SOUNDINGS

A Practice-Led Investigation into Interactive and Immersive Sound Art Installations 2000 - 2018

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Abstract

This thesis proposes *Soundings* to investigate interactivity, engagement and immersion while exposing an argument for knowledge concerning sound installation art in the 21st-century. This will be achieved through a system of artworks, interviews, observations and analysis of research findings. The objective, as an enquiry, acknowledges sound art relative to contemporary installation practice initiated from a visit to the Sonic Boom exhibition in the year (2000). As an artist who works digitally and employs sound and video as the pervasive practice, this examination exists in the sonic arts connected within the vocabulary of visuality. Possessing an auditory recognition related to creative compositions has been the stimulation, emphasising play as the central constituent of embodiment and interactivity.

The 21st-century arrived with a *Sonic Boom* of associations amongst progressions of software and hardware while acknowledging the technical proficiency, creative vision, personal values and cultural context to create engaging and meaningful works that connect with audience members. Specific technology is omnipresent and the thesis is separated into four chapters, with each stage discussing the author's artworks, further supporting the practice-led aspect of the project. Queries include, what is the role of the audience when presented with a sound installation that requires some form of engagement? Therefore, this research investigates the different roles of participator, composer and author from the perspective of the exhibition *Playback* in 2018.

Demonstrating with digital sound refers to any sound manipulated, created or processed using specific technology as the principal motivation for an exhibition. The space in which the sound art is exhibited provides a physical framework but also influences how it is perceived and experienced by the audience.

Compositions, performance and participants creating sound works present this thesis as a 21st-century account, making up two volumes. Sound, installation and space become the compositional framework and an arrangement of associations where immersion and perception are expected in the sound art installation. Listeners becoming actively engaged and playing with sound will take centre stage, inspired through involvement and collaboration. Seeking to reveal what it is to be immersed in sound art, the digital practice includes physical and computer-mediated intermedia installations designed to reveal theoretical positions in immersive auditory taxonomies.

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Introduction

While visiting the exhibition *Sonic Boom* (2000) at the Hayward Gallery in London, the idea of a research project was initially articulated. What began primarily as a trip for inspiration, the auditory sense was immediately activated from listening to Greyworld's, *Stairway* (2000) of site-specific sounds while walking up a ramp. Once in the building, the lighting was lowered and intimate. Projections demonstrated combinations of video and sound, including Christian Marclay's *Guitar Drag* (1999)[1] and Mariko Mori's *Miko No Inori* (The Shaman Girl's Prayer, 1996).[2] Initial observations raised questions of 'where is the interactivity' and 'is there any audience participation' in any of the sound works?

Walking through the exhibition revealed a notion of materiality through Philip Jeck's appropriation of old record players. Each record needle was stuck in its groove, creating a sound collage of the past. With sound, silence resonates, as provided by Christina Kubisch, who developed *Oasis 2000: Music for a Concrete Jungle* by requesting public members to wear headphones while outside on the gallery's balcony. At last, some form of interactivity took place even if it was only in a listening sense. The pre-programmed sounds provided the listeners' soundtrack while observing city life below.

[1] https://www.youtube.com/watch?v=ER_V5Snep8I Accessed 14th January 2020
[2] https://www.youtube.com/watch?v=5-0KPS1ZzDw Accessed 14th January 2020

Sonic Boom (2000) was a show that generated considerable sound inside and out. Intimate spaces created for the exhibition could not stop other sound exhibits from infiltrating each other and the term 'sonic bleed' was ubiquitous. For the visitor, technology was most evident from works on display or underfoot. Arguably, interactivity took place as it does in many sound art installations. From the wearing of headphones, listening to sound and music (electronically), watching videos in darkened rooms, or as in Paul Burwell's reworked version of *If you were born in '33, you would have been '45 in '78* (2000), by riding a bike to trigger a record player to make different sounds.

From that initial visit to the Hayward Gallery and listening to different sonic works while watching various videos. This provided the starting point for considering a practice-led investigation. In addition, it resulted in researching specific artists to speak to regarding their specific art practice and finding out how important the concepts of immersion, engagement and interactivity are to them and their practice.

So what is the nature of interactivity and engagement when looking has traditionally been the dominant method when visiting art installations? Changing a perspectival understanding from a discourse where the expectation was primarily engaging with artworks visually to one where audience members become active participants and interact has meant a

shift in what it means when visiting an art installation and precisely one with a dominant sound element.

Sound art installations that actively engage participants have become an increasingly popular contemporary art form in recent years. These installations often incorporate elements of performance, technology and interactivity and encourage viewers to contribute to the creation of the artwork. This art form is fascinating from the perception of embodiment and Dasein (a philosophical idea introduced by Martin Heidegger) as it seeks to engage the viewer on a physical and experiential level of understanding.

When choosing particular artists to support the research study, it was vital that they were not only current in sonic practices but had a philosophical understanding of what sound art is in the 21st-century. Each artist could offer valuable primary data to help shape and inform the research project. Speaking directly with the artists, the aim was to gain insights into their perspectives, methods and motivations for their particular way of working. Engaging with experts in the field meant a deeper understanding and an enhancement of the research. What is also evident regarding choosing these individuals is that their knowledge can help shape the practice-led aspect of this thesis from the point of view of a more nuanced and self-aware understanding of own perspectives and limitations when developing artwork. Furthermore, interviewing artists current in the field of this area

can ensure that this research focus is grounded in a rigorous and critical approach to sound art studies. The interviews are in their unedited form and can be located in the (Appendices III: 46). Throughout the study, their answers will be introduced to support specific questions of their practice, with a view to understanding and how best to inform the authors' installation artworks.

The concept of embodiment is central to sound art installations that actively engage participants. Embodiment refers to the notion that our bodies are not just passive observers of the world around us but active participants in creating meaning. In sound art installations, the viewer is not simply a passive listener but an active participant in creating the art. By actively engaging with the installation, the viewer becomes part of the artwork and the experience becomes embodied.

Dasein, a concept developed by the German philosopher Martin Heidegger is also relevant to the idea that sound art installations actively engage participants. Dasein refers to the notion of being-in-the-world or how we exist and experience the world around us. Dasein emphasises that the viewer is not separate from the artwork but is a part of it. The viewer's experience of the artwork is not just passive observation but an active engagement with the work and the world around them.

By emphasising embodiment and Dasein, the artworks developed by the author seek to engage the viewer on a physical and first-hand level to create a unique and immersive artistic experience. Therefore, it is crucial that when describing someone as a viewer, what is being alluded to, is a person who is not just looking but actively engaging other senses when viewing a sound art installation.

This thesis proposes a taxonomy of interactivity, participation and technology as terms used in the context of sound art installations and specifically the author's practice. It is pertinent to mention when describing interactivity at this early stage in writing, as it has relevance throughout the thesis and practice-led artworks. Interactivity has its roots dating back to the early 20th-century with Duchamp's 'Urinal'[3] whereby viewers were expected to appreciate the work conceptually rather than just aesthetically. The aspect of interactivity that concerns this practice is the one where the advent of digital technologies has meant the exploration of interactive installations so audience members have active engagement through their participation and not just passively observing or conceptually appreciating the work.

Their involvement is as significant as the artist who has set up the work. The introduction mentions two particular artworks by the author (*Watching and Gesturing*). These two particular works were pre-experiments for

[3] https://www.tate.org.uk/art/artworks/duchamp-fountain-t07573 Accessed 3rd April 2019

what is discussed in the forthcoming chapters. They were designed to explore what technology could propose for someone wanting to provide an engaging, immersive experience for audience members.

It is necessary to nominate *immersion* in sound installation art as the central tenet of this thesis as it underscores an under-represented position within multiple practical, historical and theoretical contexts. *Soundings* reveal digital musical/sound compositions with organising sounds in time, whereas the sound installations are considered in carefully selected spaces to highlight the notion of immersion. It is essential to point out when discussing immersion from a sound art installation perspective, as it merits a different understanding from a (VR) environment, whereby viewers/listeners are expected to put on a headset to be transported to a virtual visual and sonic world.

In the context of this thesis, what is being alluded to in a sound art installation is that the expectation is that audience members are not just listeners but active creators of the sound and experience, making the installation an engaging personal journey. Furthermore, this type of immersion means being surrounded by sound and movements within the space designated for the art. The artworks discussed present contexts of experimentation of what interactivity and engagement can offer and are titled:

- *Watching*
- *Gesturing*
- *Blackstrip Put Your Card In*
- *Watch Play Listen*
- *Playback (Exhibition)*

From the outset, the premise of each artwork is to cultivate a practice that is interactive, collaborative and immersive[4] so that audience members can have an active engagement rather than a passive experience. The collection of Soundworks and technology to facilitate the PhD practice emphasises three distinct phases: installation, sound works and compositions. However, no phase will dominate, as the practice should be observed holistically as an evolving query of varying mediums advanced through technology and digitisation. For example, in the Appendices section, many interactive works have been developed using Max and Ableton and all of the experiments carried out during this practice-led thesis's development. Although they may not all be referenced within the main body of text, they have been fundamental to the way the practice has been shaped and have assisted in deciding on what to include in the exhibition *Playback*.

It was essential to listen to sound and music that influenced the work created and links to Soundcloud tracks that were developed before the

[4] An immersive experience describes the perception of being surrounded by and being a part of a different environment than our normal day to day. This could be facilitated with technology like Virtual Reality goggles or a physical environment like a theme park attraction with multi-media components, or in the case of this thesis being an active participant in a sound art installation.

PhD and within the timeframe of the research. These act as reference points for the current work and introduce the listener to the sonic inspirations and experimental compositions (Appendix II: 35).

Developing computer-based music/sound art has been the formulation of my artistic practice for many years. However, it was only after completing a Masters in (2010) that my interest in interactivity and engagement from an audience participant perspective was acknowledged. This has provided the ideas for creating not only interactive computer-based works but also the sound compositions, as they have been developed to tell a story yet are experimental, improvisery and inspired by digital music technology. In addition to the artistic concepts adopted, obviously what I have listened to and my own lifelong artistic experience of listening to music, visiting galleries and being an artist/composer. This has helped shape the style of art and music I create as a specific sonic characteristic unique to me.

The following discussion commences with an artwork generated for a group exhibition in 2014. The contextual and theoretical knowledge for devising interactive, immersive installation sound art originated with the artwork titled *Watching* (Figure 3: 7). Moving from visual art to a sonic practice was the desire to involve audience members with an expanded sensory interactive account distinctive from the exhibition *Sonic Boom* (2000). Achieving this meant not only finding out what current

artists were doing but also critically analysing the creative process to develop sonic possibilities using computers and other technologies.

The first chapter analyses the interactive installation, *Watching* (2014). It was devised as part of a larger group showing varying genres of art-making processes. The exhibition was all in the same room on one floor and was designed in the 'white cube'[5] format. This was an artwork activated by a member of the public walking up to a computer screen and recognising their image, they were instructed to 'clap or speak loudly'. As a result, their self-portrait looking back at them became fragmented and disintegrated, conditioned on the frequency and loudness of the sounds executed by their gestures and voice.

The context of *Watching* (2014) emphasises the pervasiveness of cameras predominant in society. Throughout cities, CCTV is omnipresent, and many cameras carry the facility for recording audio and high-definition video, alluding to the theory of ubiquitous monitoring.[6] Placing a video camera in a gallery location increases the inquest of 'who is looking at who'. Any sound generated by participants staring at themselves transforms the video playback, composed to transgress expectations of the original intention of CCTV. Rendering the image to dissolve rather than remain in high definition acknowledges the idea of granular

[5] https://www.tate.org.uk/art/art-terms/w/white-cube Accessed 2nd June 2020
[6] https://ieeexplore.ieee.org/document/5282995

synthesis[7] theorised by Michael Foucault as a metaphor for 'systems of social control and people in a disciplinary situation' (Mason, 2019).
The chosen media to achieve this intention was *Isadora (Figure 1: 6)*. As a program, it proposed an opportunity to examine real-time interactions by transforming elaborate patching windows activated through a cabling arrangement (Figure 1: 6). Isadora endeavoured a specific way of working and the media was comparatively easy to use. Unfortunately, once the artwork was exhibited, other sounds infiltrated the display. From bodies walking past, visitors speaking in the background and other Soundworks enveloping the microphone, triggering the program to malfunction as glitches[8] and create a 'sonic bleed', where many sounds merge to the point where they are difficult to listen to.

Glitches transpired as accidents, creating irregularities in the program and while observing members of the public interacting with the exhibit, it became a method of examination, commencing with investigating another process of generating interactivity using technology. As an installation, observing members of the public interacting with *Watching* (2014)

[7] An architectural design put forth by Jeremy Bentham in the mid-19th Century for prisons, insane asylums, schools, hospitals, and factories. Instead of using violent methods, such as torture, and placing prisoners in dungeons that were used for centuries in monarchical states around the world, the progressive modern democratic state needed a different sort of system to regulate its citizens. The Panopticon offered a powerful and sophisticated internalized coercion, which was achieved through the constant observation of prisoners, each separated from the other, allowing no interaction, no communication. This modern structure would allow guards to continually see inside each cell from their vantage point in a high central tower, unseen by the prisoners. Constant observation acted as a control mechanism; a consciousness of constant surveillance is internalised.
[8]Rouse, M. (2005) In several usages in information technology, a *glitch* (pronounced GLIHTCH) is a sudden break in function or continuity, sometimes of a transient nature, with a varying degree of seriousness.

provided the motivation to investigate participative and engagement methods in other programs.

This communicated an inquiry into continuing to address concepts of immersion and interactivity from sound installation art at the forefront of this century. This commenced with the formulation of the interactive work *Gesturing (*Appendix II: 10)*,* beginning the research emphasis on creating a sound work with no visible instrument to engage participants.

The primary aim of *Gesturing* (2014: 10) was to communicate a sound work operated solely by motion in front of a computer screen. By utilising a combination of media programs, the intention involved participatory movements of arms, legs and head to trigger sounds while having no physical controller to hold and no conventional instrument to play. The chosen hardware utilised was the Microsoft Kinect.[9] This is an additional piece of hardware to attach to an Xbox 360 and is designed to pick up every inclination and gesture through mapping the body. Investigating this niche program uncovered unique concepts and potential applications to examine for producing sound and fulfilling an interactive expectation of getting people engaged in a sound work. When using the terminology participatory/participation throughout, it is from the point of view of

[9] Kinect (known in development as *Project Natal*) is a motion-sensing input device made for the Xbox 360, Xbox One, and Windows PCs. It enables users to control and interact with the console or machine without the need of a controller, keyboard, or mouse by using spoken-voice commands or physical gestures. The Kinect was created to compete with the Nintendo Wii's Motion Plus and PlayStation's PlayStation Move.

audience members taking an active part in the art practice through their own gestures, interactions and collaboration. These will take the forms of manipulating objects on screens, creating actions within a space and manipulating sound by using controllers.

Generating sound without the requirement for a visible instrument was an objective. What became apparent quickly was the glitching noises when a figure walked out of range of the Kinect camera, prompting the application to terminate. In addition, every time interactivity was to occur, a person was expected to stand in the camera's foreground. Hands had to be elevated so that the *Kinect* could map the body (Figure 8: 10). It was an intelligent media program. However, it granted only one user at a time to work within the platform's parameters. On occasions, moving several body parts triggered sounds that were not required, or no sound was heard. Building on the artwork, *Watching* (2014), glitches in this program rendered the program unsuitable for the expectation of compositional design and collaboration from users. However, what *Gesturing* (2014) and *Watching* (2014) presented, was the premise of evolving particular sound installation works that were interactive, engaging, and essentially immersive for participants taking part.

Following on from *Gesturing* (2014), the following discussion point is the composition *Blackstrip Put Your Card In* (2019), which was created by users taking part collaboratively in a sound art installation (Figure 15: 15).

They began as audience members before becoming active participants in creating their own music/soundwork. The installation artwork (*Watch Play Listen*, 2018) was developed using a program called Max/Msp/Jitter[10] and is analysed in Chapter One as an artwork that requires a hands-on approach from users to click, drag and slide objects on a screen. Finally, the exhibition *Playback* (2018) is addressed in Chapter Four and is presented as a performance by the author and an interactive element for participants to take part in to support the notion of immersion in sound art installations.

Expanding on the account, 'immersion', it describes a sensory theory perceived by a user, participator or audience member and invites a proposition of engagement rather than a passive experience. Asserting through sound, conventional ideas can only be understood with corroborating documentation from the visual arts, sonic arts and its relative newness, comparative to a history of visuality. Drawing upon philosophy from both domains of epistemology (auditory experience and perception), the cultural foundation of sound warrants a composed and balanced appreciation from a listening ear and a perceptual framework.

Contextualising sound in the 21st-century, a referent to what had occurred before, determined a clear sonic path paved from the 20th-century and

[10] Max, also known as Max/MSP/Jitter, is a visual programming language for music and multimedia developed and maintained by San Francisco-based software company Cycling '74.

provides a specific timeline. It was (Toop, 2000) who recognised the 'music of the past 100 years has been characterised by a feeling of immersion', so disregarding the sonic history not only ignores a century of experimentation, including noise, experimentalism, Avant-Garde, minimalism and participatory practices. Furthermore, it means leaving behind a body of knowledge that has influenced artists, including Francisco Lopez and Robert Henke (2017), who replied when interviewed that what is 'most important is the creation of an 'experience, an event which triggers thoughts and emotions, that transforms mental, temporal and physical spaces and their perception'. This was his response when questioned regarding his intention with his visual and audio practice.

In discussions of sound installation art, it was pertinent to get the responses from the artists interviewed for this study due to the controversial issue that it is distinct from other art forms. When interviewed, Rooney (2014) pointed out that ‘there are artists who only use sound of course, but their work should still be seen in context with work of all sorts of media. I also think it is even undesirable to categorise any practice as either art, literature, or music’. Langheinrich (2016) states that it is, ‘well justified, in a way it is’ however, Henke (2017) argues that categories are more for curators, collectors, critics and other people involved in the art market and not so much by the artists themselves. On the one hand, Stollery (2016) mentioned that he could not answer whether

it should be separated from other ‘arts’. Whereas Lockwood (2015) answers:

> My first response was that such categories are thoroughly permeable and not easily distinguished, but then it occurred to me that there is still such a visual predominance in our culture that the term/category ‘sound art’ usefully throws the emphasis onto audio and off visual, at least a little. Lockwood (2015)

Each of these responses ascertains the difficulty in viewing sound art as a specific category in the arts. Thus, it is crucial to ascertain sound art in the 21st-century and recognise its existence in all art genres. Even though the replies received for the question were from a small section of artists and not fully representative of all of the artists in the genres of the sonic, what their replies serve is a good cross-section of responses and highlights the difficulty in attempting to bracket sound art as one specific category.

In the first instance, sensory sight and sound clarify a contextualisation of sound like a specific category and advancements in technology offer a sensory perception of how sonic art practices have developed exponentially. While asserting that art installations are on the rise due to the proliferation of technologies and easier access to software (Service, 2019; Yeung, 2015), there has not been an effective response to the concepts of immersion and interactivity relating to it. Sound installation art has its sonic roots deeply embedded in a visual dialogue and often offers opportunities for audience members to engage with tactile, multisensory

artwork inclusive of diverse experiences and perspectives. It highlights the importance of reflection and intent in this niche sound field.

Having resided in Germany for eight years, Scotland for sixteen years, Northern Ireland for eight years and now located in North Wales signifies an enquiry of environmental, architectural and social space by inhabiting different areas and immersing with various cultures and traditions.

Possessing a strong accent and a birth certificate entitles a residence in a particular place, yet having moved away from Scotland just as long as previously living there, society distinguishes people by voice, appearance and cultural traditions. On the other hand, voice is often seen as an extension of one's individuality and personality. It can signal various social cues such as status, gender and ethnicity and is also subject to cultural norms and expectations. Whether consciously or subconsciously, as an interloper/flâneur, regularly going on walks, exploring, listening, breathing in and observing city life. An interest in sound, space and immersion emerged while living away from the home city of Dundee. Engaging in the values of a new country is evidenced in most travel guides and learning a language, customs and traditions to support knowledge of a new place are commonplace. Many cultural customs are adopted to coincide with becoming socially accepted with the surroundings. Space, place, language, time and sound all match influences to emphasise individualism and the idea of the self from the larger culture or society.

A curiosity in digital technologies in the 1980s expanded into investigating computing features, including familiarity with various office programs such as Microsoft *Word* and *Access*[11] on an IBM computer. Using computers has continued to influence throughout, including animation, programming, software and sound engineering, music composition, sound synthesis and graphical programming. Recognising that technology is the new source of consumption and more of an opportunity to develop creative work, Brynjolfsson & McAfee (2014: 191). Xenakis (1971) identified art and music as having fundamental functions to make a person lose 'his consciousness, ' alluding to technological immersion as a conceptual framework. Xenakis (1971) recognised this as 'exaltation', suggesting experiencing happiness or joyfulness as the emotional states anyone can get whilst playing with technology.

When able to play with computers, learning takes place from the nuances the programs offer. Using digital equipment has always been a primary influence for the author. It is assigned from early explorations of traditional art printmaking techniques of woodcutting and etching, where building up layers of image and colour was transformed into a graphical computer program with the intention of a new way of creating art. The construction of layered digital colours without the added mess of chemicals and ink addressed a change in process but was always technologically decided. The following chapter summaries identify the structure, expectations,

[1]Microsoft Word and Microsoft Access are the two main software packages used.

theoretical foundations and methodology adopted to promote this thesis as a sonic resonator in an emerging field.

Chapter One*, Sonifying Playback*, rationalises a definition of sound art and immersion while contesting how noise and sound are categorised differently yet are inherently linked. The sound installation work underpinning this chapter is *Watch Play Listen* (Appendix II: 23). It demonstrates an overview of the theoretical and contextual issues describing immersion when discussing sound art. Artists revealed in this chapter include Carsten Nicolai, Ulf Langeriech, Ryoji Ikeda, Robert Henke, Francisco Lopez and Janet Cardiff, who are all current in sonic practices and installation art. The rich history sound has with notable 20th-century artists, including John Cage and Luigi Russolo, is supported, exploring listening from a 20th-century paradigm and situating it as a 21st-century exposition. Boundaries between visual and sonic practices cast new knowledge on studies from the exhibition *Sonic Boom* (2000) perspective and are discussed in this chapter.

Chapter Two characterises the artwork *Blackstrip Put Your Card In* (2019) and discusses how the promotion of sound, noise, silence, technology, interactivity, music, installation and space are relevant concerning specific nomenclature when discussing sound art. *Sounding In* indicates the value of exploring noise and spatial relations underpinned with *play* as a central tenet. Bolton's (2001) model of Reflective Practice is discussed and

addressed, corresponding to the author's practice while acknowledging the significance of space when designing sound installations.

Nominating Chapter Three exposes a reflexive practice from the account of an artist, composer, designer, technologist, creator and musician. Recognised holistically as an 'interdisciplinary artist'. From these justifications, *Echo Trace* reflexively supports another phase of the practical work *MA/68 (*2018*),* which is a sonic composition with no visual referent. This chapter challenges the constitution of what delegates a musical work that has been technologically conceived with an emphasis on digitisation and addresses how visuality or, precisely, the scopic regime takes precedence over the auditory sense. The practical work mentioned in this chapter reveals the evolution of the concept through to completion and illustrates the relevance of technology as a central discussion point.

Chapter Four is presented principally from the exhibition *Playback* (2018), which was curated and designed by the author and positions the practice concerning contemporary art studies and critical texts mediated around immersion, interactivity, installation, playing, technology, and listening all under the notion of 'sound art'. Here is a discussion regarding contextualising *Playback* and the curatorial resolutions adopted to make the interactivity and performance operate as anticipated. Perspectival decisions from an audience member's point of view are explained. Questions centred on having a sonic sensibility towards listening

strategies are explored from the interviews undertaken with the artists and musicians nominated in this thesis.

Martin Heidegger's notion of '*Dasein*' (1927) is addressed as a method of immersion and discussed as an influential thread throughout this thesis. Merlau Ponty's phenomenological[12] concept is a research focus due to his philosophical understanding of human experience.

Finally, Sounding Out concludes the research as a totality and resonates to vindicate *Soundings* as a discrete body of work. The subheadings, *Embodying* and *Listening Out*, are implicit in this to progress the understanding of corporeality[13] and listening to sound art installations.

In developing sonic work intended for sensory channels, listeners' experience is crucial in describing aurality over perception. The expectation is that original compositions use sound to stimulate listening as an awareness of immersion, considering how immersion proposes to be involved with or covered in a substance, feeling or event. Within sound, literature contributes a philosophy, outlining theories in a listening field yet fails to mention the importance of being immersed. As a

[12] Phenomenology is concerned with providing a direct description of human experience. Perception is the background of experience which guides every conscious action. The world is a field for perception, and human consciousness assigns meaning to the world. We cannot separate ourselves from our perceptions of the world.

