minimal shapes, symbols, letters, figurations, and titles which explored human existence and attempted to unify the macrocosm with the microcosm, life with death, the spiritual realm with the earthly, and masculine with feminine into a new kind of wholeness.[102]

Hilma af Klint is included here contextually as a reference to the act of improvisation. I include her to suggest that musical improvisation, or, in the case of *Array Infinitive*, audiovisual improvisation, is a form of **channelling**. This is similar to Sun Ra amongst other musicians and artists who proclaim they have received messages through an otherworldly source: this captures the notion of being compelled to play a certain note, make a specific mark on a canvas, or dance in a particular way, suggesting that these are one and the same.[103]

See: Becoming

102 Ibid., p. 19.
103 Sun Ra (1914-1933), Experimental jazz musician and bandleader with esoteric beliefs and practices.
<https:// www.sunraarkestra.com/1-main.html>

We Hear In Order To Listen

Hearing is listening in a passive form, to paraphrase Pauline Oliveros. There is an involuntary nature to hearing, which serves a practical purpose: it is useful for survival and for those who have hearing, a sense that cannot be avoided. It is, however, possible to hear without engaging in the act of listening.[104] This brings up notions of conscious or unconscious listening, whereby our attention is fundamental to what can be heard and to interactions within our own reality and personal space. This impacts how we form relationships with the objects, people, and things around us. Hearing comprises part of our experience and connects us to all things interdependently.[105]

Listening has a field, or a range, within which we can audibly pick up sounds and noises from the immediate vicinity. Correlating this to notions of theoretical physics, we could propose the following: 'What is a field? A field carries the potential for manifesting a force. Particles of objects inside a field may change or move'.[106] Quantum field theory suggests that particles have an 'aura' or force field, which cannot be seen but can be felt.[107]

As indicated by the idea of 'enchantment', there is a sense of **co-creation** and active participation between listener and sounds, as well as between audience and performer, and technology and experience. Within a 'listening field', sounds ebb, flow, shift, and alter, which ultimately creates manifestations of forces that shape perceived form and experience.[108] This active listening field engagement is present and focused upon. The experiential is centred, and the sound component is fundamental to the overall group container. There is an active loop of reciprocity with listening, an exchange of energy, a sympathetic vibration and a 'tuning in' of focus.[109] Oliveros' conceptualisation of this sort of active exchange is present in *Array Infinitive* through the shared group component of the piece, and in particular in the participatory version, which will be discussed in the next chapter.

See: Third Ear

104 Pauline Oliveros, *Quantum Listening* (Ignota, 2022), p. 37.
105 Ibid.
106 Ibid., p. 53, referencing Stephan Peterson, *The Quantum Tai Chi: Gauge Theory: The Dance of the Mind over Matter*, (Empyrean Quest, 1996).
107 Ibid., p. 52.
108 Ibid., p.57
109 Ibid., p. 53.

Figure 7.
Sophie Mars, *Mirror Me,* 2021, Installation atExposed Gallery London,
photo by Sophie Mars

Mirror Me

Sophie Mars explores themes of movement and spirituality. She incorporates collective experience and what she calls a 'synergetic energy' healing practice through VR technology and gesture. Mars is a dance and movement therapist and performance artist based in Berlin. Her work is immersive and explores ritual as a means of transforming a performance space into a spiritual platform. In *Mirror Me*, installed at Exposed Arts Gallery London in 2022, Sophie used integrative body-mind practices to create a one-on-one encounter with visitors in which they were guided in putting on a VR headset and having a short experience in a contained gallery space, which was meant to be healing and comfortable. Mars' exploration of the human body, both figuratively and in a disembodied sense through VR, as well as of more esoteric applications for VR, are relevant to *Array Infinitive* and touch upon the ethereal nature of this keywords section.

See: Transformative

The Magic's In The Movement

Figure 8.
De Kleuren van de Geest
(The Colours of the Mind) (1997)
Duration 00:42:39 Digital
Betacam | Jef Cornelis

The first new work I researched at the beginning of the PhD was Belgian artist Jef Cornelis' visual essay on trance music, *De Kleuren van de Geest (The Colours of the Mind)*. Here, 'trance music' means music that induces a different state of mind, regardless of musical genre. In the film, Cornelis references sectarian dances as well as rave gatherings. I was struck by the role of movement in these different examples, and this prompted me to consider dance as a vehicle for transcendence, and movement as a portal to the **metaphysical**. In one instance, sacred and even religious, and in the other, hedonistic and secular. However, there is value in the act of communion, and in community, especially in and amongst those also willing to be vulnerable enough or adventurous enough to venture into other states of being. This film highlights areas of reference for *Array Infinitive* that centre on movement, music, and transcendence.

In this film, Cornelis created a network of connections between fifteenth- and sixteenth-century European paintings that illustrate Italian tarantella dances and Moorish dances alongside esoteric Gnawa rituals from North Africa. Colour is symbolic in these images, delineating psychological states such as possession, stress, depression, and anxiety, which must all be exorcised.[110] The suggestion in the film is that, through folk and ceremonial dances, there is the possibility of transgression, and the bringing forth of a form of healing, which is devoid of reason or rational explanation.

107 Jef Cornelis, *De Kleuren van de Geest* (1997), Argos <https://www.argosarts.org/work/efab13d18734422eb95bcb55e7c4a2dd> [accessed 12 February 2020].

Cornelis asks if this state of heightened consciousness can also be achieved through electronic music, rave parties, and warehouse dance floors.

Included in the Trance Dance exhibition at the Antwerp Royal Museum of Fine Arts in 1997, *De Kleuren van de Geest* traverses the spiritual and social role of self-induced altered states of consciousness, drawing links between the act of dancing to repetitive music and the trance-like states it engenders.[111] The film prompts the following two questions, amongst others: through the act or action of intentional movement, are we able to relinquish an embodied rationalism? Second, is it possible to transcend the physical body and connect the mind or spirit to a greater form of conscious awareness?

[111] Nav Haq, ed., *Rave: Rave and its Influence on Art and Culture* (Black Dog Publishing, 2016), p. 89.

Keywords Intranautical

Altered state of consciousness An alteration in a person's typical mental state, as a consequence of or a reaction to certain substances, extreme experiences, meditation or hypnotic techniques.

DMT Dimethyltryptamine, a naturally occurring derivative of tryptamine (a hallucinogenic chemical), an entheogen (psychoactive plants used for sacred or spiritual rituals) used as a vehicle to altered states of consciousness for ceremonial, medicinal or recreational purposes.

Euphoria A conscious awareness of elation, perceptive excitement or joy.

Internal experiences of sound Thoughts, feelings, or emotions that form as a direct result of listening.

Journey The act of travelling somewhere either physically, emotionally or metaphysically.

Metamorphosis An evolution from one state to another; a transmutation, conversion or revolutionisation.

Meditative Meditative - Consumed by or immersed in meditation, repetitive visuals, motions or sounds, or contemplative thought.

Mind-manifesting (Humphry Osmond) Term created by Osmand to describe the effects of psychedelics.

Psychedelic (Humphry Osmond) Term created by Osmand to describe the effects of substances that elicit a mystical or revelatory reaction; euphonious and uncontaminated by other associations..

Transcendence An occurrence whereby profound affect happens, resulting in moving beyond one's normal feelings or self-perception; a form of elation.

Transformative Involving an act of transition, development or innovation; going from one state to another.

Flashback

First Taste Of The Beyond

The **psychedelic** art movement is synonymous with the 1960s counterculture revolution that occurred contemporaneously. Different components of this movement could be incorporated into the canon of this thesis, including mandalas, Exploding Eye films, and op art. Typically, this work used visual displays, both moving and static images, which create a motion-like effect. Heavily influenced by consciousness-expanding drugs prevalent at the time, much of this work used vivid colours, repetition, and optical illusions as an attempt to recreate a **psychedelic** experience: a vision quest, or a change in perception or perspective. British psychologist Humphry Osmond coined the term **psychedelic**, along with writer Aldous Huxley, after his research with hallucinogens in a psychiatric setting. Huxley became a test patient of Osmond's, finding the subsequent experiences mystical and revelatory. The collaboration culminated in Osmond making the following statement in the 1957 issue of the *Annals of the New York Academy of Sciences*: 'I have tried to find an appropriate name for the agents under discussion: a name that will include the concepts of enriching the mind and enlarging the vision [...] My choice, because it is clear, euphonious and uncontaminated by other associations, is **psychedelic, mind-manifesting**.' [112]

See: Transformative

112 Abram Hoffer, 'Obituary: Humphry Osmond, *The Guardian*, (26 February 2004) <https://www.theguardian.com/ society/2004/ feb/26/mentalhealth.guardianobituaries> [accessed 7 October 2022].

The Responsive Eye

Figure 10.
Bridget Riley, *Right Angle Curves Study No. 4,* gouache on paper, 1966, photo Archeus Post Modern

Op art, or optical art, which also forms part of the **psychedelic** movement, used optical illusions to create a sense of movement or vibration through repetition. These were predominantly produced through paintings or illustrations that used geometric shapes and repetitive forms, which referred to the psychology and physiology of perception.

Starting in the 1960s, Bridget Riley creates minimal drawings and paintings that use simple geometric forms such as lines, circles, or squares. Her drawings 'come alive' when the viewer looks at them, often triggering sensations of movement, vibration, and depth. Her inclusion in 'The Responsive Eye' group exhibition at the Museum of Modern Art, New York, led to the op art movement. Riley's work is an exploration of line, colour, and light, the creation of a fleeting glimpse, or a shimmering optic.[113] There is a correlation between op art and VR, as both of these involve images that have a hypnotic quality, and that play with modulation and motion illusion.

See: Activate

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113 Op Art, 'Bridget Riley', <http://www.op-art.co.uk/bridget-riley/> [accessed 17 August 2022].

The Cinematic Bridget Riley

Projections As An Experienced Live Event
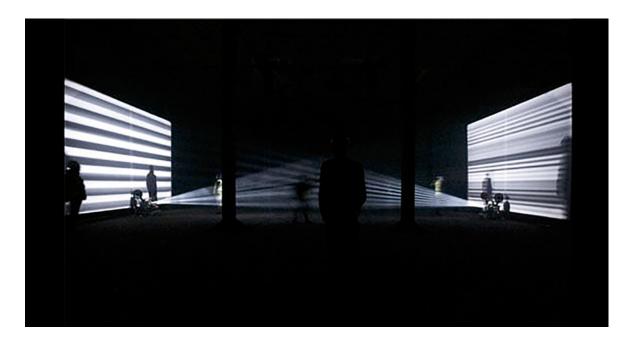
Figure 11.
Lis Rhodes, *Light Music*, 1975,
duration 25mins, photo Lux

The terms 'Expanded Cinema' and 'Exploding Eye', associated with 1960s American and British experimental cinema and filmmaking, were coined by American filmmaker Stan Van Der Beek. These works questioned classic forms of spectatorship, and the filmmakers wanted to work in a more participatory manner with the audience. They imagined a film projection as a live event and experience that utilised experimental forms of sound and reoriented the filmmaker as a performer. Often, these works were shown in alternative locations rather than formal cinemas, such as art galleries, warehouse spaces, or through multi-screen projections, and showings included performance, sculpture, and installation.[114] Mike Leonard worked with the band Pink Floyd to create light shows for their performances. He used coloured cellophane and colourful optical lenses fastened to rotating cogs and wheels, projecting light through an array of prisms and glass.[115]

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[114] Op Art, 'Bridget Riley', <http://www.op-art.co.uk/bridget-riley/> [accessed 17 August 2022].
[115] Mark Campbell, 'Mike Leonard: The man who created Pink Floyd's light show magic', Dangerous Minds (2011) <https://dangerousminds.net/comments/mike_leonard_the_man_who_created_pink_floyds_light_show_magic> [accessed 7 October 2022].

Another example is Lis Rhodes' *Light Music*, which was a key work within the London Filmmakers' Cooperative in the 1970s. The work brought the projector (in this case two projectors) out of the hidden projectionist room, and displayed them visibly throwing light at one another. This created stripes of rumination that participants were invited to walk amongst and through, creating undulating, moving light beams and silhouettes accompanied by otherworldly sounds coming from the projectors. The event was a poetic manifestation of a sound wave, enacting a human interaction with machines that generated a symphony and ballet of light.

The creation of new visionary experiences, both through avant-garde filmmaking and as an accompaniment to live music, moving images developed alongside other outputs during this time period. These films and happenings were visually and emotionally **transformative** and attempted to replicate the **psychedelic** experience on celluloid. Annabel Nicholson's *Jaded Vision* (1973) and Malcom Le Grice's films also fit into this category.[116] This correlates with Bal's notion of the performative, mentioned in the first section of this chapter, through an experienced temporal interaction with an art installation and the ephemeral nature that exists in that in-betweeness of time during the encounter.[117]

See: Presence and immersion

 115 Mark Campbell, 'Mike Leonard: The man who created Pink Floyd's light show magic', Dangerous Minds (2011)
<https://dangerousminds.net/comments/mike_leonard_the_man_who_created_pink_floyds_light_show_magic> [accessed 7 October 2022].
116 Anabel Nicholson, *Jaded Vision* (1973), film 10min, 16mm, 2 or 3 screen performance with projected idea and diagram, live sound.
117 Mieke Bal, Endless Andness: *The Politics of Abstraction According to Ann Veronica Janssens* (Bloomsbury Academic London, 2013), p. 54.

Turn On Tune In

A key reference for this section is Jonathan Weinel's *Inner Sound* (2018), which surveys **Altered States of Consciousness (ASC)** in art and culture, including contemporary audiovisual work. Weinel is a musician, AV artist, and lecturer at the University of Greenwich in London. The Introduction of *Inner Sound* begins with a reference to Aldous Huxley's literary work dedicated to **ASC**, *The Doors of Perception* (1954), which sees Huxley describing in detail his experiences of being under the influence of mescaline.[118] Weinel aims to establish a survey of **ASC** and their relationships with art and music, as well as the potential of such applications, the ways in which they may be designed, and how these simulations could be useful in digital society.[119] A key question here is how audiovisual media can generate **ASC**, in order to advance the theory of these simulations.[120] Two standards of consciousness are brought forth, which conceptualise **ASC** as points on a continuum of potentials, rather than detached states unto themselves, especially when regarding the ways in which sound, music, and visuals affect listeners/viewers, including by evoking particular connotations or feelings.[121]

Charles Tart's book ***Altered States of Consciousness*** (1969) initiated the use of the term in a wider context and cites Arnold M. Ludwig's definition: 'any mental state induced by physiological, psychological, or pharmacological manoeuvres ... representing a suffcient deviation in subjective experience from certain general norms [that an individual may experience during] alert, waking consciousness'.[122] A multitude of events and experiences can create an **ASC**, including sensory deprivation – as in flotation tank suspension, and sensory overload – as in Ganzfeld light tests. Repetitive movements, **meditation**, dehydration, or psychedelic substances can all produce **ASC**.[123] Responses to **ASC** can take a variety of forms, including alterations to one's sense of self, mystical experiences, out-of-body experiences, heightened emotions, contortions of time, and perceptual distortions of the senses, be they visual hallucinations, aural, somatic, or olfactory.[124]

118 Jonathan Weinel, *Inner Sound: Altered States of Consciousness in Electronic Music and Audio-Visual Media* (Oxford University Press, 2018), p. 7.
119 Ibid, p. 9.
120 Ibid, p. 11.
121 Ibid, p. 14.
122 Charles Tart, *Altered States of Consciousness* (John Wiley & Sons, 1969), p. 9-10; Weinel, p. 18.
123 Weinel, p. 18.
124 Ibid.

At the start of Chapter 7, titled 'Virtual Unreality', a Rudy Rucker quote is included:

> *Can computers supplant psychedelics? As one of my fellow teachers at San Jose said to me, "Computers are to the nineties what LSD was to the sixties." With cool graphics and virtual reality, we can pursue the dream of the pure, nonphysical, software high.*[125]

Weinel takes a survey of VR works that explore ASC in this chapter including VJ London's AV Depot (2016), video games such as *Gnosis* (Fathomable, 2016), gaming 'experiences' such as Deepak Chopra's *Leela* (Curious Pictures, 2011), and VR meditation games such as *Guided Meditation VR* (Cubicle Ninjas, 2016).[126] Particularly when analysing games that are meant to produce **psychedelic**-like experiences, Weinel mentions his own work *Psych Dome* (2013), which he describes as an **ASC** simulation that creates real-time audiovisualisation, whereby a player wearing an electroencephalography (EEG) headset produces control signals that affect the colours of the visuals and the perimeters of the sound and visuals, which are meant to create simulation of visual hallucination.[127] Another work referenced here is Robin Arnott's *SoundSelf* (2016), which uses the voice to control audiovisual processing and is 'inspired by a group ohm chant on LSD' to induce immersion into a transported hallucinatory psychedelic-like environment.[128] VR can aid in synaesthetic explorations of vibes and affectivity, providing a means to bring forth psychedelic or **meditative** forms, becoming a **transformative** tool for traversing and reconfiguring conscious experience.[129]

At the start of Chapter 8, titled 'Abstractions', a Terence McKenna quote about the *internal experiences of sound* from *Re:Evolution* is included:

> *The emphasis in house music and rave culture on physiologically compatible rhythms, and this sort of thing, is really the re-discovery of the art of natural magic with sound. That sound, properly understood, especially percussive sound, can actually change neurological states, and large groups of people getting together in the presence of this kind of music are creating a telepathic community, a bonding, that hopefully will be strong enough to carry the vision out into the mainstream of society.*[130]

125 Rudy Rucker, *Mondo* (Harper Perennial, 2000), quoted in Weinel, p. 135.
126 Weinel, pp. 135-148.
127 Ibid, p. 149.
128 Ibid, p. 149-50.
129 Ibid, p. 150-155.
130 The Shamen with Terence McKenna, *Re: Evolution*, limited edition CD (One Little Indian, 1993); Weinel, p. 157.

Throughout *Inner Sound*, Weinel offers a look at twentieth-century electronic music and audiovisual media that picks up on recent trends of taking greater reflection of the internal experiences of sound and music as well as research exploring **ASC**.[131] In particular, Weinel offers a conceptual format whereby artists, programmers, designers, and composers utilise this model to create new work that induces **ASC**, as a new form of expression which references a rich array of cultural artefacts exploring this specific ethos, which ultimately has a place within culture and society.[132] The development of this field, as part of the ever-advancing technologies available to us, can enable us to abstract from the theatre of consciousness and bring it back to the digital domain.[133] VR, the cyberdelic, and rave culture can comfortably co-exist creatively and thematically. *Inner Sound* references this notion and develops an archive of work that exists for this purpose, and *Array Infinitive* is in conversation with this canon.

See: Digital affective

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[131] Weinel, p. 166.
[132] Ibid.
[133] Ibid.

Rave, Rearrangement And The Senses

Nav Haq's introduction to the book *Rave: Rave and Its Influence on Art and Culture* (2016), titled 'The Electro-chemical Black Swan', encapsulates several poignant thoughts for reference. This book was published as an accompaniment to the exhibition 'Energy Flash – The Rave Movement' at MHKA in Antwerp, which ran from 17th June to 25th September 2016. Putting the socioeconomic aspects that influenced rave culture aside, this text instead focuses on the visceral, affective experience that raves generate; the sense here is one of losing control, a 'rearrangement of the senses' and ultimately the creation of a mystifying experience of **transcendence**.[134]

Through this act of **transcendence**, something new opens up both on the level of the singular and of the collective, whereby a whole new plane of being is possible.[135] Similarities are also drawn between the counterculture of the 1960s and what is known as the 'Second Summer of Love' (1988/89), linking it to a previous psychedelic youth movement.[136] Haq uses certain phenomena to encapsulate the ideologies and themes involved in rave culture, which include 'creativity', 'technology', 'autonomy', and 'civil liberty'.[137] Rave is an autonomous movement that creates alternative modes and methods for living and engaging with people socially and creatively, especially during precarious or turbulent times of societal rearrangement.[138]

See: Euphoria

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134 Nav Haq, 'The Electro-chemical Black Swan' in *Rave*, ed. by Nav Haq, p. 11.
135 Ibid.
136 Ibid., p. 12.
137 Ibid.
138 Ibid., p. 17.

