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Developing a Personal Glitch Aesthetic for Moving Image

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A thesis submitted to the University of Huddersfield in partial fulfilment of the requirements for the degree of Master of Arts

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Abstract

This project presents five contrasting films with soundtracks exploring glitch music. The five films are non-narrative but representational, with music being an essential element. The film and soundtrack work together as a single audiovisual entity. For this project, I composed the soundtracks and a filmmaker created the films based on my instruction. The contrasting visual qualities of footage across this project allowed me to explore how specific glitch techniques could match the qualities of different visual temporal behaviours and activity.

The commentary discusses how I have modified conventional approaches to sound in film music, matched the visual and real world sonic behaviours of particular materials and objects in the films, and how I have developed my own glitch aesthetic to create these soundtracks. Visual elements that I connect to my glitch aesthetic include light, kinetic energy, colour, age of footage and real world objects. The commentary also analyses the concepts of hyperreal and surreal synchresis that I have developed to explore relationships between vision and sound.

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Introduction

This project is comprised of five contrasting non-narrative but representational films. The five films have no storylines and no dialogue, thus discarding key conventional elements of mainstream cinema, which have been extensively researched and discussed; (Kalinak 1992), (Boltz 2004), (Donnelly 2005), (Encabo 2015), (Larsen 2007), (Macdonald 2013), (Rosenstone 2013), (Lucia, Grundmann, Simon 2016).

In a mainstream cinematic soundtrack, dialogue, foley, sound design/SFX, and music are the primary elements of sound (Buhler, Neumeyer, Demmer 2010), (Yewdall 2012), (Robertson 2014), (Saltzman 2015), (Avarese 2017). By linking these mainstream cinematic soundtrack elements with visual motifs, an audiovisual connection can emerge. As the submitted films dispense with mainstream cinematic conventions within the imagery and soundtrack, the five films for this project can be described as audiovisual art, demonstrating common stylistic features to surrealism, avant-garde and non-representational cinema. (Rees, 1999), (Grice, 2001), (O'Pray, 2003). For this project, I had the objective of exploring how five films could explore differing temporal behaviours and visual motifs through visual and sonic counterparts, with examples such as light, kinetic energy, colour, age of footage and real world objects being the key visual elements I wanted to work with during this project.

For this project I worked in collaboration with a filmmaker. I had full control over the direction and final approval of the work but gave the filmmaker freedom regarding filming techniques. Collaborating with a filmmaker allowed me to focus solely on the compositions for this project. The films are accompanied by five soundtracks that draw upon glitch music aesthetics. I wanted the soundtracks to explore how glitch music could be linked to representational films. I aimed to research specific glitch music techniques that would produce a relationship between vision and sound.

To achieve a strong audiovisual bond in this project, I aimed to develop Michel Chion's concept of 'synchresis' (Chion, 1994) and study how I could extend this for my project. This lead me to develop my own approaches to synchresis for this project; hyperreal and surreal synchresis. Hyperreal synchresis involves the enhancement and exaggeration of visual realism with sound.

This approach is evident within mainstream cinema when exaggerated synchronistic sounds are connected to the image, amplifying vividness. Surreal synchresis is characterised by its unnatural and dream-like qualities. In this case, I intended to design sounds with a looser synchronicity to reduce any realistic sonic qualities.

To aid my project, I explored works of audiovisual art. Alongside the study of audiovisual art, I researched how glitch artists produced their sound. By researching how artists created glitch music, I was able to construct my own personal glitch aesthetic. Through experimentation with glitch-like sounds, I wanted to study how rhythmic, timbral and temporal behaviour could be used to create an effective relationship with the films.

Aims

- To develop a personal glitch aesthetic for moving image by the connection of visual motifs to specific glitch approaches
- To study audiovisual art and conventional mainstream cinema techniques as a source of inspiration
- To explore how synchresis can be an effective method of linking vision and sound in the context of glitch music and representational but non-narrative film

1. Glitch
1.1 What is Glitch Music?

Glitch is an experimental sub-genre of electronic music that is based on the sounds of malfunctioning digital technology. Recordings of computer errors, CD skipping, digital distortion, artefacts of processing, extreme time-stretching and sampling errors are some of the main compositional elements exemplified in glitch music. In 'The Aesthetics of Failure' (2000), Kim Cascone analyses the stylistic details of the genre, which emerged in the early 1990s. He states that "composers seek to incorporate' the "failure" of digital technology" and as a consequence that "new work has emerged" (Cascone, 2000, p. 2). As he outlines: "While technological failure is often controlled and suppressed - its effect buried beneath the threshold of perception - most audio tools can zoom in on the errors, allowing composers to make them the focus of their work" (Cascone, 2000, p. 2).