[13] The state of being or having a body (being corporal/corporeal); bodily existence.

construct, immersion in contemporary sound art should share the equivalent auditory space as any artwork, invisible, enveloping, ephemeral and encompassing of the body, where a full engagement takes place from the participator.

In concluding this section, the artists and authors investigated arrive from music and visual arts frameworks. They have subverted contemporary art by generating compelling visual installations with strong auditory connections to support their output (Appendix III: 46).

Literature Review

Contributing to an art practice represented by an object or artefact, the lexical of the visual represents a history mediated through vision. Signifying sound requires changing terminology more suited to its visual counterpart, as describing something invisible brings it to a discourse of an art practice centuries in development. Occurring was a dichotomous relationship to blur fields between sound, noise, music and visuality. Artists, authors, musicians and academics who, through their many guises, have an opinion on what sound art professes to be, are reviewed and disseminated for questioning throughout this thesis.

Routledge Companion to Sounding Art by Cobussen, Meelberg and Truax (2017) has discussed immersion as a critical concept, observed as a by-product of sounding art. In the extant literature, 'immersion' appears twenty-one times, five occurring in a mediated VR (virtual reality) environment as a referent to gaming (as an avatar or character). A definitive feature of this review is released to question what sound art is and reclassify its rubric. The book by Cobussen, Meelberg and Truax (2017) intimates it is a companion to *Sounding Art*. The book is not explicit in one area. However, it exposes many genres of sound art generation, including music and art installations and offers varying opinions to particular base arguments on sound and music.

Documented are six main themes:

- Sonic Art and its Evolution
- Acoustic Knowledge and Communication
- Listening and Memory
- Acoustic Spaces, Identities and Communities
- Sonic Histories
- Sound Technologies and the Media

The subjects indicate significance in respect of this thesis in terms of the philosophical writings of the different authors. As an opening statement, Landy (2007) posits the question: 'But is it also music'? This sets the theme of *Companion to Sounding Art* (2016) and explores many genres representing sound and music historically. Writings from John Cage, Max Neuhaus and Bill Viola to current authors Labelle, Voegelin and Truax provide different perspectives of sound in the arts. Investigating what *sounding art* is and how to define it, Truax related the title of this book to the one written by Katharine Norman in 2004 with the same title, which is from the point of view of electronic music and aesthetics which offers experimental text and warrants an 'invitation to listen differently to music as sounding art (xi).

As a reference to use, *Companion to Sounding Art* is contemporary as a labelling of sonic arts collectively. However, this argument needs more

consistency as it misses essential details of what immersion and interactivity are within sound installation art, which is crucial when wanting audience members to actively participate and engage with specific artworks.

Sound art, corresponding to Cobussen, Meelberg & Truax (2017), is critical to clarify because both words 'sound' and 'art' promote many connotations. The book contains six themes, including the importance of listening in computer-mediated environments and sonic histories. Labelle's (2006) definition of sound art is constructed around context and location, specifically *Background Noise,* which is described as relational, communicative, vibratory and felt within bodies and out. Toop's *Ocean of Sound* (2001: 8) finds its niche in how music is listened to and perceived and offers a relational understanding of listening to music in an environment. Kahn's (1999) *Noise Water Meat* identifies noise as the existence and 'everything' (1999: 22), offering an output of sound as durational and mainly discussed from the first half of the 20th-century. He introduces a plea to recognise the past of visuality, music, speech and hearing as already established (ibid., 2).

Recognising how all three authors reminisce from their own perceptions, they share a commonality of noise as a product of musical language and integral to ideas and concepts of the sounding world. Labelle bases his foundations on a Cagean philosophy and how noise conveys musical

references (2006: 7). Truax (2015) mentions an opposing view against changing meanings in what others accept as their argument of sound art as an already established viewpoint.

Companion to Sounding Art (2016) exhibits a robust reason for reclassifying sound art due to the choice of authors selected to theorise in the book and implicit in this is sound as having many different meanings. Each of these books offers this thesis ideas and notions based on technological advancements, what it means to listen and an understanding of noise as music, discussed later chapters.

Sound art as a taxonomy has grown exponentially since (2000), including Caleb Kelly's *Sound Documents of Contemporary Art (2011),* clarifying its position from a sonic turn in culture. This involves a recognition of the complex ways in which sound shapes our understanding of the world and how it can be used to convey social and political meanings. *Listening to Noise and Silence* (Voegelin, 2010) can be seen as a way of exploring the dynamic interplay between order and chaos, between sound and silence and finding meaning in the spaces in between.

Audio Culture, *Readings in Modern Music* (Cox and Warner, 2004) and *In the Blink of an Ear* (Kim-Cohen, 2009) correlate sound with our time's social, linguistic, philosophical, political and technological ideas.

Noteworthy contributions from artists and academics, including Don Ihde, Brandon Labelle, Simon Emmerson, Leigh Landy and others, cite an exposition through sound and a reference point to support the investigation of what sound installation art is.

Considering the social aspect of sound and in particular, the sounds of music, speech and ambient noise in public spaces can shape our sense of community, belonging and shared experience. Linguistic sound is fundamental to language. The spoken word's tone, pitch, and rhythm can signal different emotions and attitudes and carry cultural and historical meanings for particular groups or societies. What each of these books offers philosophically is an understanding of sound and its use for centuries, from the ancient Greeks to current contemporary writers such as the ones mentioned above. At the same time, some have argued that sound is inherently ambiguous and open to multiple interpretations. When mentioning the political aspect of sound, governments have been using it to assert their authority through propaganda, speeches and anthems. Conversely, sound can challenge and resist political oppression through protest songs, chants and other forms of sonic activism.

Sounding *Art* (2016) rarely mentions sound installation as a specific category. Instead, texts clarify from a historical and cultural position and explore the broader scope of how sound art is acknowledged and contextualised in its short history. Including unveiling a case for 'inner'

sounds bleeding into the quotidian, Labelle's *Background Noise* (2006) introduces a biased analysis to identify noise as a continuum, meaning it is difficult to categorise it as being musical or brutal and assaultive (ibid., 26). Similarly, Hildegard Westerkamp's view of sound is from its inner sonority, recognising the soundscape as a 'listening within'. While Licht (2009: 8) demonstrates that emphasising a timeline in soundscape composition ultimately marks sound as music rather than sound art. Licht could be alluding to the notion of music structured around rhythm and tempo and employing harmonic and melodic structures arranged in time. In contrast, sound art may be from sound's spatial and acoustic properties rather than a temporal organisation.

When 'fixed, embedded and immersed in the physical, literal, tangible day-to-day world', as proposed by Steiner (1978), it is to be human, similar to the phenomenological ideology of Merleau Ponty. Approaching immersion from an opinion of embodiment within the digital age, several studies (Ihde, 2007; Dyson, 2009; Bay-Cheng et al., 2010) recognise immersion derived from the Latin 'immergere' meaning to plunge or dive into. Immersion in digital culture refers to the sensory experience/perception of being submerged within an electronically mediated environment, as is the intention of the author's practice.

Experiencing space through sound induces a sense of place and belonging to a culture in the city and suburbs as a *flâneur*[14] walking around the city. When walking and observing in most large cities, sound and vision are the senses endeavouring a feeling of embodiment to a location. Local voices merge with transient groups adding to a sonic fusion of pitches, timbres and frequencies or, as in the case of Labelle, 2006, listening to the quotidian sounds and not concentrating on listening to 'background noise'. Sound is the sense acquiesced; it comes to the forefront of consciousness when a place is too loud, when a television or radio sound infiltrates walls and when an alarm shatters the peace. In comparison, recognising a world without sound, 'the world can be an indecipherable, remote and dangerous place' (Ihde, 2007).

To be immersed in the cityscape, sound enters ears and reverberates around bodies. Melodies of voices and different cultures tunefully create city soundscapes repeating daily. Cities hum at an average of 90db, well within hearing range. Noise, music and sound blend to create a unique sound field of connections, echoing from past and present experiences. Sound operates unobtrusively with other senses to scan an environment, define orientation within a place and chronicle a feeling described as the

[14] Flâneur is a French term used by nineteenth-century French poet Charles Baudelaire to identify an observer of modern urban life Available at: https://www.tate.org.uk/art/art-terms/f/flaneur Accessed 14th March 2019

atmosphere. Using a sense focussed epistemology, notions of immersion take a position as an embodied 'within' rather than corporeally separated.

Broadening the account of immersion, Burns and Fairclough's (2015) use of auditory event-related possibilities discusses immersion during computer games, while Davidson's (2010) *Intersensoriality*, *Immersion and Environment in Digital Art* explore the relationship between sound, image, and movement in art. Frances Dyson's (2009) *Sounding New Media* emphasises sound, embodiment and technological interactions, illuminating how several themes are connected and are essential to this thesis due to offering a point of view from a digital interactive perspective.

Focussing on how sound as an art form can fully immerse listeners/viewers. Describing the *Sonic Boom* exhibition as the 'total immersed experience' (Toop, 2005), which constituted a 'sonic world, immersed in vibrations stimulating microscopic hair cells deep inside ears' (Barone, 2009). Often immersion is referenced but not as a focus and may seem insignificant; it is, in fact, crucial in terms of attention to exhibition practices using new technologies today.
Ihde (2007: 3) acknowledges:

> We know that we live immersed in a vast but invisible ocean of air that surrounds us and permeates us and without which our life must necessarily escape us. For even when we humans wander far from the surface of the earth to that of the moon or deep into the sea, we

> must take with us packaged envelopes of air that we inhale and exhale.
> (Ihde, 2007: 3)

The air around is invisible, and Ihde is accurate to recognise the medium's presence, from the noise it makes when it rustles through trees and sound added to air becomes subconsciously visible in the realms of cognition. All aspects of existence clarify physicality, becoming a surface for air to pierce, just as sound penetrates and becomes an 'embodiment to existence' (Ihde, 2007: 3). It is uncertain if sounds infiltrate the body and fully immerse in an aural assault on the ears, yet Labelle's (2006) assertion that the capacity to drown out 'noise' merits a focusing and filtering out sounds with 'ear lids' (Demers, 2010: 108).

A crucial aspect of the practice-led work is the compositions (Appendix II: 27) and the sounds captured to be used in the interactive sound works. To gather sound data, many walks occurred through Liverpool city centre, near the art school. Armed with an audio recorder, the aim was to capture sounds that are not often considered or even heard, where focused learning was to occur. When walking, loud music is playing from the open doors of shops and the speakers of buskers, as a listener, attempting to channel hearing on sounds more satisfying or using a Shaefferian (1977) concept of 'reduced listening' as a technique that focuses on the qualities of sound themselves rather than on their source or meaning.

All of the senses are heightened, distractions are everywhere and the city is in constant flux as the sounds change for everyone as they navigate their own paths through the city. Attempting to pay close attention to the soundscape and isolate individual sounds would require analysing sounds for their timbre, texture or other sonic qualities. Identifying the 'distracted listener' Truax (2012: 199) advocated all sound as music, creating an almost passive listening experience whereas, when sound is *scape* and composed, it engages the listener in an active listening appreciation. As a distracted listener or distracted viewer, there is a correlation between the visuality of listening, meaning paying attention to visual stimuli in a way analogous to listening to sound. *Hearing Space* derives spatiality from a temporal event and what sound is, ephemerality, temporality (Avidar, Ganchrow & Kursell, 2009: 72), a trace moving from a sound source to airwaves and out into the vast expanse of the atmosphere.

When made visible in written form, sound becomes materiality, an echo rendered silent by ink to leave traces of frequencies, pitches, and tempos. As listeners, hearing and dissecting sonically while focussing noticeably on what is current, Jorgensen & Phillips (2002) propose that a change has taken place. The notion of invisibility has increased compared to visibility, recognising hearing and seeing as having corporeal qualities. It is prompting archaeology of seeing to an enquiry embedded between pure optics and solid materiality, to a shift in conditions of perception.

Robert Henke believes there is a need for an understanding of experience when provoked by sound:

> Most important is the creation of an 'experience', an event which triggers thoughts and emotions, that transforms mental, temporal and physical spaces and their perception. This can be a simple as being delighted by a good groove or sound, and it can be as complex as the satisfaction to listen, watch and understand how a complex process unfolds in an installation.
> (Henke, 2017)

Referencing support from contemporary academics and artists enhances the knowledge distribution of sound in the arts. Henke is right to mention the audience gathering experiences from the events he creates. Many informational sources, including books and journals, are referenced to support the theoretical framework and endorse the conceptual framework for the ideas and themes used in this thesis.

Contextually listening has meant developing a better understanding of reference material to support this research. Including the curated sonic works by Professor Colin Fallows, *Hope* (1998), *Trace* (1999) and *Zero* (2000) and the sonic output of Aphex Twin, specifically to the album *Collapse EP* (2018). The influences of these works have assisted in shaping the type of music and sound files for this research. Many CDs are referenced in the bibliography and have supported listening strategies as a focus for influencing my output. For example, Aphex Twin's style of sonic creation is built around chopping samples of sound and mixing them

back in as collages, layered, somewhat discordant, and unique. Listening to Hope Trace and Zero were compiled of notable musicians past and present and included in soundtracks of exhibitions, including *Sonic Boom* (2000). Henke's (2016) album *VLSI* was also an inspiration due to the experimental nature of the sound and partly because he had used the software programs utilised in the compositions, including *Sonic Collage* (2017) highlighted in this practice (Appendix II: 35).

Each of these albums offers ideas based on strategies for combing different sounds where the emphasis is not just on the traditional formula for creating a song but on experimenting with a sonic palette of sine waves and drone sounds. These albums offer potential as starting points to be built on as explorations where compositions are created through short sound clips added to create new possibilities.

Proclaiming to trigger thoughts and emotions, this literature review has acknowledged the specific material required to define the growing practice of this niche study. While focusing on immersion and interactivity in sound installation art, the following chapter addresses the methods used for practice-led research and the production of the thesis.

Methodology

While an emphasis on *Soundings* (Appendix II: 3) makes explicit an ontology of sound in the 21st-century, consenting to an exploration of outcomes aesthetically and conceptually. Heidegger's hermeneutical idea of 'Dasein' (1978) is elected as a method supporting a phenomenological framework for this research.

> Phenomenology as a philosophy and a method of inquiry is not limited to an approach to knowing, it is rather an intellectual engagement in interpretations and meaning making that is used to understand the lived world of human beings at a conscious level. (Qutoshi, 2018)

As humans we already inhabit a sense of ourselves, which fits in with Heidegger's proposition of *Dasein*. Hermeneutics[15] is identified through inferring from a culture what one can and cannot do as an inference of immersion from a body in an architectural space. Comprehending a totality of oneself and recognising that pre-judgements shape the understanding of self and *Dasein* (Palmer, 2001). Listening and talking to artists' sonic resonances about their existing practice, in general, clarifies this investigation's position in developing new compositions and frameworks for exhibiting sound installation art in specific spaces. The

[15] Hermeneutics is the study of interpretation. Hermeneutics plays a role in a number of disciplines whose subject matter demands interpretative approaches, characteristically, because the disciplinary subject matter concerns the meaning of human intentions, beliefs, and actions, or the meaning of human experience as it is preserved in the arts and literature, historical testimony, and other artefacts. Available at: https://plato.stanford.edu/entries/hermeneutics/ Accessed 14th January 2020

desire to create an interactive display from this foundation became positioned on which *Playback* (Appendix II: 18) became conceived as a performance and artwork. The practical work and exhibition were primarily aimed at foregrounding the difference between a passive experience and an immersive one while changing the frame of reference from an audience member to become an active creator. To achieve this, interviewing scholar's artists and academics was the initial method. Therefore, it was necessary to choose individuals who understood contemporary sound art studies through already practising in this genre of art rather than individuals who need to learn about this emerging field.

Onwuegbuzie & Frels (2016: 6) detect qualitative research with a researcher interpreting data from interviews and observations rather than hypothesising or testing a theory. Researchers must remain impartial in a qualitative study, and knowledge gained is socially constructed rather than empirically absolute (Ibid., 6). Utilising a mixed-method review and developing a meta-synthesis approach (Onwuegbuzie & Frels, 2016: 6) towards research purposefully ascertains it hermeneutically. Reviewing information from a phenomenon perception rather than a meta-analysis (2016: 6) empirical approach is adopted as the study method best suited for this enquiry.

Procedural decisions assist research enterprise paradigms and follow a specific pathway, meriting an interpretive approach to data analysis. A

triangulation of the observation-interview-questionnaire has warranted an enhanced analysis to explore space, exhibitioning and generating interactive digital environments which fit the real world of participants in phenomenological research (Gray, 2009: 24) and the ontological authenticity Heidegger (1978: 239) advocated, which relates to embracing individuality and unique identities as accurate to own sense of self.

Observing has clarified a reimagining of intention and procedure for creating increased interactivity within an exhibition space. Witnessing members of the public 'playing' with Wii controllers in the exhibition (Appendix II: 15) and interpreting how they would respond demonstrated the emphasis on immersion engagement and interactivity. Utilising participant observation in this investigation permitted a perspectival difference, assisting in what Coles & Baumgarten (2000: 97) recognise as:

> Uncovering the salient dynamics of social relations, of attitudes and beliefs, by noting the many verbal gestural and material exchanges, which compose the minutiae of everyday life.
> (Coles & Baumgarten, 2000: 97)

Direct observations and preconceived notions of how users would react using unfamiliar software have summoned expectations of interactions between the program, controller and each other. This raised social and

participant relations questions, which Coles & Baumgarten (2000: 97) recognise as essential.

Sounding out the specific artwork *Watch Play Listen* (2018) assembled during this thesis acknowledges how the significance of immersion, sound and music correlate to the developments in technology and culture. Artists recognised in this phase include Ulf Langheinrich, Annea Lockwood, Nicolas Bernier and Peter Stollery, who responded to specific questions when interviewed and are known for using found and processed sounds in their sonic works. It is essential to build on their methods for producing interactive sound installations and explore their practice from the perspective of the creator and audience member. The significant development of a digital practice informed by sound, interactivity and technology indicates a method of importance. Furthermore, it highlights the growing exploration of music and compositional concepts used as artworks.

Chapter One is critical to emphasise sound and noise as a 20th-century phenomenon and view the sound artists mentioned as multi-media and inter-disciplinary in output. Determining headings to include *Resonating Immersion* and *Sounding Immersion* establishes the significance it elicits as diverse categories and discusses the role of the audience member as the participator/creator in an art installation. Engagement is foregrounded in Chapter One via space, perception and duration, which sounds like

having a primacy of sight over aurality,[16] yet it is quite the opposite. Beginning from the year 2000 and at the commencement of a new millennium (a thousand years in the making) is where the ideas for this thesis lead. This invites a reflective 'looking' back when it should be listening back to what has gone before but reimaging it through a contemporary lens as inspiration for the present.

[16] Of or relating to the ear or to the sense of hearing visual and aural sensations

Chapter One
Sonifying Playback

Sonifying Playback

Commencing with a 'Boom', not a balloon's sound when it pops or when a car backfires, this was a resonant boom to awaken sound art from its visual art sibling. At the commencement of this century, the threat of a millennium 'Y2K' of (the year 2000) technological failure occurred. This provoked those fortunate to own a home computer into anticipating whether their computer clock would survive past the time xx00. What manifested was not the 'event horizon' expected; technology endured and continued to operate normally. Communication and the knowledge society prevailed, fundamental to contemporary lives, politics, economics, and culture. Technological systems continued to operate at a sensory level, and 'mimetic isomorphism'[17] within the sonic arts established its resonating self within the genres of contemporary art.

Chapter One indicates reflecting when it is promoted as stimulation to highlight 'immersion' as the sonic thread throughout the thesis. A tripartite formulation of sound, music and immersion attests to the practice-led study introduced in later chapters and the role of the spectator and participator when confronted in a sound installation setting that requires some form of interaction from an audience member. When the artists interviewed for this study were asked the question: ‘Is a sound work

[17] Mimetic isomorphism in organisation theory refers to the tendency of an organisation to imitate another organisation's structure because of the belief that the structure of the latter organisation is beneficial.

complete when a listener interacts with the work'? The question was designed to elicit a reply regarding participation and responses included: 'This can only be answered in regard to a specific work and the ambitions of the artist' (Langheinrich, 2016).

Whereas Lockwood (2015) identifies, 'for the overall exhibition and also for individual works, which slows visitors down and interrupts the tendency to do a quick scan, is vital…' Stollery (2016) agrees to the question by answering 'Yes, and only when this happens'. However, Bernier (2014) cannot suggest any clear answer by suggesting to leave it to the 'experts' even though he is one himself. Langheinrich's response did not offer any clear answer and was too generalised to offer any support and from Lockwood's point of view, being able to slow down visitors rather than them doing a quick scan is probably the intention of every artist when wanting visitors to observe/listen to an artwork on display.

Immersion as a 21st-century taxonomy alludes to sound practices integrating, composing, interactivity, genres, spatial relations, noise (wanted and unwanted) and installation art. Technology becomes the primary connection between the creator, method, output, and user as a medium, formulated to address *Soundings* as a standalone exposition. Resonating and sounding immersion is revealed from 'being within' as a Heideggerian ontology, while the artist, artwork and audience are connected, highlighting the artwork's producer, practice and maker.

Watch Play Listen (Appendix II: 23) is designed as an interactive Soundwork and supports the categorisation of *Sonifying Playback* due to the layout, content and motives for generating it. The interactive patch[18] incorporates a combination of sound, noise files and programming built into the program so that on first sight, observers are presented with many objects that are either passively awaiting input or are moving on the screen but still require activation by a user. The interactivity allows users to click, drag, slide, push buttons, activate sliders, and manipulate audio files through haptics[19]. This artwork initially began as the interactive piece titled, *Sounding Out Interactively* (2018) which can be viewed (Figure 43: 41). It was upon observation of a user interacting with this original patch that it was decided to develop it further with more elements that allowed users to play with the different objects on display. Where *Sounding Out Interactively* had limited visual presence and functionality (Figure 42: 41), what it offered for the new patch *Watch Play Listen* (2018) was the desire to make it more visually appealing for those who played with it (Figure 23: 23).

The inspiration for *Watch Play Listen* (2018*)* was initiated from observing sonic works by Ryoji Ikeda and Robert Henke. Although a specific

[18] Max objects communicate by sending each other messages through patch cords and programmers refer to designs as 'patches'. These messages are sent at a specific moment, either in response to an action taken by the user (a mouse click, a MIDI note played, etc.) or because the event was scheduled to occur (by metro, delay, etc.).
[19] the use of technology that stimulates the senses of touch and motion, especially to reproduce in remote operation or computer simulation the sensations that would be felt by a user interacting directly with physical objects

question was asked regarding interactions with soundworks from the interviewees, the relevance of the replies did not provide how important this form of interaction was to each of the artists. Their specific audiovisual art utilises black and white geometric shapes accompanied by sound to provide a sensory experience and a sonic stimulation. A mimetic of sounds in *Watch Play Listen* (2018) builds on the output of Henke and Ikeda. However, they employ skilled technical artists to develop audiovisuals, programming and manipulate sound features. The author of this thesis designs and produces everything from the minutiae of granular sound to the visuals, interactivity and programming. All the audio (Appendix VI: 107) and video files for *Watch Play Listen* (2018) are the author's own, captured from sonic excursions in and around the city of Liverpool.

Developments in technology and culture are intimately linked and evidenced in sound art and computer music, proposing a cultural shift of creation and are evidenced more so since the turn of the century. Technological advances have made it possible to create and manipulate sound in new and innovative ways. At the same time, changes in culture have led to a growing recognition and appreciation of sound as a legitimate art form. Programs for developing sound-making and video design are easily accessible for amateur and professional users for download and exploration in the comfort of their studios or homes. Observing users playing (Figure 23: 23) with *Watch Play Listen* (2018)

demonstrated the interactivity, immersion and participation required in an artwork. Users were explicitly interested in manipulating the audio files by creating different soundscapes of noise by altering their pitch and duration. While this happened and users began clicking and dragging, the video files would change, glitch and offer a visual element to the artwork.

By incorporating video, sound, noise/music and Max programming, users could explore an installation that was as rich auditorily as it is visually. The patchers used for this artwork are evidenced (Figure 23: 23), so anyone without prior knowledge of this programming method will understand the intention, layout and design and can begin *playing* with the artwork. Composing with a sensory overload of shapes and sounds builds on what Henke and Ikeda create to challenge the notion of noise, sound and music as a collective encompassing sonic output rather than viewed as disconnected.

Cage (1973) emancipated possibilities for artists interested in using sound, suggesting music was not just for elite listeners but for anyone interested in sound and music studies. Although, before the year 2000, specific sound art exhibitions were sporadic, Max Neuhaus's (1967) *Drive in Music* or Peter Vogel's *soundwalls* (1996) suddenly defined sound as having installation status, artworks were being created and understood conceptually and recognised as environments, (Bishop, 2005) whereby the spectator could interact with, walk through and listen.

The most notable exhibition, *Sonic Boom: The Art of Sound*, emerged in the Hayward Gallery London from April to June 2000. This exhibition invited more than thirty artists recognised as adding to 'Sound in the 21st-century'.