Chamber for Endogenous DMT
(Collapsing the Wave Function)
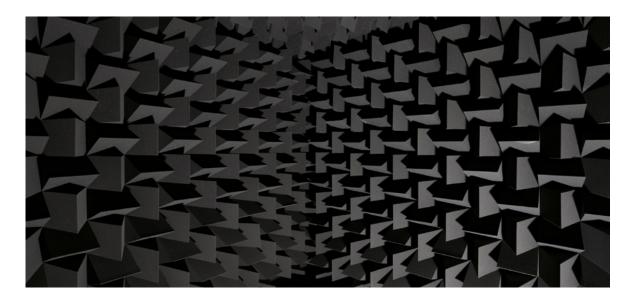
Figure 12.
Haroon Mirza, *Chamber for Endogenous DMT (Collapsing the Wave Function)*, 176 Project Space, London, 2017, photo by Haroon Mirza

Haroon Mirza's sensory deprivation anechoic chamber sculpture/experience, *Chamber for Endogenous **DMT** (Collapsing the Wave Function)*, was shown in 2017 at 176 Project Space in London. The piece also became part of a research study with Imperial College London and the University of Greenwich looking at replication of genuine **DMT ASC. DMT,** or **dimethyltryptamine**, is a naturally-occurring chemical in flora and fauna, and is also found in the human brain. Some theories suggest that **DMT** is released into the body from glands during near-death experiences, and it is the active ingredient in many biological organic **psychedelic** drugs. Mirza's work was part of a larger exhibition, 'For a Partnership Society', which included video projections, light works, and sound pieces. The exhibit considered two key quantum points: that consciousness can control matter and matter can control consciousness. Participants were invited to enter into *Chamber for Endogenous **DMT***, a pitch-black anechoic chamber, and those who signed up to participate in the study would thereafter self-report their experiences. Sitting in a void, with no audible sounds of life nor any visual imagery to latch onto, replicated the state usually experienced with mind-altering substances.[139]

139 Haroon Mirza, *Chamber for Endogenous DMT (Collapsing the Wave Function)* in "For a Partnership Society! exhibition at 176 Project Space London (2017) <https://www.zabludowiczcollection.com/projects/view/chamber-for- endogenous-dmt-collapsing-the-wave-function> [accessed 12 October 2022].

This work is an exploration of how art can influence human perception and, in particular, prolong or evoke a psychotropic reaction or response.[140] Noting its relation to science fiction, Vector magazine considers the relationship that exists between humans and technology and the ways in which that characterises our reality, in similar ways that can be read on the pages of science-fiction literature when looking at 'cognitive estrangement' or a form of spotlighting our world by contrasting it with a radical other.[141] The main query of the exhibition was to discover the possibilities of art that has the capacity to affect a person's state of mind or even alter it in the same ways that **psychedelic** substances or **meditative** practices can and do.

See: Metamorphosis

139 Haroon Mirza, *Chamber for Endogenous DMT (Collapsing the Wave Function)* in "For a Partnership Society! exhibition at 176 Project Space London (2017) <https://www.zabludowiczcollection.com/projects/view/chamber-for- endogenous-dmt-collapsing-the-wave-function> [accessed 12 October 2022].
140 Polina Levotin, 'Exhibition Review: Haroon Mirza/HRM199', *Vector and the BSFA* (2017), <https://vector-bsfa.com/ 2017/10/04/exhibition-review-haroon-mirzahrm199/> [accessed 12 October 2022].
141 Ibid.

Co-Producing A Shared Reality

Space Time VR Society

Figure 13.
Rashaad Newsome, *Assembly,*
The Armory, NYC, 2022 photo
by Danny Ashkenasi

Figure 14,

Rashaad Newsome, *Being The Digital Griot, decolonization workshop, artificial intelligence installation,* as part of *Assembly,* 2022, Park Avenue Armory, Photography by Stephanie Berger, courtesy of Rashaad Newsome Studio and Park Avenue Armory

For his Park Avenue Armory show in 2022, Rashaad Newsome presented a largescale work entitled *Assembly*. This piece included VR projections and a digital avatar that lead participatory dance classes and **meditative** activations to the public through a projected screen, as well as sculpture installed in the space as part of the larger installation and also live performances throughout the exhibition run. The range of live events included musical performance with a band and singer, and dance with improvising femme vogue dancers.[142] Newsome's work addresses hierarchy and social protocol. *Assembly* relates to *Array Infinitive* through the intricate structures of spectatorship it creates, and through the experience of entering-into and being-within the installation. Audiences can fix their respective gazes on different focal points, generating different perspectives within the collective. Participants can act as both voyeur and spectacle. This format is deepened by way of live performance and movement, in particular by the dancers but also by the audience members taking part. Newsome has been interested in post-digital embodiment for many years. This has been made manifest in his practice through films that incorporate dancers in 3D kaleidoscopic renderings (*Icon*, 2016) or through improvised vogue performances that utilise gesture driven image-making in the form of projected mark-making, a sort of visceral painting created through dance (*FIVE, THE DRAWING CENTER*, 2014).

138 Park Avenue Armory, *Assembly*: Program & Events (2022), <https://rashaadnewsome.com/#content> [accessed 11 May 2023].

143 The Chimney, Solo Exhibition Rashaad Newsome, *FIVE (THE DRAWING CENTER)* (2015), <https:// www.thechimneynyc.com/ exhibition-2015-rashaad-newsome-five-the-drawing-center> [accessed 11 May 2023].

The installation aspect of the *Assembly* included large projections, audio affirmations, graphic wallpaper, custom surface coverings and sculpture. The AI robot character called 'Being' acted as guide and interacted with the audience. Being was a gender-nonconforming femme dance instructor who led participants on a crash course in vogue dance moves, including the background, history, and structure of the dance form. *Assembly* not only incorporated technology and virtual graphics, it presented a multimodal framework similar to *Array Infinitive*, whereby the augmented audience contained both passive and active observers. Different audiences 'do' different things in *Assembly* as part of an amalgamated collective. As I present in this thesis, the *Array Infinitive* project presents and expands upon the framework of spectatorship, potentials, and perspectives within a group experience.

Figure 15,
Rashaad Newsome, *Assembly* installation shot, 2022, Park Avenue Armory, Photography by Stephanie Berger, courtesy of Rashaad Newsome Studio and Park Avenue Armory

Keywords Empirical

Bodymind   (Maike Bleeker) A form of 'corporeal literacy': a means to describe and interpret information, which includes visual, aural or media-based modes of interfacing our bodies with technology and the world we encounter.

Disembodied   A separation of the physical from the experienced encounter, in this sense through non-representational abstraction, augmented environments, performance and VR experience.

Embodiment   A form of manifestation, an idea, feeling or expression being realised into physical form and/or through the human body.

Enchantment   (Ericka Fischer-Lichte) A charm, captivation or transformation that emerges through a performance experience, with considerations of the bodily copresence of performers, audience, material objects and the space itself - collaborating on an event.

Encounter   An experience of a situation, longer than fleeting.

Experiential   A temporal awareness of the immediate environment, atmosphere and aura.

Happening   (Allan Kaprow) An art event that can involve a variety of elements including sound, music, performance, dance and theatre, which has a live/experiential tone and requires presence and a form of participation by everyone involved.

Presence and immersion   An experiential aspect of VR (presence) that corresponds with the technological or digital VR elements that assist the participant in experiencing a sense of presence (immersion).

Verisimilar   A depiction of reality.

How Did Neo Learn Kung Fu?

Corporeal Literacy And The Bodymind

Meditations on technology and **embodiment** are found within Volume 10 of *Das Neue Alphabet (DNA)* entitled *Re_Visioning Bodies*.[144] Maaike Bleeker is Professor in Media and Culture Studies at Utrecht University. Her research is grounded in theatre, dance, performance studies, art history, and philosophy. She weaves her essay, 'Corporeal Literacy', into the narrative of the film *The Matrix* (1999), in which Neo 'learns' kung fu via a plug in the back of his head, where this knowledge and skillset is 'downloaded'. Through the act of receiving this digital information internally, and then simulating sparring matches with his teacher, Morpheus, Neo adapts, learning new modes of engagement and new forms of cognition – he develops a new **embodied** literacy.[145] As Bleeker puts it, literacy can be defined as a means to describe and interpret information, which includes visual, aural, or multi-media-based content. However, the difference with corporeal literacy is in the physical dimensions of perception and sensing, and the ways that this is informed by practices of 'doing': by the use of tools or technologies, by the environments within which humans engage, as well as the habits or practices incorporated into these environments.[146] This concept of corporeal literacy offers considerations around the effects of bodily practices that co-create our modes of perception and sense-making through the human mind.[147] 'Mind' in this context does not exist separately from the physical body, but rather emerges from the interfacing of our bodies with the world we encounter, as part of our coevolution with technology. A generative term for this concept is **bodymind**.[148]

Bleeker asks important questions on this topic, such as, 'How do technologies afford modes of engaging with knowledge that respond to the bodies' potential for perception and understanding? At the same time, how do technologies mediate the development of new cognitive perceptual skills and, by extension, new modes of thinking and imagining?'[149] The study of these questions comes under the umbrella of enactive cognition, a branch of cognitive science that suggests human understanding arises through dynamic interactions between an acting organism and its environment.[150]

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144 Maaike Bleeker 'Corporeal Literacy' in *Re_Visioning Bodies: Das Neue Alphabet*, 10 (2022), ed., Daniel Neugebauer (Spector Books, 2022), pp. 28-41.
145 Ibid., p. 28.
146 Ibid., pp. 28-29.
147 Ibid., p. 29.
148 Ibid.
149 Ibid., p. 30.
150 'Embodied Cognition', *Stanford Encyclopedia of Philosophy* (2021), <https://plato.stanford.edu/entries/embodied- cognition/> [accessed 27 September 2022].

What we perceive is determined by what we do (or what we know how to do) and it is determined by what we are ready to do'.[152] These statements by Noë in his book *Action is Perception* (2004) are relevant to Neo's kung fu training in *The Matrix*.[153] Noë acknowledges how the action of movement impacts the generation of perception by effectuating changes in sensory stimulation.[154] Having perception is not just to have sensations, it is to make sense of sensory impressions – not only our experience of the world, but also of our capacity to understand it.[155] In relation to technology, the ways in which we engage with it affect the methods by which sensorimotor skills come into being and thus co-create our perception.[156] Technology has the ability to expand our potential for action, for imaging, and for understanding.[157]

Vital to the survival of Neo and the rebels of Zion in *The Matrix* is the ability to avoid being bound in the virtual, technically produced world, but also to not be bound within their real-world 'cave', to use a Platonic reference. Here, Bleeker presents the idea of 'mixed reality', which has been written about by Mark Hansen and also Monika Fleischmann and Wolfgang Strauss.[158] In this in-between world, virtual reality is no longer understood as an abstracted realm, but rather a new dimension of reality opened up by technology. She cites the following from Hansen:

> "*Rather than conceiving the virtual as a total technical simulacrum and as the opening of a fully **immersive**, self-contained fantasy world, the mixed reality paradigm treats it as simply one more realm among others that can be accessed through **embodied** perception or enaction*".

This extension of reality through virtual technology creates a 'mixed reality' the moment at which VR delocalises and reassigns human sensation through **presence** and **immersion**, thus exposing a technical conditioning of experience, centring on what Hansen calls 'the constitutive or ontological role of the body in giving birth to the world'.[160] In other words, our human understanding, modes of perception, ways of **experiencing**, and manner of actions are inherently interlaced with the technologies we use, thus we literally perceive and conceive through them.[161]

151 Maaike Bleeker 'Corporeal Literacy' in *Re_Visioning Bodies: Das Neue Alphabet,* 10 (2022), ed., Daniel Neugebauer (Spector Books, 2022) p. 30, quoting Alain Berthoz, The Brain's Sense of Movement (Harvard University Press, 2000), p. 90, and Alva Noë, *Action is Perception* (MIT Press, 2004).
152 Alva Noë, *Action is Perception* (MIT Press, 2004) as referenced by Bleeker.
153 Bleeker, pp. 33-34.
154 Ibid., p. 34.
155 Ibid.
156 Ibid.
157 Ibid., p. 36.
158 Ibid.
159 Mark B. N. Hansen, *Bodies in Code: Interfaces with Digital Media* (Routledge, 2006).
160 Ibid., p. 5, quoted in Bleeker, p. 37.
161 Bleeker, p. 37.

Returning to Noë's key ideas of what we do, what we know how to do, and what we are ready to do: these principles are profoundly changed, expanded upon, and extended through technology and our interactions with it. Bleeker quotes cultural theorist Brian Rotman, who refers to the philosopher and cognitive scientist, and author of *Natural Born Cyborg*, Andy Clark. Rotman notes that the human:

> *has from the beginning of the species been a three-way hybrid, a bio-cultural-technological amalgam: the "human mind" - its subjectivities, affects, agency, and forms of consciousness - having been put into form by a succession of physical and cognitive technologies at its disposal.*[162]

Technologies such as the camera obscura, stereoscope, and now VR can be considered culturally archetypal for new modes of perceiving and new concepts of perception and **embodiment**.[163] Developing this, we can assume that ways of perceiving are not just the result of physical encounters with technologies, but that these interactions get incorporated into and subsequently transform modes of perception and understanding.[164]

Bodies can reconstruct how sense processes are **experienced** as audible and visual, and both simultaneously. These reorganisations are emblematic of a metamorphosis in how bodies are corporeally literate.[165] The ways in which we perceive – our methods of understanding – are cooperatively formed by intra-actions of human bodies and the requirements placed on them in worlds they encounter, whether or not those worlds are in another dimension.[166]

162 Brian Rotman, *Becoming Beside Ourselves* (Duke University Press, 2008), p. 1.
163 Giles Deleuze, *Cinema I: The Movement-Image* (University of Minnesota Press, 1986), quoted in Bleeker, p. 39.
164 Jonathan Crary, *Suspensions of Perception: Attention, Spectacle, and Modern Culture* (Monoskop, 1999), quoted in Bleeker, p. 39.
165 Bleeker, p. 40.
166 Ibid., p. 41.

Continuing with the theme of **embodiment** (and particularly in relation to VR and immersive performance), a text by Shi Ke in the book, ***Embodiment** and **Disembodiment** in Live Art: From Grotowski to Hologram*, offers helpful information from a variety of sources. I will go into greater detail about performance art in the next section, but Ke's amalgamation of **embodiment**, live performance, and VR is relevant here. In Ke's vision, 'Live Art is a process of coding, decoding, reverberation, and mutual participation'.[167] Virtual reality is an extreme realisation of **disembodiment**, and creates a potential utopian version of **immersion**, as a form of retreating into another realm.[168] VR as a technology made an appearance in William Gibson's *Neuromancer* (1984) and was hypothesised and examined as an academic topic in the 1990s, which ultimately led, again, to *The Matrix*. Themes dealt with include **embodiment** – how a performer deals with their own body, as well as others' bodies, and how we exist in our lived body if it is an inescapable simulation, a cyborg, or not actually real.[169] Shi Ke quotes digital cultures performance theorist Jon McKenzie (1994) in saying that VR has been characterised as 'machines citing bodies citing machines', as it blurs the margin between performer and audience.[170] Through VR, one can distil one's person down to an exclusively **disembodied** mind within a virtual, alternative reality: creating the two extremities of **disembodiment**: a biological–mechanical outer case on one hand, and a legitimate, recognisable **encounter** through visual illusion on the other, reducing the perceiver into a **verisimilar** apparition.[171]

See: Channelling

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167 Shi Ke, *Embodiment and Disembodiment in Live Art: From Grotowski to Hologram* (Routledge, 2020), p. 210.
168 Ibid., p. 192.
169 Ibid.
170 Jon McKenzie, 'Virtual Reality: Performance, Immersion, and the Thaw', *TDR*, 38 (1994), 83–106 (103).
171 Ke, pp. 192-193.

Activate Environment: Let Audience Discover Easter Eggs

Action art – that which involves the temporal, the gestural, the sonic, or the olfactory – offers a relational foundation and an area from which to borrow. **Happenings** create areas of cross-pollination within which a work can be explored, taken in, and **experienced**. The significance of 'being there' is central to **happenings** and echoes Bruno Latour's ideas from earlier on in this chapter about affectation, liveness, and the human body as an interface. Allan Kaprow says of his own work that embedded in the **Happenings** were the idea of a palimpsest, a re-making, and a plan to change each time the piece was made. This was in direct opposition to the idea presented in the late 1950s of the artwork needing to be fixed, or to have an immutable form.[172] This notion evokes an aspect of the improvised and the channelled – it is never the same twice. It simply comes forth.

Movement was introduced into fine art through the **Happening**. Instead of a formal passive spectatorship, the work was participatory and unpredictable, which brought in the additional element of chance, encouraging conversations regarding the temporality and legacy of an artwork. If nothing material remains, then did it even exist?[173] **Happenings** promoted the setting-aside of traditional decorum and politeness, allowing the audience to fully **immerse** themselves in the 'true' essence of art and of life.[174]

Time-space connections, spatial considerations, ambiance, action, and affect were part of a **Happening**. The idea of **embodied experience** was encapsulated in this genre.

See: Co-creation

172 Allan Kaprow, 'Allan Kaprow on Reinventions', <http://allankaprow.com/about_reinvetion.html> [accessed 5 October 2022], referencing Allan Kaprow, 7 Environments (Studio Morra, 1992), p. 23.
173 Rethinking the Future, *Art Movement: Happening*, <https://www.re-thinkingthefuture.com/architectural-community/ a6057-art-movement-happening/> [accessed 5 October 2022].
174 Ibid.

Enchantment And The Performative Turn

A key source on performance theory is Erika Fischer-Lichte and her book *The Transformative Power of Performance*. Fischer-Lichte's concept of performance as a form of **'enchantment'** may possibly be read as having a specific social or cultural implication. However, it looks to a deeper **experience** of being in the world and of becoming newly conscious of that be-ing or is-ness. Fischer-Lichte's basic concept of **'enchantment'** shares common ground with 'defamiliarization', important to the Russian formalists and most clearly articulated by Russian literary theorist Viktor Shklovsky. His often-quoted definition of art is similar to the approach of Fischer-Lichte, insofar as he speaks of sensations of life, of conjuring a sense of feeling, of making the stone 'stony', and of focusing on processes of perception.[175]

I want to further explore Lichte's theorisation of **enchantment** as involving a 'lifting' of everyone slightly above the present.[176] It is these moments in time, which are described as emotionally voluminous, generous, aesthetically striking, and intersubjectively intense, that Fischer-Lichte calls moments of **enchantment**.[177] The assertions she makes around co-creating the performative **experience**, which involves a synergetic **embodiment** of both performers and spectators in a live moment, opens up a potential for the 'transformative power of performance'.[178] This situation creates a shared exchange, with each element performing an equally indispensable role.