I work with pre-existing samples which I then manipulate to create glitch-like results. This approach is one I utilised throughout the portfolio, rather than working predominantly from the sounds of failing technology as material.

When researching this genre, I decided that glitch could be viewed in two ways: the *technological approach to glitch* and the *aesthetics of glitch.* Even though I took creative inspiration from the technological application of glitches to music (such as computer errors, CD skipping and the discombobulation of malfunctioning technology) I quickly realised that this approach was something I was not going to implement in my own work. My main aspiration was to create glitch-like sounds to develop my own aesthetic, rather than a 'hands on' approach to seek out failures in digital technology.

For this project, I aimed to establish what the definition of the word *'glitch'* means to me. In my opinion, glitch is primarily associated with computer-based error. When I think about computer error or an error in audio, I think about what I have discussed above, referencing Kim Cascone's 'The Aesthetics of Failure' (2000). For me, this is the *'technological approach to* glitch': to strip technology from its intended use, to reveal the imperfections, creating glitch-like sounds from the failures of technology.

Composers and experimentalists also create glitch music by damaging objects such as vinyl, tape and CD's. The concept of damage can be found in Caleb Kelly's book *Cracked Media* (2009). "For example, a sharp object is used to deliberately damage the surface of the record, or perhaps the record is deliberately scuffed by placing it on the floor of a gallery." (Kelly, 2009, p. 36). I wanted to explore how I could create similar sounds. For example, when listening to a CD skipping, the sounds that are heard are; clicks, ticks, looping and random rhythmic patterns. Artists that explore CD skipping in their music, such as Oval and Yasunao Tone, demonstrated that an array of sounds can be created from one such approach. An example that shows this technique is the track *Cross Selling* by Oval (1996, track 4). An example of CD skipping from Yasunao Tone is the track *Palimpsest* (2004, track 1). These two examples inspired me to utilise these types of sounds and aided my knowledge of glitch music.

When discussing the *'aesthetics of glitch'*, I am talking about concerns regarding the quality and timbral elements of glitch-like sound. In order to develop my aesthetic, it was important to explore other artists' processes for creating glitch-like sounds. I wanted to pick out ways in which I could utilise the *'aesthetics of glitch'*, but not directly by using sounds from failing technology. An example of this is degrading audio, where I aimed to create sounds that might be regarded as 'damaged' or technological mishaps but were not made by deliberately damaging physical objects and materials, a technique that is often utilised in glitch music by artists which involves permanent and temporary damage to items (Kelly, 2009). For me, the *'aesthetics of glitch'* is not just simply the 'sound of a glitch' but it is also the idea of how glitch artists structure and create compositions from glitch-like sounds.

The sound types in this project can can be defined as:

Noise
Clicks
Distortion/Bitcrushing
Ticks
Blips
Microscopic Abstraction
Degrading of Sound
Granular Synthesis
Audio Compression/Encoding
Extreme Time-Stretching

Table 1. Sound Types.

Throughout this work I aimed to accentuate the imperfections of digital audio outlined in the table above. **(Table 1. Sound Types)**. I believe that my glitch aesthetic differs from mainstream cinema film composition by creating ambiguity through the timbral qualities glitch brings. The use of glitch-like sounds introduces ambiguous meanings to the representational films.

1.2 Glitch Techniques in Music

> "Crackles, pop, pocks, combustion, gurgles, buzzes, amplitude tautening, power strikes, voltage differentials, colliding pressure front, patterings, jump-slices, fax connections, silent interjections, hums, mumours, switchbacks, clunks, granulations, fragmentations, splinterings, roars and rushes have overwhelmed the soundscape".
>
> (Rob Young, 2002, pp. 46-47)

To make these sounds we might use a plethora of techniques; slicing, time-stretching, micro-sound, system crashes and transient manipulation. However, I wanted to explore a smaller number of techniques so that I could work in more detail to create a defined aesthetic, specifically concentrated on creating glitch sounds. In the early stages of this project, I realised that only a subsection of techniques were required to produce the certain results I aimed for.