Sonic Boom (2000) differed from other exhibitions because artists were selected for their sonic output rather than their visual practice. Toop (2000) argued this was one challenge of many, housing many sonic works under one roof and not much in the way of separating them. This meant a 'sonic bleed' by way of sound pollution from one exhibit penetrating the sounds of another, so a clashing of attention occurs between all sounds heard. What then transpires, the public experiencing the multitude of sounds would require a readjustment of listening every time going into a separate sound space.

After the *Sonic Boom* exhibition, a paradigm shift occurred in how curators and galleries displayed Soundworks. Emerging was an opening of sound fundamental to visual arts beginning to resonate as a specific category. Arts neologisms, including performance, new media, sculpture, and installation, existed and emphasised sound's physicality and immateriality. Recognising how 'sound art manipulates our sense to enlarge the possibilities of that experience' (Ferleger Brades, 2000).

Contradistinction within gallery spaces opened and a call for listening strategies theorised the importance of hearing, highlighting *Deep Listening* similar to what Pauline Oliveros advocated in her online presence and Deep Listening Institute.[20]

The exhibition, *Sound Art?* (2020), curated by Arnau Horta, examines artists' strategies to create sonic works influenced by visuality and music. The exhibition referenced sound as materiality and physicality while conceptualising silence and inviting a description of present-ness, comprising notable artists from the 19th, 20th and this century, including Ryoji Ikeda and Carsten Nicolai. For example, Ryoji Ikeda's *4'33"* uses framed 16mm film (magnetic film for movie soundtrack) and no sound is present. Nevertheless, the piece resonates and sounds out as a 21st-century metaphor for John Cage's work of the same title, where silence was the original designation but was loudly performed by audience members who found it difficult to keep silent when David Tudor closed the piano lid at the beginning of the performance.

It is appropriate to mention that Cage's premise for 4'33 was for the piece to be silent, the performers to be silent and the audience members to sit silently and listen. He was a composer and musician who wanted audience members to participate and interact. However, he had created a

[20] https://www.deeplistening.org/ Accessed 14th January 2020

piece where he had direct control over every individual, which was the opposite of the interactivity he strived for in future work.

Consequently, framing the magnetic film as a sonic work attests to a referent of sound removed from its intention, comparable to Schafer (1993). Foregrounding 'hearing is another form of seeing' (Acconci, Goddard and Hellerman, 1983). Sound and image accept participation from the viewer/ listener as an engaged practice of collaboration. Describing the *Sound Art* exhibition as a journey through the presence of sound in the arts (Horta, 2020). It defined itself as a similar reverberation to visual art, but in waveforms and sounds described as musical and non-musical, communicate emotionally through intrusions including pitch, timbre, rhythm, tempo and form.

Sound art is a new phenomenon compared to visual arts and has a documented history throughout the 20th-century. Russolo's (1913) *Manifesto of Noise* sounded out to establish what constitutes music by way of a pragmatic reality of life and society was not quietly going about its business. It was a celebration on an international level, and Russolo's commitment to noise and industry was evident at the 5th Paris international exposition.[21] Like Russolo bringing a loud tone into establishing the score and notational practices, he identified with industrial and urban sounds (noise) as music. Furthermore, he highlighted the

[21] https://www.ndl.go.jp/exposition/e/s1/1900.html Accessed 20th March 2020

notion of every manifestation of life signifying noise as a universal medium (1913). Compositional practices prescribed through indeterminacy and chance were ways of challenging the orthodoxy inherent in early 20th-century music. Such a proposition was somewhat unwanted, yet it infiltrated environmentally, emotionally and physically as waveforms one cannot escape. From a physics position, noise is indistinguishable from sound, according to (Elert, 2016), as both are 'vibrations through a medium, such as air or water'. Arguing noise as 'jarring to ears', Russolo recognised it as having a 'pre-dominant rhythm' (1913), which conflicted with Attali's (1985: 26) acknowledgement of noise as violence, which also penetrated the senses.

While it is true that noise intersects public thought, it does not necessarily follow the expectation of the gallery visiting spectator. The following paragraphs consider this point of view and contemporaneous with this was the object within space. No longer were spectators expected to stand and observe; they were assumed to walk in, over, through, take part in, listen, and not just passively comply but become part of the artwork as active, interactive, engaging individuals.

A desire for the medium to be more than just a message occurred throughout society. The consumer explored technology as if it was already seamlessly integrated into the psyche of anyone interested. McLuhan (1969: 5) recognised, "Today we live invested with an electronic

information environment that is quite as imperceptible to us as water to a fish". McLuhan's technocratic society established itself, while the Fluxus artist was more concerned with the process than the finished products. Considering how technology influences society and specifically the internet as a communication tool, petitioning sound in installation art exposes questions regarding sound's dichotomous relationship with visuality and recognises what experiential moments are generated for listeners/viewers. Bishop (2005) acknowledges that installation art is represented more now than it was in the 20th-century and the influence of technology and internet access has supported this increase in development. Emphasising this newfound familiarity in lexicality accentuates additions of sound infiltrating practice while addressing the conceptual underpinnings of immersion.

Triangulating the theory of immersion, sound and installation art unveils the difficulty of recognising the opinions of an abstract phenomenon (invisible sound) and a material construct (installation art) while suggesting that both together promote the idea of immersion for someone experiencing this type of artwork. An illustration of this is Ryoji Ikeda's installation *Data Flux* (2019)[22], which demonstrates a series of video screens fully enveloping the viewer with black and white visuals, every screen showing different animations of lines and shapes accompanied by computerised sounds and interpreted as data displays.

[22] https://www.onassis.org/press/dataflux-12xga-version Accessed 12th December 2021

Surrounding the space is the viewer's position and an expectation of listening and observing the screens close up if wanted. Establishing this work as immersive is due to the relentless bombardment of numbers, information and sound channelled visually and auditorily.

Accompanied by sound turns, Ikeda's installation into an immersive event and is a sensory investigation through the visual and auditory cortex. In contrast, visiting visual art galleries where contemplation is custom and observing audience participators with *Watch Play Listen* (2018) alludes to the expectation demonstrated by Ikeda. However, it expands on it by allowing visitors to touch, interact and engage with the artwork. Sight, as the primacy sense, immediately features and sound becomes evident in a reciprocating sensory field. Experiencing art as having immersive qualities, a pragmatic 'total art' is witnessed and none more so than in specific exhibitions that have increased this century from artists including Carsten Nicolai, Ulf Langeriech, Ryoji Ikeda, Robert Henke, Francisco Lopez and Janet Cardiff.

Many exhibitions have queried about what sound art is, including *Sonic Boom* (London, Hayward Gallery, 27 April-18 June 2000), *Sonic Process* (Paris, Centre Pompidou, 16 October 2002-6 January 2003), *Sons et Lumières*: A History of Sound in the Art of the Twentieth Century (Paris, Centre Pompidou, 22 September 2004-3 January 2005). In addition, festivals of sound art include *Klang-Kunst*

Festival (Germany), *Outer Ear* (USA), *Liquid Arts* (Australia), *Sonic Circuits* (USA), *Xebec Sound Arts* (Japan) and *Sound Travels* (Canada).

Detecting the year 2000 as a crucial moment when sound art became mainstream, acknowledging sound art in dialectical terms proposed an argument for a sonic awareness concerning different modes of sound art. In comparison, questioning and examining the everyday soundtrack relating to contemporary installation art and possessing the extension of a socio-sonic modality incorporating digital technology. This thesis identifies immersion as a 21st-century trope more suited to the continued advancement of technology supporting artists who compose, create and play with sound.

The premise concerns immersion relative to sound art and has identified many different perceptions of immersion from diverse genres and fields of study. For clarity, in the following paragraphs, descriptions are explored to highlight three distinct definitions. Concerning the original investigation and considering the verb and adjective 'immersion,' as being submerged in a fluid, water, sea, or amniotic fluid. Connotations are many, as identified by (Machon, 2013: 21), through the position of being 'dipped' or 'submerged'. From the point of view of Dyson (2009), who recognised the perception of 'immerse' as being involved with, literally taking over, bodily, physically and emotionally, so thinking becomes nothing else. Relating this to the original idea of *Watch Play Listen* (2018), the point was to have

participants explore the art using more than one sense, so involvement was anticipation rather than passivity. From a digital computational perspective, immersion relates to 'immersing oneself' in a game and computer environment and eliciting sensory feelings similar to Machon's (2013) assumptions and techniques adopted by contemporary artists.

Many installations include sound as the main art form and incorporate the practice of artists Ryoji Ikeda, Janet Cardiff and Carsten Nicolai. Their sound works are deeply embedded in visuality and described in aurality, while Ikeda and Francisco Lopez employ computer technology as their primary practice, an expectation as an audience member at Lopez's performances is to wear a blindfold (2017). This technique is adopted by Lopez so that wearers of the blindfolds are there for the duration of his event, submitting themselves bodily (being there) and acknowledging trust for him to provide an immersive sonic event for them to experience. Once the blindfold is privileged, visuality is momentarily disconnected to create an imbalance and a sensory embodied removal. His requirement for participants is to sit and listen. When asked about the immersive factor in his blindfold performances, Lopez (2017) stated that 'immersion is not his primary goal', 'yet it is transcendental'.

This further supports (Machon: 2013), who identified that by proposing the wearing of blindfolds, a person is taken to another situation, feeling, or moment in time due to removing a primary sense, similar to what Susan

Philipsz provides when she laments over loudspeakers, disembodied and just her voice echoing under bridges in Glasgow.[23]

Once technology supported recording, the recordist's ability to separate sound from its source generated an ethereal happening. Susan Philipsz won the Turner Prize in 2010 for her work *Lowlands* (2010),[24] located under three bridges, Philipsz was the first person in the award's history to have produced 'nothing to look at or touch, instead, Philipsz' sculpted her prizewinning work in sound' (Higgins, 2010). Composing with just sound highlights how unusual this was for a prize primarily immersed in a visual discourse throughout its history. Philipsz's voice work is described as an 'intimate experience' (Higgins: 2010), so relating this to what Lopez, Cardiff or Ikeda create, their intermedia sound works can also be described the same, further alluding to the idea of an immersive practice. Inventing the term *schizophonia* from the Greek word schizo (split) and the phone from the Greek expression, voice (sound) 'split sound' (Schafer: 1993).

Recording sound removed from its source physically and mechanically and displaying sound works in this manner, either in a gallery situation or similar to Philipsz, contributes to a challenge for those who choose to listen or not due to the acknowledgement of art that is primarily visual. It

[23] https://www.theguardian.com/artanddesign/2010/apr/04/susan-philipsz-glasgow-international-interview Accessed 1st August 2020
[24] https://www.youtube.com/watch?v=UWeKzTDi-OA Accessed 21st January 2021

was Kahn (1999: 2) who ascertained there are three distinct areas of sound in the arts:

- The early development of sound within and across artistic practices.
- The response and accommodation of sound within artistic practices.
- The use of ideas of sound within the development of essential tropes within the arts.

Kahn is arguing from the point of view of acknowledging sound infiltrating the many genres of art whilst accepting sound as recurring throughout the arts as a whole and not in one specific area. This is important as he identifies this as challenging to elucidate sound art as being in a specific category. In contrast, Leman, Maes & Lesaffre (2017) endeavouring to categorise it as an explicit definition and argue that many artworks have sound, yet this does not necessarily make them sound artworks. Furthermore, as a system for description and taxonomy, Cox (2011: 146) recognises sound art as being neglected in favour of its visual sibling, suggesting that visuality is still the dominant discourse in art.

The definition of sound art' encompasses sound as a mode through the visual arts (Toop, 2000: 107). The Glossary of *Audio Culture* (2004) describes it as a general term for works of art often produced for a gallery or museum. Later, the terminology changed to the distinction of a 'movement not tied to a specific moment, geographic location or a group of artists' (Licht, 2009: 3). Now in an era in which the exploration of sound by musicians, artists, sound artists, designers, and engineers often falls

between music and sound art categories. Defining it as a specific category, Bernier (2014) expands this argument:

> As an artist, genre and classifycation is not something I am thinking about. That said, even if I officially come from the music field I prefer the term sound art because it doesn't tie me up with the burden of the music history. The term sound art, puts it clearly that one is doing art which is not clearly the case with what is associated with the term music today. If one is work in the music field, it doesn't imply that he is in the art field? You can do advertising music, elevator music, video game music, etc. (not to mention that music is generally understood as being a support for another form). On a really pragmatically level, if I am telling someone that I am doing music, I will of course be asked what kind of music, what instrument are you playing?, which are questions that are not asked when you say you are making sound art. You will then be asked what kind of material are you working with, what kind of space or setup do you use which are questions that appeared to be more related to my practice.
> (Bernier, 2014)

People who compose music become accustomed to being classified as musicians. However, this does not address the many music-making or production genres; likewise, when a person is accepted as an artist in the visual arts, questions of categories, style and practice are acknowledged, dependent on the chosen art style they adopt. Similarly, chronicling a sound artist invites arguments for specific genres, customs, traditions and definitions. So while sound art in the 21st-century has undoubtedly become more recognised as a mainstream identity, attempting to pin it down to one genre presents many challenges at this current time.

Sound penetrates, envelops and fills the space it is in, provided the equipment supports this invisible medium. For example, sound fills a headspace of a person wearing headphones, and it can infiltrate through walls and be heard from great distances. Contrast this with what visual art proposes; It is immediately in front of view and requires the necessary sight for analysis; thus, it does not have the equivalent sonic resonance as a sound work has.

According to Maes (2013), perception and space are documented from the point of view of understanding and considering what takes place at a performance in a concert hall. A specific duration is acknowledged, and there is a definite start, middle and end time and as an audience member, the expectation of sitting and watching is culturally recognised, giving the audience members a sense of belonging and identity with limited interaction. Compare this to a sound installation or event; perception conflicts with what transpires in a concert hall, conceivably there is no starting point, no seating and the position in the space can be compromised. Closer intimate proximity than expected to other people or participators could also be in the sound installation. Just as artworks can be non-durational, sound proposes this premise, as seen in *Watch Play Listen*.

Identifying how sound involves frequency, amplitude and waveform, the purest forms and frequency, measured in Hertz, is established by

distinguishing one pitch from another (a high-pitched and a low-pitched sound). A loud sound defines amplitude compared to a soft or low sound. Waveform relates more to tone and timbre, so knowing these areas assists in understanding sound staging.

While changing from image to sound, the argument would still offer a contextual reference and support Bachelard's (1994: 1) view of 'newness' when he describes images as having a 'blend of memory and legend' (ibid., 33). Furthermore, Bachelard believes that humans can deepen our understanding of the earth and ourselves and open ourselves up to the transformative power of the imagination. Thus, images can awaken our sense of the sublime and the mysterious, allowing us to glimpse the infinite and the unknown. Similarly, sound can also evoke memory and awaken imaginations (Philipsz, 2010) and this is one of the intentions Philipsz wants to achieve with her sonic works.

Resonating Immersion

Proposing a neologism within sound immersion has its referent of a deep engagement and absorption in a sound field. Connoting immersiveness correlates with realms of technology while sharing an engagement with proprioception[25] and an embodiment of the senses. A notion of shaping 'Immersion' as a noun to denote experiential listening is to play with sound

[25] https://www.sciencedirect.com/science/article/pii/B9780080450469019070 Accessed 18th December 2019

and to term a *sensibility*[26] of listening while highlighting the verb 'immerse'. Evidencing this contemporaneously is immersion in the digital arena as this is the area that most suit the idea of an audience member being immersed in an artwork due to the interactivity and the engagement that takes place, so the once passive observer becomes an active participant in the creation of an artwork.

An idea of immersion as an extensive surrounding and vivid illusion of reality derives from Slater and Wilbur's (1997: 606) lucidity from a computer screen paradigm. They are forming an engagement with a user just like Dyson (2009), imagining through the immersive VR (Virtual Reality) phenomenon. Char Davies, whose seminal works for VR, *Epherme* and *Osmose*[27] were created in 1995 and 1998, respectively, these two works are considered within the parameters of VR.

In a mediated world, participants wearing headsets are described as 'immersants' (Davies, 2004). Furthermore, occurring in a computer-generated artificial environment, the immersant navigates their way through, always on the move as the day changes to night and the seasons change frequently. Seemingly, with various devices to go inside, not just

[26] Salomé Voegelin *Listening to Noise and Silence* engages with the emerging practice of sound art and the concurrent development of a discourse and theory of sound. In this original and challenging work, Salomé Voegelin immerses the reader in concepts of listening to sound artwork and the everyday acoustic environment, establishing an aesthetics and philosophy of sound and promoting the notion of a sonic sensibility.

[27] https://www.youtube.com/watch?v=0TdsoRpKRPc Accessed 2nd July 2019

headspace but with what Davies has provided through an aural and visual representation of a virtual world.

From a Husserlian phenomenological perspective, 'going inside' distinguishes this with a totality of reality, including other 'possible realities' (Husserl, 1960). Heidegger (1978) recognised this as 'being within' as an experience, while the characteristic of sound deals with an invisible phenomenon in airwaves that infiltrates a body in many ways. Considering a computer environment and focussing on any interactive artwork, Maes (2013) argues that participation by an audience is generally limited to pressing a few buttons or setting off a motion sensor to make something happen. This narrow point of view does not account for those artworks where the audience members make the artwork just like what was provided in the exhibition *Playback* (Appendix II: 18). However, Maes overlooks the more profound dilemma of allowing participators the chance to explore and learn from what is presented, whereas the essence of Dyson's (2009: 2) argument:

> The user's navigation of and engagement with digital content is said to give the users agency, freeing them from the passive experience of watching.
> (Dyson, 2009)

Challenging the acceptance installations offer spectators an immersive and distractive experience from what they are culturally used to when

visiting an exhibition. An auditory world resonates, accepting everyone with a sensory privilege. Sounds one hears in space are sounds of bodies reciprocating in a sonic field, of artists, audience and participators. A plurality identified as a postmodern construct materialises throughout 21st-century sound art. The following extract from the interview with Robert Henke (2017) identifies concern for experience and interest:

> In the museum, I hope I can keep the audience interested for an extended period of time, just because what they hear and see wants them to stay. In a club, I of course like people to dance, and when I perform in a theatre, I want them to be amazed and surprised for the duration of the piece, so that when it is finished they feel inspired.
> (Henke, 2017)

From Henke's point of view, his primary aims of the cultural institutions of museums, clubs and theatre all have the audience members at the forefront of his intentions of keeping them interested and participating. Francisco Lopez (2017) describes audience engagement as:

> An absolute one! I believe music (or something substantial like it) is not created by producing sound but instead by an act of profound listening. That fundamental act of creation is thus in fact in the hands of the listener.
> (Lopez, 2017)

Arguing that ideas of interaction between viewers and artworks began as a 1960s phenomenon Gibbs (2007: 27). When a person looks at a painting or a sculpture, it stimulates a response, there is a degree of interaction;

this cognitive process does not affect the picture itself, so it elicits a limited form of interactivity and not necessarily the feeling of immersion. The idea of an artwork responding to and even being controlled by viewers was radical, as in the case of the Fluxus movement.[28] It opened questions regarding relationships between artist, artwork and audience, enhancing the tripartite formulation, elected through sound and immersion. Identifying *Watch Play Listen* as an installation invites considerations of composition, design, layout and musical/sonic intention so that audience members can become players and develop their own aural and visual understanding when asked to participate in an interactive soundwork to highlight the notion of immersion.

Sounding Immersion

Beginning this chapter with sound and immersion situates it here, in this place, as a resonator for the forthcoming chapters. Returning music as a search path invites a rich history that is too comprehensive for this thesis, but it should be mentioned how important it is to sound artists and practices. Music can restore a sense of place, time, feeling, an event, or a moment of life while eliciting memories of happiness or sadness in the sense of sonic reflexiveness. Being immersed in music is like immersion in a digital context from the point of view of focusing on the minutiae of the sound. A person does not have to be physically there but can feel the

[28] https://www.tate.org.uk/art/art-terms/f/fluxus Accessed 16th October 218

beat and imagine a representation of a place. Unlike water, where every aspect of the physical self is challenged once the whole body is submerged, every sense is heightened. One can hear, taste, feel and smell as the water envelops the body.

Music and computational immersion arouse individual senses over others, yet struggle with human haptic and olfactory senses due to these offering imagined sensory experiences. Henke (2017) acknowledges immersion as an essential quality he likes to achieve in some of his works, while Dawn Scarfe (2015) posited she was more interested in dispersion than immersion, which included sounds dissipating into new environments and blending into their surroundings (ibid,. 2015). Relating immersion to 'music and narrative' (Rooney, 2014) does not regard sound as an abstracted 'thing' detached from a musical experience. Instead, he suggests that 'thing' like music is a Eurocentric term which functions independently from immersion in sound and connects to soundscape studies and 'listening in an environment' (Polli, 2017: 85).

Contrasting this with traditional Western music from one perspective, Rooney (2014) views no separation between music and sound. Instead, he categorises it all as sound, some interesting, and some not. Listening to music may bring back an olfactory sense of smell, a time, place or a memory, but it is a representation or an imagined sense. Describing the immersive nature of a vast soundscape as the 'totality of immersion' (Polli,

2017) emphasises a cognitive reaction more than a physical one. To clarify, immersion in music does not have the same sensory experience as in water. Nonetheless, it still provides ephemerality of the unseen through sound, gesture and movement, similarly associated with understanding a theatre production or play. When Bernier (2014) was interviewed for this research and asked his thoughts on immersion, his reply was interesting as he mentioned,

> It is not an objective, only a fact: sound is immersive by definition as it is flowing everywhere around us. But immersion is not necessarily a focus in my work. I think that even in stereo (as opposed to surround) can sound immersive with the right sound in the right space played at the right intensity.
> Bernier (2014).

Bernier proposes that all sounds are immersive as long as they are played in a place that highlights the sounds resonating qualities. Conversely, Stollery (2016) points out that he will 'surround the audience with loudspeakers and sculpt (usually) stereo sound in 3D space'. He mentions that he would also like the listener to appreciate this form of 'spacialisation' (ibid., 2016). This notion of sculpting with speakers to create immersion is how many sound artworks are developed, including Janet Cardiff's *40 Part Motet* (2001). In researching additional areas where immersion is intended or recognised, understanding where else immersion can exist suggests the field for exploration is not narrowed and introduces an enhanced understanding of immersive practices. Immersive

theatre in the arts offers definitions and ideas from a theatrical outlook, applying directly to contexts of productions and performances. *Immersive Theatres* (Machon, 2013) is an example of a study where the author has recognised the importance of theatre studies from perspectives of technologies, audience, space, immersion, duration, concepts and fields applicable to sound art practices.

Machon (2013) acknowledges that in explaining the two distinct areas of practice (sound and theatre), a definite correlation builds on the importance of recognising how immersion may not be a primary objective, similar to Lopez (2018). However, from an audience perspective, the more engaged with what is presented, the better the sense of being part of an event increases. Theatre immersion differs from digital immersion due to staging and where audience members are expected to sit and observe. As an audience member, there is sometimes an encouragement and an expectation to participate in the production. The level of interactivity expected varies and can require full involvement in the 'happening' or event, comparable to a Fluxus invention from the 1950s.

Categorising the theatre experience as interdisciplinary and participatory (Machon, 2013: 28; Lux Technical, 2019), the dramaturgical practice has existed for centuries in religious festivals and ceremonial pageants. Proposing a sense of immersion in some contemporary art and performance practices is alike when requiring the audience to participate

rather than passively observe or sit back. Theatre and participatory performance can be daunting to those audience members who do not know the expectations, thus requiring a person to have the confidence to participate in what could be an abstract concept and no prior knowledge of the event. Much like the Fluxus experimental multi-media *Happenings* of the 1960s, the audience members had to do something to complete the work, such as 'blink hard, stare hard or pick something up' (Higgins, 2002: 25). Explicitly discussing the participator/spectator involved in any art experience and talking of complicitness in a world where one can immerse oneself through art expressions and meanings (Machon, 2013: 30).

The prioritisation becomes a form of immersion in the embodied self. Engagement, interactivity and involvement are factors relatable to what Machon positions as 'immersants' (ibid., 2013). While identifying the blurring of boundaries between the original creator and members of the public who visit such an artwork, (Machon, 2013: 31) recognised the importance of engagement and how to identify when immersed:

1. It is an event
2. Unique 'in its world-ness'
3. Deft handling of a space
4. Inclusive of sound, duration and action

It is significant to note that the terms are not exclusive to immersion as it propositions a physical world and an imaginative attitude. Machon

recognises the importance of space and the particular duration of an event involving sound and some form of action. Relating Machon's ideas to the exhibition *Playback* then, evidence suggests that the fulfilment of providing an event with a form of immersiveness was achieved if basing the recommendations on the 4 points above. The notion of a scale of immersion is a new affirmation as it posits a rapid increase in understanding dependent on the artist's intention. The idea of 'commingling'[29] (Ingold, 2018) invites an immersive perception of listening in rather than out. As a passive experience, immersion defines *senses* as a provocation that appears contradictory.