Fischer-Lichte further explores co-creation through analysing works such as Mariana Abramović's *Lips of Thomas* (1975). In *Lips of Thomas*, Abramović ate a jar of honey and drank red wine. She then broke the honey jar with her hand, cutting herself and bleeding in the process, after which she used the broken glass to carve a five-pointed star on her stomach, and then whipped herself on the back. Finally, she lay on a cross made of ice, which was positioned below a hanging heater. After thirty minutes, a spectator spontaneously ended the performance by covering Abramović with coats, reconfiguring the performance roles.[179] Traditionally, in galleries or theatre spaces, there is a separation of art and spectator, or performance and observer. In this instance, however, the interference by the audience member transformed the involved spectators into actors.[180]

175 Viktor Shklovsky, 'Art as Technique,' in *Russian Formalist Criticism: Four essays,* trans. Lee T. Lemon and Marion J. Reis (University of Nebraska Press, 1965), p. 12, referenced by Marvin Carlson, 'Introduction' to Erika Fischer-Lichte, *The Transformative Power of Performance* (Routledge, 2008), p. 7.
176 Jill Dolan, *Utopia in Performance: Finding Hope at the Theatre* (University of Michigan Press, 2005), p. 5.
177 Marvin Carlson, 'Introduction' to Erika Fischer-Lichte, *The Transformative Power of Performance* (Routledge, 2008), p. 9.
178 Dolan, p. 97.
179 Erika Fischer-Lichte, *The Transformative Power of Performance: A New Aesthetics* (Routledge, 2008), p. 11.
180 Ibid., p. 13.

This sort of 'event' is different from Futurist 'serata', Dadaist soirées, and Surrealist 'guided tours'. Instead, the event creates a new reality for all participants of the performance whereby it is not merely interpreted but first and foremost **experienced**.[181] This redefines the relationship between subject and object, actor and spectator, the observer and the observed, but also critically between the performative elements of signifier and signified.[182] In *Lips of Thomas*, there is the development of a real-time common situation, transforming everyone into co-subjects.[183] The situation triggered physiological, affective volitional, energetic, and motor reactions that motivated further actions – creating an oscillatory relationship between all involved.[184]

The notion of metamorphosis through these gestural and **experiential** processes can be defined as 'the performative turn'.[185] This defines an **experience** or event that includes an artist, observers, listeners, and spectators who create a new focal point of genesis, reorienting the work as an object in its own right, away from the intentions of the creator-subject.[186] What comes from this is an altered relationship between the material and semiotic status of objects in the performance, whereby their use has changed. This creates new forms of autonomy, opening up new possibilities for those involved to have a transformational **experience**.[187]

Allan Kaprow's **Happenings**, mentioned in the previous section, are also brought forth by Fischer-Lichte in relation to music and sound. The idea of performance as 'event' or '**experience**' is fundamental. Fischer-Lichte drew connections between **happenings** and experimental music or the performative nature of experimental composition. John Cage, who Fischer-Lichte considers to have already set the 'performative turn' in motion by the early 1950s, was well before Abramović.[188] Cage's instructed compositional gestures, as part of an orchestral score, created a movement that was visible to the concert audience. This type of work incorporated a gestural and visual element. Describing the work that begets a new relationship, or feedback loop, between musicians and listeners, Karlheinz Stockhausen invoked terms such as 'scenic music', Dieter Schebel used the term 'visual music', and Mauricio Kagel used the term 'instrumental theatre'.[189]

181 Ibid., p. 17.
182 Ibid.
183 Ibid.
184 Ibid.
185 Ibid., pp. 22-23.
186 Ibid.
187 Ibid.
188 Fischer-Lichte, pp. 233-240.
189 Christa Brüstle, 'Performance / Performativitaet in der neuen Musik', in E. Fisher-Lichte and C. Wulf, eds., *Theorien des Performativen, Paragrana vol. 10* (2001), pp. 271-283, referenced in Fischer-Lichte, p. 20.

Following on from the notion of Lichte's **enchantment** is L.A. Paul's writing about *Transformative Experience*. Paul studies potentials found within **experiences** that have the capacity to make a profound impact. Paul focusses on decision-making, suggesting that one cannot truly know what something is like until it has **happened,** and that this ultimately requires making a decision to undertake the **experience**. The transformational aspect of **experience**, according to the philosopher David Lewis, once it has viscerally occurred in real-time, leads us to obtain new capacities of recognition, imagination, and recollection, which in turn verify that the transformation has taken place.[190]

The act of choosing is fundamental, as it constitutes an an engagement with **presence** and the **experiential** nature of a situation.. This can often involve a sense of discovery that precipitates pleasure, happiness, peacefulness, fulfilment, and joy as much as there is also the potential for sadness, anxiety, or pain. The act of choosing articulates a preference, a process, and ultimately a creation.[191]

The different and the new can lead to the profound and the revelatory. Connections between conscious cognitive states and cognitive phenomenology enhance notions of **experiential** value and ultimately revelation.[192] Prescient emotions coming from **experience** indicate a value of discovery – of knowing one's preferences and understanding one's willingness for the new, which is beyond or independent from first-order **experience** of pleasure or pain.[193]

See: Journey

190 L.A. Paul, *Transformative Experience* (Oxford University Press, 2014), p. 10.
191 Ibid., p. 178.
192 Ibid., p. 12.
193 Ibid., p. 178.

Space Is The Place

Queer and literary theorist Eve Sedgwick speaks of 'spatialised' modes of thought.
This theory refuses a division between the performative and non-performative, and instead articulates a cluster of relations which connect and differentiate at the same time.[194]
Sedgwick places importance on 'being beside', drawing out the notion of planar relations and the Deleuzian idea of spatial positionality.[195] 'Beside permits a spacious agnosticism',
she argues.[196] This notion of the beside is useful in thinking about existing amongst a group or being located alongside other audience members during a performance, evoking the symbiotic nature of the temporal and the spatial, and the fruitful potentials and possibilities of space.[197]

Spatial boundary within live performance or **embodied** art is highlighted in Ke's previously mentioned book, ***Embodiment** and **Disembodiment** in Live Art.* There is an interplay between the perceiving subject and the perceived world that the person is **embodied** in. Ke proposes three basic ways to engage with spatialised perspective: distance, positionality, and (inter) subjectivity.[198] Spatiality is fundamentally **embodied** and creates corporeal reverberations within the performative landscape, actualising senses of 'border' and activating performers and audiences as **embodied** subjects.[199] When examining live art as an experimental medium, Ke suggests an intrinsic essence of 'essentialisms' can be achieved by playing with perspective, altering the perameters between **disembodiment** and **embodiment** as a new paradigm.[200]
In the perception of an art object (physical or phenomenal), regardless of whether it is a 3D object or a living human body, an **embodied** performer invariably affects an audience's perception by connecting with a variety of corporeal senses simultaneously.[201]

194 Eve Sedgwick, *Touching, Feeling: Affect Pedagogy Performativity* (Duke University Press, 2003), p. 5.
195 Ibid., p. 8.
196 Ibid.
197 Ibid., p. 9.
198 Ke, p. 202.
199 Ibid.
200 Ibid., p. 210.
201 Ibid.

Fischer-Lichte also addresses spatiality, which she considers to be a key component of any performance. Fischer-Lichte suggests that the space 'emerges in and through it'.[202] During the activation of a space into a performance space, 'it opens the possibilities for the relationship between actors and spectators and for movement and perception'.[203] Tonality and aural spaces operate in tandem with this. The aural space within an **encounter** dissolves the boundaries of the performance space and blurs the lines between inside and outside.[204] Any and all random sounds or noises become an organic part of the **experience** and hold the potential to transform the performance space.[205]

See: Illuminatory Sound Environment

202 Fischer-Lichte, p. 107.
203 Ibid.
204 Ibid., p. 124.
205 Ibid.

Figure 16.
Rachel Rossin, *Stalking the Trace*, VR installation, 176 Project Space, London, 2019, photo by Tim Bowditch

Stalking the Trace

In 2019, Rachel Rossin presented the large-scale, multi-viewer VR installation *Stalking the Trace* at 176 Project Space in London. The installation consisted in different 'enclosures' that utilised audio, full-wall projections of VR visuals, colourful lighting, and hanging VR headsets to create an **immersive experience**. The work, which was both physically and virtually **immersive**, explored human agency and technology by way of the movement of gallery spectators walking through its distinct sections. This movement created a narrative that commented upon the ways in which traces of the human body can be felt within the formlessness of technology.[206] *Array Infinitive* raises the question of a human 'trace' and human connection when a group is **immersed** in VR. It asks: is it possible to still recognise that which is human through the **disembodying** technology?

[206] Gemma Murray, 'Between the Past and the Future: Reflections on Rachel Rossin's 2019 "Stalking the Trace"', Medium, <https://medium.com/@gemma_murray_/between-the-past-and-the-future-reflections-on-rachel-rossins-2019-stalking-the-trace-84779fc27f07> [accessed 12 January 2022].

In 1988, Jean-Francois Lyotard countered the notion that technology is an extension of our human–corporeal nature. Lyotard points towards the notion of evolution by way of conceptualising human thought beyond the body, or human 'hardware', re-orienting a material version of ourselves that explores technological subjectivity beyond the physical. [207] An **embodied** point of view through the lens of technology can create ambiguities of perception. Rossin explores how technology might supersede our psychological ability to manage the pace of current development. Rossin's *Stalking the Trace* offers a non-linear notion of the **experiential**, presenting recognisable imagery but suggesting it is in a new 'container', or 'space and time', of this exhibition: she creates a 'second life' that can be lived through the artwork.

See: Bodymind

207 Jean-François Lyotard, 'Can Thought Go On Without a Body?', *Discourse*, 11 (1988), 74 - 87

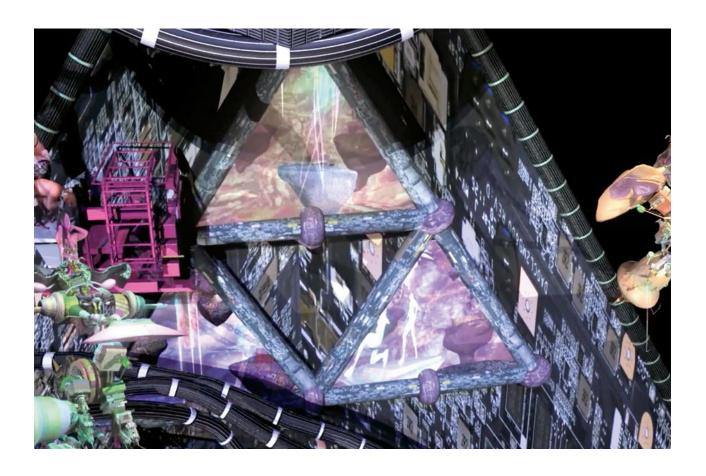# Creation Can Be A Translation

VR, Music, Performance

Figure 17.
Jacolby Satterwhite, *En Plein Air: Music of Objective Romance*, feature-length cinematic VR dreamscape, 2016, still

A major figure of contemporary art working with VR is artist Jacolby Satterwhite. Originally from Columbia, South Carolina, and now based in Brooklyn, New York, Jacolby uses VR visuals, 3D animations, music, performance, and installation to explore ideas around ritual, desire, and memory. His work looks at 'process as metanarrative', and how these operations reference a wider shared **experience** that weave connections between past, present, and future. He uses cassette-tape vocal recordings made by his mother, which are often songs she wrote derived from southern American folk music, gospel, and R&B. He also works with inventions she made and ideas she developed around medicine, sex, astrology, and philosophy. He references the surreal in his work, alongside queer and BDSM subcultures. He considers his aesthetic language to be an 'extra-terrestrial journal or poetic-scape'.[208]

I discovered *En Plein* Air when it featured in the Electronic Superhighway exhibition at Whitechapel Gallery in 2016. This work was the first I had seen that combined underground club, fetish, and queer culture through VR visuals and music. The catalogue description written by Omar Kholeif describes Satterwhite's work as layering CGI images and processes on top of analogue, physical material.[209] The backing track to this work caught my attention thanks to its subterranean nightclub feel. The music was created in collaboration with Nick Weiss of electronic music group Teengirl Fantasy and featured sampled cassette recordings of Jacolby's mother. *En Plein Air* is a commentary on timeworn plots of animé films, presenting a dream-world that has been overtaken by an alien community. The new society ushers in a reconfigured environment of destruction and rebirth via simulated erotic dancers that do not conform to normative romantic and emotional tropes or to the gender binary found in mainstream animation and pop music.[210]

Although not part of the 'Electronic Superhighway' exhibition, Jacolby has created performances that sit alongside his VR films. One such example occurred at San Francisco Museum of Modern Art in 2017, which combined performance, music, and virtual projections as part of *En Plein Air.* For this show, there was a triptych of projections that included VR-rendered representations of the black and Hispanic queer ballroom scene of 1970s and 1980s Harlem. Satterwhite presented three different elements for the performance: that of a digital avatar on screen, a DJ, and a 3D performer in physical space.[211] Jacolby combines performance and VR with dance and dance culture, and, for this reason, it is a key creative reference for *Array Infinitive*, as well as the multi-modal nature of the performer's awareness necessary to perform live with work such as this.

208 Morán Morán Gallery, *Jacolby Satterwhite*, <https://moranmorangallery.com/artists/jacolby-satterwhite/> [accessed 7 July 2021].
209 Omar Kholeif, 'Jacolby Satterwhite', *Electronic Superhighway: From experiments in art and technology to art after the internet*, exhibition catalogue, ed., Omar Kholeif, (Whitechapel Galleries, 2016), p. 30.
210 Ibid.
211 Amelia Ames, 'Review: Jacolby Satterwhite's Virtual Reality Performance at SFMOMA Imagines a Black, Queer, S&M Future', *Artspace* (2017), <https://www.artspace.com/magazine/interviews_features/close_look/review-jacolby- satterwhites-virtual-reality-performance-at-sfmoma-imagines-a-black-queer-sm-54680> [accessed 21 July 2022].

Figures 18 and 19.
Jacolby Satterwhite, *En Plein Air: Music of Objective Romance*, San Francisco Museum of Modern Art, 2017, photo by Charles Villyard

Be-Ing The Audience Member: Conference Study 1

London

Figure 20.
Per/Forming Futures, Investigating Artistic
Doctorates in Dance and Performance, 2019,
photo by Dominique Rivoal.
Curated by ADiE.
Dates: 11-13 April 2019
Venue: Middlesex University, Hendon
Campus, London, UK

In the spring of 2019, I attended the Per/Forming Futures Conference at Middlesex University
in London, which focused on investigating artistic doctorates in dance and performance.
The conference was part of a three-year project by Artistic Doctorates in Europe (ADiE)
and included eight leading organisations from the UK, Finland, and Sweden. I attended the
conference to learn new information about movement and performance research at PhD level.

I attended a practice-based breakout workshop, which was chaired by Robin Nelson.
Nelson has written extensively on the topic of practice-based research and, in particular,
a seminal book called Practice as *Research in the Arts: Principles, Protocols, Pedagogies,
Resistances* (2013).

The following are notes taken at the practice-based workshop and are based upon questions, answers, and discussions amongst fellow attendees: a participant asked how research practitioners can judge the rigour of their own methods. Nelson recommended looking within one's own work or within the practice, and that rigour emerges in the 'doing'. Nelson suggested that if substantial enquiry has developed, a rigorous process has been created. The advice given was to find one's location in a lineage and pinpoint how one's work is different.

Here is an extrapolation of specific lines of enquiry through practice research: Nelson spoke of performative research being aligned with notions of 'testing' and 'prototyping', similar to user-led and end-user research, as a form of doing-thinking action.[212] There are examples of this sort of testing or 'doing-thinking' throughout history: the Quattrocento painters in Italy who studied the potentials of geometry and perspective; academic research into the performative practices of Athenian drama, which lead to the advancement of opera in the 1600s; method acting developed by Stanislavsky; Picasso and Braque creating new dialogues that went on to form Cubism; and the creation of the Serialist approach by Schoenberg and Stockhausen. Each of these examples employs systematic modes of artistic research.[213]

212 Robin Nelson, *Practice as Research in the Arts: Principles, Protocols, Pedagogies, Resistances* (Palgrave Macmillan, 2013), pp. 48-70.
213 Nelson presentation, referencing Nicholas Till, Per/forming Futures, Friday 12 April 2019.

Figure 21 and 22.
Kerryn Wise, *Exposure*, Per/Forming Futures, Investigating Artistic Doctorates in Dance and Performance, Middlesex University, 2019, stills from documentary footage by Kerryn Wise

Exposure

Seeing Kerryn Wise's work was one of my primary motivations for attending the Per/Forming Futures conference. Wise is a dancer, a member of Studio Wayne McGregor, and a lecturer at De Montfort University. The work she showed at Per/Forming Futures incorporated 360° video with VR headsets, combined with live performance, which was experienced simultaneously by the audience members. Visually, the work was inspired by Cindy Sherman, offering a surreal version of black-and-white scenes and characters. I encountered Exposure watching the images in VR alone as an audience of one. At the end of the video, after being led to a chair without seeing who was guiding me, a stage hand removed my headset and Wise was holding a mirror up to my face, slowly moving backwards out of view. This offered me a profound experience of not only movement/dance and VR but also of a one-on-one encounter of VR. There was a professional and precise manner in which the performers conducted this piece and this became a generative reference for my work.

See: Coevalness

Be-Ing The Audience Member: Conference Study 2

Graz

Figure 23.
GAPPP – Gamified Audiovisual
Performance and Performance Practice, 2019,
photo by Andreas Pirchner

Kunstuni Graz/University of Music and
Performing Arts Graz.
Institute of Electronic Music and Acoustics – IEM.
Dates: 29-31 March 2019
Venue: Mumuth, Graz, Austria

I attended the Gamified Audiovisual Performance and Performance Practice (GAPPP) symposium (2019) at the Institute of Electronic Music and Acoustics, Graz, Austria, to discover new research being conducted around audiovisuals in VR. A recent work that utilised similar technology is *Kilgore* (2017-2018), created by Marko Ciciliani, and I was also able to watch this performance live at GAPPP. During *Kilgore*, performers engage in an 'extended instrument design' whereby they use musical instruments and live sound-making devices as controllers in a virtual 3D game to navigate an avatar, opening up the game as a performance space in its own right.

While many of the elements in *Kilgore* are present in my piece, there are also several key differences. First, there is a competitive two-player aspect to *Kilgore*. The performers are both game-players and musicians, with their backs facing the audience, and are either playing the game with hand controllers or playing music from their instruments. Audiovisual reactiveness from the audience point of view is not necessarily immediately understood and the onlookers vacillate between focusing on the performers, the visuals, or the sound. This sort of shifting spectatorship is similar to the hybrid-audience experience in *Array Infinitive*, but my work incorporates the audience into the performance as an experiential event.

Figure 24.
Christof Ressi, *Terrain Study*, at GAPPP
2019, Graz, Austria, photo by Leslie Deere

Terrain Study

Another piece presented at GAPPP was *Terrain Study* by Christof Ressi, performed by Szilard Benes. In *Terrain Study*, a single performer could be seen on stage, wearing a VR headset and improvising on a clarinet. Behind the musician was a large screen showing an abstract VR landscape with a platform in the foreground decorated in marbled reds and yellows, while further afield there was a foggy green horizon with cascading mountain peaks. As the performer moved around a demarcated real-world space, sometimes facing the audience and sometimes not, the screen projecting the VR world responded to his movements and sounds. At times, the live clarinet contorted and manipulated certain objects on the screen, and the perspective shifted with the performer's head and VR headset. The programme notes explain this performative or installation-based work as a series of explorative musical video game environments that use the musician/clarinet player as navigator through complex 2D game worlds, and that works technically via a motion sensor on the instrument.[214]

The abstract imagery and AV performer in VR in *Terrain Study* are closer to my research project both aesthetically and in their arrangement. Viewing this work, and all the performances at the conference, benefitted my research and enabled me to gain a better understanding of the audience's point of view. Although the work presented at GAPPP resided in a classical electroacoustic concert-style lineage, witnessing contemporary performance work using gaming technologies was useful for research purposes, as was observing works that used audiovisuals and VR.

[214] GAPPP: Gamified Audiovisual Performance and Performance Practice, Conference, Institut Elektronische Musik und Akustik der Kunstuni Graz, programme notes, Terrain Study by Christof Ressi (2019), performed by Szilard Benes.