CD Skipping-like Sounds

I had no intention of damaging CDs to create glitch. However, I wanted to create sounds with similar timbral characteristics to that of CD skipping and similar malfunctions. I decided to concentrate on the kind of sound I wanted, not the direct use of failing technology. An example of how I attempted to produce this was by gathering my own samples and chopping the sample into random segments. By dissecting minuscule parts of a sample, I could create the tick-like qualities of CD skipping. I might then time-stretch a section, therefore elongating a microscopic moment of timbre. Elongating microscopic timbres leads to 'errors' in the resultant audio through noticeable artefacts from the time-stretching.

Here I was taking the sonic idea of CD skipping but adapting it to my own aesthetic. I aimed to create a variety of digital timbres from each single sliced sample. These encompass everything from noisy, and distorted sounds to clean, crisp ticks and blips, all of which can be heard at *01:19 - 01:32* in the *Machines* film. The technique of slicing minute segments from a sample was influenced by Yasunao Tone's work, and especially the track *Man 'Yo 36-37 507417 Xero Crossing (Edit)* (2004, track 3). This is an example of how one single technique could be applied to different settings to create a variety of timbres and rhythmic elements.

Noise

> I was able to divide digital noise into three basic categories of noise artifacts: encoding/decoding artifacts (which are most often referred to as compression artefacts), feedback artifacts and the 'other' corruptions known as glitch artifacts – artifacts for which the causes are not (yet) known. It is important to realise that the difference between each of these artifacts is not rigid, as the description of a glitch artefact can be understood as a de/compression or feedback artefact (and visa versa), depending on the viewer's knowledge of the technology.
>
> (Rosa Menkman, 2011, p. 28)

As Rosa Menkman's *The Glitch Moment(um)* states: "The etymological definition of noise refers to states of aggression, alarm and powerful sound phenomena in nature" (Menkman, 2011, p. 28). Menkman's acknowledgement of the emotional aspects of noise was something that I aimed to portray within my work. I wanted to create different types of emotion and draw on the impact noise can have in creating a "powerful sound phenomena" (Menkman, 2011, p. 28) in a

soundtrack for film. I aimed to use differing noise timbres to emphasise the colours, emotion and light in the films.

I wanted to research how my glitch aesthetic could be linked to emotion. In my opinion, glitch music is not normally associated with positive emotions. Glitch is more commonly perceived as being aggressive and I believe this relates to the concept of damage (Kelly 2009) and more specifically noise. An example that I believe demonstrates why glitch music is not regarded as conveying 'positive' emotion is Yasunao Tone's track *AI Deviation #1* (2017, track 1) due to its aggressive qualities and lack of delicacy.

An example of noise timbres can be found in the first few shots of the *Idyllic* film. For this particular visual motif of landscape imagery, I wanted the noise to reflect the fluctuating movement of the breeze. A bright, tinny digital noise timbre is introduced to reflect this. I automated volume and EQ in order to match the temporal behaviour of the moving foliage.

Two tracks by Taylor Deupree inspired the use of noise in my work. These tracks are *Occur 4* (2001, track 4) and *Worn* (2009, track 2). I was influenced by the static aspects of noise in *Occur 4,* specifically how the basic timbre of the noise did not change, but the variation in dynamics created a sense of motion in the sound. In contrast to this, I was inspired by *Worn* because of the constant fluctuations in timbre, texture and lack of linearity which creates complex soundscapes.

Granular Synthesis

Granular Synthesis creates complex and elaborate soundscapes, microscopic timbres, textural embellishments and 'cloud-like formations across a audio spectrum' (Roads, 2001, p. 117). For me, granular synthesis gave me the creativity to focus on the imperfections of sounds. My approach to granular synthesis was to take a sound and extract the imperfections, revealing the sound source's error-like qualities. One way that I created glitch-like granular sounds was using the plugin 'SoundGrain'[1]. What I liked about this plugin was the ease of creating a number of

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[1]Soundgrain is a graphical interface where users can draw and edit trajectories to control granular sound synthesis. Ajax Sound Studio. (2019). *SOUNDGRAIN Granular Sound Synthesis*. Retrieved from http://ajaxsoundstudio.com/software/soundgrain

glitch-like sounds from one sound-file, meaning that timbral qualities from the individual sound-file could be treated with different levels of granulation and glitch-like qualities.