Differing levels of immersion should translate to different levels of interactivity by audience members or participators at an art installation. For example, a partial immersive experience, as opposed to a full one, is a contradictive statement and contests the synaesthetic [30] sensation one can achieve when featured in an installation model designed for engagement. Where immersion relates is evidenced through an orchestration of the senses, mediating the haptic and visual. An olfactory sense arrives with the space the art is displayed in, adding to an embodiment of participators, audience and spectators.

[29] to mix together things of different types; to be mixed together like this:
[30] Synaesthesia is when you hear music, but you see shapes. Or you hear a word or a name and instantly see a colour.

Proprioception[31] is activated when users begin interacting with an exhibition that requires some form of input and haptically touching an artwork to create sound and visuals. Although not a new phenomenon (Stern, 2001; Ihde, 2002) it requires a lot of planning, design and experience from the initial developer of a digital artwork.

The *Playback* exhibition was designed so that anyone with no prior skills in music composition to become a creator and composer of a unique interactive sound work. 'Playing' is a focal point of interactivity where it offers a gallery visitor a different experience from what is routinely expected when visiting an exhibition (Appendix II: 15). Playing with sound enhances Helmreich's (2010) idea of a soundscape becoming 'haunted by the notion of immersion'. It alludes to Lefebvre's (1991) *Production of Space* as a place for 'logico-epistemological space, the space of social practice and the space occupied by sensory phenomena' (ibid).

This is a recognition of space as a multi-faceted environment that not only provides somewhere for a present-ness of action from anyone but also fulfils an expectation of promoting a sensory prospect for people within that particular space. It is necessary to point out that most of the discussion has been regarding an interior space where audience members have been inside and experiencing a setup created explicitly for a curated interior space. Promoting a balanced view and contrasting this is the

[31] Proprioception, or kinaesthesia, is the sense that lets us perceive the location, movement, and action of parts of the body.

conversation had with Lockwood (2015), who takes the concept of immersion out of the gallery context through the intention had with her sonic works:

> A listener's sense of immersion in my sound fields is very important to me. For example, in my three sound maps of rivers, my aim for myself is to record in such a way that I begin to sense the nature of the river, through my mind, which tracks the intricate acoustic details, and my body, which is absorbing all those sound waves as vibration. My aim for you, as listener is as above and in addition, that this sort of immersion might lead to a recognition of no separation between you and this river's energy. So it follows that I try to bring those sounds to you as directly as possible, in such a way that you are not aware of me as a presence in the work. I use no manipulation other than some EQ, sometimes a little reverb, often use slow cross-fades to avoid disturbing a listener's concentration, etc.
> (Lockwood, 2015)

Lockwood describes engagement as where connections are made between sound, the artist's intention and listeners' anticipation. First, Lockwood designates her own focussed listening on a place and records the present, capturing all sounds. Then, once back in the studio, the editing process is minimal to 'avoid disturbing a listener's concentration' (ibid., 2015). This suggests that Lockwood hopes and insists on the listener taking responsibility for their interactions with her work from the point of view of having a full sensory experience of what is provided.

It is necessary to recollect how this chapter began by describing the *Watch Play Listen* (2018) artwork while situating it in sound art terms

as an interactive installation. The project originated to test a process between participators, technology and the space exhibited under immersion. Permitting participants to play by clicking, dragging, pushing, pulling, and sliding (Figure 42: 41) in the work *Sounding Out* showed how the works were to be experienced. Only direct observation of this happening and watching people play with the interactive works and seeing how they were involved in making sound fulfilled the expectation of the project. Attempting to address sound art as a specific genre while proposing *immersion* as the overarching taxonomy has emphasised a need to rationalise this sound project from a perspective of technology. This is partly due to the artists discussed (their practice is technologically placed) and because the author has developed sonic works that are inherently computerised and digital in output.

Sounding In (Chapter Two) explores auditory notions contextualised in music, noise and space. It formulates the tripartiteness of the different lexical resonators, where *play* becomes an essential focus in the installation *Black Strip Put Your Card In* (Appendix II: 15).

Chapter Two
Sounding In

Sounding In

Exposing the development and construction of *Black Strip Put Your Card In* (2018) invites sound, noise, silence, technology, interactivity, music and installation as *Sounding In*. The concept of play was mentioned in the previous chapter, highlighting how important it is to this project, so addressing *play* as an overarching experiential understanding of culture, embodiment and exhibiting will be presented here. In addition, the corresponding chapters (three and four) will explore the additional practice-led works of the author, which further the understanding of sound, interactivity and technology.

Black Strip Put Your Card In (2018) transpired as a component of a broader comprehensive sound exhibition in Liverpool (*MA68*)[32] whereby the emphasis was purely on sound for tannoy, featuring street recordings and slogans from MA students, lecturers, musicians and artists. Before submitting work for this show, it was clear the emphasis was on the term 'sound collage', which immediately inspired what was being developed using the various technologies for sound creation. After listening to what the students had created while using the Wiimotes, *Black Strip Put Your Card In* (2018) was decided to use as the sound work in the group exhibition *MA/68*.

[32] https://www.alandunn67.co.uk/ma68handout.pdf Accessed 12th February 2018

The participants accomplished interactivity by using the gaming controllers through gestures, clicking buttons and generating different sounds (Figure 15: 15). Recording the audio from their performance illuminated the proposition of engagement in installation art and inspired the notion of sound immersion in the context of materialisation. It was evident both players were enjoying what they were doing (Figure 16: 16) and foregrounding this is a promotion of collaboration, connecting two people making a sound work. Both participators composed sounds by situating themselves in front of the projection and they watched the screen move to their different gestures.

The more they clicked, the more movement on the screen and the increased sound clips were generated. This was an actual sound collage in that their arm movements generated different pitches. At the same time, clicking the buttons produced randomised sound clips, and when listened to together, what they had created is defined as music in a gallery context. What is specifically evident is that they are not glancing down at a computer screen like Ryoji Ikeda or the expectation of laptop musicians such as the Female Laptop Orchestra.[33] Glennie expands on this point further by mentioning:

> We all have a tendency to conduct our lives, where we're looking downwards at the moment, we're on our mobile phones or on our computers…
> (Glennie, 2015)

[33] https://femalelaptoporchestra.wordpress.com/ Accessed 14th January 2020

Although Glennie mentioned this over 7 years ago, it is even more so apparent now due to the accessibility of digital devices being in the mainstream of society. It is recognised that at least 98% of the UK population has a mobile phone,[34] and whether or not this statement is true, it is evident when walking in any city centre, observing people on phones or other digital devices is all too apparent. The reason for mentioning this is due to society's knowledge of using and handling digital devices for a specific purpose and highlights the increasing importance of digital technologies into our daily experiences.

When describing a musical instrument, the association is one in which a performer plays by using a stick, bow or pluck to resonate strings, hit a stretched skin, as in a drum or by blowing into a hollow tube with designated holes for covering or leaving open. Whatever instrument is played, the sound is immediately outputted due to the shape and layout of the instrument, each with its timbre. Performers feel their instrument and know how to control it through practice and can recognise when playing the wrong note or the incorrect sound from reverberations in the space or the instrument itself.

Employing a Wiimote as an instrument disregards the original intentions of the handheld device, thus challenging the Wiimote concept as just a

[34] https://www.mobileuk.org/mobilefacts#:~:text=There%20are%2097.23%20million%20mobile,connections%20per%20head%20of%20population. Accessed 25th January 2021

gaming controller. How Wiimotes work is through Bluetooth technology[35] that communicates between different hardware and software; interactions connecting technologies are imperceptible, so by pressing a button or waving the Nunchuk, an event occurs, but there is no expected sound from this instrument, the sound is outputted from the speakers so performers control these devices differently from a recognised instrument. A different relationship is created between the performer's actions and the sounds produced because the performer of the Wiimotes does not need to have any necessary training or skill to use one. As Emerson & Egermann (2018) suggest, its function is to be used as a system for controlling sound synthesis to trigger computer-generated audio. This is evident in what was created for the exhibition *MA68* and the Wiimotes used for sound-making highlights this position.

The technology between Bluetooth, software and hardware was the omnipresent mediator summoned to execute the sound installation to function correctly. Completing the work required human input to manage the devices and standing within the designated space. They adopted positions side by side even though they were not instructed. It was obviously where they felt most comfortable, as they were now the performers and not acting as passive audience members.

[35] A Bluetooth® device works by using radio waves instead of wires or cables to connect with your cell phone, smartphone or computer. found in millions of products we use every day – including headsets, smartphones, laptops and portable speakers.

They played with the sound and it was evident the two performers were committed to finishing the work at their own pace and duration, which for the notion of being immersed in a digital sound environment, they achieved this. The expectation was for anyone with no prior understanding of this type of exhibition and *playing with sound* in a location reserved principally for visual art. For the participators, a new encounter prospered and to be provided with a gaming controller, which they both had used in its original context (Wii gaming), piqued their interest regarding their expectations. They did not know they would become the architects of interactivity, performativity, sound and compositional conceptions. They achieved a sense of relationship in working together as a duo to make their unique sound event.

What both had achieved was a form of experimental music performance parallel to recognised experimental composers, Dame Evelyn Glennie and Fred Frith, who have collaborated on various improvisery projects.[36] Questioning whether the participants of the *Playback* performance answered accurately to the sensory expectation of the author's intention. It can be argued that engagement took place as soon as they began gesturing with the Wiimotes, they had no preconceived notion as to what they were expected to do and both were laughing and appeared to be enjoying creating sound or music together. The argument can be from the

[36] https://www.youtube.com/watch?v=-X8v2q4wThA Accessed 7th May 2019

concept of embodiment and the sounds felt and heard in that space at that particular timeframe.

In *Blackstrip Put Your Card In* (2018), the author supplied the necessary tools for making music/sound interactively (Figure 16: 16). Taking part were two participants and when questioned on their particular skill base, one had some musical knowledge (playing the flute) to grade four at high school. The other had no musical pedagogy of performing any instrument but was inquisitive when seeing the Wiimotes. Both participators were questioned if they had used a Wiimote controller before; they accepted they had, but solely in a gaming context and could mention the games where gesturing took place to make the Wiimotes work. They both knew how to hold the devices and the instruction they received was to click on buttons randomly and to gesture as if playing a Wii game but obviously in a different context.

Once they had finished and the exhibition ended, listening to what was recorded was the following process. This was not a recognised song because it had a basic musical structure consisting of an intro, verse, pre-chorus, chorus and bridge. Instead, they had created sounds, changing from melodies to spoken parts (including the phrase 'Blackstrip put your card in' used as the title of their recorded audio) to noise, all frequently changing due to the amount of gesturing and clicking they were achieving.

Using this recorded audio then raised questions of ownership and production due to the author providing all of the programming and the sound files for the participants, their role was to complete the work in an improvisery manner. Ultimately, it was a collaborative effort between many parties. Blackstrip *Put Your Card In* (Appendix II: 15) was conceptualised as a performer generating a sonic work interactively without using recognisable musical instruments. Employing Nintendo Wiimotes to trigger sounds conditioned on gestures from a player indicates how the sounds are modified and outputted through speakers solely through the act of someone responsible for using the devices. Contextualising this within the paradigm of music history highlights a performer as someone sounding a recognisable instrument for the conception of sound making and playing. The performer within the Playback exhibition of their enactment subject can click buttons and raise arms to gesture as if 'playing' with the Wiimotes (their primary intention).

Participators were instructed to explore, play and perceive and had no set time to conclude, comparable to how an improvisery musician functions with no pre-determined goal and no time restraint, just discovering for enjoyment. Players began carrying out distinct movements to produce a Soundwork. Their arms were gesturing and they were moving their bodies and engrossed in what they were creating. They fulfilled the expectation of interactivity and observing the users in action provided the notion of immersion the author was pursuing with this installation.

The principal aim was to prepare three distinct software programs, all communicating to formulate a generative sound work managed using user input for interactivity. The motive for utilising a Wiimote was due to the device having a built-in accelerometer for tracking across three separate axes, X, Y and Z and motion sensing capabilities.[37] Due to it operating via infrared meant that it could be used to communicate with other software and hardware and the software application signifies how the Wiimote calibrates the sound heard in space but reliant on the gestures, determining which sounds are triggered and generated. For example, a distinct sound will be heard when someone swings their arm left (z-axis) and an arm swinging right (y-axis) constitutes an alternate sound, while an arm gesturing up and down (x-axis) triggers various opposing sounds.

Inviting perspectives from gaming (Fizek, Woletz, Bezka, 2015; Hart, 2014; Collins, 2013; Desainte et al., 2004) *play* as a cultural paradigm is a dominant online search return highlights the pervasiveness of associating play with culture. From a historical perspective, playing an instrument is recognised as a practice of outputting notated sounds on instruments such as guitar, piano, clarinet or cello. However, with the advent of digital technology becoming more mainstream and more people using music software to create their music/sounds at home, using a traditional instrument can be argued as becoming obsolete due to the accessibility of electronic devices for music creation and production. Mapping gestures of

[37] https://www.ign.com/wikis/wii-u/Wii_Remote Accessed 8th August 2018

sound using digital instruments, a disassociation appears between the instrument played and the sound produced by the computer because it is in a digital environment requiring speakers to output the sounds. This raises the question of what senses will be activated when presented with sound in this way. Considering how an aural experience aims to give spectators an auditory and visual involvement, does this justify their sensory needs? Returning to the question presented to the different artists, ‘Is immersion your goal with your artworks’? The replies varied from yes to ‘not really’ (Scarfe, 2018). Being immersed in what is rendered and being asked to take part, if conceivable, is an expectation in some installation environments.

Can this paradigm be achieved when there is no recognisable musical instrument to 'latch on to' (Landy, 2007) or 'cultural familiarity' (Alperson, 2002) with devices? Answering Landy's question regarding 'latching' on to something, it has already been mentioned throughout the last few paragraphs whereby the participators could instantly use the controllers provided. As a cultural expectation of familiarity, society is used to controllers in a gaming context and adults and children know how to click buttons, from mobile phones to television remote controls.

An embodied cognitive approach is recognised as interacting with the world while carrying mobile devices in pockets and using television remotes to switch channels. Observing a child with a TV remote invites

the pressing of buttons acknowledged through their cognitive feedback system. It is culturally within a child's DNA to have a natural predisposition to press buttons from a cerebral perspective, 'our fingers no longer grip, they click and drag' (Toop, 2000), and this inquisitiveness separates humans from other species.

Digital technology is at a phase where haptic[38] responses to instruments invites 'play' without touching any device. The Theremin[39] was the first instrument endorsing a non-haptic response to playing, and users moved their hands around an antenna and a loop to create a monophonic tone. More movement by the performer meant an increased variable of sounds. Even though the instrument's timbre remained fixed and resembled a violin string sound, performers could make notes durational depending on their hand position. Moholy Nagy (1923) announced an invention called the *groove-script* [40] then renamed it the *sound script*. This resembled the Theremin in that the *sound script* was a way of making sound without a traditional musical instrument.

[38] hapticˈhap-tik:relating to or based on the sense of touch: characterised by a predilection for the sense of touch.
[39] The Theremin was originally the product of Soviet government-sponsored research into proximity sensors. The instrument was invented by a young Russian physicist named Lev Sergeyevich Termen (known in the West as Léon Theremin) in October 1920.
[40] https://www.guggenheim.org/blogs/checklist/moholy-nagy-and-optical-sound-at-the-guggenheim Accessed 10th January 2019

The *sound script* brought forth the graphical geometric shape into the semiotics of sound generation. Thus, the ritual of playing with shapes carried sound as a process forward into the realms of gameplay. When a gamer sits down or stands before embarking on their game, they must carry out certain formalities, including:

- Turning on the computer or console.
- Using a controller or keyboard to login into the game by clicking on buttons.
- The game reacts to buttons pressed.
- Both hands haptically respond by moving joystick controls and button presses to make effects occur on screen.
- Interactivity and immersion are taking place due to focus on the screen of sound and visuals.

Compare this to the expectations of users in the interactive sound installations deliberated for this thesis:

- Participants may use a game controller to trigger sound events through the computer by clicking on buttons and gesturing with their arms.
- Visuals and audio are activated to create an event.
- Participants can activate different sounds dependent on the button clicked.
- Participants can freely walk around the space and click buttons, gestures with arm and hand movements are expected.
- Interactivity and immersion occur due to participants viewing and listening to what they are creating in a live context.

Suggesting associating a gamer and participant together in terms of the rituals to be carried out before undertaking their respective actions promotes a question, 'Why is a game controller utilised to make an event occur, such as in sound creation'? Reflecting on the *Gesturing* artwork

(Figure 8: 10), where there was no physical instrument or something to hold, yet there was still sound being created. The author's aim has been to engage participants through movement in the respective installations. The Wiimote is a recognised device that requires actions from the user through gestures. It was a natural progression from an artwork that could only accommodate one user at a time to an interactive work that could accommodate up to 6 users all getting involved. The difference between the normal function, when someone uses a gaming controller, is there is no *gameplay* involved in the Playback exhibition, denoting there is no end goal of a winner or point-scoring facility, such as in a 'Pareto optimal'[41] performance.

The exhibition *Playback* resonated most from the idea of an audience member suddenly becoming a creator and participator in a sound event for pleasure and vindicated Bolton's (2001) concept of *serious play* identified in forthcoming paragraphs. An online gaming environment promotes collaboration between players to achieve the adulation of beating everyone else and for good team play. In contrast, Playback promoted collaboration to promote the making of music and sounds together for enjoyment.

[41] An outcome of a game is Pareto dominated if some other outcome would make at least one player better off without hurting any other player. That is, some other outcome is weakly preferred by all players and strictly preferred by at least one player. If an outcome is not Pareto dominated by any other, than it is Pareto optimal, named after Vilfredo Pareto. Available at: http://www.gametheory.net/dictionary/ParetoDominated.html Accessed 14th January 2020

Participants utilised the inbuilt controller features and interaction parameters such as pitch, dynamics and LFO (Low-frequency oscillation) to develop new sounds. These were pre-programmed below twenty hertz and were randomised in the programming phase. As a result, a unique sound event was created every time, dependent on the movements of each participant. As mentioned, up to six controllers can be used simultaneously and automated to perform different sound procedures and trigger video events if needed.

This would suggest an ensemble of performers all working together as if a symphony, yet no recognisable instrument would be held. Playing with sound via the computer uses Bluetooth and Midi CC[42] (Appendix VI: 104) to generate embodied movement in space with a hand-controlled controller. Shinkle (2005) recognises gameplay from a player's perspective and immediately connotates immersion as an active practice, indicating that playing a video game involves both diegetic and extradiegetic activity.[43]

[42] MIDI CC definition: Musical Instrument Digital Interface Continuous Controller. The MIDI protocol contains a bank of parameters that can be set and varied over time. These parameters include things like Program Changes, Portamento, Volume, Sustain, Tuning and a host of other variables. Each one is assigned a number (e.g., Modulation = CC1, Pan = CC10).

[43] Diegetic sound is any sound that the character or characters on screen can hear. So for example the sound of one character talking to another would be diegetic. Non-diegetic sound is any sound that the audience can hear but the characters on screen cannot.

The player has a conscious interaction with the interface presented in front, *diegetic* and corporeal response to the gaming environment in how and where they position themselves, *extradiegetic* (ibid., 2005: 3).

Distinguishing the importance of corporeality and interaction posits how experience is recognised and shapes a sensory opinion fundamental to gaming and interactive works, where the desire to achieve a goal is the formed belief. When considering gaming interactions occur through visuals, sound and dialogue and players become immersed in what they see and hear presented in front of them. Playing with sound in video games, Collins (2013) mentions a perspective of how online gamers choose to listen or not to the sounds in the background while playing. This invites an argument for how much listening takes place and challenges the notion of being immersed when listening.

The layout appears to be the same whenever witnessing an orchestra in a chosen space. The audience sits facing the conductor and the musicians so members of the public can sit, observe and listen from a distance. Recognising how orchestras work on a hierarchical structure (Eno, 1976: 226) with the focus (lead) at the front and everyone else behind (other instrumentalists). It is significant to compare this arrangement to a two-dimensional painting where the artist has skilfully used perspective to make a point of view in the foreground and everything else is in the

background giving the artwork a sense of three-dimensionality. Although not picking out any specific artist, mentioning an art style using perspective is pertinent, as having specific rules gives the impression of creating space. As a viewer, the notion is to look into the front and back.

The Playback exhibition is intended to challenge the idea of audience members sitting and watching. There were no chairs; there was no place to sit. This was a decision by the artist so that anyone there could walk around and explore. This concept resonated in practice, especially when using Wiimotes as instruments, foreground, mid-ground and background dissolved so performers using the controllers in the space highlighted no hierarchical structure (Figure 17: 17). By allowing audience members to use gaming controllers where they did not have to stand in any specific area and move freely around a space challenged Eno's acknowledgement of orchestral layouts and structure.

Discussing Brian Eno's generative music or 'discreet music' (1975)[44] is an example of an artist utilising a system of music production having its referent in the music of Terry Reilly and Steve Reich.[45] Ultimately, the aim is interactivity and creating unique sound works not limited to a 'class of goals' (Eno, 1976: 227). This is vital as it recognises the compositional strategy if the goal is excluded, meaning that the idea of 'goal setting' is

[44] https://daily.bandcamp.com/lists/generative-music-guide Accessed 10th March 2020
[45] https://londonsinfonietta.org.uk/whats-on/steve-reich-terry-riley Accessed 16th May 2019

not a directive and is relatable to a sonic work as having no designated ending.

When asking audience members to participate in the Playback exhibition, they needed to be permitted to explore with no time constraints (apart from the closing time of the gallery). The audience was to become participators (if they wanted). Using Wii remotes redistributed as musical instruments rather than gaming controllers demonstrated a blurring of genres and a contrast to generative digital systems.[46] They became the artist, musicians and originators of something new, where they were responsible for their actions within a specific space. It was not just the redistribution of a gaming device. It was also the re-classification of who the artist was, as it was not the original artist who was completing the work. Was it someone else?

If categorising the creator, methods, materials, and work, the artistic process is generally an artist's activity organising their ideas to generate plans and strategies for making artwork. Bolton's (2001: 32) model of reflective practice identifies three foundations that support the notion of what an artist goes through in the art-making process and suggests:

[46] Generative art refers to art that in whole or in part has been created with the use of an autonomous system. An autonomous system in this context is generally one that is non-human and can independently determine features of an artwork that would otherwise require decisions made directly by the artist. In some cases the human creator may claim that the generative system represents their own artistic idea, and in others that the system takes on the role of the creator.

- Certain uncertainty
- Serious playfulness
- Unquestioning questioning

Acknowledging the first foundation, a process of unknowing and having no clear goal creates a sense of uncertainty while approaching a provocation. Is this the correct way or where to proceed when developing an artwork? Upon observing the people who took part in creating *Blackstrip put your card in,* the original intention of the artist was to get a hands-on interactive element into the exhibition rather than a passive 'just looking' experience. Watching people laughing while playing and making sounds addressed the notion of the maker/creative practitioner as the one with all of the answers.

Serious playfulness refers to a willingness to 'experiment' and accept reflection as a process of listening and looking when unsure of what is being developed. Pertinent queries refer to a procedure of examination when confronted with a problem. Bolton makes a statement that 'It is our questions which determine which way we will set out across the moorland and therefore what we are likely to find along the way' (Bolton, 2001: 34). What Bolton is alluding to here is the artist is making progress through a process of exploration, it is evident when creating art whether it is in the plastic arts or digitally inspired, artists make decisions and ask questions right up until the point where they do not want to continue, suggesting the

work is complete. The three foundations set out by Bolton invite constant reviewing and reflection. At the same time, serious playfulness establishes from the point of view of an artist playing to develop work for audience members to complete. This suggests a hands-on attitude to acknowledging the interactive installation art.

The expression *serious* represents an altered understanding and proposing play for enjoyment becomes more about the artworks presented and the notion of relational exploring to formulate ideas as artworks. Promoting art that is inherently social and fosters collaboration between individuals is no more apparent than in what is acknowledged by Bourriaud (2002):

> The possibility of a relational art (an art taking as its theoretical horizon the realm of human interactions and its social context), rather than the assertion of an independent and private symbolic space, points to a radical upheaval of the aesthetic, cultural and political goals introduced by modern art.
> (Bourriaud, 2002: 14)

Art having a social and political focus clarifies the proposal by Bourriaud. He further claims that 'the role of artworks is no longer to form imaginary and utopian realities but to be ways of living and models of action within the existing real' (Bourriaud, 2002: 15). When Bourriaud was describing *Relational art*, he was coming from the point of view of the artist no longer working in isolation in their private spaces. They were opening themselves and their art process to everyone, so the art becomes

inherently social when more than one person is involved in the practice. What is suggested is one point of view and if accepting Kosuth's (1969: 158) assertion that 'the importance of all art is the ideas', then what would occur could be the notion of no artwork at all because ideas can be forever stored in the brain and not outputted for an art-loving public.

