COMPOSITION PORTFOLIO

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Abstract

This portfolio of work aims to explore the physics of sound and psychoacoustics as a means for musical composition, utilising experimental music techniques and electronic music. These four binaural, acousmatic pieces take inspiration from spectral music, acoustic phenomena, minimalism, ambient music, beating tones, and space as a compositional parameter. The structure of this commentary will begin with a brief outline of my personal reasons for creating this music before examining some historical context and key terms surrounding the works. Finally, I will discuss my four compositions.

Background

Upon moving to London to study for my undergraduate degree, the city's culture presented me with a new, readily available accessibility to art and music. This period diverted my interests in music away from melody, harmony and rhythm, and towards the core aspects of sound in aesthetic, timbre and space. I have primarily always composed contemporary popular music, with a particular love for jazz music's melodic and harmonic complexity during my teenage years. With hindsight, however, I have come to acknowledge that the principal stimulating feature for me always came back to the 'sound' of those records; Miles Davis' spine-tingling horn sound in the opening bars of *Blue In Green* (1959), the soul from Coleman Hawkins' Saxophone and Ray Charles' gritty, distorted vocal.

It was at university where I was first introduced to electronic music, specifically IDM and ambient music. Contrary to Jazz, these branches of electronic music had, arguably, different intentions, namely, limited harmonic choices, an emphasis on repetitive phrases and loops, and attention to gradual changes in tonal quality. It was here where my fascination in music drifted towards exploring the quality of a single sound and the infinite possibilities of what we can do to it.

I have also become increasingly aware over recent years that instrumental music, and our capacity in a mainstream society to explore its artistic depths, seems limited in comparison to vocal-led music and the visual arts. In the UK, we appear accustomed to immersing ourselves in uncomfortable themes, emotions and socio-political issues using these art forms. Watching *Schindler's List* (1993) at the cinema or seeing Tracy Emin's *My Bed* (1998) at the Tate Modern are commonplace for most to explore in art. In music, it is more likely for a lyric to present a socio-political theme; Billie Holiday's '*Strange Fruit'* (1939) and Bob Dylan's '*A Hard Rains A-Gonna Fall'* (1963) immediately spring to mind.

But what about instrumental music? Why are we less willing to listen to instrumental music that raises and challenges such fundamental socio-political themes and emotions? Could sound itself play a more leading role in provoking important societal questions through art?

Research Themes and Questions

My research for this portfolio of instrumental works has been guided by the overriding theme of utilising the physics of sound as a compositional tool. These works are all connected and informed by sound and timbre itself as the primary source, utilising experimental music techniques to explore, manipulate and develop component parts through creative investigation by way of electronics. Sounds and recordings were heavily effected and manipulated, including altering their length, pitch, reversing, cutting-up and rearranging, looping, filtering and distortion.

Moreover, the spatialisation of sound has played an important role in these compositions, utilising binaural methods to create immersive compositions that explore sound aesthetics and Spectromorphology (Smalley, 1997), which I will discuss later in this commentary.

Additional underlying research questions that have informed pieces in my portfolio pay particular relevance to the use of sound, and the re-contextualisation of it, as a tool for asking direct socio-political questions: What can sound and music teach us about our socio-political landscape? Does our sonic landscape sufficiently illustrate the effects climate change and industrialisation are having on the planet? Can the re-interpretation of 'everyday' natural sounds help further stress our current climate emergency? Can the re-appropriation of human voice recordings serve to emphasise potentially the most dangerous and divisive political rhetoric ever uttered by a sitting President of the United States?

The aims of this project intend to refocus my own practice as a musician whose primary work is based in commercial pop music, and provide me with a better understanding of: How are electronics in the modern technological age informing musicians' practice and capabilities? How

accepting is the average Radio One listener of 'non-musical' sounds in popular music in the 21st century? Can we extract musicality in all sounds?