Be-Ing The Audience Member: Conference Study 3

Glasow

Figure 25.
Makers of the Unreal
Glasgow Short Film Festival
University of the West of Scotland
Immersive. Dates: 13-17 March 2019
Venue: CCA, Glasgow, UK

I attended 'Makers of the Unreal', hosted by University of the West of Scotland Immersive as part of the Glasgow Short Film Festival in 2019. On the panel were artist Rachel Maclean, PhD student Tessa Ratuszynska, and ISO Design Director Damien Smith. The host was Professor Nick Higgins, while Dan Tucker of the Sheffield Documentary Festival gave a keynote. For this section, I will focus on two main areas: Tucker's suggestions for VR makers, and Maclean's real-world experience of making a VR film. Tucker placed great emphasis on hosting a VR experience. He drew analogies between VR and inviting a guest into one's home: both involve making sure the visitor is comfortable and looked after, so that the person has a good experience.

A key element of the participant experience is the guidance and support they receive throughout the VR encounter. This is intentionally designed to make every audience member as comfortable as possible, with the aim of creating the most pleasant experience. Taking inspiration from Tucker's talk, there are several key factors to consider when presenting a VR work. Tucker discussed the technical aspects as secondary to the experiential aspect: the story comes first; the technology second. Tucker's own view is that VR is better 'done with other people' and that abstraction and fragmentation are suited to the VR space.[215] This aligns with *Array Infinitive*.

> 'Things to think about when making a VR piece: you are building a world, you are changing perception, allow the audience members a certain amount of agency so they don't feel powerless, have a host - the audience are like visitors in your home, after the experience check-in with each person and ask them how they are, do they feel ok?' [211]

I'm Terribly Sorry

Figure 26.
Rachel Maclean,
I'm Terribly Sorry, 2019
still from VR film

215 Dan Tucker, 'Keynote', *Proceedings of the Makers of the UnReal*, Glasgow (Centre for Contemporary Arts, 16 March 2019)
216 Ibid.

Rachel Maclean's *I'm Terribly Sorry* (2019), a 176 Project Space and Arsenal Contemporary commission, is a dystopian VR world that reflects and comments upon Brexit. Maclean worked with a VR production company for the work, which was funded through the commission. Self-funding could not have achieved the ultra-slick production value of this six-minute VR film. This aspect of VR art is changing, but remains an issue. Developing VR work of a high calibre is difficult, takes time, and is expensive. These factors have held back many less established artists in this arena and explains why VR works of major significance predominantly re-create or re-render well-known artists, such as Anish Kapoor, Laurie Anderson.

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Chapter Three

Methods And Methodology

This PhD project's methodology is practice-based and prioritises action as a methodological approach. I activated this approach by way of imagining, creating, developing, collaborating, prototyping, interfacing, testing, and evaluating. This has occurred through research-and-development prototyping, case studies, pilot testing, field work, and research studies. This approach to making-doing-interfacing instigated new developments and understanding about the work, its function, and its relationship to the audience.

Included below is a list of timeline events and corresponding Appendix pages.

I recommend reading the thesis text first, before accessing the Appendix content. There are also additional Appendix prompts in the body of text in this chapter.

Timeline Of Development

Technical Aspects and Foundational Elements

Array Infinitive involves a number of technical components. These include VR equipment, audio equipment, and computers at a foundational level. When the work is presented to a hybrid-audience the amount of equipment increases to include projectors, screens, and further lighting. Software used for the practical research include the Unity game engine, Max MSP, and Ableton. During the early prototype phase, the performer used an HTC Vive system and the audience were in Oculus GO headsets. In 2021, we migrated the project for both performer and audience to the Oculus Quest 2 platform for parity, as Quest was the most affordable wireless headset with internal tracking available at the time. Internal tracking eliminates the need for external cameras or other hardware to establish a virtual working space. In the original concept, there were four VR audience members for this work, all seated and stationary, and the local networking enabled the performer's gestures to control the audience visuals and sound en masse in real-time. In addition to the VR headsets, there was a custom software audio interface, which was gesture-controlled by the performer's movements. This component was designed by engineer Ross Flight, and was used in *Modern Conjuring for Amateurs*. We modified the gestural interface for use in *Array Infinitive* and adapted the interface for use with VR.

The musical element of *Array Infinitive* was one of the first components to be developed. Here, I will expand upon how this part of the practical work was arrived at and the processes involved. The audio setup followed from *Modern Conjuring*, in that Ableton and Max for Live were used as well as OSC data from Unity. The live gestures adjusted parameters, such as filters and reverb, to loops of audio in Ableton, depending on the X, Y, Z axis positioning. Each hand posture triggered a sample of audio, which had either been recorded from a musician or composed specifically for the scene. To reference Radigue, these can be thought of as gesture-controlled tape loops that are played and mixed through bodily movements.[217] I worked closely with Flight to set the gestural placements. We would, in a sense, choreograph and set the hand positions with the sound. I created the movement and he set the parameters in Max MSP. Max communicated to Ableton through Midi and the sequence of the set up was important, considering the Wi-Fi and our Local Area Network (LAN). Max was launched first, then Ableton second on an active Wi-Fi network. Midi IAC drivers were initiated and all audio output options were set. Then the audio laptop was switched to the LAN *Array Infinitive* network, which exists offline. The performer headset was turned on, the *Array Infinitive* app was launched and then the Max interface initiated. This activated the network and live data could be seen in Max MSP.

217 Radigue, Éliane, 'The Mysterious Power of the Infinitesimal', *Leonardo Music Journal*, 19 (2009), 47-49

The research and development of this PhD project took place over several years, which included the years of the COVID-19 pandemic. During this period, the opportunities to meet as a team were limited. However, the societal slow-down and a general adaptation to online forms of working suited this project in terms of timescale and benefitted the work overall. The general format for working included group Zoom meetings with the development team, online Unity development between Chris Speed and myself, followed by targeted development days in person in London at Premises Studios in Hackney with everyone present when restrictions lifted. In addition to this, I recorded several Glasgow-based musicians for *Array Infinitive*, and the recordings became integral parts of the soundscapes and score. These include Scott Morrison on clàrsach, Sarah McWhinney on cello, Kylo Searl Mbulu on processed percussion as well as Maggie Broadley, Kate Hollands, and Bec Wonders, members from the Glasgow School of Art Choir for a three-part harmony vocal of women's voices. The vocal recording session took place at LaChunky Studios, Hidden Lane, Finnieston, Glasgow, and was engineered by co-supervisor Ronan Breslin. Images and footage of the recording sessions, musical and vocal artists can be found in the supporting video, by Mind the Film, as part of this thesis. Alongside the Glaswegian artists included in the sonic element of *Array Infinitive*, I collaborated with London-based artist Mary Hurrell on a bespoke costume. Again, this method of development took place over an extended period of time owing to the pandemic. Later, when the university was once again fully accessible, I added copper fingertips to the costume, which were part of the original idea. I made these at the GSA casting studio and electroformed them into custom jewellery. The conductivity of copper is central to the concept for this addition: the energy coming from my hands during the performance is transmitted through the metal fingertips, which act as transducers or superconductors from one realm to another.

APPENDIX PGs. 166 - 176.
APPENDIX PG. 202.

Stage 1 Development

Supervision Demonstration 1

Introduction of self-report questionnaires

On Tuesday 17th December 2019, I conducted the first official prototype demonstration of the VR developments up to that point. There were three rudimentary VR scenes (red, orange, yellow), very basic design, and primary particle trail motion-gesture control with sound (see APPENDIX pp. 177-178). This was conducted at the GSA Media Lab, and was attended by the supervisory team, which then included Dr Marianne Greated, Dr Francis McKee, and Ronan Breslin. As there was only one HTC Vive and one Oculus GO headset available, each supervisor experienced the demonstration one-by-one. After the demo, the supervisors completed questionnaires, followed by further conversation. The questionnaires included a modified version of the 5D-ASC (5-Dimensional Altered States of Consciousness) scale to measure affective response.[218]

To offer some background, this method of measuring ASC was developed by A. Dittrich in 1998 to scale non-ordinary (i.e., altered) states of consciousness and is an extension of the OAV instrument also developed by Dittrich. OAV stands for oceanic boundlessness (OBN), dread or anxiety of ego-death (DED or AED), and visionary restructuralization (VRS).[219] This form of measurement is the most widely used scale to quantify altered states and is an extension of Dittrich's APZ (Abnormer psychischer Zustaende – Abnormal Mental States) questionnaire.[220] Responses to individual questions are grouped into eleven categories: Experience of Unity; Spiritual Experience; Blissful State; Insightfulness; Disembodiment; Impairment of Control and Cognition; Anxiety; Complex Imagery; Elementary Imagery; Synaesthesia; and Changed Meaning of Percepts. A subset of 65 questions are tabulated, but there are sometimes more. Covariant statistics are then applied to compare the categories.[221]

[218] The 5D-ASC is a 94-item self-report scale that assesses the participants' alterations from normal waking consciousness with a Cronbach's alpha range between 0.88 and 0.95 (Dittrich 1998; Dittrich et al. 2010; Studerus et al. 2010). The participant is asked to make a vertical mark on the line below each statement to rate to what extent the statements applied to their experience in retrospect (i.e., from 0 "No, not more than usually" to 100% "Yes, more than usually"), and the score ranges from 0 to 100%. The 5D-ASC measures 11 subscales; experience of unity spiritual experience, blissful state, insightfulness, disembodiment, impaired control and cognition, anxiety, complex imagery, elementary imagery, audiovisual synaesthesia, and changed meaning of perception. Moreover, the 5D-ASC measures 5 key-dimensions which include oceanic boundlessness that identifies mystical-type experiences and has been compared with the "heaven" aspect of Huxley's mescaline account (Dittrich 1998), anxious ego dissolution, visual restructuralization, auditory alterations, and reduction of vigilance, Bio Protocol Exchange, 5-Dimensional Altered States of Consciousness Rating <https://bio-protocol.org/exchange/minidetail?type=30&id=10100707> [accessed 26 Jan 2023].
[219] Barry Klein, (2015) *Tests and Measurements* (PSYC-8316-1) Final Paper, PhD student, General Psychology, Walden University <www.barryklein.org> [accessed 11 July 2020], pp. 2-4.
[220] Ibid.
[221] Ibid.

Psychometric Qualities of the 5D-ASC Test

The 5D-ASC questionnaire is a visual analogue self-rating scale consisting of 94 items, assessing five primary dimensions and one global dimension of ASC. 1) OBN concerns euphoric or exalted states of non-self or being at one with everything, often accompanied by time distortion or a sense of timelessness. 2) AED comprises thought disorder, anxiety, arousal, and loss of self-control. 3) VR gauges changes in meaning and perception; these questions are clustered on basic illusions and hallucinations, background hallucinations, synaesthesia, altered meaning of percepts, aided memory, and facilitated imagination. (4) The AA scale measures auditory illusions and auditory (pseudo-) hallucinations. (5) Finally, the RV component relates to drowsiness, reduced alertness, and diminished cognitive function. [216]

For the purposes of the supervision demo, I modified the questionnaire in two ways. I did not include the 'Complex Imagery' and 'Elementary Imagery' sections, as the participants were being immersed in a VR environment that relies heavily upon pre-made visual stimulation that is being provided as a sensory trigger in a straightforward way. Another manner in which I wanted to modify the 5D-ASC for the purpose of this situation was by adding questions pertaining to group experience, as this is a key area of my research. However, due to the previously mentioned lack of multiple headsets to create a true group event, this demonstration had to be one-on-one and thus these additions were ultimately rendered void. In the end, I reduced the number of questions from ninety-four to thirty-three, attempting to create a smaller data set amongst what would be nine different categories in this case, which left out 'Complex Imagery' and 'Elementary Imagery'.

222 Erich Studerus, AlexGamma, and Franz X Vollenweider, 'Psychometric Evaluation of the Altered States of Consciousness Rating Scale (OAV)', PLoS ONE, 5 (2010).

Example:
The first version questionnaire

The thirty-three questions were as follows:

1. I had the feeling everything around me was unreal.
2. The boundary between myself and my surroundings seemed to blur.
3. I felt totally free and released from all responsibilities.
4. I had the feeling that I had been transferred to another world.
5. It seemed to me as though I did not have a body anymore.
6. I felt very happy and content for no outward reason.
7. I was aware of being part of a group.
8. I felt comforted knowing I was part of a group.
9. It seemed to me that my environment and I were one.
10. It seemed to me that I was dreaming.
11. My thinking was constantly being interrupted by insignificant thoughts.
12. Extraneous sounds and noises impacted my experience negatively.
13. I felt threatened without realising by what.
14. I had the feeling that I no longer had a will of my own.
15. I was afraid without being able to say exactly why.
16. Everything around me was happening so fast that I no longer could follow what was really going on.
17. Tine passed more slowly than usual.
18. I felt isolated from everything and everyone.
19. So many thoughts and feelings assailed me at once that I became confused.
20. Objects around me engaged me emotionally much more than usual.
21. Things around me had a new meaning for me.
22. Sounds seemed to influence what I saw.
23. The colours of the things I saw were changed by sounds and noises.
24. Sounds and noises sounded different than usual.
25. Time passed faster than usual.
26. I simply could not get rid of some unimportant thought.
27. I had the vague feeling that something important would happen to me.
28. I had trouble distinguishing between what I imagined and what I really experienced.
29. I no longer knew where I actually was.
30. I had the feeling I could think faster or more clearly than usual.
31. So many thoughts came to my mind that I no longer was able to organise them properly.
32. I had the impression that everything occurring around me was related to me.
33. I felt influenced by electric currents, rays or hypnosis.

Example:
Self-report scoring

For each question the participants had a range of 1-10 scoring.
The questions looked like the following:

1. I had the feeling everything around me was unreal.

Opposite of what I felt				Close to what I felt				Good description of what I felt	
1	2	3	4	5	6	7	8	9	10

The following findings came forth from the data collected during this test demonstration.

Experience of Unity

Two of the questions related to group experience in this category were void because this test did not produce a genuine VR group experience, due to lack of equipment. I had included the questions on 'sense of group' here in an attempt to measure group presence in VR. After the omission of the two questions, that reduced the data points for this category to six.
The scores: 4 High   1 Mid   1 Low

Spiritual Experience (9 data points)
The scores: 7 High   2 Low

Blissful State (6 data points)
The scores: 3 High   3 Low

Insightfulness (6 data points)
The scores: 3 High   3 Low

Disembodiment (6 data points)
The scores: 5 High   1 Low

Impaired Control, Cognition (17 data points)
The scores: 5 High   2 Mid 10 Low

Anxiety (12 data points)
The scores: 1 High   11 Low

Audio-Visual Synaesthesia (12 data points)
The scores: 5 High   1 Mid   6 Low

Changed Meaning of Percepts (15 data points)
The scores: 4 High   2 Mid   9 Low

Reflections on the use of the 5D-ASC Scale

This experiment produced several significant outcomes. The test led to an understanding of what could be termed a 'Disembodied' 'Spiritual Experience'. The VR experience did not seem to cause serious anxiety or impair cognition significantly, nor did it cause a 'Change of Meaning or Percepts'. The results ran average on 'Blissful State', invoked 'Insightfulness', and ran low on perceived 'Audio-Visual Synaesthesia'. However, interestingly, this category was the only one to receive a full 10 rating of 'Good description of what I felt'. The question that received a 10 was: 'Sounds seemed to influence what I saw'.

An analysis of these findings demonstrates that the data points were not evenly distributed. In an attempt to create a coherent set of questions in line with the aims of the project, I weighted the last four categories more heavily. VR is a simulated environment and is by its nature likely to be considered 'disembodying'. The 'Audio-Visual Synaesthesia' category may pose challenges owing to its the audiovisual nature. I place the listener/viewer into a pre-made sensory experience, which is enhanced through abstract colourful forms and corresponding sounds. At this point in the process, I believed that further testing would allow me to better ascertain the synaesthetic effects of the piece. The low numbers of data points in 'Spiritual Experience' and 'Blissful State' skewed the test away from the positively affective spectrum of statistics included in this questionnaire. Understanding whether or not a VR environment causes any physical disturbance such as nausea or vertigo, or any psychological disturbance such as anxiety, is crucial for commercial and artistic VR developers. I designed the questions to better understand these potential repercussions, rather than focussing on the (potentially more favourable or constructive) experiential 'affectiveness' of this early-stage prototype. This in turn made the questionnaire less balanced.

Reflections on utilising the scientific method

The demonstration raised questions around use of the questionnaire format. Is a scientific questionnaire an adequate form with which to measure ASC response for an artwork? My views on this are divided. On the one hand, this test is an established method for measuring altered states. I could have conducted biometric data collection, such as blood pressure and heart rate, but I did not have the facilities or resources for this kind of analysis. As such, self-reporting was a better fit for my research. On the other hand, this test is used to measure a host of data points I do not address in my own research, such as hallucinations and related reactions that can occur under the influence of psychotropics. In addition, the 5D-ASC assessment is not intended to measure group experience, which is a key part of my study. Owing to this, I decided to adapt the 5D-ASC toinclude a line of questioning tailored specifically for this project. The scientific method avoided anecdotal evidence and opinion-based feedback. Generating evidence often employs some form of the scientific method, including in many non-scientific sectors (such as art), whereby the use of institutional forms of evaluation are a vital part of the process.
For many foundations, establishments, and institutions, using questionnaires is a key method for obtaining data for health and safety purposes, quality control, or grant applications.
For this reason, I maintain that using a the scientific questionnaire to collect ASC data from research participants was a suitable method at this stage of the process.

Fortuitous Happenstance

Feedback from the Supervision Team

The supervisory team focused on the aesthetics of the work in their feedback: what the VR scenes looked like, how they operated, and the impressions received. They stated, for example, that the Red scene was reminiscent of games or 'gaming environments' and one supervisor found it slightly 'ominous'. They suggested that the water in the Orange scene 'came too close'. And one supervisor 'felt invisible' as the water seemed to 'shoot through' them, rather than 'fall over' them as it would do in real life. In general, the term 'hypnotic' was used to describe the audiovisuals for the experience from the whole team. One supervisor wanted to be a 'more active participant' rather than a passive one, similar to situations whereby first-person gaming experiences are directed independently by the gamer themselves. Two supervisors felt the questionnaire was not appropriate for this test, whereas the third supervisor disagreed and thought a questionnaire format was the correct approach for measuring VR response.
We discussed the importance of immersion and presence in VR – where 'immersion' means the participant has 'no thoughts outside of the virtual world', and 'presence' means the ways in which the participant acknowledges the 'real self' in the 'other' VR environment.
In addition, it was not clear to the supervisors that the scenes were advancing through the colour spectrum, from Red to Orange to Yellow. There was dialogue about colour theory and developing the use of the colours, as well as discussion around the scene changes. The supervisors suggested experimenting with more silence before one setting changes to another. In addition, the participants were unaware that a live performance was occurring whilst they were fully immersed.

All of the above feedback was important and useful, but another serendipitous (and perhaps even more beneficial) situation arose from the lack of equipment. As the supervisors had to take turns with the kit available, those not wearing a headset were able to observe what was going on from an external vantage point. This opened up an entirely new and unexpected area for this artwork: watching a performance in VR as an observer who is not in VR. The general feedback was that this type of viewing, i.e., seeing the VR performer physically in the real world, changed and personalised the experience. The participants also reported feelings of intimacy and vulnerability through this viewing experience, which became a new of line of investigation for the work. This unexpected finding became significant to the project as a whole, and generated a new aspect of *Array Infinitive*, which led to the addition of a hybrid-audience in later iterations. While it was always my intention to produce a performance with a mixed audience (both in and out of VR), I did not anticipate the significance of its impact on the audience dynamic.