Similarly (Lewitt, 1967) claims, 'in conceptual art, the idea or concept is the most important aspect of the work'. Again, this is from a period of art production where ideas were the usual way for artists to express their practice. What Bourriaud did in the late 1990s was to bring a social, collaborative aspect to art. Ideas were still important, but more so at this time was the public audience getting involved.

Distinguishing embodied sensory knowing and learning occur as people engage with their everyday environments. Consider any large city, including Liverpool, where this study is predicated. People walk, run, amble and explore the different streets. There is constant engagement through the acts of walking, talking and listening and the ultimate source of all meaning and value from a phenomenological point of view is the lived experience of human beings. Embodiment from the perspective of creator/participator/listener proposes the fundamental grounding indicating a *recognition* identified with the terminology of (Husserl, 1960: 36), who recognised phenomenology as a positive alternative to what was occurring in the sciences at that period.

Generating an interactive work consents users to play rather than have sedentary experiences and argues ontologically for involvement, preferable more than passivity. For example, creating the installation *Black Strip Put Your Card In (2018)* was to designate embodiment and percipience, meaning users needed no prior knowledge of hardware or software to engage and only required them to pick up a handheld device to press buttons. By doing this, it triggered events and allowed immediate feedback through sound and direct experience and was an expectation rather than a secondary thought. When Cage's premise of people 'doing it' as 'invitations' (Ross, 2010) denounced perceptions of someone as a passive listener to make it more about active engagement than not getting involved in any way.

Connecting the notion of engagement to artists Ryoji Ikeda, Carsten Nicolai, Janet Cardiff and Francisco Lopez, their art-making experiences are argued through digital auditory channels. Deliberating artworks by Ikeda and Nicolai are due to the relational idea of how the body is located when visiting their installations. Ikeda's (2012) *The Transfinite* (Figure 49: 84) and Nicolai's (2000) *cyclo.* (Appendix IV: 89) demonstrates how technology, as well as visuality, has created an assembly for immersion, interactivity and auditory waves as embodiment.

Mentioning how interactivity is often 'under-represented' (Maes, 2013) when describing sound art practices. Maes (2013) recognises how some

sound works provide only a limited form of 'touching' and compares this to a visual artwork that emphasises passively observing. However, a more profound sense of cognitive understanding is felt when more senses are activated rather than just emphasising looking. Langheinrich (2016) acknowledges interactivity from the aspect of all humanity and suggests:

> I very much agree to the term consumption, and this includes work asking for or even happening only if there is interactive contribution. Interactivity is eventually a form of a "consumable", defined and labelled with a price system, as such offered on a market, may it be the off market, or the off-off market; offered, assessed in terms of market value-categories like all aspects of human relationship, including our body, age, sexuality and soul…
> (Langheinrich, 2016)

Regarding interactivity as a 'consumable', it is a product that can be used and discarded, has a shelf life, and encourages recognition of surrendering the body as a passive observer. Determining compositionality and enabling the performer to take ownership, Cage relinquished direct control over the artwork and encouraged challenging the conventions and his *4'33"*[47] first premiered by David Tudor on August 29, 1952, in the Maverick Concert Hall, Woodstock, New York is a recognised example of this. The performance was a different form of interactivity as the expectation was the performer at the piano when it was the audience members interacting and creating the sound work. Less than twenty years later, Jack Burnham's exhibition *Software* (1970) in New

[47] https://www.youtube.com/watch?v=HypmW4Yd7SY Accessed 3rd September 2020

York challenged expectations when visiting a public event. The premise was presenting artworks created according to a fixed plan and interactivity and described as a *new meaning for art*.

Burnham endeavoured to show how technologies were used as a form of collaborative art process rather than as finished artefacts. In the introduction of the exhibition (Chapin, 1970), describes how the concentration of the exhibition was on the interaction between people and their electronic and electromechanical surroundings. Accepting the show was fifty three years ago still resonates today in curatorial practices from the point of view of the importance of the audience connecting with the artworks presented.

What Burnham did was to confront relations between visitors, curators, artists and spaces to exhibit. Referencing *software* as an interactive metaphor immediately generated a relationship between the system (computer) and human actors (audience). When presenting an object as a completed artwork and not the primary intention is similar to conceptual art, which is concerned with the idea rather than an artefact. Revealing compositions inspired by sound (Appendix II: 35), specifically digital. The aim was to promote Galanter's (2016) concept of practical complexity, where a generative system described as highly ordered yet has the intricacy to look after itself was developed autonomously. Each of the compositions was developed using specific software with an emphasis on

the software having some form of autonomy so that the technology and the person using the technology collaborate. Sufficient complexity operates in the software program when randomising different scenes to be set off at separate times. The only way to achieve this is through understanding the programming and expert knowledge of the software. In the software used for the compositions, a complex mix of order and disorder merits the program having a combination of user input and computer-generated information, which invites indeterminacy, randomness and generativity and furthers the argument of 'life requiring a mix of order and disorder, to maintain integrity and survival, and disorder to allow flexibility and adaptation' (Galanter, 2016: 157).

Producing, delivering and generating 'interactivity' as the over-arching metonym allows users to play with specific artworks in the *Playback* exhibition and offers a changed frame of reference from the practice of Ryoji Ikeda and Janet Cardiff. Acknowledging the concept of 'play', from a gaming paradigm, as the medium for output in a sound installation, the argument emphasised how providing a gaming controller changed it to an instrument for making music. Observing participants producing a sound work altered the perception of what it means to play with no recognisable instrument at their disposal and Noble (2012) claims that 'helping people make novel sounds can be a sort of play', thus *Blackstrip Put Your Card In* demonstrated how providing a wide

variety of sounds to choose from merited a unique sound event from the participators.

Experiences through sound, vision, touch, smell and somatosensory immersion are existence not on an existential level but empirically apparent and factual. Pythagoras[48] identified concepts of acousmatic sound, where the sound heard is devoid of all reference. If an individual cannot see where the sound is coming from, they cannot attach an object or meaning to what is listened. Favouring one sense over another ostensibly offers humans an experience of life inherently unique to everyone, shaping what one does.

As a Husserlian (1913), phenomenological position, perception and object are acknowledged through a 'bracketing' of references. Grouping or bracketing presence into a philosophy whereby the self is the only existing *thing* contradicts the construct of 'Dasein', distinguished by Heidegger (a student of Husserl). Recognising, 'This entity which each of us is himself…we shall denote by Dasein' (Heidegger, 1927/1962: 27) purports to be a recognition of the self as 'being within' at this place and at this time and is significant in that it relates to the human body as not just

[48] Acousmatic sound is sound one hears without seeing an originating cause. The word *acousmatic*, from the French *acousmatique*, is derived from the Greek word *akousmatikoi* (ἀκουσματικοί), a term used to refer to probationary pupils of the philosopher Pythagoras who, so that they might better concentrate on his teachings, were required to sit in absolute silence while listening to their teacher deliver his lecture from behind a veil or screen.

a *thing* mentioned by Husserl. The body is a vessel that absorbs different perceptions. One of those is through the auditory channels and 'In listening, one is engaged in synergy with the world and the senses' (Dyson, 2009: 4), including proprioception (Davidson, 2010:4) which is the sense that lets us perceive the location, movement, and action of parts of the body. Mentioning proprioception highlights the importance of this sense as it helps when judging objects from the point of view of size, weight, scale and material. *Proprioception* is the body awareness sense permitting the ability to judge the body within space so that the sensory receptors that cover all aspects of the human body, including skin, muscles, and joints, become activated as a sensory object. Describing the olfactory sense, Machon (2013) recalled:

> All of one's senses heightened it is difficult not to become acutely aware of the natural aromas of the space, of polished wood floorboards, of dank cellars of earthy green woods. (Machon, 2013: 76)

Activating the smell sense invites people to breathe in through the nostrils and acknowledge their environment. Even when walking into the Art school at LJMU, there is a distinct smell, and every room has its aroma. It can invoke a whole repertoire of emotions and correlating senses as *somatic*[49] sensations (Patterson, 2009: 768) argues for a definition of haptic knowledge to provoke an understanding of the importance of touch.

[49] Relating to the body, especially as distinct from the mind.

Haptic, from the Greek word 'haptikos' and 'hapteshai', is to grasp, sense and perceive the body. Haptic emphasises the tactile perceptual experience of the body as a whole (rather than just the fingers) and indicates the faculty of bodily kinaesthetics (locomotion in space). Driscoll (2011: 108) identifies the haptic sense as the oldest, most comprehensive and most complex of the senses, with receptors embedded throughout the body from the skin into joints and muscles.

> Touch is the guiding sensation in infancy along with, to a lesser extent, sound and smell. It is touch that orients the sense of sight. Together with the social incalculation of spatial cues, touch enables the otherwise incomprehensible quilt of light and dark colours compromising the visible world to acquire meaning and distinction.
> (Kyong & Keenan, 2005: 25)

Touching grounds the aesthetic experience in muscle, bone, gut and heart. Touching is the body asking questions and finding answers, not a bloodless, intellectual exercise but a 'somatic sensory knowing by the body' (Driscoll, 2011: 111; Patterson, 2009). Developing an art practice inspired by sound and music offers an embodied somatic experience and Leman, Lesaffre & Maes offer their insight:

> Music stimulates senses, enriches insight, sharpens identity, gives strength, reveals community values, and deepens social connections; it addresses the individual person as well as the social group; practicing music requires sophisticated sensorimotor skills as well as theoretical insight.
> (Leman, Lesaffre & Maes 2017)

Continuing with a sense focussed recognition, the concept of music known today as 'vocal or instrumental' sounds (or both) is connected in such a way as to produce emotion in the listener where the beauty of form, harmony, and expression is recognised. Sounds lend themselves to music and are pleasant (or at least tolerable) when played in a sequence (called melody) or in unison (called harmony). It takes a listening ear to attend and distinguish whether the sounds heard are harmonious or not. Lockwood (2015) amplifies this further:

> Music and sound art each have a sort of temporal context: music tends to happen in a rather short period of time, (other than Satie's Vexations and its offspring of course, not to mention La Monte Young), and generally on a specific date whereas sound art is often presented in spaces which allow for long periods – days, weeks, months and sometimes years, like O+A's installation, Harmonic Bridge, at Mass MOCA. Music is not often structured interactively, in terms of listeners, whereas sound art is quite frequently and more easily lends itself to that, as with many of Liz Phillips' installations. In terms of physical/spatial context, distinctions have fallen away. Music is made in every possible environment and structure, as is sound art – which is truly liberating.
> (Lockwood, 2015)

Music invites interactions, reciprocating as an embodied contributor with the intent of making a sound of sensorimotor, cognitive, emotional, and energetic abilities. Describing the 20th-century, Huxley (1950: 3) recognised the 'Age of Noise' through physical, mental and desire as the most critical factors, while The *Art of Noise* manifesto by Luigi Russolo (1913: 10) acknowledged complicated polyphony and a variety of timbres and colours supported through complex, dissonant chords, inspired by

industrialisation and inventions. It was while creating a series of (Intonarumori)[50] noise instruments to provoke 19th-century classical sensibilities that promoted inharmonious intensity and expressed what Russolo established.

Music was changing, as were ways of listening and mechanisation and industrialisation became the music of the time. Moreover, the advent of the tape recorder suddenly allowed musicians and composers to forget notation and to record directly into the machine; thus, Russolo's manifesto sounded out music to blur boundaries between music as the principle of all familiarity and noise, another form of experience to be appreciated.

Non-musical sounds accepted by Cage, Schafer, Schaeffer, Boulez, Stockhausen, Riley and Varese woke up the established listening practice as a modernist construct. They were later developed into sampling in the 21st-century. Challenging listening practices, including performing, participating, and composing, became the accepted culture of Europe and America. Suddenly noise or *Organised Sound* (Varese and Wen-Chung, 1966: 18) became the immersive dominant factor of a century stimulated

[50] The Intonarumori were a family musical instruments invented in 1913 by Italian futurist painter and musical composer Luigi Russolo. They were acoustic noise generators that permitted to create and control in dynamic and pitch several different types of noises. Available at: https://www.thereminvox.com/article/articleview/116.html Accessed 14th January 2020

through industry, technology, war, famine and the birth of the *digital revolution*.[51]

Russolo's rhetoric of every manifestation of life accompanied by noise has 'for our ear what the eye is to our familiar sight' (1913: 13) queried the politics of looking commencing from an auditory perspective. An age of noise in the 21st-century echoes a time of the past, whereas the digital technology industry continues developing a high-tech scape of binaries between sound and noise. While emphasising noise as a political bargaining tool, the period of industrialisation and urbanisation to cybernetics and a technologically driven soundscape permits consumers to create order from noise (ibid.,1913).

Immersing humans daily, whether allowing it or not, is always everywhere, enveloping the body. From listening to different genres of music, many songs are dominated by digital synthesisers and sounds are stretched beyond their original frequencies. Usage in the late 20th-century identified synthesised sounds increasing in popularity due to advancements in software and hardware and expanding electronica into the 21st-century. 'Was ist Klangkunst' alternatively, 'What is Sound Art' is a good foundation

[51] The Digital Revolution began between the late 1950s and 1970s. It is the development of technology from mechanical and analog to digital. During this time, digital computers and digital record keeping became the norm. The introduction of digital technology also changed the way humans communicate, now via computers, cell phones, and the internet. This revolution led way to the Information Age. Available at: https://www.worldatlas.com/articles/what-was-the-digital-revolution.html Accessed 12/8/18

for this dialogue. Sound art has transgressed to music (Kahn, 1999) relatively to the expansive negligence of what academia offered in terms of musicology. Scarfe (2015) acknowledged:

> It might have to do with practicalities: digital media was becoming more accessible, so it was easier to collect, share and edit sounds. Perhaps to add to that, there was a concern the immaterial nature of digital media. I remember David Toop writing in the Sonic Boom catalogue: 'our fingers no longer grip; they click and drag', as if emerging digital environments threatened our corporeal identity. Being invisible and of the air, sound seemed to be an appropriate medium through which to explore these concerns, for me at least.
> (Scarfe, 2015)

Where sound starts, ends, or in the middle is investigated and having no indication or pointers introduces a different encounter on how to listen. Scarfe alludes to the immaterial essence and posits sound as invisibility, yet as a medium, it is highly manipulatable as a material. The sonic compositions in (Appendix II: 35) assist in Scarfe's metaphorical view of 'clicking and dragging' due to how the sound works were conceptualised for explicit digital environments.

Exposing sound as the overarching taxonomy of noise, silence, technology, interactivity, music, and installation from the *Blackstrip Put Your Card In* (2018) perspective, The *Sounding In* chapter addressed *play* as an understanding of embodiment between the installation and the users.

Observing participants in action fulfilled the expectation of the original proposition, where gaming controllers, technology and performers (namely audience members) arguably outputted sound as music. Inherent in this chapter was the emphasis on play as a social construct where anyone with no prior training in constructing sound as a composition could come and explore. The sonic resonances generated sound with noise due to varying pitch frequencies and outputted what could be considered music. The performers played out and varied their movements in the space to alter the sounds they wanted to hear. Although the work that was produced was complete, it was only complete when they decided to stop. The more movements they made, the more sound variations were outputted, and some of the sounds clashed where they could be described as just *noise*. An element of sound noise is revealed in the forthcoming chapter due to its influence on the practice-led work, compositions, and the cultural influence noise possesses in society.

Sounding Noise

Hearing noise is an attempt at what psycho-acousticians and auditory neurologists term 'localisation'. Biologically, localisation decides whether hearing noise is dangerous, potentially harmful or predatory. By the eighth foetal week, it is recognised that the development of the entire subcortical auditory structure is created and rationales an argument for hearing as the first sense developed prenatally by humans. Hearing is one of the earliest

developmental senses and like smells or olfactory senses, they invoke activity in the primal parts of human brains that pictures do not (Farnell, 2010: 110). When born, infants have the auditory ability to recognise 'consonant pleasant sounding intervals and dissonant intervals' (Trehub, 2003) and a perceptual acknowledgement is developed to distinguish differences between music and noise. Hearing and sound enhance a distinction and dominance sound has over vision and supports an argument to localise sound as a 'signifier' (Schnupp, Nelken, King, 2011; Trehub, 2003). Kahn's (1999) book, *Noise, Water, Meat* is from an expectation of noise as a signifier and an inference of water sounds of altered precepts, including:

- Acts of interpolation and immersion
- People and languages
- Militarism

Understanding that an inference of noise infiltrating the quotidian correlates with immersion as an act. This point of view attributes an examination of perception. It recognises immersion as 'always a background dish and din and clatter of gregariousness' (Kahn, 1999: 23). Society or explicitly, the social world already existed before immersion. *Noise* is an unwanted sound judged as unpleasant, loud or disruptive to hearing. From a physics standpoint, noise is indistinguishable from sound, as both are vibrations through a medium,

such as air or water. The difference arises when a brain perceives and receives sound linking directly to the physics of sound and how noise exists, and as humans, when an unpleasant noise is heard, an attempt to shut out the sound is made by covering the ears.

Consistent with (Elert, 2017), noise is disordered sound,[52] whereas Kahn (1999) clarifies noise using the adjective and verb as sounds through the noise. Aurality is recognised as a phenomenon sonically contrasting with the culture of visuality (Labelle, 2006). While constituting this as not an opposing force (Kahn, 1999: 3), analysing each distinct phenomenon and exploring each measure individually before embarking on the argument of noise and music. Noise is when tuning an analogue radio or television to an empty frequency and is attributed to physics, identified with the colours white, pink and brown.[53] It is the sound of rain hitting the ground, builders using machinery, air conditioning fans, or crowds applauding. These are familiar noises encountered daily, and introducing 'noise' into the compositions (Appendix II: 35) and *Blackstrip Put Your Card In* (2018) evidences a listening experience of noise as music.

Building on the practice of Oliveros (2005), who advocated that the 'ear hears, the brain listens and the body senses vibrations, Kassabian (2013:

[52] https://physics.info/music/ Accessed 16th October 2020

[53] There are a variety of noise signals that can be used to help with a variety of situations in daily life. White noise is the most popular colour of noise that people have heard of and even listened to but there are two other colours of noise, pink and brown that can also be used to help in relaxing and soothing. All colours of noise are sound frequencies and ranges that the human ear can hear and each can be more effective in various situations than the other. Available at: https://www.quiethomelab.com//types-of-noise/

7) questions, 'Do we hear or listen'? Hearing and listening are effective means for humans to filter out particular sounds. At the same time, Kassabian (2013: 8) indicates that music is ordered and noise is random and backs up his initial statement of people finding music irritating and wrong in specific environments. However, Kassabian does not support his statement and corroborate the argument further, whereas Norman (2004) argues for noise contrarily:

> Noise is a disruption to the current flow. Noise sends us skipping back and forth between tracks, between endnotes and the body of the text. Noise is the unexpected glitch. Noise is a song you heard by accident and without desire. Noise is in no order. Noise is an annoying subtext and deliberate (or non-deliberate) mistakes. Noise is unwanted aggravation. Noise is beyond our control. Noise is thwarted expectations. Noise is overload. Noise is an in-your-face attack an affront to reason! Noise is every crappy love song you've ever heard.
> (Norman, 2004)

Before compositions become labelled as music, they begin as a wave, a sine wave of primary matter. Different pitches become ostensible from these waves by changing the frequency, and tones are developed for manipulation. Deliberate noise or sound before revealing how much music influences both areas. Voegelin's (2010) treatise on *Noise and Silence* expands the dual relationship by comparing them to music, as both require an auditory sensibility to recognise how and what to listen. It is maintained from an evolutionary perspective of sound having at least two distinct qualitative dimensions (Forrester, 2012), one nurturing, supportive and indicative of comfort, care and safety. The other is

dissonant, disruptive and likely to provoke anxiety, enhancing the argument for sound as music and noise as two distinct categories. Iounna Kouvaras (2016) argues, 'I think it deserves its genre labelling, as I see it quite distinct from other art forms'. Sound as noise involves listening to what satisfies the auditory canals. Whereas Cox (2009: 23) associates background noise as fragments, uninterrupted, perennial, and it is the sound we hear daily as existence.

It is while recognising materiality as composed of matter that sound as an ambiguous invisible substance should imply non-materiality yet is often described as *physicality* (Lockwood, 2009), *spatiality* (Gallagher, 2016) and *perception* (Nudds & O'Callaghan, 2006*).* The optical visual realm has primacy on senses of materiality, yet physics defines *sound* as waves requiring a medium to pass through to make the waves audible. It is pertinent to mention how infrasonic sound below audibility to human hearing (under 20Hz) is a frequency described as felt and not heard. In contrast, ultrasonic sounds above 20,000Hz are used in medical practices and the same system bats use to detect objects distantly.[54] The human middle ear apparatus makes it impossible to hear frequencies classified as ultrasound or infrasound (Augustine, 2018) and adds to its invisibility as a medium, omnipresent, not seen, but heard and felt.

[54] https://www.wildlifeonline.me.uk/questions/answer/what-is-echolocation-how-do-bats-use-it Accessed 7th January 2018

La Monte Young is known for extended durational practices, which Graham (2004: 112) describes as interfering with brain time and does not offer instantaneity. Compared to the expectation of the exhibition, *Playback has been created* for spectators to interact physically with the work. This contrasts with La Monte Young's extended time paradigm of *Dream Music,*[55] whereby the influence of drones and sustained tones offers a listener a type of music where the expectation is to listen and feel the sounds enveloping the body. Graham (2004: 112) understands physicality with La Monte Young's practice, stating:

> The sound is bouncing off the side of the walls and the architecture as you move around. You are actually inside the production of sound by the architecture as well as by your own perceptual process. The sound is material.
> (Graham, 2004: 112)

Making an invisible wave suddenly vibrate through a substance brings sound into materiality. Enhancing a material view of sound is promoted through Ryoji Ikeda's current work, which features stark black and white geometric shapes over a minimalist soundtrack, embodied as data expositions and noise. Just like in La Monte Young's work, the body is meant to be enveloped materialistically whereby the senses are overcome to the point of, 'how much can be managed when bombarded with black and white shapes accompanied by sound'? Nicolai's clinical use of sound as a material permeates his music production, and an illustration of this is

[55] https://www.soundworks.app/post/la-monte-young-dream-music Accessed 19th January 2019

the soundtrack of *The Revenant* (2015), composed by Ryuichi Sakamoto and Bryce Dessner.[56] The music is stark, minimal and durational with repeated phrases, combining Cello with Electronica as a support to the expanse of the environment. Both sound and place complement each other, where sounds become visual representations, and a dichotomy of the scenes (cold and brutal) contrast with the beauty of the soundtrack. Analogous to this is visual listening and auditory seeing**,** which refers to the primacy of reality established in the visual field.

Identifying vision as the most heavily used sensory modality in analysing human behaviour (Ali Salah et al., 2010) emphasises how visuality takes precedence for those with no impairments and who operate in an object-orientated world (Ong, 1971). According to (Wang et al., 2008), it can be argued that the visual cortex may be connected to sound processing as a multi-sensory input whereby more than one sense is activated. Therefore, belonging to optics invites an auditory modality to enhance the perception of the sensory fields explored as a way of seeing sound and listening through visuality.

Auditory listening is only evident provided hearing is sufficient to pick up any sound. Using a sight-focused intention to pick out forms as shapes and make sense of objects is easier when a physical object is presented in front and complete view. Looking invites understanding the surroundings

[56] https://www.youtube.com/watch?v=VvP-DhS6fhQ Accessed 13th Novemeber 2018

and visualising relations between space and environment. While having the ability of vision, shadowy outlines become explicit, and sight as a primary sense in Western society is used to explore and experience colour as a complex set of relations offering an observer an unbiased view of what is in their field of vision.

Describing how the visual realm or *occularcentrism*[57] favours the eye over the ear (Synnott, 1993: 208) and insisting that 'whereas one can observe whether someone is looking at a visual artwork, there is no way of seeing whether someone listens' (Neuhaus, 1994b: 3). This is the difficulty with an invisible medium where the dominance of the visual tends to take precedence even though there is no hierarchy of the senses. 'Seeing' sound is still biased towards visuality, and Sternberg and Sternberg (2017: 72) make the point that 'vision is the most widely recognised and the most widely studied perceptual modality' whereas Lopez (2017) has a different perspective:

> According to McLuhan, that supposed age of occularcentrism started its decline decades ago. From my perspective, the most interesting and substantial developments for sonic/listening creative strategies are not related to current futile paradigms of resolution (3D, 4D, VR...) and information mapping (data 'sonification', 'sound visualization'...) but rather to the work with situations, conditions and expectations for

[57] A perceptual and epistemological bias ranking vision over other senses in Western cultures. An example would be a preference for the written word rather than the spoken word (in which case, it would be the opposite of phonocentrism). We say that 'seeing is believing', 'see for yourself', and 'I'll believe it when I see it with my own eyes'. Available at: http://www.oxfordreference.com/view/10.1093/oi/authority.20110803100245338 Accessed 5/7/2018

> listening or experiencing sound. That leads to a very eclectic and absolutely time-transversal imbrication of tools and concepts from very different ages. We don't need 'new technologies' as much as we need new ways of meaningfully imbricating the accumulated history of creative tools.
> (Lopez, 2017)

It is interesting how Lopez believes that the current creative outlet of VR, 4D and 3D computational mediated modalities are not the best strategies for experiencing sonic listening, and he may have a point. What each of these technological paradigms offer is a way of listening from a subjective foundation. However, by mentioning them as ‘futile’, Lopez points them out as just ‘gimmicks’ and that offering a sensory modality should be through situations, conditions and expectations when experiencing sound. Technologically, they deliver an immersive experience for the listener, but they do not answer the queries regarding visual listening and sonically seeing.