I will now provide some historical context and define some useful key terms with regard to this portfolio of works:

The Physics of Sound and Psychoacoustics as a composition tool

Modernism in the classical avant-garde

At the turn of the 20th century, composers and musicologists began pushing modernist manifestos, moving away from classical music's traditions and constraints, and pondering sonic texture and timbre. Russolo's Futurist manifesto, *L'arte dei Rumori* (1913), argued that traditional instruments lacked innovation due to their timbral limitations and so began promoting the idea of 'infinite variety of noise-sounds' (cited in Cox & Warner 2007, p. 11). He believed the concept of new noises heard as a by-product of the Industrial Revolution and urbanisation meant musical sounds must evolve in alignment with the evolution of our sonic environment (*ibid*). Composers in the classical avant-garde began challenging the traditional symphony format, with Mahler, Debussy and Satie, moving 'away from narrative and towards landscape', focusing on sonic timbre, space and ambience (Eno cited in Prendergast 2000, p. xi). Composers for the first time were turning away from debating consonance and dissonance in music, towards defining 'noise and so-called musical sounds' (Cage 1937 cited in Cox & Warner 2007, p. 25). This was evident in Varese's *Ionisation* (1933), which saw the composer placing emphasis on timbre and texture as organisational tools in a sonata form (Smith, 2010). This 'liberation of sound' drew upon changes in the environmental soundscape, paying musical reference to the boom in industrialisation and technological advancements (Feldman cited in Cox & Warner 2007, p. 16).

Early Electronic music

As technology progressed towards the middle of the 20th century, electronics began influencing compositional practice. In line with Russolo's manifesto discussed above, composers such as Pierre Schaeffer, began experimenting with 'found' sounds in *Musique Concrète,* seeking to manipulate and modify sound recordings to become unrecognisable from their original state to 'abstract the musical values [these sounds] were potentially containing' (Schaeffer cited in Reydellet 1996, p. 10). I will examine the techniques used in *Musique Concrète* in more in detail later on in this commentary.

Simultaneously, at this time, other artistic fields were utilising similar processes in creativity. In the visual arts, artists such as Marcel Duchamp, created work from found objects (Truax 1984, p. 119) as well as writers in the literary world pushing modernist ideas by cutting up and rearranging words and syllables, as seen in William Burroughs's *The Soft Machine* (1961).

Spectral Music

This portfolio of works takes influence from techniques explored in Spectral music, focusing on the physics of sound as a basis for composition and examining the notion of psychoacoustics. Reacting to the strict, mathematical approaches of serialism, spectral music rejected these compositional systems pushed by Stockhausen and Boulez, consequently promoting a more intuitive approach to composition by progressively developing the elements of a sound. Pioneer of the movement, Gerard Grisey, described Spectral music as 'not closed to a technique but an attitude' (2000, p. 3). All of the works in this portfolio address the reconstruction of sound, exploring microtones and discrete components of sound spectra.

Space as a compositional parameter

It is important to address the notion of space as a compositional parameter for this portfolio of works, specifically with regard to acousmatic music. Smalley argues that 'acousmatic is the only

sonic medium that concentrates on space and spatial experience as aesthetically central' (2007, p. 35).

Smalley recognises five ways in which space can be affected or developed, as MacLeod explains:

> 'Internal space – a spatiality that implies an enclosed resonance, such as the resonant body of an instrument; External space – a space that is outdoors in the open such as a park or indoors within an enclosed space such as a room or hall; Image definition – relates to the spatial focus or how well defined the spatiality is (clear or blurred) and whether it occupies a small localised area or spread throughout a space; Spatial texture – refers to the spatial distribution of sound events in a time frame; and Contiguous space – a gestural motion within a space that is either linear or changing paths, sometimes in multiple directions.' (2016, p. 47).

This utilisation of space as a parameter in electroacoustic music allows the composer to draw upon the fundamental awareness we have of space in our daily lives and exhibit diverse, emotional experiences in the listener (Smalley 1991). To support this notion, all four works in this portfolio are composed for headphone listening via a binaural mix.

Spectromorphology

Spectromorphology is a term used to analyse a sound's footprint as it formulates through time, exploring the interaction between sound spectra (spectro-) and the shaping and changing it makes through time (-morphology) (Smalley, 1997 p. 107). 'The spectro- cannot exist without the -morphology and vice versa; something has to be shaped, and a shape must have sonic content' (ibid). This term is useful in regard to this portfolio, with all works exploring the shaping of sound and the creation of spectromorphologies through the application of gesture and energy to a sounding body by way of electronics.