Evaluation of Feedback from Supervision Demo

Showing VR work in an under-developed state is, by its nature, likely to present challenges, for it requires participants to imagine a later version that they are not themselves experiencing. With this in mind, the comments about the water in the Orange scene being too fast or 'not behaving like normal water' are accurate. The feedback on the 'Marsy'/'Gamey' feel of the Red scene was helpful, as this was not what I intended. The suggestions that I be more abstract with my elemental interpretations was helpful. For instance, I was trying to portray an 'earthy' feel for Red, and a splashing, 'watery' feel for Orange. I made this design decision by borrowing from the elemental correspondences of the chakra system, which follow in alignment to the colour spectrum: red = earth; orange = water; yellow = fire; green = air. The final three are all the same element: blue, indigo, violet = ether. At this point, I understood that utilising more abstract forms would allow me more space to get away from figurative or literal representations of real-world objects and likewise their interpretations.

Another important takeaway from the demo was the new awareness of spectatorship and gaze. As Catherine Yass said of her damaged 35mm prints, which ended up being a 'happy accident' for her film *Lighthouse*, having a lack of equipment in this case broadened the parameters of the PhD project in compelling ways.

Peer Demonstration 1
with Artist / Musician Graham Dunning

To build on the momentum of conducting a major demonstration of my work for the supervision team, I conducted two peer demonstrations shortly after the supervision demo on Thursday 19th December 2019. The first occurred with sound artist and musician Graham Dunning.

In his feedback, he suggested that the positioning of the environmental arrangement in his headset (Oculus GO) was slightly off; he had to look to the side to see things from the righthand perspective. Dunning did not feel the need to control the environment or particle trails, as is usually the case in a gaming environment. In the Yellow scene, he felt there was a communal experience owing to the flickering fire in the middle of the base. In the Orange scene, he said it 'felt like he should have felt the water' as it splashed onto him in VR, and also that hearing the water splash on the ground would have made a difference. He also suggested that I think spatially about the environmental sounds and be mindful of the stereo field. Dunning was able to perceive that, when the particle trails moved, the performer was also moving.

Dunning felt there was a noticeable use of the uncanny for this version of the work – the water did not make a splashing sound and he could feel a chair in the real world, but there was no seat represented in the virtual space. In relation to this issue of presence and immersion, he said that 'the brain wants to connect things'. He also explained how, as a participant, he used his ears to understand the shape of the room, and he presumed others would as well. In terms of sound, there is little difference between being in and out of the VR in this version of the work.

To gather more information about the external-viewer scenario that I discovered in the supervisor demonstration, I decided to replicate this with Dunning. He liked the idea of the participants in VR having one view and another audience having a different view of the performance. He also said this had a 'ceremonial' or 'ritualistic' effect. He found it interesting to explore the divide between being in and out of VR and felt this was an original line of enquiry. It opens up questions about performance, communal experience, what people do in VR, and allows us to ask what it means to be part of an audience. He also identified a link between secular group experiences and religious group experiences, which specifically related to the line being blurred between being in and out of VR. Everyone in the room would be part of the 'religious experience' but only those with the headsets on would be experiencing the 'trance-like' state. This highlights four distinctive aspects of the performance: (1) different ways of seeing this performance; (2) different ways of engaging with it; (3) sitting amongst participants in a performance; and (4) dancing/moving as part of a performance. These ritualistic elements highlight a distinction between those who want to be more actively involved in the ceremony and those who take on a more observational role.

Peer Demonstration 2
with Artist / Engineer Jenn Sykes

For the second peer demonstration, I showed the work to artist, computational designer, and lecturer Jenn Sykes, who gave further beneficial feedback. Sykes preferred standing up to sitting down, especially in the Orange scene when the water was at waist height, because when sitting 'it felt too submerged'. Unlike Dunning, Sykes did not perceive a correlation between the particle trails and the sound as she was experiencing the work in VR. In the Yellow scene, she could see a marginally higher correlation between the moving particle trails and the sounds being played compared to the other scenes. Sykes mentioned being aware of time and suggested that standing for twenty minutes in VR might be difficult. She also picked up on the colour change, noting that there were distinct colours being presented that shifted from Red to Orange to Yellow.

The design of *Array Infinitive* includes shimmering cylinders of light to represent the participants in the virtual space. Sykes understood that the cylinders were significant and at times wanted to see whether they responded to other stimuli in VR, as is common in gaming. She assumed there was a relationship between the cylinders and knew they had meaning. Sykes did not find the Red scene ominous. In terms of being an active or passive participant, she found it took a few minutes in VR to assess this and that this 'pause to ascertain' aspect was key to determining whether or not the experience was 'calming' or 'meditative'. Sykes also felt that the staging of the sound was critical for immersion. She felt the visual element of the piece 'all around' and felt that the sound needed to be as well. This particular aspect of the work is difficult to adjust for the purposes of demonstration, given the VR room in the GSA Media Lab. In this small workspace, I could not use surround-sound or a broader stereo field of sound.

Regarding the water, which many participants up to this point had felt was 'too fast', Sykes had the opposite view: that it was realistic rather than too fast. Standing rather than sitting, she believed, benefitted her experience of this scene and of the VR piece in general.

Figure 27.
Early development at Solarflare Studio,
visual representation in projection of VR
participant as a column of light,
photo by Solarflare Studio.

A sparkling column of light can be seen in the projection.

This represents the audience member sitting in the chair.

Red VR particle trails are being moved around the audience member,

as they watch virtually through the headset.

Supervision Demonstration 2

On Wednesday 12th February 2020, I conducted a follow-up demonstration, which included developments that built on the meeting two months prior. This was a less formal situation than the preceding demonstration and was primarily intended for feedback on changes I had made to the aesthetics of the piece. For this version of the work, I incorporated a fade-out from one scene into the next, to address what some had felt were jarring transitions between scenes. There was also a clearer understanding from the participants this time that, in the Red scene, the moving particle trails 'gravitate' towards them as they watch in VR. It became apparent that the water particle trail in the Orange scene did not have this effect, and the preference amongst participants was strongly in favour of the gravitational particle trails. This 'gravitational' trail means, for the audiences in VR, that the particle trail ribbons migrate towards you and swirl around you when in close proximity to you. Participants still felt the water was 'too fast'. The gravitational particle trails in the Red scene added to a sense of feeling 'more like you're there' and made audience members feel more present and less dislocated. In addition, the instrumentation was still unclear. The audience, in this case two supervisors, were still not aware in VR that the moving particle trails were being controlled by me (the performer) in real time. The colour changes seemed more noticeable with this demonstration. Moreover, there was discussion about the need for a creative decision around the VR scenes, which needed to either be much more abstract or much more narrative to assist the viewer/listener in navigating the VR experience.

Evaluation of Feedback

All feedback received from these demos and discussions was useful. The observations and reactions helped me better understand the user experience (UX). Some of this contributed to specific design changes and some did not. For instance, I decided that audience participants must remain seated for safety reasons, despite the feedback from Sykes who personally wanted to stand.

Dunning's feedback was particularly useful in terms of the overall experience of the work, thoughts on audience expectations, and the observational aspects of the work. The new points raised on the performance regarding ways of seeing, engaging with this work, notions of the ceremonial, and movement in performance were important notes to receive, offering new perspectives and fresh areas of focus when thinking about audience experience.

The supervision feedback relating to the questionnaires was also a focus and indicated that, while a questionnaire is an appropriate format to use, it needs considerable refining. The comments on the aesthetics of the piece relating to minimalism and colour theory were also important areas to consider further. Returning to my original point in this section: feedback on a work like this will ultimately be subjective and can vary widely from participant to participant. The range of feedback was useful to ensure that my approach is balanced, but the feedback will not dictate every one of my creative decisions. Of utmost importance is that the audience feels comfortable and safe whilst immersed in VR. This remained consistent throughout the early stages of the project, and participant feedback was helpful in understanding how best to ensure this.

Stage 2 Development

Centre for Contemporary Art Intermedia Lab Pilot Tests

When the pandemic hit, the project underwent a long hiatus, during which time I continued to develop the work remotely. This included building a working prototype with seven VR scenes that moved up the colour spectrum. When COVID restrictions began to ease, I carried out a plan to produce a more formal controlled experiment, which would allow me to further explore the research questions and gather more participant feedback. This first-round research pilot was completed from Wednesday 14th July to Saturday 17th July 2021 in the Intermedia Lab at the Centre for Contemporary Art (CCA) in Glasgow.

Participants were invited through peer groups, neighbours, word of mouth, and email advertisements to Glasgow-based yoga studios and meditation centres. Owing to COVID household rules, I encouraged household 'bubbles' – flatmates, households, or couples – to come together. The study was assisted by Maria-Cristina Onea, a GSA undergraduate student. We conducted four days of pilots, with groups of four, three times a day, and succeeded in doing a test-run with twenty-five people. In each pilot, Maria and I greeted each participant, and tried to make them feel welcome and comfortable. Once the participants arrived and were seated, we gave them information about the study and assisted them in putting on a VR headset. Shortly thereafter, the experience began, and lasted around fifteen minutes. During the research study, the sound was emitted through four Genelec speakers, in a general stereo field, with the speakers positioned strategically to create acoustic immersion. Once the performance finished, Maria and I helped the participants remove their headsets and did a basic wellness check. After this, the questionnaires were given to each participant in separate parts of the room, adhering to COVID protocols.

The questionnaires included the MODTAS, 11D-ASC, and a written feedback form. I decided to move from the 5D-ASC to the 11D-ASC through consultation with psychology lecturer and researcher Dr David Luke. Dr Luke also made me aware of the fact that the 11D-ASC and MODTAS needed to be administered together. Dr Luke had used these methods to measure ASC response for Haroon Mirza's sculpture *Chamber for Endogenous DMT (Collapsing the Wave Function)* (2017). The MODTAS, or Modified Tellegen Absorption Scale, was created in 2005 by G.A. Jamieson to measure levels of sensorial absorption. This thirty-four-question form is divided into Synaesthesia, Altered States of Consciousness, Aesthetic Involvement in Nature, Imaginative Involvement, and Extra Sensory Perception (ESP). The 11D-ASC was created to measure altered states of consciousness and includes marking on a Likert scale between 'no, not more than usual' and 'yes, very much more than usual'. The other written self-report feedback forms included questions regarding response to colour, awareness of the group, and the VR experience. In addition, for almost every group there was further oral feedback and discussion after each test.

Key data was collected during these tests which formed a major milestone in the public-facing component of the research. This feedback provided a robust body of qualitative data that I used for next-phase development and assessment of the research project. Witnessing participants' reactions and hearing about their experiences was highly productive. Demonstrating the work to the public proved invaluable, despite the challenges posed by COVID restrictions. Extensive COVID protocols were adhered to during the process and measures were put in place for both research team and participant safety.

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Figure 28.
Figure 28. Leslie Deere PhD research documentation, CCA Intermedia Lab pilot tests, 2021, photo by Maria-Cristina Onea

Official Pilot Test Evaluation

CCA Intermedia Lab

The piece requires a methodical set-up to activate the networking. I was unable to communicate with research assistant Maria via hand signals because my hands were full (holding the controllers), and I was unable to see her face because I was wearing a headset. Owing to this, I asked Maria questions aloud as I wore a headset and used the hand controllers. For instance, I would ask 'Do we have data?' as a sign that the piece had successfully networked and was ready to go. This may have had an impact on participants' awareness, forcing them to presume what was about to happen or unintentionally create a sense of expectation. Different people may have understood 'data' to mean different things, or associate the term with various feelings. The questionnaires revealed that a number of participants felt slightly 'anxious' in the first few scenes. This anxiety appeared to diminish over the course of the experience: there appeared to have been a 'settling into' the VR space and many participants had reached a more relaxed state by the later scenes. It is important to note that, in the group briefing, I emphasised that, if at any time a participant felt unwell or needed to stop, then they could raise their hand and Maria would assist them immediately. During the entire pilot run we did not have any participant wellness stops.

The ages of the pilot test participants ranged from nineteen to eighty. Among the participants were people who self-identified as male, female, nonbinary, and neurodivergent. After sessions, participants shared further information, feedback, and feelings through conversation. This is how I became aware of how the participants identified, which is not information I asked for on the participant information forms. One participant who notified me of an anxiety disorder said they found the work soothing and wondered about the potential of this work for people with similar conditions. In another instance, we had a participant who identified as neurodivergent and was somewhat concerned before the pilot about feeling constrained in the headset, but was pleasantly surprised that they did not experience this during the demonstration.

Overall, the controlled pilots considerably advanced the research. We were able to proceed with in-person tests as Glasgow was officially in Tier 1 of the COVID-19 restrictions and the CCA was allowed public visitors. We abided by the household rule and followed all COVID protocols in place at that time.

Example: written questionnaire

Questionnaire
Part 2 - AV VR

How did you feel when you were in the following VR scenes:

1) Red:

2) Orange:

3) Yellow:

4) Green:

5) Blue:

6) Indigo:

7) Violet:

8.) When in VR, were you aware of being part of a group?

9.) If yes to question 8, in what way were you aware of being part of a group?

10.) If no to question 8, why do you think you did not feel part of a group?

11.) Did you want to be part of a group for this experience?

12.) In what ways did the group experience enhance or detract from the experience?

13.) How aware were you of the sound?

14.) What was your reaction to this mixed reality experience, being in VR visually, but hearing the sound in the room all around you?

15.) Did this anchor you in the 'real world'?

16.) Did you like this or not like this?

17.) If yes to question 16, in what ways was that anchor pleasant?

18.) If no to question 16, how did this detract from the experience?

19.) Was it obvious that a human was controlling the movements in VR and sounds around you?

20.) Was it obvious that this was happening live in real time?

Self-Report Questionnaire Results

The self-report written questionnaires concentrated on colour, group experience, sound, and the performative element. The Red scene received mixed feedback about people being 'anxious', 'excited', and 'slightly nervous'. In the Orange scene, participants reported 'being warm' and 'intrigued', 'bright', and 'mellow'. The Yellow scene garnered a variety of responses, ranging from 'happy', 'alert', and 'gentle' to 'unsettled' and 'a bit anxious'. For some participants, the Green scene was their favourite, and inspired feelings of 'joy', of 'breathing', of 'being engaged' and 'curious'. Others preferred the Blue scene, which they described as 'peaceful', 'cool', 'science-fiction-like', and 'exhilarating', although one participant felt extremely anxious in this scene, which they liked the least. Reactions to the Indigo scene included 'magical', 'starlit', 'flowing' and 'happy'. Feedback about the Violet scene garnered comments such as 'relaxing' and 'blissful', 'trippy', 'reflective', 'a feeling of awe', and 'the most surreal'.

These results suggest that participants were not aware of being part of a group whilst having this VR experience. The majority of participants said they were not cognisant of being in a collective experience. In the VR world, there are four cylinders of sparkling light in the same positions as the chairs in the physical world, and they remain in the same position in every scene. This was meant to be a marker of other live participants' positioning in the room, and to act as something 'familiar' in each scene, to indicate to the participants that they were having the experience alongside each other.

There are different reasons that this collective experience could have been obscured to participants. The participants had a lot of content directed towards them, and most were not gamers or experienced with VR. I was explicitly seeking feedback from this kind of participant, but it also means the experience, at least at first, may have been sensorially overwhelming, creating an 'audiovisual litany', after Sterne.

The participants were generally so focused on the immersion and being 'lost in the experience' that the group aspect became irrelevant. It was overwhelmingly clear that the audio component was of great importance in the experience. The audience noted that they were fully aware of the sound and enjoyed hearing the sound through speakers rather than through headphones. In addition, most participants were not aware that the performer was controlling the sound and visuals in real-time. Again, I attribute this to audience experience and awareness of gaming, insofar as those with experience of VR tend to understand how digital content, which moves or changes on a screen or in a headset, is being executed by someone, usually through a controller.

The questionnaire provided multifaceted and important findings for evaluation. These include: that the participants were generally not aware of the group dynamic in the VR space; that they were acutely aware of the sound, although not that the performer is 'playing' the VR artwork as an instrument; and that there were very distinct reactions to colour.

After studying the data, I came to the conclusion that some of the questions could have been clearer and/or formatted differently. The question about the sound being an 'anchor in reality' was interpreted in different ways by the participants. I did not mention, nor was I explicit in conveying, that the sound could either be delivered via speakers (so that everyone was sharing the same sonic space) or through headphones (so that each participant would be having a more singular sonic experience, further isolated from the other participants). Playing the audio into the room undeniably enhanced the group dynamic, as everyone was hearing the same thing at the same time. If headphones had been used, then participants would not have known whether they were hearing something different from those around them. However, prompting the audience with another unspecified version of the VR experience, which I was not providing, could have been misleading for pilot test purposes. Using the headphone reference could be a clearer, more direct way of describing an alternative, rather than assuming participants know the different ways sound can be emitted and broadcast to an audience.

There was one participant in particular who felt the sound was too loud and this coloured their experience in general, whereas the majority of the audience enjoyed the sound and felt it was a key element of the VR event. Another interesting, although perhaps unsurprising, finding was the reaction to colour. The Blue scene inspired strong reactions, both positive and negative. The person who did not enjoy the Blue scene contrasted it to elements of other scenes in the experience. They marked out the Blue scene in questions on the numerical forms (MODTAS and 11D ASC), stating 'except blue' or 'only blue' in relation to what was being asked. This demonstrates how subjective participants' responses are to the piece, as several participants enjoyed the Blue scene the most.

Another crucial insight garnered by the test was the participants generally lacked an awareness as to how the piece was working and what was happening technologically. A few people commented that they found it fascinating to discover that the performance was happening in real time, which suggests that, while they were in the experience, they assumed it was a video being played on the headsets. One participant said they did guess that the piece was being conducted or controlled by me because of my movements in the room. Interestingly, no others had this same assumption, despite the fact that my footsteps and movements were audible on the hard wood floor. Finally, one participant stated that, while they were in the VR experience, they thought it would be very interesting if a person was controlling the piece live like an instrument, but they did not realise that that was exactly what was happening.

The sound is important. Generally speaking, the feedback suggests the work relaxes participants and creates a safe space, which enabled them to enter into a calm state. In discussion, participants described being comfortable in the environment and some noted how the work reminded them of psychedelic experiences and allowed them to explore that realm in a safe space.

ASC Data Analysis

The CCA Intermedia Lab pilot data was analysed and plotted on the traditional ASC graph, as per consultation with Dr David Luke. The results show that *Array Infinitive* (N=25) creates a genuine ASC experience, as shown on the graph, compared with sixty minutes in a floatation tank, sixty minutes of breath work, twenty-five minutes of Ganzfeld effect lighting treatment, or 120 minutes in a darkroom. To return to the question of using scientific modes of measurement: the method offers the capacity to plot quantifiable findings on a graph, which can then be evaluated in relation to other ASC experience generators. However, the questionnaires are lengthy, with over 120 questions, some of which focus on elements I do not explore in this project. However, at this point in the research, this was the most suitable and most readily available method of measurement.
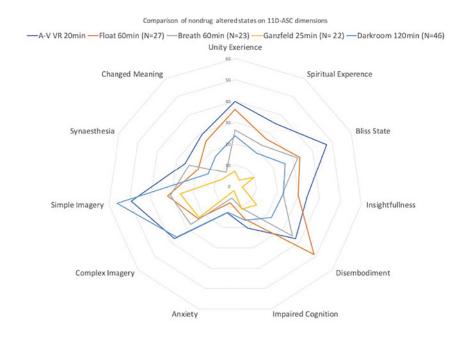
Figure 29.
Comparison graph, non-substance ASC generators and results, 2021, David Luke

Into The Cca Theatre: Public Beta

Role Of Public Beta

Directly following the pilot study in the CCA Intermedia Lab, I presented *Array Infinitive* at an exhibition at the CCA Theatre from 22nd to 25th July 2021, which involved three performances per day. The reason for a public presentation of the work was twofold. First, this research aims to investigate VR in relation to an audience. The Public Beta became a practical way of getting the research out of the lab and into a setting with a crowd of people, to ultimately test the research to its fullest potential. A controlled pilot test cannot compare with working with members of the public at an arts venue through live performance. In addition, gathering further feedback from members of the public who had not taken part in the pilot, and who knew nothing about the research, provided further relevant and useful field data.