Physiologically hearing with eyes is not likely, yet metaphorically it is accepted. Look at an object and imagine its sound; for example, hitting a drum by beating it with a stick or hand creates a distinct noise and once already seen and heard, a drum beaten is a picture of a sound played out. We can now imagine sound and hearing with eyes or an intuitive eye. A sonic/visual awareness makes the senses work cognitively and in unison. According to (Ludden, 2015), each sense modality affords an aspect of

being human while not experiencing senses individually. The brain engages with vision and hearing to create a conscious life experience.

To listen visually is to sense sound/noise cognitively by attaching it to something already understood to possess awareness. Hearing a sound and bestowing it to an object is listening to the self within, disembodied from other voices. It occurs as soon as we open our eyes and can see for the first time, and we begin to objectify the world around us.

When Lopez (2017) requests listeners/viewers to wear a blindfold so they are immersed in his sound performances, he removes a perceptive quality inherent in all those willing to follow his instruction. Although this is not compulsory, he supports it with it to aid 'concentrated listening'. Auditory seeing is related to visuality but is a change in sense organs and a separate way of accepting sight and sound. Aural seeing is activated when hearing a sound or noise. An immediate reaction would be to associate this with the cultural familiarity of an object. A trip down memory lane, or to trigger an event or piece of music, to aid in visualising another moment.

This promotes sound and noise as a dominant sense and challenges the ocular-centric modality first conferred by McLuhan (1962) as a visual metaphor for Western society's way of seeing. Investigating noise from an artist's perspective and the philosophical comprehension of the medium,

this chapter has petitioned noise as not constantly 'jarring' to ears but as a musical component, adjusting the frame of reference from colour and visuality to a mechanism of choice for composing and manipulation. In making sound works. It was while utilising noise in two of the compositions, *Blackstrip* (Appendix II: 35) and *Move Away* (Appendix II: 35) that confirmed Russolo's and Cage's theories of what signifies sound as being like music and noise. Further supporting this is the knowledge gained on Nicolai's and Ikeda's sound visualisation, whereby they both use noise as a predominant feature to accompany the visual aspect of their practice. Compare this to what has been formulated currently and highlights a distinct progression of a multi-media oeuvre and will be considered in the following chapters.

Sounding Space

> We regard as simple givens: for example, between private space and public space, between family space and social space, between cultural space and useful space, between the space of leisure and that of work. (Foucault 2002: 230)

When the artists interviewed to support this research were asked, ‘can you expand on the importance of space (head, architectural and resonant) when presenting an intermedia piece for public consumption’? The nature of the question was designed to elicit responses concerning their knowledge of exhibiting in particular spaces. Langheinrich (2017) prefers

to approach this question from the point of view of consumption and interactivity, ‘I very much agree to the term consumption, and this includes work asking for, or even happening only if there is interactive contribution’. Whereas Stollery, Scarfe, Lockwood and Kouvaras all recognise the space as being vitally ‘important’ in the presentation of sound.

When proposing sound installations, architectural space and headspace become significant factors for the artist using the space and those who have to experience the art. *cyclo.* (2000)[58] is a collaborative research project by Ryoji Ikeda and Carsten Nicolai, emphasising the concept of visualising sound. In a multi-sensory and immersive event, *cyclo.* is accomplished against a backdrop of dynamic visuals generated through real-time sound synthesis (the electronic production of sound where no acoustic source is used) and analysis. What is fascinating about this work is that both artists are sitting in front of a large projection screen, operating sound and visuals through a process as laptop performers. Their bodies are silhouetted, so outlines are visible to the audience, contrasting with the stark white lines of the animations. Sound and image are synchronised, featuring an audio-visual spectacle and the event is orchestrated with the touch of buttons on a keyboard.

The art installation or performance is arguably immersive, suggesting that to experience it fully requires the active participation of a listener/viewer.

[58] https://forma.org.uk/projects/cyclo Accessed 23rd April 2019

The question arises, though, 'Is it a fully immersive event when there is no expectation of physically touching with what is it presented' and only the auditory and visual senses are required? *cyclo.* is designed to visualise sound through shapes known as audio metering and labelling it as multi-sensory (Ikeda, 2000), acknowledges it from the view of ocular and auditory perspectives. The event occurred in a spatial darkened room. It promoted a sense of immersion, where sight becomes the less dominant sense to sound, and the architectural space presenting the work becomes a leading influence.

When discussing space in the 21st-century, it connects from an architectural view to promoting social, head, floor, void, expanse, mental and blank space. Although not exhaustive, many more definitions from both Cambridge and Oxford dictionaries dedicate definitions of space that are too many to mention here. Distinguishing space from a phenomenological ideology ascertains the notable contributions to knowledge and understanding received as a 21st-century theory in and out of the gallery. An acceptance of space as *Heterotopic* (Foucault, 2002), space can be demarcated or undefined; it is still a space indicating liminality, established as the threshold between two places, states of being, or eras. It is (Shields, 2013: 12) who invites space as having diverse connotations, including 'duration, linear distance, parking or relationship area, in two and three dimensions whereas Soja (1980: 210)

establishes space as something tangible to be grasped, yet is outside what is expected of spatial relations:

> while such adjectives as 'social', 'political', 'economic', and even, 'historical' generally suggest, unless otherwise specified, a link to human action and motivation, the term 'spatial' typically evokes the image of something physical and external to the social context and to social action, a part of the 'environment', a context for society its container rather than a structure created by society.
> (Soja, 1980: 210)

Whether conscious of it or not, sound plays a crucial role in comprehending 'different spaces' (Rigby Hanssen, 2009: 129); this is evidenced in the artwork of Bill Viola, who is known for using video, audio and black cube spaces to present his work. Rigby Hanssen recognises how Viola uses extended time paradigms utilising drone sounds to emphasise the space used for display. Likewise, Lucio Fontana's art production deliberately exhibited space, movement and time. This is evidenced in the *Spatial Concept* (1962)[59] a visual artwork that advocates a trialectic approach to art creation. A single colour canvas slashed seven times by a knife appears simple in construction; probing deeper opens another dimension, the two-dimensional plane disrupted to show what is behind, a void created to suggest another space of relations, the regular, taut canvas on the frame is hacked apart as the space in-between.

[59] https://www.tate.org.uk/art/artworks/fontana-spatial-concept-waiting-t00694 Accessed 15th November 2018

Although Fontana is a visual artist, mentioning a practice where the intent is on challenging how space is recognised and changing the frame of reference supports the intention of the author of this thesis, where the space acknowledged for the *Playback* exhibition was carefully decided.

Sound as a medium is time-based and sensitive to space, acuity/experience and environment. It becomes intertwined with sculpture, architecture, installation, film and media art disciplines. 'Just as chaos is the source of order, liminality represents the unlimited possibilities from which social structure emerges' (La Shure, 2005), and a liminal space is one where the space of the unknown is discovered. To experience the *Soundwork* (*MA/68*), the volume is deliberately lowered on the narration so it is perceptible and not consuming. A slight delay and echo are added to the sound to stimulate perceptions while listening to the spoken word. Adding an echo indicates liminality and space between voices to be heard. Visuality and aurality are considered together for viewers/listeners to recognise both parts as complete, holistically, so there is no separation objective.

The ephemeral, invisible nature of sound poses arousals within cultural practice and presentation due to artists finding novel ways to display sound materially. An example is Laurie Anderson's, *The Handphone Table* (1978).[60] It consists of a table, two chairs and electronics hidden

[60] http://www.see-this-sound.at/works/947.html Accessed 11th November 2019

below it. The anticipation is for listeners to rest their arms on the table while cupping their ears, and sounds are generated through the table and up the arms of participants. A soundtrack is played out, and senses are engaged between two people mirroring each other's actions.

Sound is a wave requiring the propagation of matter for it to vibrate and generate sound, just like the *Handphone table*. Discussing space through the concept of materiality communicates sound within materiality yet is a falsification from the point of view of requiring an object to release sound through the air for this phenomenon to occur. Physicality and sensorial adapted spaces rise to prominence in the work of Bill Viola, who recognised space as a place for the audience to sit in a darkened environment to observe large video screens to experience the work. Heidegger understood the physicality of space from 'being within' as humans inhabiting their own space and having knowledge of their place in it. Schaeffer's space is predicated on the absence of a source and any visual construct (Cox and Warner, 2004: xiv), so it becomes one with the invisible medium of sound.

Defining a *gallery space* as an 'elitist environment' (Doherty, 2009: 28) where the audience is exclusive to the space highlights how even spaces to house art are politicised. While artists formulate art for an exhibition or a museum, the space should be intended to promote inclusion rather than

exclusion. Acconci (2000) recognises 'the museum is a public space only for those who choose to be a museum public', thus furthering Doherty's (2009) premise of elitism when visiting cultural buildings housing art.

Artwork created for a specific context and place rather than subscribing to space as a display distinguishes this as a cultural construct. Space as a dialectical relationship has connotations inherent in social acts and is a paradigm of spacialisation (Lefebvre, 1991), suggesting that humans make up space relations. When exhibiting sound in a public space advances enquiries of understanding from the listeners and audience members' expectations while in an architectural space. Throughout the time of *Fluxus*,[61] space was a concept appending to an experience of the heard. Audiences were not obligated to sit and observe from the front, just like in a concert. The Fluxus artists sought to alter the elitist perception art had and wanted art to appeal to the masses rather than a select few, so entering into a Fluxus art installation or event meant involvement from the viewer.

Constraints of access and time are imposed when members of the public can explore particular spaces and observe a conventional notion of a musical exhibition/performance. Occasionally there is no cost incurred in public exhibitions, so visiting any time between the working hours of the

[61] https://www.theartstory.org/movement/fluxus/ Accessed 15th November 2018

building is permitted. Being able to walk around freely and not be expected to sit or stay for the duration is what all galleries propose to the public. Klein (2009: 103) argues that there is no dress code or spatial restrictions, denoting that public members are free to discover the space at liberty. The exhibition *Sonic Boom* (2000) was no different, and 'all the spaces flowed into each other' (Toop, 2000).

Space in sound installations is discovered by artists who take sound through walls and structures to infiltrate aspects of architecture inside and out, such as (cyclo.: 144). Max Neuhaus selected the heading *Sound Installation* to describe an exhibition developed in the 1970s titled *Times Square*, which was considered to allow visitors to 'take possession of it as their discovery' (Neuhaus, 2006). Sound art installation and its representation in a gallery clarify a robust understanding of context and expression and offer time as a participatory paradigm and space as a physical/metaphysical concept. Neuhaus's site-specific *Drive-in Music* (1967)[62] reclaimed the cultural hegemony of a gallery context by allowing visitors to experience the work in real-time at any time of day because it was situated outside along a stretch of road in Buffalo, New York. This was identified as the first recognised sound installation by Neuhaus as a work for a public who only sometimes visits art galleries.

[62] https://cestunesortedepanel.wordpress.com/2013/09/21/max-neuhaus-drive-in-music-1967/ Accessed 23rd October 2021

Licht (2009:5) contrarily identified Edgard Varese's *Poe'me e' lectronique*, an electronic composition, and Iannis Xenakis *Concret PH* as the first 'momentous' sound installations at the Brussels world fair in 1958.[63] These were described as multi-media spectacle (Brønnum, 2012), proposing sensory exploitation of the senses and inviting a multi-modal exposition for the public experiencing the work. However, a sound installation invites questions of duplicity and intentionality where the ephemerality of non-physicalness stimulates the auditory sense as something felt and not seen. This contradicts the object of the installation becoming situated, visual and apparent in full view of anyone experiencing it.

Discussing a relationship between music and space is a one-way association predicated on music and space as 'rarely created together' (Blesser & Salter, 2009: 128). However, with the introduction of computer technology and specifically Digital Audio Workstations (DAWs), space and contrived space is more accessible due to the advancement of spatial properties and enterprises in the virtualised audio environment. Spaces, thus imaginary and based on real places, contradict the view of music and space as separate entities.

[63] Available at: https://rasmusbroennum.wordpress.com/2009/06/09/expo-1958-poeme-electronique-corbusier/ Accessed 15th November 2019

While recognising musical space as a physical environment due to walls housing the music and the place where listeners and performers congregate. Blesser & Salter (2009: 129) invite an acknowledgement of the concert hall or exhibition space as a place that grants the performer/artist a complex expose and frame of historical reference as far back as the 18th century in the UK. Space has become a dominating factor for artists who utilise white and black cube formats and is significant when conceiving sound installations.

Where *Blackstrip Put Your Card In* (2018) was presented, the relationship between participators, technology and environment reciprocated holistically in a defined space. The space agreed upon was carefully chosen due to the intimacy and the white cube format of stark walls and hard flooring so sound would resonate throughout. Considering how sound dominates art history, chapter three foregrounds the position of reflection through the art practice and acknowledges another practice-led artwork referred to in this thesis (*MA/68*).

Chapter Three
Echo Trace

Sonic Reflection

Indicating *Echo Trace* as a relevant chapter in this thesis intimates a reflection and evidence of an occurrence already accomplished. This phase resonates in the past tense as a mode of exploration to support the artistic output of the author. In this sense, an echo trace can be seen as engaging with reflexivity in a technological sonic-mediated environment. Highlighting the installation and sound artwork *(MA/68*) informs another feature of the practice-led phase and is referenced and analysed against current theories of sound and exhibited during writing.

Submitting a sound work for the group exhibition *MA/68,* the performance was a live broadcast for tannoys on Gildart Street in Liverpool. It was in response to a brief relating to Vangelis's *Paris May 1968* and a song generated by The Beatles titled *Revolution 9* (1968), which was a collage work using repeated phrases to highlight the political climate of that era. Describing the inspiration for it:

> Revolution 9 was an unconscious picture of what I actually think will happen when it happens; just like a drawing of a revolution. All the thing was made with loops. I had about 30 loops going, fed them onto one basic track. I was getting classical tapes, going upstairs and chopping them up, making it backwards and things like that, to get the sound effects. One thing was an engineer's testing voice saying, 'This is EMI test series number nine'. I just cut up whatever he said and I'd number nine it. Nine turned out to be my birthday and my lucky number and everything. I didn't realise it: it was just so funny the voice saying,

> 'number nine'; it was like a joke, bringing number nine into it all the time, that's all it was.
> (Lennon, 1970)

When *The Beatles* released *Revolution 9* (1968), they intended to contest conventions on what constitutes a musical work by deliberately using found sounds, repeated phrases and polyphony; the compositional structure did not follow a Western orthodox verse, chorus, pre-chorus verse, and bridge arrangement. Assembled comparable to Fluxus, it was a 'Happening'[64] occurring on record and a deliberate challenge of what music represents. Although *Revolution 9* broke with narrative conventions, it questioned a musical product's authenticity, durationality and functionality.

An arrangement of found and recorded sounds builds on The Beatles' 1968 composition. Whereas *The Beatles* physically cut up the recorded sound tape to form their collage, the process used for the exhibition *Playback* was digitally constructed. It was composed entirely using Wiimotes to generate sounds utilising three different software programs from a technological position. Each software product had a distinct component in advancing the collaged soundscape. This was an

[64] *Happenings* emerged in the 1950s. While these performances blurred the line between several genres of art—including music, painting, poetry, and dance—they were most strongly tied to theatre. They featured elements of improvisation and audience interaction, as the artists hoped to create an entirely new experience with each performance. “I always believed that my work should be unfinished in the sense that I encourage people to add their creativity to it, either conceptually or physically,” Yoko Ono, a prominent pioneer of the movement, explained. Available at: https://mymodernmet.com/performance-art-artists/ Accessed 20th January 2021

improvised composition, having only one set criterion, to be within a designated timeframe, and was unequivocal due to upload size, speed, and submission online to fulfil the expectation of the *MA/68* exhibition.

Considering the sound work (*MA/68*) and knowing that it was part of a larger group show fulfilled the premise of an immersive event due to the process used to create the sound piece. As it was outputted over a loudspeaker for the listening public to receive, the software program used to create the work permitted the scope for sound manipulation so that the designer and receiver could be immersed. Building on the work of Robin Rimbaud (Scanner), who participated in the exhibition *Sonic Boom* (2000), fleeting moments of conversation and noise were recorded while strolling through the city.

Rimbaud is famous for documenting telephone conversations using a scanner, and these conversations were then collaged into electronic compositions and sometimes turned into dance tracks. Just as Rimbaud's *Scanner* Soundworks raised concerns about private and public space and the inherent nature of privacy, questioning whether all sounds are intended to be heard (Licht, 2009: 8)? Answering this is dependent on sounds apprehended within the range of human hearing unless physiologically a person cannot hear. All sounds are detected and can be captured using recording devices. In comparison, the intention was not to interfere with conversations that members of the public were making but to

capture snapshots of voices from different accents and urban noise while gathering sounds from the city.

Contributing sound into this matrix with no definition by place makes it penetrate everywhere, challenging the objectivity of visual art situated in one place. In this particular environment, the sonic work *MA/68* is presented, and the listener is anticipated to hear the extraneous sounds of traffic and other sounds, all wanting dominance. This is the sound of life as all-encompassing and forever present. If listening is taking place, hearing follows as a reciprocal process and cyclical.

Theorising that 'what we see is more important than what we hear or read' (Rose, 2001: 1) expands an argument for a sonic methodology. An artist who uses sound as primary material proposes stimulations to different sensory modalities relatable through the ears instead of sight.
This world is the sonic domain embedded in the visual arts. Blurring boundaries between the ocular and auditory merits a conceptual framework addressed and considered through a sonic counterpoint.

The practice-led aspect of the author is inherently auditory yet alludes to perception within the plastic arts. Using specific techniques to realise intentions of sound manipulation sanctions the importance of sounds captured from daily life. Prevalent with this is exploring tools within the software for digital sound manipulation and experimentation with

found and synthesised resonances evidenced in the author's *Max Patches* (Appendix II: 38). They have been designed to promote sound underpinned with a visual emphasis but not necessarily for looking at an artefact. Making a case for a change of understanding and challenging an experience of art through a multimodal sensory approach, an artefact is recognised:

> Artefacts-that is to say, particular artefacts- are, if they are anything at all, individual concrete objects: property bearers, which exist in space and persist through time.
> (Lowe, 2014)

An artefact supports the visuality inherent in contemporary art. In contrast, an actual sound art piece is a room devoid of any tangible physical material. There is nothing except sound channelled through speakers, which may or may not be hidden, so the space resonating with sound becomes an empty room. An argument will be that it is not an empty room if the sound is emitted. However, the point to be made here is that there are no physical objects, so there is nothing to see. As a framework to base a reference point on alludes to the impact, conceptual art had on society, where the intention was on the artist's idea rather than presenting art where the viewer could see an object in front of them, as in the case of minimalism.

Any form of interaction in front of an artwork suggests a spectator must visually, haptically and auditorily explore through their senses to connect

with any piece of art. When (Lopez, 2017) was asked, 'What does it mean to listen' his reply was, 'At a transcendent creative level, the one I'm more interested in means to engage in body and soul in the act of true creation'. This is Lopez inviting a whole body experience when asked to engage in the act of listening, whereas when Ulf Langheinrich (2017) was asked a similar question relating to a listening strategy:

> ‘not really, I simply trust this to be the case, focusing on this aspect may result in a somewhat didactic approach. What raises and keeps attention is an enigma, a depth that unfolds and happens or doesn't, but cannot be made?[sic]
> (Langheinrich, 2017)

This is a somewhat ambiguous answer to the question of a listening strategy. The intention was on interaction whereas, Langheinrich was basing his answer on keeping 'attention', which is still an essential factor of having a person engage in the art in front of them. It can also allude to the immersive intent of engagement as he mentions that attention is an enigma and something that unfolds. This could also be describing immersion.

Immersed in sound daily identifies with reality in the world. It is soundings that cannot be shut off without some form of physical objects such as noise cancelling headphones, but even these are not 100% soundproof, as there are still frequencies that can infiltrate from sirens to other higher-pitched sounds. Janet Cardiff embraces sounds one hears daily and weaves them into a narrative without much editing in terms of altering

pitch and frequency as a method of *Musique Concrete*[65] for the 21st-century. Describing the millennium as an age of 'post-digitisation' (Paul, 2016: 4), Jenkins (2017) claimed, 'the digital revolution is over',[66] suggesting an oversaturation of anything designed digitally.

Just as Post-Modernism is prescribed through appropriation, post-digital as a way of sensory experience becomes a normative discussion from the point of view of a cultural shift in which the boundary between the digital world and the physical is blurred. It can be argued that digital technologies are so integrated into every aspect of existence that the post-digital era highlights how technology infiltrates seamlessly into daily experiences. The advent of more accessible technological machines in society has meant an art practice that considers all of the senses rather than accepting the dominance of visuality that audience members expect to use at an installation with a sound element.

Ultimately, there needs to be an adequate understanding of the concerns for digital technologies within the gallery system. Specifically, when sound is mentioned, a barrier is created for the gallery to display sound and for the receiver to accept the work. When (Kouvaras, 2016) was asked, ‘A lot of current sound artist’s works are as important visually as they are

[65] https://www.frieze.com/article/music-22 Accessed 16th November 2018

[66]Simon Jenkins https://www.theguardian.com/commentisfree/2017/feb/02/digital-revolution-age-of-experience-books-vinyl Accessed 6th February 2018

auditory, can you expand on this dichotomy'? Her reply recognised how post-modernism attempted to remove specific barriers to art making.

> I think the point is artists are seeking to break down this 'dichotomy' one of postmodernism's missions is dissolving barriers between artforms and even art & life, and as my book *Loading the Silence: Australian Sound Art in the Post-Digital World* argues, sound art is postmodernism's exemplar.
> (Iounna Kouvaras, 2016)

Conveying meaning through visuality, including photography, television, advertising, computing and visual displays, provides a platform for looking intrinsic in culture (Rose, 2001). This opinion of a scopic regime relates to images and how they are culturally constructed (ibid., 2001: 6), suggesting Western society favours 'looking' rather than 'listening'. Kahn (1999: 158) argues that visuality overwhelms aurality in the cultural balance of the senses. Jay (1993) supports this with 'occularcentrism' explained as a spotlight on visual thought within a culture. Arguing for a 21st-century auditory acknowledgement is before seeing the sound being unveiled. Ears form in the womb before sight, so listening can experience the external world even before birth. At around 18 weeks, it is recognised that babies can pick up sounds,[67] so highlighting the recognition of sound before sight is the right intention for auditory recognition.

[67] https://www.whattoexpect.com/pregnancy/fetal-development/fetal-hearing/ Accessed 23rd September 2019

While sound does not necessarily have to relate to what is obvious, what transpires, ears will always pick up sound from a distance or nearby, as in what was provided for the *MA/68* installation. By offering no visual referent, visitors were expected to listen rather than observe, thus challenging listening habits and the expectation of looking at an artwork. Intrinsic in this is how the *MA/68* Soundwork is generated as a 21st-century method as it was developed using the software first released this century and was explicitly mastered for output over loudspeakers. The technology used was the main intention for the specific digital sounds as it allows a user complete control over every 'bit'[68] of sound. This means anyone with this knowledge of Ableton can produce unique-sounding digital works utilising the latest methods for 21st-century production. Addressing technology is further reflected in the following chapter from the notion of digitisation as it is with this knowledge that the whole practice of the author is inspired.

Developing work digitally supports understanding 1s and 0s or on or off states in the binary world. The ability to transform any sound from a wave to a bit through a granular synthesis process merits a different listening experience for the designer, specifically the listener.

[68] A binary digit (bit) is the minimum unit of binary information stored in a computer system. A bit can have only two states, on or off, which are commonly represented as ones and zeros. The combination of ones and zeros determines which information is entered into and processed by the computer.

Technological Reflexivity

Technology is the omnipresent consideration from the software and hardware relevant to the practice-led installation work. Reflecting on technology advocates looking back at specific digital tools when technological reflexivity suggests an opposition between what is current and what is in the past, thus sanctions for future-proofing from the perspective of the software utilised throughout.

Beginning with the expression *digital*, it is pertinent to mention where it was first introduced into the lexical, as it was first derived from the Latin word digitus to suggest individual fingers or toes (digits) and was later adopted by mathematicians in Bell Laboratories to contrast with analogue data prescribed in computing (Williams, 1984: 310). Digital sound has transformed sound art, electronic music and mainstream music today. Artists can create from the comfort of their homes and have full mixing capabilities dependent on the software they have at their disposal. No longer do artists have to go to studios to pay for time or the hiring of producers as they can master or produce their sounds utilising a Daw that is not expensive but has powerful production capabilities. Many accessible audio editing technologies are available, accentuating the notion of an armchair musician or digital composer. In addition, individuals can access software for sound manipulation more readily due to the growth of affordable technology.