Binaural listening

These four works are fundamentally created for headphone listening via binaural mix methods to provide an intimate and immersive 3D listening experience. Taking influence from Barry Truax (2000), Hildegard Westerkamp (1989) and Matmos (2001), binaural mixing, unlike stereo mixing, offers a three-dimensional perception of distance and space, aligned with how we hear sound in our daily lives. This kind of immersion in sound aims to help aid the listener to perceive the sounds and recognise musical gesture. Smalley discusses 'levels of surrogacy' where he breaks down cause, source and spectromorphology into three orders (Smalley 1997, p.110). The first order concerns a primal level of sound; merely a sonic body, preceding any 'instrumentalisation' or musical structure. The second incorporates an acknowledgement of traditional instrumental gesture, utilising aspects of performance skill. The third order of surrogacy involves gesture that is created in the music itself, with the nature of the spectromorphology becoming unclear as to its cause or origin (ibid, p. 112).

Sound Source-Bonding

All works play with the notion of 'source-bonding', a term also coined by Denis Smalley, as 'the natural tendency to relate sounds to supposed sources and causes, and to relate sounds to each other because they appear to have shared or associated origins' (1997, p. 110).
Through creative application and electronic manipulation, all four works aim to explore and develop the origins of a sound's source, often baring little or no resemblance to its original, clean state.

Sound as a socio-political device

Certain pieces in this portfolio touch on the notion of documenting and exploiting sounds, utilising them to highlight socio-political issues. Composers and musicologists have argued the usefulness of sound as a way of highlighting vital information about the socio-political landscape,

with some stating that '[sound] is an activity that is essential for knowledge and social relations' (Attali, 1985). The thematic intentions behind works, such as Matthew Herbert's album *One Pig, (2011)* inspired parts of my portfolio, an album that sonically documents the life of a pig from birth to slaughter to plate, asking acute questions about the meat industry. Documenting our natural soundscape and sounds of a socio-political nature to use in musical composition, is an 'inevitable, if unpleasant, accompaniment to progress' (Truax 1984, p. 84), which I will explore in this portfolio.

Indeterminacy

This portfolio aims to highlight the notion of indeterminacy through acousmatic music. It is useful to note that whilst there are no scores for these pieces, all pieces involve sound recordings as the source material which are then developed and manipulated through post editing and FX. Like the manifestos of Cage (1961, p. 35-40), Boulez (1957) and Terry Riley (1964), indeterminacy is encouraged through the employment of chance operations at the compositional stage; an approach and aesthetic that was highly encouraged throughout the creation of these works. Examples of chance operations in this portfolio included setting up reel-to-reel tape loops and recordings to play at alternating speeds, backwards and physically manipulated at timed intervals, creating random occurrences within the context of controlled systems.

Plunderphonics

With my final piece *You Can Do Anything,* I aim to contextualise this around the work of composer Jon Oswald's 'Plunderphonics'. Oswald challenged notions of authorship in musical composition by way of sampling and digitally reproducing existing musical works by artists, such as Michael Jackson and Dolly Parton, constructing new, original compositions out of the sound material, often unrecognisable from their original state (1985). This utilised experimental music techniques such as slowing down, speeding up, reversing and looping sound recordings, as well as reorganising lyrics to derive new meaning and alternate compositions. His 1985 album

Plunderphonics 69/96 raised debate surrounding originality, ownership and copyright with the album ultimately facing a lawsuit from Sony and Michael Jackson. Oswald contended that sampling had become an integral part of songwriting practice and that without the use of quotation in music which copyright laws prohibited, 'well-intended correspondences cannot be distinguished from plagiarism and fraud' (Oswald, 1985).

COMPOSITIONS

The layout of the commentary for each piece outlines the history, theory and methodology behind the work through artistic aims, contextual background, analysis and evaluation.

250_____Signs

Artistic Aims

250_____Signs is an investigation into acoustic phenomena, specifically beating tones (or interference tones), microtonality and psychoacoustics. Using the pure neutrality of sine, pink and white noise tones sounding at 250hz, my research aims for this piece is to create and explore notions of musical gesture by way of electronics.