The Public Beta was the first attempt to create a 'hybrid-audience'. To do this, I created a video installation with three large projections in the CCA Theatre that showed each VR scene as the performance progressed. The costumed performer was in the middle of a small, seated audience of four, as in the pilot tests. Other audience members who were not in VR sat in small clusters throughout the theatre space, facing the performer and VR participants. The moving, colourful particle trail imagery controlled by the performer was projected onto large screens, enabling other gallery-goers to see 'inside' the VR experience, thus sharing, by extension, what the VR participants were experiencing via the headsets, albeit in 2D form. On a practical level, the hardware is expensive, which limits the number of headsets available and therefore the number of people who can be immersed in VR at one time. With many VR exhibitions in arts venues and institutional spaces, this usually leads to exhibits being split into allocated time slots, where very small groups experience the work over the course of the day. This can lead to long wait times and fewer audience members being able to participate in the experience. Through this research, I am exploring the possibility of opening the VR experience up to a wider audience via the use of projectors and speakers. This enables more visitors to experience the work at the same time. This raises the questions: is it possible to have a VR experience without the headset? Can this method democratise VR?

Example: planning for the hybrid-audience

Figures 30 and 31.
Array Infinitive, hybrid-audience exhibition mockup, 2021

The Hybrid-Audience

Witness to VR Performance

During the Public Beta, the audience not in VR were able to fix their gaze upon either the projections, the performer, fellow audience members, or the space more generally. They could also close their eyes completely and absorb the soundscapes over an amplified sound system with sub bass. In this way, the hybrid audience was born. Only two of the official ethically approved participants from the pilot were able to come back for the Public Beta. I have included detail on this in the evaluation further along in this section. It also sparked a desire to test the hybrid audience aspect to a greater degree, which I will discuss in the upcoming section related to Iklectik Art Lab.

This Public Beta version of the work enhanced its performative characteristics, as non-VR participants could see that the performer was controlling the audiovisuals through their gestures. One of the performances in particular was significant: the Friday evening performance. We had a full house (as much as the COVID tier system would allow). There were four audience members in VR and eight not in VR. This was by far the most dynamic performance of the run, both for me as performer and for the audience in situ. There was a tangible atmosphere in the space. Participants in VR reported afterwards that they had a heightened experience thanks to the other audience members in the room, who could fully see what was going on. The non-VR audience contributed to an 'affective turn', which shaped the collective experience.[223] Reaction by the non-VR audience aligned more closely with how an audience might be expected to behave while watching a performance. This includes creating a sense of excitement or wonder about what is happening before their eyes, and also clapping at the appropriate time – thus co-creating the 'mattering maps' of the affective experience for those immersed in another world.[224]
A transference occurred, which led to a real cohesive group experience. This kind of live situation, with audience members in different 'realities' in the same physical space, became a key area of research for this project.

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223   Patrica T. Clough, P.T. 'The Affective Turn' in *The Affect Theory Reader*, eds., Gregg and Seigworth, (Duke University Press, 2010), pp. 206.

224 Lawrence Grossberg, interviewed by Gregg, M., and Seigworth, G.J., 'Affect's Future; Rediscovering the Virtual in the Actual' in Gregg and Seigworth, eds., *The Affect Theory Reader* (Duke University Press, 2010), pp. 309-338

Pilot Participants Return Visit: Sans VR

Two participants from the controlled pilot tests returned to experience the work outside of VR. For this time slot, there was no other public audience in attendance, which meant I performed to these two participants directly – there was no-one else in VR except me. The two participants completed a follow-up written self-report questionnaire, offering further observational and experiential feedback. Here, I focus on the ways in which audience and performer relate through VR and the ways in which this exchange reorganises itself. Both returning participants were fully aware of the group dynamic in a new way, and felt the sense of immersion as much as they had in VR. This version of the work with projections, from an audience point of view, is the opposite of what they experienced previously. As the performer, I could not see who I was performing to, but they could see me. This is unusual and presents an interesting dynamic: I felt isolated from the audience. Once again, sound proved to be a key factor. Participants stated that the sound was 'more immersive/impressive' and that 'the movement on the screen was very cohesive to the movement of the performer'. Of these two returning visitors, one said they 'did want to be back in VR' and the other said 'not really'. The one participant preferred this experience outside of VR, stating that, 'I even prefer this not being in VR experience, personally it is more effective to feel/see/hear'. In addition to this, 'watching [the] performer outside of the VR device was amazing'. Theoretical ideas around the Brechtian fourth wall and a new form of audience 'alienation', embodiment/disembodiment and different modes of audience interactivity come to the foreground at this point of the research.[225]

Owing to COVID restrictions and the need to move audiences on quickly following performances, I did not capture ASC data from the exhibition format of this work.

225 The Brechtian Fourth Wall is the invisible separation between the performers, or those often on a stage, and the audience. For further clarification, see for example Tom Brown, *Breaking the Fourth Wall* (Edinburgh University Press, 2012.) A new form of this notion arises through VR whereby audience are isolated visually in 'another visual realm' via the headset.

Stage 3 Development

Apiary Field Study

On Saturday 26th February 2022, Apiary Studios and Gallery in London hosted *Array Infinitive* for a day of field research with members of the public and peer groups. This comprised three different groups who were a mixture of members of the public who had been sourced through Eventbrite, friends, colleagues, and their contacts. I was also interviewed by Faye Dowling for *Antenna*, Apiary's art blog and online publication.

After each session, we engaged in a dialogue about the experience. There were no questionnaires or forms in this study. The set-up was simple, with stereo sound and no projections. One participant stated that it was 'the most meditative experience they'd had in a long time' and another couple who came together 'wanted it to go on for longer'. Participants suggested there was scope for each scene to be extended, for participants to become better acquainted with each scene individually and to be able to be further subsumed into it. A participant added that the Blue scene 'was like death or facing the shadow' and 'from there we are transformed into something new'. This visitor's experience in VR seemed to be a journey that resulted in a 'transformative experience'.[226] I also received feedback by email from one participant who asked to share further feedback privately, rather than in front of the group. The feedback noted that:

> *The experience reminded me of Shamanic practices – circle journeying and a kind of ceremony when a new circle gathers and ancestral spirits are invited to be present.*
>
> *In this practice, people enter a different reality/state of consciousness, and we usually do this under blindfold. How this can manifest for me is that I'm aware of the presence of others - like the columns of energy, and also the appearance of spirit animals or people or energies which were like the VR bubbles/blobs/cells and which move around the person they are visiting. And all of this may take place in a landscape.*
>
> *Overall there was an awareness of being in VR and in the room simultaneously, which mirrors being in the shamanic worlds at the same time as in a real world space.*[227]

[226] L.A. Paul, *Transformative Experience* (Oxford University Press, 2014), p. 10.
[227] The author received permission from this participant to share the feedback in this thesis.

Figure 32 and 33.
Image Collage from Apiary Studios field
study (2022), photo Chris Speed

Iklectik Art Lab Research Study

Further Afield Am

As a follow-up to the CCA Intermedia Lab pilot, I set out to conduct another formal study to compare with the CCA pilot. This took place on Saturday 2nd July 2022 at Iklectik Art Lab in London. Maria-Cristina Onea once again assisted me in working with the four groups of four participants each on the day. Compared to the CCA pilot, this group was less diverse in terms of age and gender, and most were digital natives with ages ranging from twenty-one to fifty-two. The format was the same as at the CCA: beginning with a greeting, an explanation of the study, and assisting people into the VR headsets. During this study, the sound was emitted through Iklectik's in-house Amoenus sound system. The system is 13.4 ambisonic capable, but we did not use ambisonics for this study. Once the VR experience had finished, Maria and I assisted the participants to remove their headsets and did a basic wellness check, and then the participants completed the questionnaires. As before, the self-report questionnaires included the 11D-ASC, MODTAS and feedback form. There was less verbal exchange after each VR experience compared with the CCA study. The schedule of the day afforded less time for oral feedback, as we had another field study to attend and Iklectik was hosting an event that evening. This is important to note because the verbal feedback at the CCA study contributed a significant additional amount of testimony and input. Some participants volunteered information about how they identify or disability status, which supplemented my understanding of the work in relation to a wider and more nuanced group of participants. That could well have been the case at Iklectik, but I was unable to obtain this information to verify this – although some participants shared relevant information on the questionnaires, which I will discuss further on.

The data from the second study presents clear differences to the first. First, far fewer people, in comparison with to the CCA pilot, felt anxious or nervous at the beginning of the VR experience. In this instance, one person stated that the Red scene made them feel 'stressed', another said it was 'intense', and a third person said, 'it was a lot to look at'. Otherwise, the most common feedback on the Red scene was 'curious' and 'alert', with the some participants feeling 'intrigued' and 'in awe'. This contrasts with the CCA study, where more people felt some degree of anxiety for many of the first scenes. Moving to the Orange scene, the feedback was more balanced, including comments like 'very relaxed, almost sleepy' to 'more engaged – exploring' and, interestingly, 'more settled, enjoying the environment'. Indications here are that this group had mellowed into the VR experience by the second scene.

Moving on through the colour spectrum, or chakra system, Yellow received feedback like 'serene yet active', 'optimistic and content' and 'enveloped, most like being touched'. The Green environment, as before, inspired responses including 'Expansive! Gauzy, loved this one', 'hearty, cared for', 'joyful and floating', 'floating, more aware of height'. Several participants picked up on the corresponding element and design inspiration for this scene, which was 'air' and cloud forests respectively. One person correctly recognised the chakra point – the heart.

The Blue tron-like, wire-frame environment, again as at the CCA, received strong responses including, 'one of my favourites, I felt calm and it was therapeutic' and, to counter that, 'some trepidation at points'. A particularly meaningful piece of feedback was that one participant 'thought a lot of *The Three Body Problem* novel and Sci-fi', which has been the only comment to date that has referenced literature. For the Indigo scene, which moves into an abstract version of outer space, there was the following feedback: 'more sleepy and childish, unicorn?', 'relaxed and interested in what was around', 'more meditative, thought wondering', 'unicorn colours, was appealing', 'nostalgic, reminded me of colours from childhood', 'happy' and 'playful'. It is notable that this scene was interpreted in similar ways amongst most members of the group. The broadly comparable age range and exposure to coinciding forms of digital media could possibly account for this.

Finally, the Violet scene's feedback included 'lots of body sensations, tactile', 'calm', 'spiritually prodded', 'gently affected', 'in awe', 'mesmerised'. One comment here I will present in full: 'Last scene was unusual, felt like it was an art gallery, feel like all scenes would be good for sensory/ relaxation purposes for neurodivergent people'. Again, there was feedback about how this work might be of particular relevance to a neurodivergent audience.

In this study, which had half as many participants as the CCA study, the majority were not aware of being in a group while they were in the headsets. However, more participants at Iklectik answered 'yes' to the question pertaining to group experience. The participants that said 'yes' noted the following thoughts: '[I was] wondering if the others were seeing the same thing' and (noticing/seeing) 'the 3 other bodies of light' (in VR); 'feeling their presence' (referring to the other participants) made them cognisant of being part of a group. One participant said, 'Not initially, later realised the others were represented by the cylinders/pillars'. The takeaway from this is that a higher number of Iklectik test participants realised that the participants were represented in VR as sparkling cylinders of light.

Those that said 'no' to being aware of the group added that 'we didn't interact with each other in any way' and referred to 'not seeing each other' (in VR), and one suggested this was 'because it was a solo experience of one-ness + personal journey + concentrating on VR visuals'. There was considerable feedback here about 'wondering if others were seeing the same thing', which reveals an awareness of other members taking part, but in some instances being curious if 'they'd missed something' or if others had 'missed what I was experiencing'. This could be an inherent part of VR and the isolation it creates because of the headset. There was also feedback about sitting as a group but having singular experiences, and that VR 'can feel lonely'. Alongside this, though, there was a counter-response about the experience amongst other people being 'less lonely' and there being a 'sense of discovery together'.

As in the CCA study, all members of this group found the sound to be very affecting. Almost everyone was 'very aware' of the sound and one stated that it was 'a big part of the experience'. One participant who clearly had previous understanding of VR said that they felt 'enveloped, very clearly not attached to headset, I liked it' and that it was 'immersive'. One person, as at the CCA, felt that the sound was 'too loud'. For most participants, the sound 'gives a more immersive experience' and 'went with the visuals' and they 'really enjoyed the immersiveness of it'. There was more feedback this time on the actual spatial positioning in relation to the sound system. A few people commented that they believed the sound system was mostly 'on the left' or on 'a certain side' of them. This is despite the fact that the group was positioned in the centre of Iklectik's speaker system, so any sort of sound prevalence on one side was unintentional. Most people did not find that the amplified sound 'anchored' them in physical reality. However, there was one participant that did find this aspect grounding: 'yes other peoples' sounds (chair creaking) did anchor me'. This specific aspect was part of my original creative decision to amplify the sound. I conjectured that participants are isolated visually in VR, but they were able to hear me in the 'sound field', i.e., my clothes rustling or my feet on the floor. I believed this anchoring or physical grounding might be comforting.

Finally, most participants were not aware that a live performer was controlling the audiovisuals. A few participants guessed that it was computer-generated or that it was a press-and-play video. One particular contribution was intriguing: 'No, but I thought that might be the case, it felt more like alien entities'. For most participants, their first awareness that the audiovisuals were controlled by movement was when they saw the question on the questionnaire.

Unlike at CCA, I refrained from asking 'Do we have data?' before beginning of the experience. This change was made in response to feedback obtained in the CCA pilot and to test the impact of participants' response to VR. Generally speaking, it took this group less time to 'become settled' in the VR space. Further, many picked up on design aspects and audiovisual forms of communication that I had intended to convey. One participant in particular did not fill out the individual colour questions but instead wrote: 'overall the experience was pleasant and meditative for all of the colours'.

An additional ASC graph was not possible after the Iklectik study owing to issues arising with COVID. However, I was able to extrapolate from the available data that the results align with the CCA Glasgow pilot.

Figures 34, 35, 36.
Research study, Iklectik Art Lab, 2 July 2022,
photos by Maria-Cristina Onea

Breaking Convention Afterparty

Further Afield Pm

Directly after the Iklectik study, my research team and I headed to the Breaking Convention afterparty at Juju's in Spitalfields. Maria and I were joined by developer Chris Speed, who assisted us. As the space for this demo was smaller, and we were sharing it with the PsyCare charity, we conducted a modified version of the work. PsyCare are a charity providing welfare services at music festivals and events. PsyCare and *Array Infinitive* were in a seating section at the back of Juju's that had doors separating it from the main room on one side and doors to an outdoor private patio on the other. It was a small-scale space and there was sound bleed, so in this instance we used headphones. Given the limited room to make large gestures and demonstrate the work as it was designed, I let seated participants use the performer headset and control the audiovisuals themselves one at a time. The distinctive aspect of this field study was that several people were already in an altered state when experiencing the work. This was a good testbed to see if they were comfortable, felt safe, and could enjoy *Array Infinitive*. Indeed, they did. Many people conveyed feelings of wonder as they worked their way through the scenes. One participant said it was their 'favourite VR experience'. Another visitor, who claims not to like VR normally, 'enjoyed it for its whimsy and colour'. This was also the first time I had let others utilise the main headset, thus controlling the audiovisuals. My team and I were pleasantly surprised by how participants were able to manage the interface, albeit in a seated and more contained format.

Figure 37.
In situ at Breaking Convention afterparty, 2022, photo by Maria-Cristina Onea

Into The Performance Space: Postgrad Event

Watching The Watchers

As a second part to the formal research study day, Iklectik hosted a group show entitled 'PostGrad', exhibiting current PhD work and personal research projects. Included in the show were Anna Nazo, Josefina Camus, and I. Anna is a lecturer at the Royal College of Art and has been working on a drone and AI audiovisual research project. Josefina presented her final stage PhD project on Energy Forms in performance space, which included an audiovisual film shot in South America. I presented my PhD research project *Array Infinitive* as part of this group event. The exhibition took place on Tuesday 26th July 2022. I used Iklectik's ambisonic system for this occasion and Ross Flight sound engineered. Chris Speed also contributed VR visuals for the live, wall-sized projection that accompanied my performance. The show was well attended at near-full capacity.

For this outing, I had three official study participants re-attend to see the work whilst not in VR. The feedback included a clear participant awareness of 'being part of a group' and a 'collective experience'. Two stated that they did find this hybrid experience immersive and the other did not, stating that they were 'aware of being in an audience structure', which hindered immersion for them. All three agreed that they were having a different experience from the people in VR. All the participants enjoyed seeing the performer's movements, which clearly translated to the sounds and particle trails.

When asked specifically about the experience of watching others in VR there were a variety of responses:

'It felt like watching people on drugs tripping slightly voyeuristic, but felt like I appreciated their enjoyment and engagement.'

'I felt loving towards them and excited for them I think because I'd already experienced it. I was excited for them to have a similar experience.'

'Meta, watching the watchers. Curious and somewhat sweet and amusing.'

In relation to this experience being a live performance all of the participants said they were very aware of it being such a situation. 'I appreciated the movement aspect much more this time'.

Figure 38.
Poster for PostGrad exhibition at Iklectik

APPENDIX PG. 192 - 195

Glasgow Project Room

Final Field Study

I was in residence at Glasgow Project Room from 14th to 25th November 2022. Here, I presented different parts of the PhD research and used the space as a workshop and studio, setting up a desk and completing thesis-writing whilst meeting guests and visitors that trickled through the venue. I had a projection running, so the visuals could be seen clearly in the room for those not in VR, and Genelec speakers in basic stereo. Glasgow Project Room is part of 103 Trongate, which also houses Glasgow Print Studio, Street Level Photoworks, Transmission Gallery and Sharmanka Theatre, so I was able to interact with visitors to the wider 103 Trongate. In addition, I held an open day on Saturday 17th November and a residency reception on Wednesday 24th November. At these events, a high numbers of venue patrons, peer members, students, and general public experienced the work.

This was another valuable public-facing experiment. This iteration of the work was more casual than previous field studies. Rather that have set run times of the VR performance, I greeted people as and when they came to the space, explained the residency and the research, and showed them *Array Infinitive* individually. Presenting the work in this manner was illuminating and facilitated new discoveries with the research. In this instance, it proved practical to let participants use the performer headset, so they could control the audiovisuals themselves. Previously, I had been sceptical of doing this, as I was unsure if people would be hesitant to control a live sound system or to 'perform' in a 'dancerly' or embodied way whilst not being able to see others who may be watching them. My worries were unfounded. Participants settled into the experience and this development created a far greater connection and reaction between participants. This constituted a productive development from the Breaking Convention installation, where people had to remain seated. At Glasgow Project Room, there was ample space to move around, to create full, embodied gestures, and to truly 'play' and activate the piece.

During the residency, there were a few notable visitors. One was a retired teacher who worked specifically with neurodivergent children. He suggested that this experience would be beneficial for such students and encouraged me to contact schools to propose the idea. This added to previous suggestions that *Array Infinitive* could be constructive for neurodivergent people. Another guest was a public speaker who specialises in using gesture to communicate. He works with a wide range of clients from the corporate world but also, interestingly, orchestral conductors. He was intrigued by the work and use of gesture, where the piece is played like an instrument. In addition, a number of younger people, accompanied by their parents, experienced the work for the first time. This was also a first for *Array Infinitive*, and a beneficial form of new feedback.

One participant in particular was celebrating his twelfth birthday. He was at the exhibition with his mother, who is a Shamanic teacher and practitioner in Glasgow. They offered two unique points of view. Both really enjoyed the piece and the mother said the room 'felt charged', and they both stayed in the Project Room for over an hour, each going into the VR twice.