Degrading Audio

Whether through synthesis or sampling, I wanted to demonstrate how degraded sounds could be used to develop my glitch aesthetic. My intention was to take a pre-existing sound and transform it into something unusual and more abstract. For example, I would take traditional *instrumental* sounds that are heard in mainstream cinema, such as piano and strings, and manipulate their sound quality with processing such as bitcrushing. Bitcrushing was a key part of degrading audio, I wanted to create distorted, noisy timbres that related to the idea of lo-fi sound and failed technology. Tracks that inspired me to use bitcrushing include *White Sands* by Ambrose Field (2008, track 6) and Crystal Castles' track *Doe Deer* (2010, track 3), both of which have the sort of unusual sonic quality that I wanted to produce in my work. One tool that I used throughout this project to create degraded audio was Native Instrument's plugin 'The Finger'[2].

The use of extreme time-stretching was also a technique that I used to degrade audio. This enabled me to produce soundscapes and extended pad-like timbres similar to the work of Taylor Deupree. A track that inspired me to concentrate on creating soundscapes was Snow/Sand (2002, track 1). I wanted to create similar fluid temporal behaviours from extreme time-stretching in the submitted soundtracks. I also intended to create extreme time-stretched sounds to match the visual behaviours of wind, sun and the motion of transport and machinery in the films.

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[2] THE FINGER provides more than 40 effects including real-time samplers/transformers (e.g. loop, re-arrange, reverse, scratch, heavy granular effects etc.), as well as filters, gaters, delays, reverbs, distortion, wave shapers, ring modulation and many others. Native Instruments. (2019). *THE FINGER*. Retrieved from https://www.native-instruments.com/en/products/komplete/effects/the-finger/

1.3 Glitch Artists

In the early 00s, Alva Noto composed tracks that explore the use of high frequency content, reversed audio, discontinuity, granulated phrases, clicks, short looping phrases and noise. Alva Noto's approach to glitch music became influential on my own work, inspiring me to explore the ways I could build individual glitch sounds that develop into intricate and texturally thicker glitch-like rhythmic patterns. An example of this can be found in *Travel* at *03:58 - 04:33* when the tick-like timbres that represent the flickering sun transforms into emulating the electrical elements of the vehicle. Alva Noto creates glitch-like rhythms using ticks, clicks and zap qualities, similar to the timbral qualities that I wanted to achieve in my work. Tracks that influenced me to create glitch-like rhythms and tick-like sounds are; *Uoon I* (2002, track 1) and *Duoon* (2002, track 3.

Minimalism also began to thrive in glitch, with artists such as Taylor Deupree demonstrating the variety of aesthetics within glitch music. Taylor Deupree on his website biography describes his music as "rich with abstract atmospherics" (Deupree, 2019) and claims that it: "emphasises a hybrid of natural sounds and technological mediation. It's marked by a deep attention to stillness, to an almost desperate near-silence." (Deupree, 2019). Taylor Deupree's work helped me to understand how granulation, time-stretching and slowly developing soundscapes could create thicker yet non-intrusive sonic textures which induce calming, tranquil emotive responses to the music. I felt that I could use extreme-time stretching and a minimalistic approach to sound to create these emotions and sensations within the spectator, similar to Taylor Dupree's work.

Björk's album *Vespertine* (2001) also inspired my work. This album explores microscopic rhythmic elements, rich soundscapes, and crystal-like timbres. This is, in part, due to the album being co-written with glitch experimentalists, Matmos. An example of Matmos' approach to glitch music on this album is the track *Cocoon* (2001, track 2). The duo's approach of recording 'everyday' sounds to create music of the glitch genre made me focus on producing similar stylistic qualities from wild sound[3]. Matmos combine heavy uses of stretched, morphing, granulated drones with lo-fi and noise timbres, something I also utilise in my compositions.