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Contextual Background

Beating tones is a psychoacoustic phenomenon where two sounds of minutely differentiating frequency, when played simultaneously, result in a perceived interference of amplitude, creating audible beats of sound (MacLeod 2016, p. 24). The speed at which the beats of sound are perceived is dependent on the distance between the pitches, with faster beating tones audible at further distances between pitches and no beating tones audible when pitches are identical (Lucier, 1998 cited in *ibid*). This technique was notably used in the work of Alvin Lucier, in *'Crossings' (1984), 'In Memoriam John Higgins' (1984)* and *Fideltrio (1987).*

In addition, the piece incorporates the use of ring modulation to create electronically produced combination tones. Combination tones are the acoustic counterpart to ring modulation, creating the sum and difference tones of any two frequencies by the adding and subtracting of the two frequencies (Rose 1996, p. 20). As Rose explains, 'A + B gives the summation tone while A − B gives the difference tone' (*ibid*). The sum and difference tones created from this system enabled

me to explore microtonality, dissonances and distortion in the piece, with indeterminate responses.

Analysis

250_____Signs takes its name from 250 hertz, around the frequency of which the piece is based and takes influence from Stockhausen's *Mixtur* (1964) and *Mantra* (1970) works using ring modulation. This created subtle distortion and rhythms from the sine tones, allowing sub and overtones to surface and deviate pitch from the piece's original foundation at 250hz. This use of ring modulation as a compositional technique is also a direct response to Cage's writings on 'indeterminacy', as discussed above, along with Nyman (1999) and Reich's (2002) stress on the importance of 'process' as a compositional parameter; 'outlining a situation in which sounds may occur, a process of generating action (sound or otherwise)' (Nyman 1999, p. 4).

Pink and white noise tones are introduced as the piece progresses in an attempt to explore the relationships between different test tones. This, along with ring modulation, resulted in generating a diverse number of dissonances through sum and difference tones, as well as timbral interest through distorted and clipping sounds. These were a welcome addition to the piece, adding a plethora of unpredicted development and microtonal inflections from the original test tone sound.

Finally, I used this work to begin exploring space as a compositional parameter. As Smalley states, 'a musical gesture can be more vividly dramatized through spatial displacement' (1991, p. 121). The spatiomorphology of the piece changes during the latter quarter, with the introduction of virtual space, creating the illusion of spatiality by way of electronics. Audible overtones can be heard as the 'image definition' becomes blurred (Smalley 1997, p. 124).

Evaluation

An initial challenge I faced during the compositional process was finding a test oscillator that was sufficiently precise to create the beating tones I was seeking. The use of ring modulation enhanced the bland nature of the Logic X clean test tone, creating microtonal overtones and distortion, along with additional timbral depth through the use of pink and white noise tones. Finally, the choice to create a shift into a virtual space later on in the work introduced subtly discrete sounds by way of spatial distribution, exploring temporal musical flux in line with a spectromorphological approach. (Smalley 1997, p.107).

Reflecting on the piece, I was particularly pleased to discover unexpected dotted and triplet rhythms as the sine waves and ring modulation homogenised, providing a welcomed energy that was different to the other works in my portfolio.

Loops

Inspired by the compositional approaches of *Musique Concrète,* and composers Pierre Schaeffer and Alvin Lucier, *Loops* seeks to re-create recordings of instrumental performances through electronic manipulation, exploring notions of process and indeterminacy in music composition.

<div align="right">JK 2020</div>

Contextual Background

Loops consists of numerous short piano, voice and percussion recordings that were recorded onto a reel-to-reel tape player. The tape was then physically manipulated during the re-recording process into Ableton Live, pursuing techniques used in *Musique Concrète,* such as cutting up, reversing and pitch shifting various sound recordings*.* It is the approach of *Musique Concrète* that allowed me to explore acoustic phenomena, microtonality and push notions of sound source-bonding (Smalley 1997, p. 110), aiming, at times, to lose resemblance from the recording's initial qualities whilst simultaneously challenging the traditional use of the piano in musical performance.

Analysis

The motif that begins the piece is a piano recording, manipulated and repeated in different variations. I wanted to explore the notion of process, taking influence from composers such as Reich (2002), Nyman (1999), and Schaeffer (2013). Studying pieces such as *Clapping Music (1972), Pendulum Music (1968)* and *It's Gonna Rain (1965),* I was attracted to Reich's view of 'a compositional process and a sounding music that are one and the same thing' (2002, p. 34). To

encourage process and the notion of indeterminacy within a controlled operation, I set up multiple reel-to-reel tape loops and recordings of sounds to play at alternating speeds, reversing and physically handling them at timed intervals. I used this approach sparingly as it felt important that none of the pieces in this portfolio became constrained by a specific dogma that risked being pastiche.