For the larger open day and residency reception, I maintained a looser and more participatory format. An interesting feedback loop ensued, whereby people would go into VR as the performer, come out and watch the next performer, go into the VR as a passive observer, come out and watch the projection and then go 'back in' as the performer a little while later. This created both a unique VR experience and an interesting collaborative atmosphere. Witnessing how the public 'played' this instrument was intriguing. Seeing people lose their inhibitions and fully 'sink into the experience', performing to others whom they could not see, was significant. The instrumentation of this work came to the fore during this new participatory version, which transformed into a kind of happening.

Figure 39.
Poster for residency
at Glasgow Project Room, 2022.

Figure 40 and 41.

Leslie Deere performing *Array Infinitive* with University of Glasgow
Psychedelic Society participants in VR, photo by Hal Williams [218]

228 The University of Glasgow Psychedelic Research Society was created in 2021 and seeks to conduct research, including the creation
of a VR work, which aims to simulate a therapeutic psychedelic experience. Founding members of the group came to Glasgow Project
Room to see my research and discuss *Array Infinitive*.

Figures 42 and 43.
Participants experiencing *Array Infinitive* at Glasgow Project Room, 2022,
photos by Leslie Deere

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Chapter Four

Conclusion

The outcomes from the project development of *Array Infinitive*, the corresponding research studies, and the subsequent collated archive are multifaceted and forward-facing. Through this PhD, I have developed a new and distinctive VR artwork that offers a vantage point of being both within and without a virtual reality, and expands the framework of performance, participation, and spectatorship. The research has produced a close examination of audience experience and collective presence through VR. Alongside the practical development of the project, a variety of research studies and public engagements generated ways of obtaining qualitative data. Interacting with a broad community was a valuable foundation to this project, which often led to unexpected findings and discoveries. In addition, a repository of artistic and theoretical work has been assembled. This explores altered states and maps affect, perception, and transcendental experiences. The scientific methods used for the research studies confirmed the capacity of *Array Infinitive* as a genuine ASC experience generator. Verifying this quality proved the achievement of affect and this more ephemeral aspect of the artwork became quantifiable.

This practice-based study sought to research the following questions:

-In what ways can we develop the language and articulation of affect in art while establishing an archive of work that explicitly aims to create an altered state of consciousness (ASC) experience?

-How can we explore and reimagine the infrastructure of spectatorship and group experience through a hybrid-audience encounter of VR performance?

-What are the potentials of gestural audiovisuals expanded into virtual space, and how are live sound-making and performance redefined through this process?

During the development of *Array Infinitive*, there were key moments of discovery, which helped shape the thesis and research as it unfolded. A primary example of this was the first supervision demo, which was conducted with limited equipment. This limitation produced a new finding which led to an expanded form of spectatorship. In addition to this, the first demonstrations offered insight at an early stage into the importance of sound and the diverse nature of participant response. That input helped to consolidate an understanding of the subjective nature of the work, and the need to delineate the differences between subjective and collective questionnaires was gained and the subsequent need for additional forms, which addressed more directly the group experience, the sound, and other aesthetic elements. This shaped the approach for the formal research studies.

Both the pilot at CCA Glasgow and the secondary study at Iklectik Art Lab London offered opportunities to gather qualitative data and feedback from test subjects in a controlled environment. There are several aspects of these case studies worth commenting on. The first concerns the length of time it took these two different test groups to settle in to the experience. The CCA study participants experienced more anxiety and for longer. Analysis of the findings indicate this was because: (A) the pilot was a testbed in researching a group VR audiovisual performance, which meant we were still discovering and developing the best practice in doing so, and (B) the participants were impacted by the audible communications between myself and the assistant during the set up. This verbal communication impacted the ways in which the audience were introduced to the experience, and ultimately influenced their experience of the piece as a whole. In addition, the findings suggest that the responses were influenced by the wide-ranging participant demographics for the CCA study. By contrast, the Iklectik study participants relaxed into the experience quicker, and certain design aspects were more easily recognisable to them, such as the virtual cylinders of light as representatives of the four seated audience members. The demographic at the Iklectik study included mostly digital natives and the group was more homogenous in terms of age and identity profile. It is also important to note that there were design developments between these two major test periods, with further VR development occurring before the Iklectik study, particularly around the VR particle trails. This may well have influenced the test results and reactions. Foundational elements such as the cylinders of light were exactly the same for both studies, however.

An important finding within this research pertains to the level of awareness the audience in full VR had, in terms of what they were seeing and hearing occurring in real-time and being led by a live performer. Overall, the participants in both studies were not aware of this live aspect. This constitutes one of the project's central findings and was tested in multiple settings. The randomised, ever-changing nature of the audiovisuals, the sounds of my feet on the floor, or the fabric of my clothes moving – both of which could have been signifiers of a live event – did not lead the audience to be aware of my role in the piece. The hardware, moreover, did not create Fischer-Lichtean performative 'enchantment'. Most of the fully immersed spectators did not recognise that the sounds and images were happening live. The VR audience were not aware that the digital content that was being generated was being conducted by a human performer in the space with them. This aspect is compelling as society integrates with machine assistance, algorithms, and AI. This research outcome suggests that what is and what is not controlled by a human is not necessarily obvious to an audience who are fully immersed in VR.

An aim of this experience was to promote a human component – to create a work that, despite its technological complexity and digital nature, still produced a 'felt' experience, a genuinely evocative moment, as it was being conducted by a person in a room amongst other people in close proximity. The research suggests that this was not a part of the participants' experience when fully immersed in VR and ultimately forms a major research outcome. Although minimal and abstract in nature, there was an abundance of content, or the aforementioned 'audiovisual litany', resulting from the full VR encounter. The figurative element in *Array Infinitive* was the performer moving around in physical space, albeit out of view of the audience in headsets. The performer, or 'non-representational conduit', was making that happen, but the research shows that the audience in VR were not acutely aware of it.[229]

This project has clearly demonstrated the affective impact of using amplified sound rather than headphone-based audio. The immersive potential of the VR work was significantly enhanced by the audible soundscapes. The amplified sound opened up a 'listening field', which was not only affective to participants, but also demonstrative in terms of 'positioning' audience perspective in a positive way. The 'listening field' as Oliveros would describe it, in this instance, included the live improvised sonic environments, which were amplified through speakers, as well as creaking chairs, rustling clothes, the performer's footsteps, and miscellaneous sounds. While these aspects were not understood to be signifiers of a performance, their impact was nonetheless affirmative and helped anchor the audience. To reference CC Hennix and the ISE (illuminatory Sound Environment): the sound blurs the line between the inside and the outside of the experience. The 'mattering maps' as Grossberg calls them, in this instance, live in the in-between space of experiencing both the visuals and room ambiance in a dedicated space amongst other audience via a headset, simulated imagery, and amplified improvised soundscapes. The studies suggest that the intention of achieving a Fischer-Lichtean 'enchantment' by 'lifting everyone slightly above the present' occurred through the sonority of this work. Participants found the auditory element to be significantly impactful, both for personal immersion and for shared experience. The response rate of influence for the live soundscapes ranked highest on the self-report questionnaires, and the intentional aim of creating a collective encounter through this was successful.

The different versions of this project reconsider performance as 'a spatial, bodily event with co-presence amongst performers and audience'.[230] *Array Infinitive* created such an event, which utilised VR technology and live audiovisuals. The moment this immersive environment became an incubator for the visceral and embodied is the point when it offered the chance to discover the ways in which audiovisual VR performance affects an audience, particularly with the hybrid-audience and participatory adaptations. The singular versus collective experience is key here, and touches upon what Carlson calls a 'common situation' with 'co-subjects'.[231]

229 Henry Flynt, *Three Essays on Spirituality in Art* (João Simões, 2020)
230 Ericka Fischer-Lichte, *The Transformative Power of Performance: A New Aesthetics* (Routledge, 2008), p. 17.
231 Marvin Carlson, 'Introduction' in *The Transformative Power of Performance: A New Aesthetics* by Ericka Fischer-Lichte (Routledge, 2008), p. 6.

This involvement in a prevailing place of activity, rooted in the here and now, ultimately transforms everyone in the shared space and triggers physiological, affective, volitional, and energetic responses.[232] It is this sort of oscillatory feedback loop that is a locus of my research.

Intentionality and meaning-making through the occurrence is essential. Is the artist purposefully trying to create a certain type of experience? Through my investigations, I have concluded that the level of shared group awareness and the fact of live human involvement were not at the forefront of participant experience. *Array Infinitive* achieved a form of 'mood-managing' more than a perception of the collective when everyone was in headsets. I analyse this in tandem with the fact of the audience's lack of awareness that a live performance was occurring within their physical environment. However, outside of VR, that was not the case, and unsurprisingly the visual cues for those not wearing headsets contributed exponentially to the audience recognition of what the instrument was and how the group was assembled.

The group aspects of this project were multi-layered. Visual markers placed in the virtual environment (cylinders of sparkling light in the same positions as the seated participants) were meant to mimic the audience positions in physical space, but this was not obvious to most participants (although there was more awareness of this in the Iklectik study). Entering into the research room or project space amongst a group of people, and then coming out of VR and discussing it with those present, was not insignificant. Whilst immersed in VR, however, the general participant experience was more singular or even solitary. VR encounters can often feel isolated, especially those virtual worlds that are abstract and do not offer figurative objects to grasp or connect with. The abstract qualities of this work presented a space and an invitation to 'give in' to the minimal elements and corresponding ambient sounds, with the aim of inducing an 'Endless Andness' as Mieke Bal puts forth or a 'self-transcendental experience', which is a term being explored by researcher Dr David Glowacki[233] and will be mentioned in greater detail in the next section.

A genuine ASC experience was generated by the 'common situation' and immersion into *Array Infinitive*. The comparisons for this conclusion were evaluated amongst other non-substance-based ASC experience generators including: Ganzfeld lighting, floatation tank, a darkroom, and breath work. *Array Infinitive* exceeded these other methods particularly in the areas of 'Unity Experience', 'Bliss State', and 'Spiritual Experience'. *Array Infinitive* also scored higher in the areas of 'Synaesthesia', 'Insightfulness', and 'Changed Meaning'. I used these established and accessible forms of measurement. This was also the measurement technique used by Dr David Luke, who advised on the *Array Infinitive* studies and previously measured ASC for the purposes of an artwork by Haroon Mirza, which I will elaborate upon below. An alternative option would have been biometric data, which would require specialist equipment and machinery not readily available for this research. Towards the end of the PhD project, researcher Dr David Glowacki published a paper on similar non-drug ASC encounters through VR entitled: 'Group VR

232 Ericka Fischer-Lichte, *The Transformative Power of Performance: A New Aesthetics* (Routledge, 2008), p. 17.
233 David Glowacki, et al., 'Group VR Experiences can Produce Ego Attenuation and Connectedness Comparable to Pychedelics', *Scientific Reports*, 12(1) (30 May 2022), article number 8995

Experiences can Produce Ego Attenuation and Connectedness Comparable to Psychedelics'. He used self-report scales previously used to measure psychedelic drug experience, which included the MEQ30 (Mystical Experience Questionnaire), the 'Inclusion of Community in Self' scale, the Ego-Dissolution Inventory and the Communitas Scale. These methods look at similar areas to the 11D-ASC and MODTAS; Glowacki comparably sought to measure STE's (Self-Transcendental Experiences).[234]

Further research would be needed to ascertain the suitability of these forms of measurement for artworks. Glowacki is a computer scientist whose research areas focus on computational physics and aesthetics. Glowacki's VR project *Isness* is what took me to my first Breaking Convention conference in London, in 2019, in the early stages of my own PhD research. I specifically went to see *Isness*, but was unable to experience it at that time. However, I did become acquainted with Dr Glowacki and members of the research team. All that being said, it is accurate to assess in scientifically quantifiable terms that *Array Infinitive* succeeded in creating a 'self-transcendental experience' (STE). [235]

Is the scientific method appropriate for research such as this, and what purpose might it serve in art? A more refined method for obtaining such data for artistic purposes would be useful. My initial motivation for using this method was two-fold. To begin with, it was the technique employed with Haroon Mirza's *Chamber for Endogenous DMT (Collapsing a Wave Function)* (2017) to ascertain whether the sculpture induced an ASC.[236] Dr Luke assisted in measuring ASC for that exhibition and conducted a research study at the gallery. Second, calculating or mapping affect can be challenging. Affectation, and quantifying that which is transcendental or measuring such a phenomena, is not straightforward. Employing the scientific method was a way of avoiding anecdotal conjecture or subjective opinion. In addition, arts and cultural institutions employ versions of the scientific method on a regular basis for evaluation and to gain feedback from audiences. Collecting audience response data usually engages with some form of scientific method. The techniques I used, 11D-ASC and MODTAS, are established surveys. At the beginning of my research, I believed that that proving ASC success and verifying that it could be done conscientiously was important for the PhD. However, now that I have finished, I better understand the usefulness of quantifying this aspect of an artwork lies in the applications it might have for art that engages with a wider public, students, young people, or vulnerable people. Additionally, when art is used in a therapeutic capacity, measuring what it 'does' for both tangible results and health and safety purposes becomes important. Is there an opportunity to create and develop new methods of measurement for similar knowledge outcomes? What are the important factors or data points that need to be included? This thesis establishes a foundation from which new development in this area can be cultivated.

234 Ibid.
235 Ibid.
236 Haroon Mirza, *Chamber For Endogenous DMT (Collapsing the Wave Function)*, "For a Partnership Society! exhibition at 176 Project Space London (2017) <https://www.zabludowiczcollection.com/projects/view/chamber-for-endogenous- dmt-collapsing-the-wave-function> [accessed 12 October 2022] exhibition included ASC research with volunteer participants by Imperial College London and Greenwich University.

Array Infinitive as a research project seeks to explore the ways in which participants reacted to VR audiovisual performance art; and the ways in which the audience developed an understanding of their surroundings and the creative intentions of the maker, both in and out of the virtual space. Making the general tempo slow and unhurried was an explicit compositional decision, in an attempt to open up the Radiguean 'third ear' sonically. This temporal pace applied to the VR visuals and the performer's movements, which subtly adjusted and 'played' the virtual instrument, bringing out new sounds, tones, and combinations of sounds through the act of improvisation. Opening up this performance to a hybrid audience made the cadence of the work fully accessible in tangible ways through the gaze, and this form of seeing–understanding was increasingly realised as the research progressed.

The concept of a hybrid audience for VR performance, as developed through this research, offers a new approach to virtual experience and presents an expanded framework for spectatorship. This project presents a utopian possibility of networks and interconnectedness. Understandings of how an audience functions, its role in the performance, and the impact of a structural reconfiguration are all reconsidered through *Array Infinitive*. The different modes of 'reality' present in this situation created a format for active participation and a multidimensional encounter. Through this PhD study, the notion of coevalness or participatory active-observation was explored.[237] Each study and iteration created further layers of understanding of the ways in which *Array Infinitive* was received, was responded to, and was affective with audiences. It became clear in the larger settings that this occurred through an interwoven audience, some of whom were experiencing a form of isolation and some who were not, yet both were present at the same performance together. This provided an interesting landscape of findings to explore. Being alone and together is a dichotomy. Presence in this sense includes isolation and collectiveness simultaneously. The project created a paradoxical situation in which an audience was secluded from fellow members while having an otherworldly experience, and intermingled with a group who were witness to the physical goings-on and 'peering behind the scenes'. This presented new collective possibilities. This shifts the perspective and point of view to a multimodal framework and creates an augmented and sophisticated architecture of spectatorship.

In terms of instrumentation, *Array Infinitive* rigorously explored the use of gesture to 'play' audiovisuals in a live capacity through a VR environment. -Considerable development took place through the research into gestural scope for real-time VR visuals and sonics. This advances further knowledge of movement-making in virtual spaces and live sound-creation by way of, and designed explicitly for, this sort of technology. *Array Infinitive* positions itself in a lineage of experimental sound-making that incorporates improvisation. This work is less of a game and more of an experience, which is produced live, through automatic movement/sound-making or autoschediastic performance.

234 Ibid.
235 Ibid.
236 Haroon Mirza, *Chamber For Endogenous DMT (Collapsing the Wave Function)*, "For a Partnership Society! exhibition at 176 Project Space London (2017) <https://www.zabludowiczcollection.com/projects/view/chamber-for-endogenous- dmt-collapsing-the-wave-function> [accessed 12 October 2022] exhibition included ASC research with volunteer participants by Imperial College London and Greenwich University.
237 Mieke Bal, *Endless Andness: The Politics of Abstraction According to Ann Veronica Janssens* (Bloomsbury Academic London, 2013), p. 9.

One of the most interesting aspects of the field study at Glasgow Project Room was observing the ways in which the audience moved with and through this work. Some people were more contained in their gestures, while others had a wider range of movement, and several participants adopted a kind of martial arts stance. This iteration of the research demonstrated that the audience were willing to be vulnerable with the piece and enter into a new kind of encounter with it. A form of Bleeker's 'corporeal literacy' was developed through the participatory version of this project.[238] This was another unexpected discovery. Prior to this, I assumed participants might be nervous controlling a live sound-system, or would not enjoy being observed while fully immersed and moving their body in VR. This piece asks of those that step into that role to perform to an audience one cannot see. Participants relinquished a degree of control, embraced the occasion, and were subsumed not only into the work, but also into what had previously been my role as performer, thus creating a new type of participatory event and paradigm for collaborative immersion.

The ways in which VR performance art is developed and delivered to the public punctuates this research. Creating this project during a pandemic presented challenges with assembly, both in terms of development and with conducting field research. However, a considerable amount of interaction with the public occurred, as and when it could happen safely according to COVID protocols. This research would benefit from more studies with further audiences. The frequent positive reactions to *Array Infinitive* being a creative safe space for neurodivergent people suggested that this VR experience is calming, comfortable, and manageable. This feedback came from participants who identify as neurodivergent themselves as well as teachers and professionals who work with neurodivergent students. There is scope and aspiration to develop further research in this specific area.

Alongside the research analysis, a survey of corresponding art, academic essays, and theories has been compiled into an archive. It serves as a collection of material that explores ASCs. This includes historical and contemporary work and aims to bridge the gap between the analogue and digital by way of intention rather than process. This evokes further questions about art that explores the extraordinary or the affective sublime through a variety of means, and the ways in which digital culture can take reference from, and are ultimately connected to, the earlier analogue pieces as source material for the transcendent.

Looking ahead to future research: this could be conducted around audience understanding of 'their place' in VR art, particularly the role audiences play in a performance piece. This is meaningful at present given the advent of AI. *Array Infinitive* is not built upon algorithmic processes: it is controlled by a human, through human decisions, human improvisation, and human gestures. The cybernetics here include an embodied person using physical energy to create movements that activate the technology. However, most participants were unaware of this feature. *Array Infinitive* is abstract in nature. Presenting more obvious 'replicas' of the human audience members within the VR scenes could have provoked a greater understanding that the audience members were being 'represented' in the virtual world.

238 Mieke Bal, *Endless Andness: The Politics of Abstraction According to Ann Veronica Janssens* (Bloomsbury Academic London, 2013), p. 9.

Array Infinitive asks if this is necessary. How is performance translated through this kind of technology? What are the methods of connection that replicate the audience–performer relationship, or are these methods changing through VR? How is VR different than AI when it comes to performance art and audience experience?

Subsequent research could also centre on VR for meditative or therapeutic practices that benefit from, or indeed rely upon, an altered-state experience, or for artworks that aim to explicitly explore these topics. A key domain at present is the expanding field of psychedelic therapy. Research focused on *Array Infinitive* as a suitable initiation or integration tool for therapeutic treatments would be compelling. There are distinct applications to explore with *Array Infinitive*. I endeavour to proceed with further research with hopes of redefining our understanding of remedial practices and to further probe the potential of this area through art.

An array is used for a variety of purposes from twelve-tone serialist composition to computer science. In programming language, an array data type is used to indicate a variable that can be indexed. An arrangement of objects, an array can be clusters, sections, groups, or cylinders of sparkling light.