Researching availability at the commencement of the millennium, technological advancements in DAWs have grown exponentially with globalisation and advancements in other technology areas, including the speed at which surfing or downloading from the internet. Privileging electronic music, Norman (2004: 5) identifies technology as producing considerable noise, often with unpredictable results. Relating this to the *MA/68* exhibition, technology supported using noise to create unpredictability in the artwork due to the methods for devising the composition. It was essential to allow the software to have some autonomy over output and the players to control the buttons to press. This meant a unique technology-driven sound work used as a specific artwork.

According to (Gibbs, 2007: 28), technology must be 'relevant', and it is difficult to escape the developments of equipment having a great deal to do with advancements in sound installation works. This research and practice-led work relies on technology, and it is continually in flux as a tool and can become obsolete very quickly. What someone believes is 'state of the art' and visually relevant can quickly appear dated. With this knowledge, it was crucial to carefully consider the software to develop interactive, engaging artworks and compositions.

Searching online will return many programs available for sound/music production, creation, and performance, so it is vital to utilise programs that offer advancements and updates to remain current for users.

Advancements in technology have offered digitisation entering the sonic world, and music is becoming readily available at the touch of a button. Telephone lines communicate through fibre optic signalling and satellites, so streaming music from smartphones and listening 'on the fly'[69] is the quotidian.

Processing of sound and manipulation has become flawless in the digital world; no longer is the needle jumping on records and static dust ingrained between vinyl grooves. Compact discs laser burned and etched offer a different listening experience from what occurred before. Moreover, they were an encouraging factor of digitisation and positivity due to their size, cost and ease of fitting many tracks on one disc.

The technological age created a beat of discontent throughout society and music was changing the cultural landscape (Cox and Warner, 2004) due to the ease of transportation and sharing. The technology required for production and redistribution offered a method of systems dialectically opposite to stagnation with the art system. Like Fluxus artists experimented with performance and interactivity in the 1960s, artists in the late 1990s and 2000s sonically experimented with sound structures at a micro level to release echoes of inherent characteristics.

69 If you do something on the fly, you do it quickly, often while you are doing something else, without preparing and without thinking too much about how it should be done: Available at: https://dictionary.cambridge.org/dictionary/english/on-the-fly accessed 24th March 2019

While advocating sound and technology, sharing a binary relationship constructed on sound waves, analogue decoding sounds from traditional instruments is technology augmenting reality digitally. Supporting digital instead of analogue is making a sound from the source and manipulating it entirely so the referent becomes unrecognisable, a feature of using digital sounds. Using computers in music has enabled composers and musicians to control and manage sound with precision and freedom 'implausible with acoustic instruments' (Cipriani & Giri, 2010: 3). What is known through a continuum of time and values, analogue represented through electrical waves; the digital world is full of 0s and 1s. Once an image or a sound is converted into sequences of numbers, digitisation, precisely transforming an item of data (text, sound and image) into a system of binary numbers, makes this possible. Manipulating sound requires hardware intrinsically digital to begin a process of change from analogue and acknowledges a 'concept of digital as what exists in a computer or another digital device' (Evans, 2017).

Technology grants any sound to be saved, stored, altered and ready for future use, suggesting an interchange between the user and the hardware to 'function effectively' (Evans, 2017). When considering binary characteristics of digitisation and when sound is amplified to show its specific waveforms, computers require a specific language to function and inherent in this is binary coding. Describing digital sound through zero and

one is a system where these two numbers have vast meanings for the computer and anyone to interpret as media.

Signifying with multi-media terminology is to realise binary through images, sounds and words, yet this alludes to a vocabulary disparity. Computers recognise any media as numbers rather than multi-media, so endeavouring to separate artists who work in various media as hybrid or multi should account for a binary recognition system. This accounts for an artist who uses digital sound/music or displays digital images, so the acceptance should be as visual and sound artists working digitally in a binary system.

Artists considered digital also identify in binary systems, and once an artwork converts to digitisation, it instantly dematerialises, becoming a commodity and easier to reproduce. According to (Galanter, 2016: 168), with the ubiquity of the internet, distribution makes 'duplication essentially a free process', raising questions of authorship and authenticity. For the original creator of the art, the machine (computer) outputs the artist's intention in a reciprocal process. The artwork is for the audience and the hand and logic create the system.

Dialectic confrontations of digital sound dematerialise what Lippard (1968) offers as the art object.[70] Just as McLuhan (1964: 267) identified, the Telegraph is a social hormone presenting itself in the culture of the time. Simulacrum echoes Baudrillard (1988), who recognised that defining *imagery* as genuine or false was challenging. His understanding related to a culture of images, viewed from a standardised paradigm due to the barrage of imagery displayed throughout culture everywhere. It wasn't easy to define where those images Baudrillard mentions obtained as they have been highlighted through media, television and technology.

Boatwright (2017) ascertains the 20th-century phenomenon of saturating society with imagery, and the introduction of social media supports this argument. The Scopic regime aligns with Augoyard & Torgue (2005) and does not merit another medium supported through it due to technology reinforcing picture taking and production. A facsimile would apply to a scopic regime because, as a cultural expectation, observing similar things and shutting eyes and not looking is easy. In contrast, shutting ears and not listening is impossible when listening to music or a sound art installation.

[70] During the 1960s, the anti-intellectual, emotional/intuitive processes of an art-making characteristic of the last two decades have begun to give way to an ultra-conceptual art that emphasizes the thinking process almost exclusively. As more and more work is designed in the studio but executed elsewhere by professional craftsmen, as the object becomes merely the end product, a number of artists are losing interest in the physical evolution of the work of art. The studio is again becoming a study. Such a trend appears to be provoking a profound dematerialization of art, especially of art as object, and if it continues to prevail, it may result in the object's becoming wholly obsolete.

Some authors have long assumed that there is a dichotomy between music and sound, especially in installation art. For instance, 'Sound art is arguably the most burgeoning area in contemporary, postmodern and (post-postmodern) music-making (lounge Kouvaras, 2012). On the other hand, Brandon Labelle (2006) argued that a shift away from music was a shift toward sound' and, ultimately, when it came to the nature of sound and music. The underlying assumption was that music proposes a culture of listening and sound as an indicator of everyday life (Labelle, 2006). Labelle is alluding to his concept of background noise, where sound infiltrates everywhere from architecture, environments and locations and can travel great distances.

Chapter Three introduced *Echo Trace* as a reflection in action, where reflexive play and technological reflexivity supported the notion of sound as the pervasive description. Technology has fundamentally been the primary thread while promoting from a binary indication and system as a combination of numbers, and digitisation in music and sound, thus proposing a dichotomy to analogue data to 'glitch' out of this chapter.

The main emphasis has been addressing the *MA/68* Soundwork, designed with technological media at the forefront while contextualising digitisation to challenge visuality. The *MA/68* composition was explicitly designed with no visual referent yet can be considered an immersive artwork due to how it was displayed, similar to Susan Philipsz's *Lowlands* (Higgins,

2010). The immersion aspect is provided from where the loudspeaker was presented and for the extraneous sounds of life surrounding the display area.

The *Playback* exhibition is curated and devised to include the author's artworks, contextualised against the current practice. It is acknowledged as an interactive, immersive installation for the public to come and play with. Chapter Four submitted *Sounding Out* to realise where the artworks outlook contemporaneously and the variable influences that have led to this study into digital, interactive art installations that have a sound influence.

Chapter Four
Sounding Out

Sounding Out

By critically analysing the exhibition *Playback* (2018) with a *Sounding*, it is situated against current systems and clarifies what practice-led is in a contemporary research field. Each sound work conceptualised interactivity, compositionality, and immersion to exemplify a mode of practice construed from a sensory ethnographic perspective. Sound as the primary matter attended to the phenomenological 'being within' as suggested by Heidegger (1927: 2011) from the point of view of the artist as maker and the audience as participators. Furthermore, the proposals put forward by the artists interviewed for this research exemplify the understanding of a listening strategy.

Listening out connects specifically to the *Playback* performance (Appendix I: Showreel), where the importance was on listening and interacting by participators. Before the exhibition, it was essential to find out what specific listening strategies artists used to keep audience members interested in their installations. Henke (2017) and Lopez (2017) both suggested making the artworks' interesting', whereas Rooney (2014) uses 'fairly accessible literary narrative elements' but does not state what they are. Lockwood's (2015) strategy is interesting because she would prefer her audience members to be as 'relaxed as possible and sitting or lying down, rather than standing briefly'. This is a somewhat different interactive experience from what the Playback installation proposes but is

similar to what Pipoletti Rist [71] offers in her immersive installations, where audience members are provided with beds to lie on and stare up to the ceiling. What Scarfe (2017) proposes is similar to Lockwood from the perspective of 'sound materials used, how they are arranged temporally and spatially, and whether there is a relationship with the acoustics of the live situation or not'. Reflecting on the replies concerning listening strategies, although each artist has their way of keeping audience members interested, this question is probably challenging to answer due to expecting the artists interviewed to have this knowledge at the forefront of their understanding when they want an engagement from their audience.

An embodied construct from an audio spectator indicates Truax's (2012) proposition of a tripartite listening experience associated with tuning ears to sound and noise. Utilising different artists' points of view under the notion of sound art establishes a necessary contribution to sound installation modes. An artist's discipline uses technology by allowing audience members to complete interactive artworks using physical controllers through a visible association of an invisible medium, i.e. sound. This listening strategy was adopted as it meant a more hands-on experience than lying or sitting down. However, it did mean the

[71] https://www.nytimes.com/slideshow/2016/10/28/arts/design/pipilotti-rist-pixel-forest.html Accessed 18th April 2021

environment's acoustics were considered due to the white cube format of the architecture. The sounds that the audience members could use were pre-installed and manipulated within a DAW so that a unique sound event was created whenever users began sculpting their sound. This was achieved by allowing the computer some autonomy over when a particular sound is played out but ultimately the purpose was for the technology to randomly select sounds and noises so that a unique event was created every time.

To playback is an act of executing a recording to hear or see. First, it refers to the live performance of the installation (Figure 20: 21), primarily located in the etymological of the auditory. It began with an opening E Note in a mezzo forte[72] direction to resonate around the space, the space stark in all its whiteness reflected from floor to ceiling. The original score (Figure 21: 22) was specifically written for the space to highlight the smooth white walls and shiny floors. Whereas some composers would be against this type of minimalist set-up and the smoothness of the walls, this space offered any sound, high or low pitched, to be heard as they reflected off the walls and floors to dissipate high up in the atrium. The notes and chords played were deep, resonant and durational to reverberate around the space and outward.

[72] moderately loudly

This was a white cube format for a presentation that opened up to a 6th-floor chamber where the performer, instrument and the reactive to sound visuals were displayed. This was an aesthetic decision so an audience could appreciate, listen and observe what was being presented. The artist performed using a modified guitar programmed through Max/MSP/Jitter. Each note played out on the strings created its sound, and the performer plucks, slides and taps staccato effects to fill the clean white space.

Playing the guitar and utilising it with specific programming environments proposed a sophisticated music-making strategy rather than using an effects pedal for the performance. The aim was to control precisely what type of sound came out using programming knowledge (Figure 18: 19) and the specific software programs used to create a new sonic palette from a modified electric guitar. Managing the guitar in a *table-top* technique determined the adopted playing style to support increased string bending and formulating varied sounds associated with electric guitar playing. In addition, drop D tuning permitted deeper bass sounds when strings were plucked, rubbed, or picked in the performance.

The space is the place where things take shape, where people come to listen, observe and ultimately play. The once silent whitewashed walls begin to resonate with imagery and composed sounds, reacting and bouncing off each other. The hard floors and smooth walls become a

resonator for the artist who played his soundtrack while audience members watch and listen from a distance.

They do not yet know that they will be asked to be the performers to create their own soundtrack in this sparse space. They will be provided with the tools (Wiimotes), and the expectation will be to make their sound work. The blurring of the performer, artist and audience member becomes evident. Who then has ownership of what is created? Who is looking at whom? Do the audience members feel they are now performers or just having fun and playing? A performer knows who their audience is, yet an audience member being asked to become the performer changes the frame of reference from watcher to a player, from reader to author. Questions of authenticity and ownership suddenly come to the fore because they did not set out to be on stage. Nevertheless, here they are, creating sound works collaboratively/socially and without any preconceived notion of the outcome and any sound considerations that should be adhered to.

The performer only glances furtively at the audience members, checking for reactions and participation (Figure 19: 20). They have yet to realise the intention of performing themselves to create their soundscapes/compositions. The performance lasts for 14 minutes but can extend depending on the performer as the sheet music provided (Appendix II: 22) merits the sounds to be durational similar to La Monte

Young's extended timepieces. The artist is the creator, participator and performer and awaits validation from the audience. Once finished and the applause settles, the artist mentions the display behind him. It is a projection of an Ableton interface (Figure 34: 32) and shows many different colour-coordinated scenes named with the sound they will make when clicked. What is not on view is the modifications and mastering that have taken place on every sound added. What is also not in sight for the user is the side chain compression and randomiser that selects sounds purely by chance so that every click by a participator selects a different sound every time.

The artist provided a little introduction and held up the Wiimotes to see who would like to take part in creating their soundtrack, which can be described as music or noise dependent on the listening experiences of the audience. Although there were six Wiimotes for up to six participants, only two picked them up. It is unclear why only two wanted to take part at this time. However, this was still an event taking place socially between two passive bystanders who were suddenly the makers of their sonic event.

Performing as the artist in the Atrium Gallery, an awareness of the space and the expectation of arranging equipment considered how the audience was predicted to receive the installation work. It was essential that listeners and spectators could walk around and observe the performance from the front, sides and back, fundamentally different from a traditional

concert or gig where viewing the performers is primarily frontal. The Atrium is a public space offset from the front door, so the sound must be manageable regarding loudness. For the guitar performance, an original score was created (Figure 21: 22) and designed to augment the entrance's resonance and expanse into the art building. Choosing the atrium space in the art college as the choice venue was principally due to having an appreciation of the space and necessitating a white cube arrangement with smooth walls and hard floors to enable sound to reverberate throughout the structure. The entrance to the building opens into a vast area, the ceiling six floors up, intimating that any sound even turned down low could be perceived as it advances upwards.

The guitar sounds shaped a reverberation, informing the timbre of the open space. Repetitive patterns sounded out, foregrounding the Atrium's scale, space and depth and adding reverb and echo to the sounds to establish the resonance of the space is promoted by what the technology proposes.

Subsequently, consenting to perform and exhibit the interactive works in the art school, the arrangement proposed everything required for establishing the installation and setup. Although restricted by the opening times (8.00 AM to 9.00 PM), it justified later closing than any other gallery space in Liverpool then, which inferred that anyone working later than 6.00 PM could still visit the production. The proposed attendees were artists,

students, lecturers, and public members visiting the building who may have had prior knowledge of interactive sound works composed.

Exhibition Opening

The initial significance of setting up and ensuring everything operated as demanded was overlooked as soon as the performance commenced. As the guitar sounded out its transformed sounds, everything was anticipated and corresponded to interactivity as a process for participators. The designation was to demonstrate an installation that challenged passivity from the spectator's outlook.

What was evident about this performance, the members of the public chose to stay at a distance rather than gather around, as was the expectation, even though it was suggested they could move freely around the space. Further alluding to the premise of viewing performances from the front rather than surrounding the performer. Visuals were programmed, including the patch *Generative Visuality* (2018) with the author's compositions (Figure 41: 40) built into it to react to sounds originating from the guitar, rendering a multi-sensory emotion for those in the space. Aurality and visuality were combined to promote the sense of immersion, where more than one sense was activated.

Audience Participation/Reaction

By understanding the techniques, artists adopt to retain an audience within installation works. Janet Cardiff (Headphones), Francisco Lopez

(Blindfold), Robert Henke (Lasers) and Ryoji Ikeda (Large-scale projections) contributed ideas for what can be achieved when planning for immersion and interactivity. Each of these artists cleverly employs methods so that audience members have a more profound experience than what is offered by looking alone.

Promoting interactivity by utilising gaming controllers offered an altered experience to the users, as they were the performers producing their soundtrack when their original intention was to come and observe an art installation. From their perspective, there was no preconceived notion and no expectation other than to see what interactivity was on offer. By having projections already on the walls, curiosity is ignited. Once the artist explained the intention of using the Wiimotes, the players could accomplish this on their terms without requiring knowledge of how to play a specific instrument or having an understanding of the explicit software introduced as a projection on the wall. What was stimulating about watching formally passive spectators becoming engaged and interacting with the technology was that once they recognised their gestures modified the sound of their compositions, their movements became fluid (Figure 17: 17) as if playing an instrument, similar to musicians who perform with a Theremin as previously discussed in earlier chapters. Movements became actions to alter the sound.

The participants were smiling at each other and laughing as they performed their sound/music work with no visible instrument other than a gaming controller. Witnessing members of the public interacting with the Wiimote installation was a particular highlight as it offered validation of the intention of conceiving interactive works in this manner.

The boundaries between artist, performer and audience members became blurred to the point of whom is the performance for. The observers were once standing watching; now they are participating and becoming artists/performers, just as the Fluxus movement intended. The artist who created the installation becomes the observer, and a role reversal of authorship becomes apparent. When recognising immersion from an embodied perspective, the audience participates in a socially engaged practice. It fulfils the expectation of Heidegger's phenomenological position of 'being within' whereby the everydayness and existence of 'being in the world' is all that matters.

Observing the new co-authors, they were playing for enjoyment; no predetermined notion was placed on them. They were oblivious to being watched and were gesturing with the controllers in a manner where efficiency in the gestures controlled the sounds out of the digital source. They soon realised that if they moved their arms slowly, the sound field changed considerably, furthering their interactivity, immersion and sense of play.

The sound waves echoed and bounced around the hard floors and smooth walls into the atrium, rising to the 5th floor. The sounds cannot absorb into any soft furnishings because there are not any. This was a specific curatorial decision by the artist, as the expectation was for all sounds to be heard and felt bodily.

The curatorial decision adopted was that the audience was expected to play in the space with minimal instruction. It was determined that rather than allow the participators to explore freely, a card designated to 'pick up and play' was the only guidance provided. The rationale was to promote inquisitiveness and curiosity. It was proposed that anyone's fixed notions of what was to happen were limited to what was written on the card. It was evident that once audience members observed others interacting, they joined in, creating a unique sound work. It was apparent that not everyone wanted to take part but was comfortable enough watching others making music.

The location of the installation had already been agreed upon, enhancing Doherty's (2009: 28) argument that 'Site-specific is more than the room one works in'. The gallery displaying the interactive works is proposed in a Modernist white cube format as identified by O'Doherty (2007: 29). Arguing that the presentation of Modern art in 'puritanically regulated white walls with strategic lighting is a familiar part of any visit to a Modern art gallery' (Meecham and Sheldon, 2005: 213). The installation practice

justified a white cube format. However, elements of the art also warranted a black cube style of appearance associated with video and multi-media styles of production and generation.

The artist primarily codes generative art through *autopoiesis*;[73] then a computer adds code through knowledge inputted by a user. The artist creates, the computer develops and responds, and a cycle of creativity and randomness emerges. The *Playback* generative system defines the object secondary to sound, and randomisation supports a pro-creative paradigm. Reciprocity is realised between machine, computer, sound and listener, where a complex system is recognised as a specific artistic output. Processes involving multivariate themes become evident and comparable to what installation Art and participatory art provide.

Experimental compositions (Appendix II: 35) have been designed for self-generation and integrated into unique systems relatable to Eno's non-repeatable outputs (1976: 227), whereby a sound will loop but will not repeat at the same time it is first heard. The element of play and experimentation is essential to Eno as it is to the author of this thesis. Rather than exhibit a static practice, each art creation discussed characterises a journey as a continuum. From the perspective of

[73] The term autopoiesis (from Greek αὐτο- *(auto-)* 'self', and ποίησις *(poiesis)* 'creation, production') refers to a system capable of producing and maintaining itself by creating its own parts. The term was introduced in the 1972 publication *Autopoiesis and Cognition: The Realization of the Living* by Chilean biologists Humberto Maturana and Francisco Varela to define the self-maintaining chemistry of living cells.

phenomenology, a dialectical relationship between subject and object enhances an experience created for listeners and participators as all-encompassing and directly related to each other. Just as repetition is the 'quintessence of gameplay' (Shinkle, 2013) in a musical environment. Repetition, such as in Steve Reich's *The Desert Music* (1983) or Pachelbel's repeated bass lines in *Canon in D Major* (circa 1680), foregrounds how creating a recurrence was used for centuries in music. Listening to the sound output of Ikeda, Nicolai, Stockhausen, Radigue, Derbyshire and Oram, they each manipulate sounds that repeat, durational and are unmistakable within their style of production constructed using a computer.

Employing a laptop as a compositional tool is analogous to the practice of (FLO) Female Laptop Orchestra **(**Nela Brown and Magdalena Chudy). Their performances are orchestrated by sitting behind laptops and composing synchronically (2016). Predominantly collaborative with as many as fourteen laptop performers. '*Sutra',* in collaboration with the Zagreb Flute Ensemble (ZAF),[74] reveals how many laptops can operate as an ensemble for generating sound/music.

Utilising a laptop alongside the more traditional instruments of keyboard and guitar meant there was a dichotomy of output even though they were all routed through a digital interface (Figure 19: 20). Building on the

[74] This performance includes a composition by David Mastikosa and a video by Anja Kavić.

research of Ryoji Ikeda and Carsten Nicolai, who still perform with just a laptop in front of them. As a compositional strategy, showing the audience a performer working with more than just a keyboard and mouse invites additional involvement from the performer rather than as someone just standing behind a laptop and clicking keys.

Social and cultural experiences members of the public face when introduced to a sound installation they have yet to gain prior knowledge of summons expectations and understanding of what is presented before. Situating practice as a 21st-century concept indicates a post-modernist sensibility, where a plurality of systems and technology is addressed and offered as specific artworks. Intrinsic in this is a desire to alleviate the need to show programs' inner workings due to the systems' complexities and the background knowledge required to understand the structures. However, what the audience, spectator or user gets to experience is the first-hand processes of sound creation presented as displays of objects brightly coloured and labelled, so at least there is a level of understanding of what the artwork does.

An ideology of installation art as a situation refers to an artwork in 'all its totality' (Bishop, 2005). The materiality of sound added to a contrived space requires viewers/participators to complete this totalising effect, arguing for installations to be considered immersive experiences. Bourriaud's (2002) *Relation Aesthetics* indicates a concept of viewers

making artworks through participation and active involvement. This relates further to Installation art, Bishop (2010: 6) and Machon (2013), where viewers physically to environments, whether theatrical, immersive or experiential.

Examining whether an artist can fully immerse a person in a sound art exhibition has been a primary tenet explored. Current theoretical discussions accentuate the disparity between visuality and auditory sensibilities, with few books offering suggestions on sound immersion in art installations. Digital sound is locating itself concerning a potential totality where sounding out becomes a reciprocity between the space and listener in an installation. Recognising how listening as an act has connotations of hearing while giving attention to place, space, and communication supports anyone having a perceptive quality of understanding.

Listening Out

When acknowledging how electrification changed 'society's response' to electric light (Nead, 2000), the sounds the public experienced changed from the new efficacious lampposts throughout towns and cities. Environmentally the spaces where socialising, working, playing and relaxing are spaces where sound dominates. Examining the nature of space and reflexivity of listeners within an elected space, Truax (2015) recognised how electrification in the 20th-century changed listening

practices on a personal and an acoustic level. Traditional gas lighting was the precursor to electrification and the listening public was delivered a different soundscape from what they were accustomed to where one 'necessitated receptiveness to a different sound' (Nead, 2000). The quotidian changed with this new implementation and Truax's (2012) view of the public found it difficult at first to accept this new soundscape entering their daily lives.

Once people started tuning their ears to the everyday soundscape, Truax (2012: 199) argued, they had a different attitude towards hearing, increasing the provocation of sound from a social perspective. Understanding sound requires a listener to account for what they hear so they can visualise and objectify their understanding and make sense of the sonic foreknowledge.

Inferring that perception is a gestalt process benefiting the senses (Wang et al., 2008) while using a cross-modal approach. This method is multi-sensory and not limited to one sense over another but arguably appears to begin with the notion of sight. The auditory system shares with vision and olfaction an ability to register the proximity of objects and events found a distance away from an individual by focussing intently on what is challenging that particular sense. Familiar as an auditory experience is, converting soundwaves into vibrations in the inner ear is beneficial because it can convey information from any direction relative to the head,

whereas 'vision operates over a more limited spatial range' (Schnupp, Nelken, & King, 2011: 51) described as 20/20 vision, which is having the ability to view an object at least twenty feet away. These sensory narratives perceive the notion of embodiment, providing multi-modal possibilities in time, space and contexts. Although not necessarily for aesthetic understanding, concretising the source of sound and whether it has a practical purpose is what a listening human being achieves to recognise objects in the world. Sound, noise, and listening envelop environments, often demarcating space as experiential, where the interstitial space lies in-between as liminality. However, sounds are more than this, as they can cross borders and boundaries. When responding to the question, 'what does it mean to listen'?