The work plays on a traditional popular song format of AABA, in line with my undergraduate studies in popular music. Within this structure, the use of short loops of sound are repeated and accentuated through gradual, minimal processing, a feature notably used in Brian Eno's *1/1* from his seminal ambient music works, *Music for Airports (1978)*. From 3.40, the stretched and heavily detuned sound that is introduced, offers a movement into low-mid frequencies, losing resemblance to the initial piano recording. This section also highlights microtonality as the manipulated sound recordings move in between semitone pitches as tapes are slowed down and sped up. Furthermore, the use of VST plugins and post FX such as reverb, delay, saturation and tremolo sought to utilise contemporary production methods.

Evaluation

On reflection, the concept for *Loops* began with more rigid intentions than the processes ultimately used in the final version. My original aims for this piece intended to be dictated by processes in the light of Boulez's and Stockhausen's serialist rigidity in systematic compositional structures (Boulez, 1957), Reich's work discussed above (2002) and Brian Eno's graphic scores (1978). Like Reich, I was interested in 'perceptible processes' (2002). The first draft of this piece began by taking samples of tape recordings in varying lengths and placing them in order to create a generative, autonomous system, similar to Eno's *2/1* (1978) and *77 Million Paintings* (2018). This subsequently resulted in a lack of audible interest and personal authenticity, following a well-trodden path in process music composition. As many of the loops tended to be sonically dense, the original systems were useful on a macro level but required additional exploitation in filtering and spatialisation.

Consequently, I used the initial beginnings of this work as the grounding for the piece, taking a more intuitive approach in abstracting musical qualities from the sounds. Certain post recording FX brought the piece to life, such as the reversing and detuning of sounds, providing lower depth that the piece needed, offering different textures and a wider frequency range.

Dawn Chorus

Artistic Aims

Centred around the theme of climate change and the damaging impact humans are having on the natural world*, Dawn Chorus* seeks to explore the potential of sound composition as a socio-political tool through acoustic ecology. This work aims to examine and reconstruct a sound recording of a morning dawn chorus through binaural spatial displacement, sonic filtering and digital abrasion to create a sonic art piece that further emphasises our climate emergency.

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Contextual Background

Taking influence from Murray Schaffer and Barry Truax's (1984) explorations in acoustic ecology, *Dawn Chorus* is composed entirely from a field recording of a morning dawn chorus, recorded in Hampshire, April 2020. The work aims to separate the intrinsic, source bonded links we traditionally have with the sound of a dawn chorus, in line with Smalley's writings (1997, p. 110). The use of 'nature' in electroacoustic music has become a common theme in the work of experimental music composers including David Tudor, Alvin Lucier and John Cage (Rogalsky 2010, p. 133) with the latter composer stressing its musical use in 'waking us up to the very life we're living' (1957, p. 4-5). The sounds of rural life, such as the chirping of birds and insects, ocean waves crashing on the shore and a howling gale, support nature's sonic validity in an experimental music aesthetic by providing chance methods and variable outcomes. My compositional interests for *Dawn Chorus* lie in 'the function of recording itself and our relationship to these [sounds]… [we're] not really paying attention to' (Herbert & Meyer 2013).

Analysis

With *Dawn Chorus,* I applied a shapeshifting, intuitive approach inspired by a spectral music manifesto, pulling elements and tones that excited me in the sound recording. This initially began by applying filtering effects to enhance these features, before utilising delay, reversing and time-stretching later on in the piece. The first minute displays the sound-recording in its purest form; to 'press pause, wander around the sound – trying to understand its component parts' (Herbert, 2013).

The primary motif throughout the piece is, notably, a loud bird song first which is heard at 0.22 and then repeated, contorted and drowned out in different parts of the work to sonically symbolise pollution's destruction on the natural world.

The piece's spatiomorphology begins in a natural, external space (Smalley, 1997: 122), before moving into a virtual space in the second half of the piece. Effects including delay, distortion, phasing, filtering and reverb were applied to the *Dawn Chorus's* primary recording, employing techniques used in David Tudor's *Rainforest (1968-73)* to create an 'Electronic Ecology' (Rogalsky 2010, p. 135). Using a 30-band graphic equalizer, I was able to uncover livelier tones and timbres at parts of the piece, enhancing their presence to create a more in-depth analysis of the space and frequencies that were developing.