Infinitives are a special form of verb that can be used as a noun, adjective, or adverb. They are made by adding the word 'to' before a base verb, and can be useful when discussing actions without actually doing the action, such as a precursor of what is to come:

To listen.   To see.   To experience.   To feel.

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Appendix

Introduction

As specified in the thesis this practice-based research included the development of a new VR project entitled *Array Infinitive*. This PhD project was developed and extended into pilot tests, research studies and field work to obtain qualitative data and feedback from participants and audience. This Appendix creates a supplemental archive of images, documentation and material for the thesis.
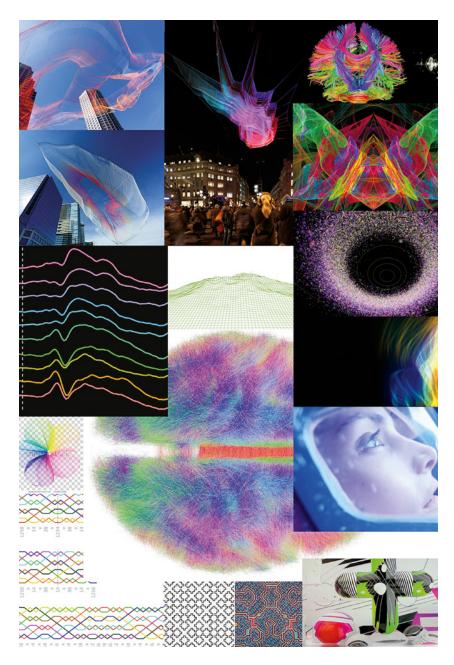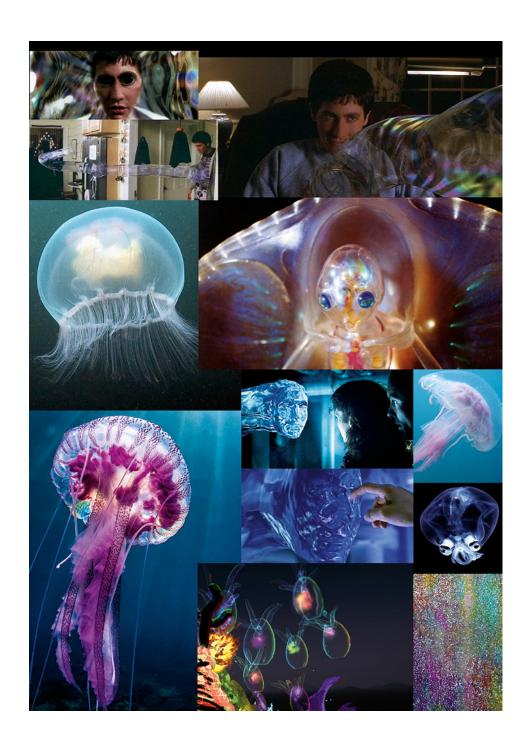
Modern Conjuring For Amateurs

Introduction

Clara Rockmore
Photo by Toppo

Modern Conjuring for Amateurs
Photo MK Gallery (2017)

Conceptualising Array Infinitive
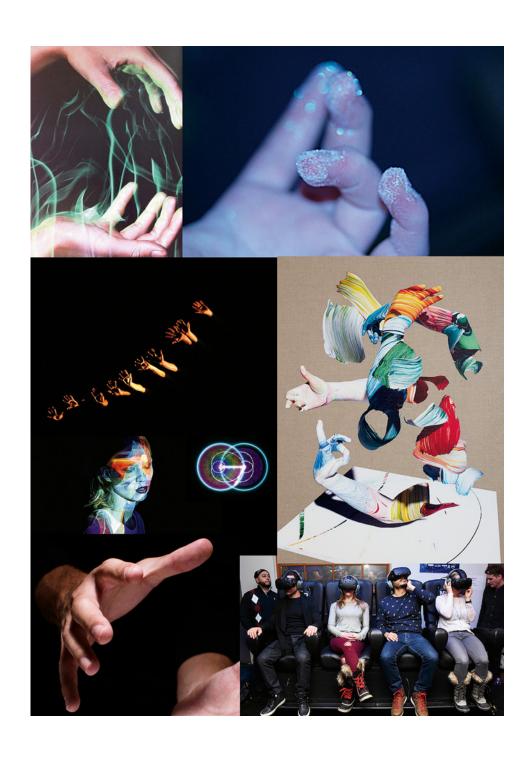
Early stage mood boards and mock-ups

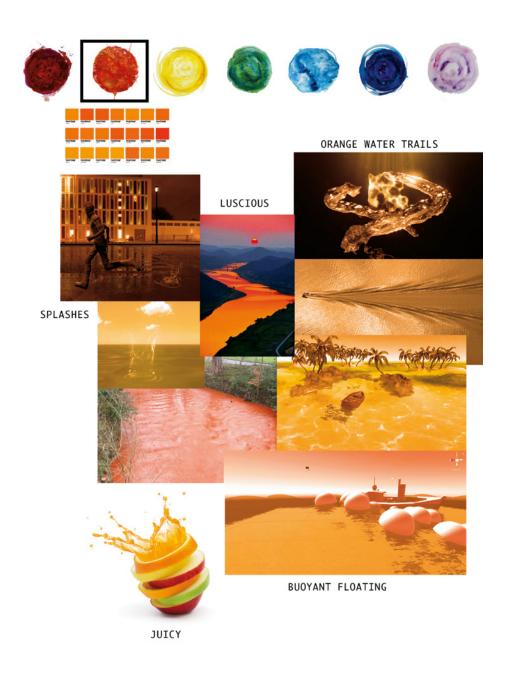**Original project mood boards**
(2019)

Original project mood boards
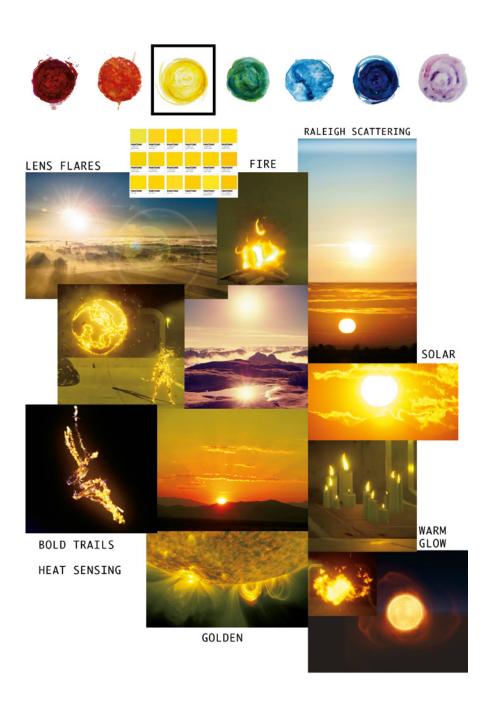(2019)

Original project mood boards
(2019)

RED TERRAIN
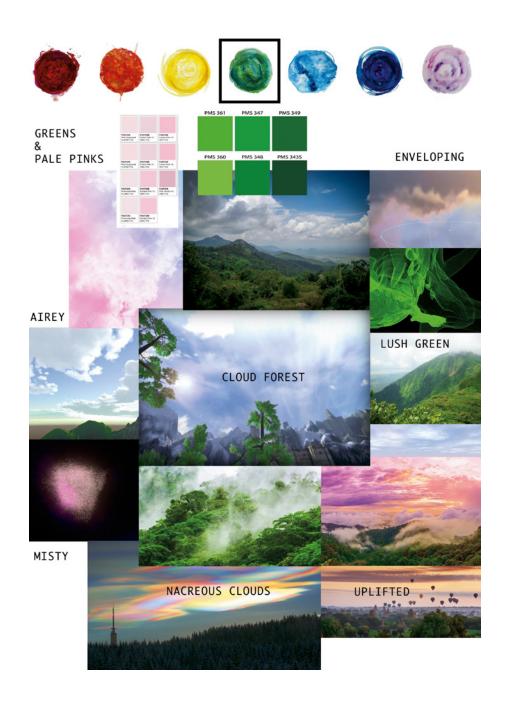
EARTHY

EXPANDING
WARM
PARTICLES

WARM
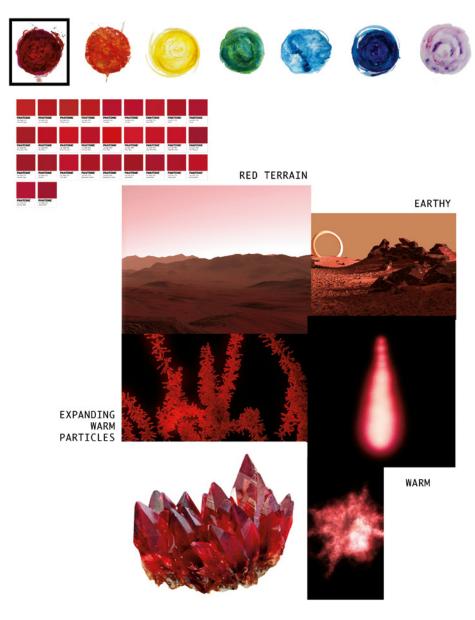
JEWEL TONE / JEWEL LIKE

Original mood board for the red scene
(2019)

170.

ORANGE WATER TRAILS

LUSCIOUS

SPLASHES

BUOYANT FLOATING

JUICY
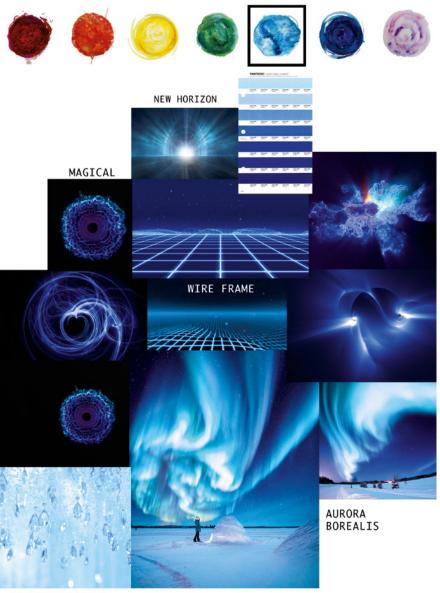
Original mood board for the orange scene
(2019)

LENS FLARES

FIRE

RALEIGH SCATTERING

SOLAR

BOLD TRAILS

HEAT SENSING

WARM GLOW

GOLDEN

Original mood board for the yellow scene
(2019)

GREENS
&
PALE PINKS

PMS 361 PMS 347 PMS 349

PMS 360 PMS 348 PMS 3435

ENVELOPING

AIREY

CLOUD FOREST

LUSH GREEN

MISTY

NACREOUS CLOUDS

UPLIFTED
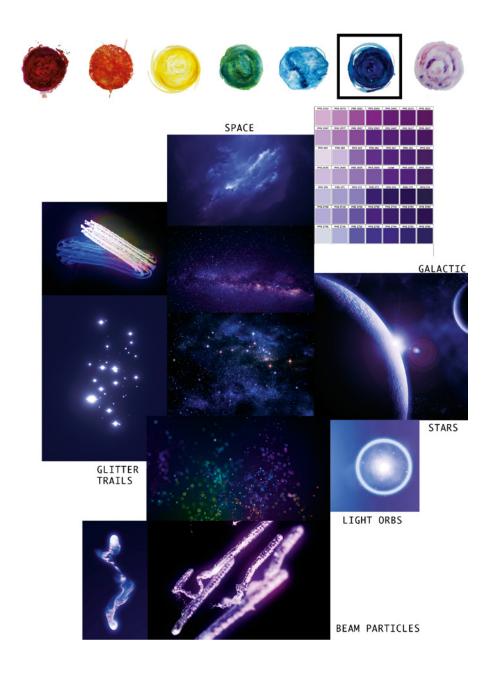
Original mood board for the green scene
(2019)

NEW HORIZON

MAGICAL

WIRE FRAME

AURORA
BOREALIS
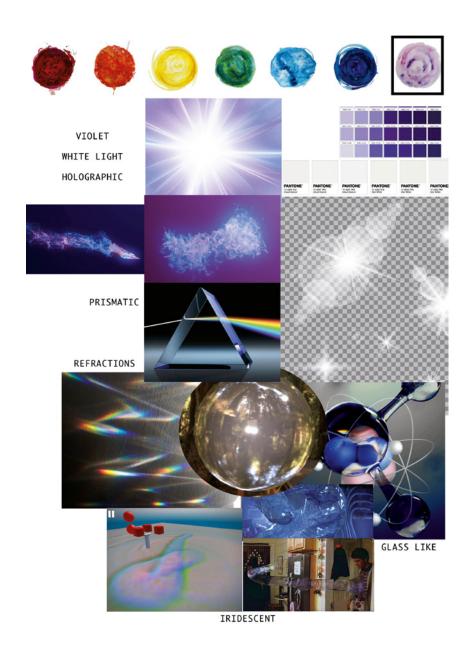
DRIPPING CRYSTALS

Original mood board for the blue scene
(2019)

SPACE

GALACTIC

STARS

GLITTER
TRAILS

LIGHT ORBS

BEAM PARTICLES
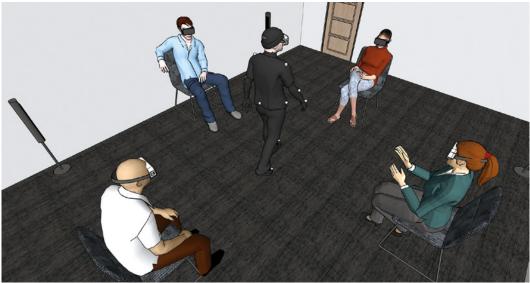
Original mood board for the indigo scene
(2019)

VIOLET
WHITE LIGHT
HOLOGRAPHIC

PRISMATIC

REFRACTIONS

GLASS LIKE

IRIDESCENT

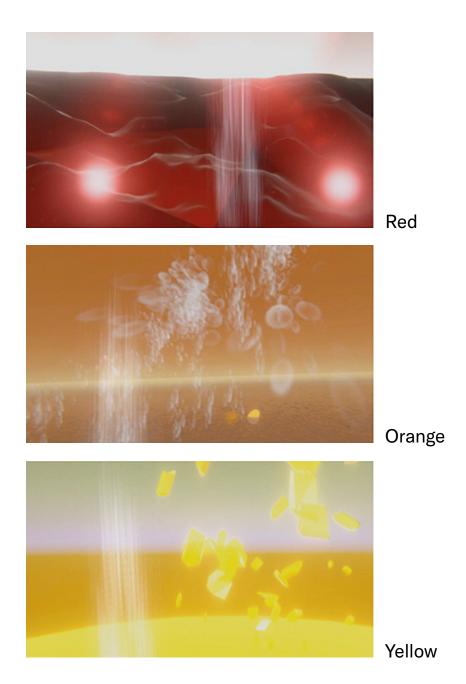**Original mood board for the violet scene**
(2019)

Original mock-ups for the VR experience
(2018-2019)

In the beginning I imagined using a motion-capture suit to trigger
the audio-visuals in VR. We reoriented the approach during development
to the Oculus Quest 2 headset and controllers.

Early Prototyping

Original Scenes

Red

Orange

Yellow

Early VR development, which was shown to the supervision team and peers (2019-2020)

Next Stage Prototyping

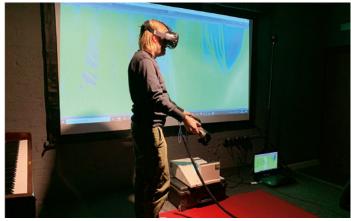Premises Studios Development Sessions Development during the pandemic.

Top image from L to R, Stuart Cupit, Chris Speed, Leslie Deere, Ross Flight.
Bottom image, Ross Flight, Leslie Deere, Chris Speed.

Group development days when COVID restrictions lifted. Premises Studios Hackney, London (2020-2021)

Top image, Stuart Cupit and Chris Speed.
Bottom image, Ross Flight

**Group development days when COVID restrictions
lifted. Premises Studios Hackney, London** (2020-2021)

Group development days when COVID restrictions lifted. Premises Studios Hackney, London (2020-2021)

**Group development days when COVID restrictions
lifted. Premises Studios Hackney, London** (2020-2021)

Stuart Cupit, Ross Flight, Leslie Deere at Solarflare Studio

Stuart Cupit, Ross Flight, Leslie Deere at Solarflare Studio

Development at Solarflare Studio (2018-2021)

Pilot Tests

CCA Intermedia Lab

Pilot Test at CCA Intermedia Lab (2021)

Pilot Test at CCA Intermedia Lab (2021)

Pilot Test at CCA Intermedia Lab (2021)

Public Beta

CCA Theatre

Poster for the Public Beta at the CCA Theatre (2021)
Design by Rhendi Greenwell

Installing in the CCA Theatre (2021)

Stills from Public Beta footage by Paradax Period (2021)
The blue scene.

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Leslie Deere
Array Infinitive - Public Beta

Thu 22 July — Sat 24 July 2021

3pm / 5pm / 7pm, Free but ticketed, Theatre
14+ accompanied by an adult
Book online / 0141 352 4900

Take a journey through sound and colour as part of a new VR installation experience.

Be a part of this public beta, which welcomes visitors to experience the work both in and out of VR. We encourage households to come as a small group to experience the work.

The first four participants to arrive will be allocated a VR headset each. Others will be immersed in a VR installation with projections and sound installation.

Accessibility

Please note, the final VR scene has some flickering imagery.

Screenshot from the CCA website.

Public Beta, CCA Theatre (2021)
The 'hybrid-audience' can be seen here.
Some audience are in VR and others are not.

Postgrad Exhibition

Iklectik Art Lab

PostGrad exhibition event at Iklectik (2022).
Stills from film by Rupert Earl.

PostGrad exhibition event at Iklectik (2022).
Stills from film by Rupert Earl.

PostGrad exhibition event at Iklectik (2022).
Stills from film by Rupert Earl.

Costume Development

Dress and Fingertips

Original mood boards, sketches and prototype of the costume (2019-2020). Collaboration with artist Mary Hurrell

This image is taken during a fitting at Mary's flat in London (2021) and was used as source material for the Public Beta poster.

Final night of the Public Beta, CCA Glasgow (2022).
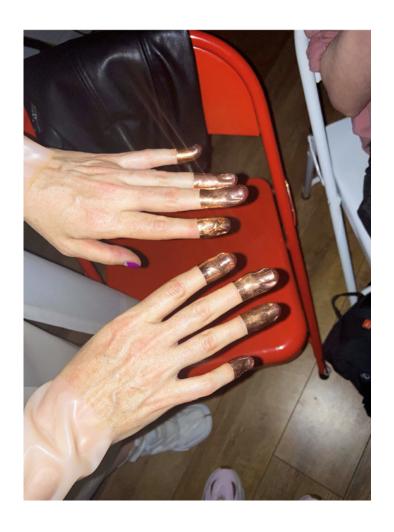Photo by Maria-Cristina Onea.

Three step process:
Cast my fingers
Electroplate the casts
Cut off the ends and sand down for use

The copper fingertips were worn for the
first time at the Iklectik performance.

Musicians and Vocal Collaborators

Clockwise from the top: Kyalo Searle-Mbullu, Sarah McWhinney, Members of the Glasgow School of Art Choir - Maggie Broadley, Kate Hollands, Bec Wonders, Scott Morrison.

Video Information

There are three videos included in this PhD submission, and can be found in the folder with the digital PDF of the thesis and appendix.
The three videos are listed below and it is advised to watch them in this order, to see the progression of the project.

1) Project development, film by Mind the Film.
File name: 1_Development_ArrayInfinitive_LDeere.mp4

2) Public Beta at the Centre for Contemporary Art Glasgow, film by Paradax Period.
File name: 2_Public-Beta_ArrayInfinitive_LDeere.mp4

3) PostGrad exhibition event at Iklectik Art Lab London, film by Rupert Earl.
File name: 3_PostGrad-Exhibition_ArrayInfinitive_LDeere.mov

204.