> Obviously many possible things, depending on context, intention, listener, etc. At a transcendent creative level the one I'm more interested in it means to engage in body and soul in an act of true creation.
> (Lopez, 2017)

The answer is distinct from the reply Henke (2017) gave when asked the same question:

> I noticed something that I find disturbing: news videos or documentations, where people say very important things, for instance talking about the effects of the hurricane in Puerto Rico, and whoever made the video decided to added a generic music background with drums and strings etc. That's the opposite of 'to listen', neither to the person speaking, nor to the non-music in the background.
> (Henke, 2017)

Henke indicates this to the kind of sound observed similar to Brian Eno's *Airport music* or Eric Satie's *Furniture music,* where listening is not essential. Lopez (2017) views listening as engaging the body and mind, like Schaeffer is the attempt to organise and filter out unwanted sound. Voegelin (2010) professed a listening sensibility only achieved through the dedication of opening 'one's ears', analogous to Pauline Oliveros's ideology of concentrated listening.[75] Labelle's acceptance into sound art practices began with Background Noise (2007) as a manifesto for sounds of the city as both appealing and forever present. Deliberating on sound and music, Voegelin, Oliveros, Toop, Truax and Cage acknowledge listening as of primary importance in the last century while proposing not a dichotomy but a symbiosis contributing to a feedback system concerning the eye, ear and brain. Just as images can recall an event from different times, sound also has this unlocking potential.

Music, sound and noise have this ability and the chorus, verse and melody can change rationality or feel in a person or, as Eno (1979) stated, 'music alters perceptions'. For example, when a dementia patient recognised a song on the radio, it triggered a memory of happiness and dancing. 'For the first time in a long time, the patient recognised her daughter' (Simpson, 2019) and 'Music is a great therapy for people' (ibid., 3).

[75] http://archive.soundamerican.org/sa_archive/sa7/sa7-pauline-oliveros-on-deep-listening.html Accessed 30th January 2020

Recognising how a symphony, melody or even a single sound, 'when it is solemn and deep, it prolongs and penetrates through to the core of existence' (Minkowski, 1936). Being within and centring ourselves on all sounds as melodious and resonant, the scape of sound invites an exchange of experience and feeling that, as humans, can shape ideas and understandings of place and memories.

Listening cannot be observed as a detached experience and should be accepted. However, Rooney points out that 'some sounds are engaging and others not' (2014), signifying disregarding sounds if they are not appealing. The invisibility of sound is a 'constant presence' (Voegelin, 2014: 1). While locked in an anechoic chamber, Cage wanted to find out what absolute silence felt and sounded like, a silence where there is absolutely nothing. He was disappointed because he could hear the beating of his heart and blood pumping around his veins. Concluding, there was no absolute silence. When speaking of Munroe, who works in Microsoft's anechoic chamber, Gray (2017) echoes Cage's sentiment, 'When you stop breathing, you can hear your heart beating and the blood flowing in your veins'. This is sound forever present inside and out and an essential element of existence. Sound plays out its narrative and has its place amongst *Das Ding* sounds, *thing-ness* or *sensation,* according to Husserl (1984: 20). Sound can also be fleeting and ephemeral and Voegelin (2014: 2) approaches characteristics of the sonic with the same regard as a scientist describing sound through waves and vibrations. This

questions what sound offers the listening ear, whether frontally or asynchronously. Resonating, reverberating and returning through sound invites a two-way feedback loop between the output and the listener.

Langheinrich (2016) and Scarfe (2017) suggest it is something that unfolds and develops over time, whereas Stollery (2016) advocates asking the audience to 'take off their current pair of ears and replace them with a new, fresh pair' inviting a dedicated type of 'deep listening' such as what Oliveros (2005) would have suggested. Positing sound as a phenomenon (Merlau Ponty, 2005) due to the invisibleness of its materiality is a forever arrangement of *being* in the world. Cage's (1973) proposition of sound activated listening to hear something unknown that should not be heard, while the notion of listening to silence contradicted Cage's initial statement.

Listening in an anechoic chamber invites a mode of 'being' human or, as Heidegger (1978) recognised it as, *Dasein* whereby having an understanding of ourselves concerning the environment that we find ourselves in. This involves recognising our individuality and sense of self regarding the cultural context and expectation of listening in whatever situation it requires. In describing a sonic sensibility, 'sound and silence' are intimately associated (Voegelin, 2010), even though there is a dichotomous incongruity between words that require a listening action. Demonstrating sound through Hz (Hertz) and binary is a sonic sensibility

of freeing one's ears to opportunities of sounds in interior and exterior spaces. Sensibly listening to what perception as noise is, an expectation is to understand and hear relatable to Farnell (2010: 106), where engaged listening is a state of knowledge involving some degree of interactivity and involvement with sound. Inferring engagement:

> This is one of the challenges I've always enjoyed. I like to draw people into listening for extended periods of time, since my installation works in particular aim to immerse listeners directly and they unfold gradually.
> (Lockwood, 2015)

Hearing a sound or noise is the expectation of a functioning tympanum,[76] and listening demonstrates an active involvement biologically from the same branch of science and auditory channels. Correlating from the ear canal to the brain and reciprocally operating as communicative, participatory and collaborative, humans are taught from opening eyes and ears that social interactions are a mainstay of existence. Listening in the context of being human means actively engaging and processing auditory information from the environment. Listening involves being present and attentive to the sounds of the environment, allowing humans to understand and connect with their surroundings and others profoundly. This carries on throughout life, education and the workplace, where communication through the senses assists in forming relationships. Moreover, listening

[76] The tympanic membrane is also called the eardrum. It separates the outer ear from the middle ear. When sound waves reach the tympanic membrane they cause it to vibrate. The vibrations are then transferred to the tiny bones in the middle ear.

can help us better connect with nature, music and other sounds, thus enrichening experiences and immersing our understanding of the environment around us. Not listening to sounds or music would suggest closing off receptors through the cilia to the eardrum and brain. Oliveros (2005) championed for everyone to have a heightened understanding of the world's sound and an acknowledgement of sound. By actively engaging in listening, a deeper connection to our surroundings would enhance humans' connection to their environment.

Appreciating listening as a mode of attending to and interpreting sound, Demers (2010: 16) supports non-musical sounds from the outside world as what is perceived daily, whereas hearing refers to the physiological process of perceiving sounds. Listening invites an act where attention and intention mean actively focusing on and making sense of the sounds presented. It also includes understanding what messages are communicated through facial expressions, body language and gestures.

There is both the 'sonic object' and the listening encounter, the sonic intention, listening encounter, and the expression 'audio-spectator' accept the object and listener as a relationship inspired through the guise of *Musique Concrete* (Chion, 2017).[77] When questioning listening to noise as different from listening to music, the connotations vary from this

[77] The idea behind Musique Concrète is that the composer begins with a set of “concrete” sounds and arranges them into a piece of music. This concept means that the composer is not limited by traditional musical instrumentation and theory. They can, in fact, collect any sound that appeals to them and use it in the realisation of a final piece of music.

phenomenon. Arguing noise as a separate means of listening to music, Wishart & Emmerson (2002) advocate three modes of listening: casual, semantic and reduced, positioning attending as an idea. While understanding noise as culturally and semantically situated proposes a natural response to hearing and listening to the sound of traffic in the distance, immediate connotations are of accepting there are vehicles on the road. Although not typically listening to the aesthetic qualities of the sound, the information that the sound conveys makes the listener aware and serves a functional purpose so the listener can extract whatever information they need rather than enjoying the sound for its own sake.

From a position of physicality and perceptibility, Ihde (2007: 27) unites listening and hearing. Sound as physical presence and sound as attention invites contradictory references inherent in the air to breathe and waves penetrating ears. Merlau-Ponty's (2005) argument of, 'perception is a relationship utilising a multi-sensory view, claiming the individual's body resonates with its surroundings'. Overall Merlau-Ponty's notion of phenomenology emphasises the importance of embodied perception and subjective experience in understanding and shaping perceptions of reality. Ihde (2007: 44) advances this statement further, 'I do not merely hear with my ears, I hear with my whole body'. It echoes a body as the same, an object and organ of receptiveness, absorbing air and sound waves. By including sounds captured from walking in the city (*MA/68*), an association

of noise with an object is reasoned as casual listening and relating it to something already 'known or have heard' (Chion, 2017).

Using altered listening modes invites perceptive metaphors and a distinction between performance, installation and intervention supporting phenomenology. For Merlau Ponty, perception is not a passive process but an active and embodied process that involves the entire being of existence. The exhibition *Playback* (2018) confirmed the tripartite formulation from the artist performing to the participators creating sonic works as 'being within'. An expectation was the embodiment, emphasising listening to what was outputted and created and the notion of perception as not just a cognitive trope but an affective and emotional process shaped by experience and the social and cultural contexts in which humans live.

Planning installations to appeal sonically and bodily and challenge other senses is the prospect introduced in the exhibition *Playback*. As a phenomenological experience, sound will determine how spatiality can exist as a means for reverberation as an embodied and subjective experience. Lefebvre's (1991) concept of space functions like Merlau Ponty's (1961) speculation in that identifying a duality of senses, neither one dominates over the other and highlights what Bishop (2005: 47) views as an installation seeking to trigger fantasies, individual memories or cultural associations in a viewer's mind. Arguing that the 'subject and

object are not separate, reciprocally intertwined and interdependent' (Merlau Ponty, 2005: 50) but rather a lived experience interwoven with a perception of the existence.

When audience members get involved in the installation (*Playback*), a mutual immersion occurs between sound, space, spectator, artist and visuals (Appendix II: 18). The viewers/listener's role is just as important as the artwork, and claiming 'perception is a question of vision, involving the whole body' (Merlau Ponty, 2005) attends to the understanding of embodiment as a function of spatiality and the listening ear.

Concluding this chapter from the position as a reflexive listener, audience participator, and sounding out addresses semantically revelations of listening, performing and participating as acts of embodiment in a sound art installation. This highlighted a phenomenological 'being' in space, head or otherwise, semiological and current and acknowledged Merlau Ponty's idea of social and cultural contexts shaping perceptions of reality.

The intention was to introduce the expectation of participators when faced with an interactive sound installation and emphasised the *play* constituent in the performance of users with gaming controllers in their hands, creating sound/music compositions collaboratively. The concluding chapter echoes the purpose of the prolonged research study by signifying the value of reviewing and having a transparent

methodological enquiry while establishing an artist-led investigation through exhibiting and performance.

Conclusion

Conclusions indicate endings when, in fact, they support the commencements of future journeys into research and practice. For example, the *Sonic Boom* (2000) exhibition invited the original research subjects into interactivity and immersion as a 21st-century investigation. Addressing this from a practice-led formulation, the body of work created emphasised the author's compositions, interactive installations and performance identity. At the same time, proposing *Soundings* as an investigation into the nomenclature of interactivity, engagement and immersion when discussing sound art installations. What began as a journey beginning with artist interviews then progressed into an art practice technologically prevalent.

From the outset, artworks were created for audience members to participate through their bodily gestures of clicking, dragging and sliding objects on a large screen. Passive observers became authors of their sound events even though the artist had set up the experiences for them. By becoming an active participant and engaging in the artworks, there was a blurring of who is the artist, the audience, and the maker/creator.

This was the overall intention of the artist, who primarily developed the work through various software programs. When someone is engaging with art and actively getting involved, there is the notion of immersion,

where the body is engaging in an experience and are an active part of this participation. Relating this to Heidegger's 'Dasein' and Merleau Ponty's Phenomenological position, the artist has fulfilled the original premise of a person 'being-within or being-there' rather than as a passive observer and being immersed and engaged within that particular environment at that particular time. Sound has an immersive quality entering ears and can touch a person physically and emotionally. When specified in a sound art installation, it can create an immersive environment that uniquely engages the senses and body. The listener's experience of the installation is shaped by their bodily engagement with the sounds and their interpretation of the meaning of the sounds. This supports one of the original premises of developing a practice where the intention is engagement and participation.

The immersive quality of sound art installations can be viewed as an extension of the concept of immersion discussed in Heidegger and Merleau-Ponty's philosophies, where the individual is inseparable from their environment and their experience by their bodily engagement with it. Both Heidegger and Merleau-Ponty see immersion as a fundamental aspect of human existence. For Heidegger, immersion is necessary for understanding Dasein's relationship to the world of things, while for Merleau-Ponty, immersion is necessary for understanding perception and embodiment. Therefore, uniting both sound and visuality merits a totality of immersion.

Emphasising current opinions of practice in sound art installation from a perspective comparative to what artists are producing now. Writing to sound out, then in, sound forward rather than sound after, sound through and around is a calling to reverberate and resonate through walls and shelves. It emphasises this research as a paradigmatic 'hörspiel'[78] from the characterisation of Soundworks with no apparent visual presence. The notion of auditory spectatorship through digitisation and embodiment has transformed how humans understand conceptions of pitch, rhythm and harmony in sound. It begins and ends as waves, bits and bytes and confronts a manipulation of the senses while disregarding expectations of what is heard.

It has also created new possibilities for embodiment in auditory spectatorship. *Soundings* fulfilled what it set out to do and recognised sound installation art as an interactive and immersive experience for those privileged enough to participate in what is exhibited. From a phenomenological first-person subjective experience, the *Playback* sound art installation provided an immersive environment that uniquely engages the senses and the body. If the equivalent exhibition were set up again, the programming would have to change as too many sounds inputted affects the computer processing power. A desirable change would allow audience members to add their sounds during the performance, contributing to an increased immersive sensory exposition. Developing

[78] Radio works

the interactivity of artworks is an area that is continually modified due to the software programs having updates and artists uploading their new designs to public forums for dissemination and downloading.

One area that has always been stimulating in the research process has been the artist interview because they all provided a valuable perspective on their process, work and creative vision concerning sound art. Hearing directly from the artists helped support an understanding of the motivations, challenges and inspirations that shaped the creation of their art. In this way, the interviews helped contextualise their work and provided a framework for understanding their practice as well as the practice-led work of the author.

Presenting the thesis in four explicit chapters nominated participation and technology as discussion areas, where partaking in a sensory event with no prior knowledge of the outcome brings forward the situation for 'Dasein' and especially 'being within' as a Heideggerian construct. Heidegger believed that the traditional philosophical approaches to human existence needed to focus more on abstract concepts and universal principles and neglected the concrete experience of being human. Dasein is the mode of being that is unique to human beings and is characterised by the senses and is not fixed or static but is constantly in the process of becoming.

Soundings proposed an articulation of sound art that utilises immersion, interactivity and participation as the methodology to promote the author's practice. Inherent in this were the sub-sonic genres that provide the soundtrack of experiential listening strategies designed to promote engagement and haptic responses to the presentation of an installation artwork. Identifying a specific practice-led artwork supported with a theoretical underpinning of an artistic modality of knowing as *Soundings*. Chapter One addressed immersion as the argument and notion of how there is a direct correlation between sound and immersion as a nascent articulation. The listener's experience was shaped by their bodily engagement with the sounds and their interpretation and significance of those sounds in the installation.

Foregrounding sound, noise, technology, interactivity, music and installation in Chapter Two supported how sound is challenging to identify as a defining genre. While specific aesthetic and conceptual themes can be identified within sound art, it is a diverse and evolving field that defies easy categorisation and should be perceived as a relational matrix of dissolving boundaries. While it can be recognised as a distinct field of artistic practice, it continues to push what boundaries there are in the realm of sonic expression.

The promotion of the reflective practice was deliberated in Chapter Three, presented as Echo Trace, which can be understood as a metaphorical

imprint left by the interaction between technology and the sonic environment. The exhibition (*MA/68*) and the artwork *Blackstrip Put Your Card In* (2019) provided the framework for the discussion in a technologically mediated environment as to whether there was a dichotomy between music and sound in an installation setup. Therefore, when considering music from the use of rhythm, melody, harmony and structure and to be listened to as a cohesive whole, in comparison, sound art generally has no structure in terms of beginning and end but can have musical elements such as sampled instruments or vocals. Ultimately the relationship between music and sound will depend on the specific goals and intentions of the artist. While these two forms of sonic expression may have specific aesthetic and conceptual differences, they can be combined and integrated to create immersive and engaging sonic environments.

Chapter four emphasised the exhibition *Playback* (2018), contextualising the author's artistic discipline and the performer/non-performer paradigm or (specialist/non-specialist). This was shaped critically by the replies from the authors, academics, artists and musicians to facilitate an enquiry of listening and transference of knowledge. Hearing directly from the artists provided a platform for contextualising their work and a framework for the author to build his own enquiries. Beginning with sound and audition offered an opposing experiential line of enquiry, whereas, in contrast, visuality is still recognised as the dominating discourse in an expansive

field of genres. Playing with an invisible medium and making it material required a cognitive reformulation of understanding and technological reliability. It was while foregrounding *Watching* and *Gesturing* as artworks designed to promote interactive experiences for users without the need for a visible, tactile object that inspired the beginning of an evolving art practice.

The search for shared knowledge and language enhanced the desire to produce artworks with a specific intention of immersion as the sonic identity. 'Glitching' as accidents proposed an acknowledgement of some software media programs not fulfilling the expectation of what was required, resulting in locating advanced media programs to accomplish the desired conditions. Generating sound with modified gaming controllers evolved into the *Playback* (2018) exhibition, promoting an interactive, engaging, and inherently immersive art practice. Arguing for immersion as the compositional construct emphasised the importance of participation from a phenomenological concept. The audience members are no longer passive observers in the sound art installation. Instead, they became active participants and engaged through their bodily movements and actions to create unique sonic experiences. The gestures undertaken by the participants took the form of subtle movements to auditory events. This highlighted a shift in how the individuals engaged with the environment around them.

The themes of play and immersion for participants exploring technology they may not be familiar with were explored. Technology was the pervasive consideration connecting each research heading and sonically filtered throughout every facet of the theory and process mentioned in this study. Technology as the mechanism is ubiquitous and augments the artist/author. Therefore, it fosters critical thinking of the specialist, musician and technologist who facilitated creative opinions realised as complete artworks. A sonic grounding from a digital continuum is accepted in an installation, composition and online presence of the artist's website, Spotify and Soundcloud (Appendices).

Engaging and listening invites reciprocation of *Sounding Out* as opposed to sounding in and grants an etymological resonator in an accepted field of sub-genres of auditory sensibilities. While comprehending sound as a milieu, it bleeds into everything, invisibly tactile and can be pervasively physical as the sound resonates as airwaves in whatever location it accommodates. A process and methodology emphasising digital binary to connect practice and theory accomplish the requirements of a feedback loop cyclically informing each other while regarding the research questions distinguished within the sound works.

Observing individuals interacting with the artworks rather than as passive audience members were accomplished by preparing the participators to accept gaming controllers routinely reserved for Nintendo Wii and Xbox

(Appendix II: 15). By modifying the controllers and 'hacking' the software pre-ordained how they became instruments for sound generation rather than their original intention.

Permitting a hands-on sensory immersive experience and generating original sound works without a requirement for VR or other immersive strategies, participators made their own sonic/musical works by employing gestures and clicking buttons (Appendix II: 15). By working collaboratively, performers became digital symphony of many sounds and although they did not compose in a gaming paradigm, they employed a controller to produce sound and sanctioned interactions in real-time, particularly with technology to invent original sound art/music. Discovered during this research, a commonality between artists, authors and academics defines how challenging it is to group sound art into one specific modus. Therefore, sound art is a complex and multi-disciplinary field encompassing many practices and approaches.

While it is challenging to categorise sound art as a single genre, it can be recognised as a distinct field of artistic practice characterised by sound as the primary medium. Research has foregrounded discrepancies between visual and auditory statements, with few books inferring theorisations on sound immersion in art installations.

Visuality in the arts is still dominant and can be linked to the technological developments of photography and film in modern society. These technologies have made it possible to capture and reproduce massively, creating a visual culture pervasive in contemporary life. Digital sound, however, continues to offer artists a language to explore coincidentally with their visual output.

Addressing immersion, interactivity and participation as the main activities in the exhibition, *Playback* outlines the acknowledgement of 'doing' rather than as 'passivity'. The sounds heard in the context of the installation invited reciprocation through being either an active participant or a passive observer. They suggested involvement in listening to the output of sounds and actively engaging with the space and the sound, interacting with it and affecting it in real-time. A tripartite formulation of a participator, interactively composing through technology, defines a method of involvement. No longer is the necessity for passive observation but invited sociality, where the sounds, movements, presence and actions influence the sounds heard.

Technological advancements in the software offer a reconfiguring of expectations while recognising the artist and audience members as compositional collaborators in producing new sound considerations. From a phenomenological perspective, this transformation from audience member to participant can be viewed as a shift in how individuals engage

with their environment. Rather than simply observing/listening to the soundscape, the participant became an integral part of it, shaping and being shaped by the sonic environment.

It is here and now where the implications of the observer/listener take place. Once the expectation was to stand, observe/listen, the artist changed the frame of reference from performer/composer to handing over the controls (figuratively) to the unknowing audience members. The primary intention of the performance was to create a sonic impression utilising the technology mentioned throughout the thesis. The artist/performer played out a soundtrack of manipulated bass lines designed to resonate through the open space of the Atrium. The sonic work was created to highlight the starkness of the space and the hard surfaces surrounding the listeners and performers. The abstract visual imagery was still reacting to the sounds when the artist offered the passive audience members to actively participate in creating their soundtrack for the space.

Despite the minimalistic environment, this space was charged with noise, music and expectations of interactivity. The artist performer was now challenging the cultural hegemony of the artist's role while handing over the controllers to the audience members, who were now the performing authors of their sonic production. It was a time to explore, play, have fun and be immersed in the moment of a culturally recognised space designed

for exhibition practices. The once audience members collaborated interactively and made music or noise dependent on whoever was listening.

Although only two participators accepted the gaming devices to make sounds, what they created, sonically had all of the attributes of a work that could grace any sonic anthologies listened to for inspiration. This was one of the main reasons for submitting it as an artwork for the exhibition *MA/68*. Moreover, recording what they had created validated the intention of the original premise of participation, interactivity and engagement by audience members. By asking whether or not immersion of the kind whereby the body is absorbed into the sonic environment took place.

The participators were engaged and focused, interacting with the equipment, technology and themselves. They wanted to explore the sounds and gestures by carrying out lots of movements to see how far they could modify the output of sounds from the computer. They were having fun, and more evident was that they made their sonic work used in an exhibition of sound art.

If the same exhibition was staged again then there would be some changes adopted including, making more of an emphasis on getting more participators to use the Wiimotes rather than just two. Although the gallery

setup was adequate for the performance, it was felt it could be improved with more interactive screens where audience members could create sounds by clicking directly on the screen such as in *Sounding Out Interactively* (Figure 43: 41) whereby users could click, drag, press and manipulate sounds directly on a screen.

Throughout this study, a body of work has been accomplished highlighting a practice of using sound as the art process that also became the immersive and participative intention required for an installation. Therefore, this thesis has been a journey using sound as the overarching taxonomy of interdisciplinary art creation, accentuating interactivity, participation and immersion established as *Soundings*.

Afterword

Becoming a post-doctoral researcher will support the avenues of exploration for traversing, namely from a sensory ethnographic understanding of artist and audience reciprocally creating and developing artworks together. Presenting mixed-method research for this investigation's feature has opened various opportunities for anyone interested in generating sound installation art from the viewpoint of participator, interactivity and technology. While it has been indicative of approaching this study from the perspective of immersion in sound art installations, it is also applicable to mention the iniquitousness of VR, spacialisation techniques and immersive cinema created to offer alternate worlds to explore. In contrast, I intended to engage and co-author with the artworks I developed. VR and cinema offer different experiences, including artificial environments and audio-visual technology.

Although there is engagement, it comes from various production methods, including large screens or wearing a headset. Of course, when considering immersion and the reasons for its development in computational strategies. Being able to change everyday reality and experience something new offers excitement and enhances a sense of self and identity. This volume has been created for foundational studies in sound art for the 21st-century. If it is opened with an inquisitive mind to understand context, theory and generative expositions, achieving what

was set out to promote 'immersion' in sound installations is reached. To conclude, a quote by Francisco Lopez sums up the sentiment of sound art in the 21st-century:

> Sound art (whatever that is) by itself is massively "multi-dimensional", "inter-related", etc. No other "elements" are needed.
> (Lopez, 2017)

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Interviewees:

I. Nicolas Bernier
II. Robert Henke
III. Linda loanna Kouvaras
IV. Ulf Langheinrich
V. Annea Lockwood
VI. Francisco Lopez
VII. Paul Rooney
VIII. Dawn Scarfe
IX. Peter Stollery

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