Evaluation

When examining compositional approaches used in acoustic ecology, I was initially interested in a more minimalist slant, in line with Hildergard Westerkamp's *Kits Beach Soundwalk* (1989). This begins as a fairly untouched piece before exploring the identity of natural sounds through heavy technological filtering and manipulation. However, after analysing similar works, such as Herbert's *One Pig* (2011) and Matmos's *A Chance To Cut Is A Chance To Cure* (2001), I used

extensive digital transformation by way of cutting up and warping the sound recording, exploring a combination of unaffected and effected sounds.

An issue I struggled with during the composition of *Dawn Chorus* was masking sounds and over-layering textures. The dense nature of frequencies from the initial recording made it challenging to pull out and highlight individual tones, thus needing the use of equalisation and filtering. However, the often sonically abrasive nature of *Dawn Chorus* felt a necessary decision to support the piece's theme, raising valuable socio-political questions through music.

You Can Do Anything

Artistic Aims

You Can Do Anything (YCDA) is a plunderphonics piece composed entirely from voice recordings of President Donald Trump, continuing my explorations into socio-political debates through the use of sound. *YCDA* explores modes of listening, playing with both notions of semantic meaning through language and *Musique Concrète's* approach of reduced listening; purely examining the traits of a sound itself by separating it from its original context. By way of electronic manipulation, this work intends to uncover and examine the sonic fabric of what I believe to be some of the most divisive, degrading and dangerous statements ever uttered by a current 'Leader of the Free World'.

JK 2020

Contextual Background

YCDA pays homage to the approach of experimental composer, Matthew Herbert, who throughout his career, has explored socio-political topics through sound, including Brexit, ethics in the meat industry and political conflicts in the Middle East. His 2013 work, *The End of Silence,* sees the composer zero-in on a 5-second recording of a pro-Gaddafi plane flying over Libya and dropping a bomb. The final piece, 45 minutes in length, sees the contortion of the 5-second sound recording, drawing attention to the socio-political nature of such a sound through musical composition. *YCDA* also takes inspiration from Trevor Wishart's piece 'Two Women' which sees the composer manipulate voice recordings of Margaret Thatcher and Lady Diana (2000).

This work aims to push the notion of 'found sound', a term that Herbert believes to be 'no longer sufficient' (2010). Like Herbert, 'I have stopped being interested in the sound of any door closing but am now interested in listening to the door of number 10 Downing Street closing' (*ibid*). Creating music that directly highlights important socio-political issues in this way, in my view, provides a vital progression for music as an art form.

YCDA includes Trump's speeches, such as the US withdrawal from the Paris Climate Agreement (BBC News 2017), a ban on Muslims entering the United States (BBC News 2015), the downplaying of COVID-19's dangers (Guardian 2020), and finally, his degrading statements about women, in which he contends 'you can do anything [to a woman], grab them by the pussy'(CNN 2016).

Prior to the commencement of composition for *YCDA*, I set out my compositional parameters, tools and limitations in a personal contract to myself, taking influence from Herbert (2011).

PERSONAL CONTRACT FOR THE COMPOSITION OF *YOU CAN DO ANYTHING*

This template will attempt to outline the compositional approach of this work.

1. Only sound recordings of Donald Trump's voice may be used as source materials.
2. The use of traditional musical instruments is strictly forbidden.
3. Melody, Harmony and Rhythm can only be generated by the manipulation of sounds collected for this project.
4. The acknowledgment, magnification and utilisation of what you perceive as 'accidents' is strongly encouraged (indeterminacy, aleatory and chance methods).
5. 'Let things be themselves' Cage (1968, p. 10).

Jack Kenworthy (2020)

To address issues of copyright regarding *YCDA,* like many plunderphonics composers, I believe this composition falls under Section 107 of the Copyright Act, suggesting 'fair use' by: 1) holding the public interest at the heart of this work with its non-profit pedagogical usage, 2) the 'transformative' aspect from the original recordings and 3) the original recordings deriving from a 'factual work' of a news report as opposed to a 'creative work' from a movie or song (U.S. Copyright Office 2020).

Analysis

Taking influence from Alvin Lucier's *I Am Sitting In A Room* (1969), the first audibly recognisable technique used in the piece explores a virtual space by processing and re-processing a recording of speech through the same room, drawing upon acoustic resonances to present the meeting of 'the voice' and 'the room' (Rogalsky 2010, p. 135). The speech used is Trump's withdrawal from the Paris Climate Agreement, symbolising the worldwide impact of this decision.

This work establishes the minimalist rhythmic technique of 'Phase Shifting', taking influence from Steve Reich's seminal works *It's Gonna Rain (1968), Come Out (1966)* and *Piano Phase (1967).* A reaction against the aleatoric and serial compositional techniques of the time, Phase Shifting is a technique where two unison melodies canon off one another as one alters its starting point or speed, causing them to lock in and out of rhythm (Kvistad 2013, p. 2).

With such intrusive language in areas twinned with sonically abstract moments in others, this piece ultimately aims to provide a variety of layers to the listening experience and psychoacoustic exploration, taking an ambient music approach where 'what you hear depends on how you focus your ear' (Glass 1998). For this piece, I became inspired by Oswald's plunderphonics work, 'Dab' (1989).

YCDA utilises granular delay, reversing, pitch shifting, filtering, saturation, ring modulation and graphic equalisation as a means of abstracting the sonic makeup of these recordings, pushing an

abrasive and noise aesthetic to highlight Trump's the disturbing rhetoric. I also utilised a 'cut-up technique' on certain vocal recordings, aiming to derive new meaning in line with a plunderphonics approach (*ibid).*

Evaluation

During the development of this piece, I contemplated the idea of creating multiple shorter pieces made up of each individual vocal sample as opposed to one longer piece of work. It became evident, as the work progressed, that the combination of these recordings not only facilitated the possibility of simultaneously exploring spaces and techniques, but furthermore, added to the shocking and repugnant nature of Trump's words when positioned together.

Creating a piece entirely of voice recordings, although challenging in places, presented surprising musicality, particularly in melodic phrases created when slowing down sounds. However, a primary concern I had with this piece was introducing notions of virtual space and manipulating recordings of crucial issues expressed by Donald Trump to the point of unrecognition, thus running the risk of diluting the gravity of the piece's theme. Attempting to address this, I utilised both a *musique concrète* approach, heavily effecting and manipulating sounds through distortion and saturation, as well as simply 'let things be themselves' (Cage 1968, p. 10), to allow certain abrasive, indistinguishable sounds to enhance the severity of Trump's rhetoric. Furthermore, the use of repetition through utilising phase-shifting helped further pronounce certain abhorrent phrases.

What I hope to demonstrate with this work is how music and sound composition can play a powerful role in addressing socio-political issues to facilitate societal awareness and promote positive change. As a musician, I consider it important to acknowledge these everyday issues in my work. To borrow from Herbert (2010), 'I don't wish to just be a passive consumer of the human experience'.

Summation

This portfolio of works has allowed me the privilege to experiment outside of my typical creative practice in popular music and explore composition in some of its purest forms. Each work in this portfolio has enabled me to practise a variety of compositional techniques and facilitate my interest in the integral elements of a sound, in sonic timbre, microtonality and psychoacoustics. As a composer, my day-to-day work is focussed on popular music composition, which, over the past decade, has seen increasing emphasis on music production, in line with commercial music practices. Many of the compositional techniques and approaches I have explored in this project will continue to strengthen my practice as a composer as well as further affirm my belief in the expansive diversity of sound.

The 21st century is a time of massive technological advancements. The developments in music technology have afforded us the ability to perceive and hear sound in new and innovative ways, offering an exciting stimulus for further musical creativity. With this in mind, I hope to continue the musical explorations of this project at Ph.D. level. Pieces such as *Dawn Chorus* could be further developed if experienced in an immersive, 3D sonic installation, in line with David Tudor's 1968-73 *Rainforest* (cited in Janovski & Joseph, 2019). *You Can Do Anything* offers further exploration into some of the divisive politics the world faces today through sound alone. Finally, *250____Signs* and *Loops* offers a foundation into a deeper search for simplicity and beauty in the colour of sound.

This project has been a personal journey into the infinite possibilities of music and sound. Music plays such a pivotal role in the lives of humans. It has the ability to connect us with our fellow beings, teach us about the deepest parts of our internal worlds and raise our awareness of sociological and environmental issues in the world around us. To borrow from Nietzsche: 'Without music, life would be a mistake.'

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