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[3] Wild sound: Sound recorded without a camera rolling. The term is used for sound gathered independent of a picture, such as a close-up sound of an effect that is going to be photographed, for use by sound editors in post production who must match a sound to what is seen on a picture. (Holman, 2002, p. 276)

Further Artists that Inspired my Aesthetic of Glitch

In this table I briefly summarise elements of further work that inspired my glitch aesthetic:

Artist	Elements and Sounds
Aoki Takamasa Album: Rv8	• Heavily based rhythmic glitch • Repetitive patterns • Looping • Crisp/bright timbral aesthetic
Aphex Twin EP: Come To Daddy	• Rhythmic grooves and glitch patterns • Time-stretching and granulation • Use of high resonant frequencies as a timbral motif • Lo-fi glitch grooves with cleaner high frequency glitches • Noise
Jan Jelenik Album: Loop-Finding-Jazz-Records	• Crisper/bright glitch timbres • Noise elements to create soundscapes • Blips, clips and zaps
Monolake Album: Ghosts	• Bright/crisp glitch timbres • Rhythmic phrases on and off beat to create discontinuity • Heavy use of reverb and delay to create spatialisation • Sample based • Noise glitch
Fennesz Album: Venice	• Static noise • White noise • Bitcrushed timbres • Circuit bending-like sounds

Table 2. Table of Influential Artists.

2. Audiovisual Art
2.1 Audiovisual Art and its Relationship to this Project

Audiovisual art is a category of multimedia that explores visual and auditory abstraction. Kinetic energy, light, moving shapes and colour are some of the foreground visual components that might be reflected in a soundtrack. As stated in *Avant-Garde Film: Forms, Themes and Passions*, "it maybe be argued that the meaning of abstract film is concerned purely with formal relationships - shape, size, depth, movement or colour" (O'Pray, 2003, p. 12). Starting from as early as the 1920s, avant-garde and abstract film became key areas of experimental visual composition. As time and technology evolved, new methods, techniques and means of describing specific experimental cinematography became apparent, with the development of practices such as surrealism, absolute film and experimental digital cinema. As it states in *A History of Experimental Film and Video* "the movement as a whole has more often looked to alternative, rather than to popular audience on the margins of the mainstream cinema" (Rees, 1999, p. 1). I wanted to look into "alternative" (Rees, 1999) and mainstream cinema to explore how a visual and sonic relationship could be created in representational but non-narrative films and abstract approaches to cinematic soundtracks.

2.2 Visual Techniques in Audiovisual Art

For the purposes of this project, I researched the different variants of experimental film. My intention behind this was to work out which specific visual elements I could subsequently respond to in my soundtracks.

> The avant-garde rejects and critiques both mainstream entertainment cinema and the audience responses which flow from it. It has sought 'ways of seeing' outside the conventions of cinema's dominant tradition in the drama film and its industrial mode of production.
>
> (A. L. Rees, 1999, p. 1)

Avant-garde and surrealist cinema draws on the traditions of painting. As Rees' writes: "Avant-garde film has also taken over the traditional genres of art - rather than those of the cinema itself. These have been central to its language and rhetoric and have shaped its subject matter". (Rees, 1999, p. 2). Using shapes and colours, filmmakers of the avant-garde wanted to put "paintings in motion through the film medium" (Rees, 1999, p. 20). With painting offering just one *image*, the medium of avant-garde film provided freer boundaries in relation to space and time. I aimed to

focus on temporal motion and spatial perception and link that with synchronised abstract sounds. An example can be found in the film *Travel* at *01:04 - 01:08*, when the close up shot of the train flashes past the camera. This is matched with an abstract sound that links to the changes in motion of the train and imitates the change in distance when the train speeds past and exits the shot.

An example of an avant-garde film that has parallels to my project is Buñuel's *Un Chien Andalou* (1929). I aimed to look into Buñuel's use of non-dialogue and his broadening of the limitations of narrative. *Un Chien Andalou* (1929) also draws upon the use of characters whom the spectators cannot really emotionally relate to. This, in my opinion, is due to the lack of spoken word and the irrational behaviour of the characters in the film. What I took from the film was that even though we cannot easily sympathise with the characters, we can still relate to their behaviour due to the recognisable physical actions performed (for example, walking and riding a bike). This I believe can be found in my film *Travel*. Similarly to *Un Chien Andalou*, the audience is drawn to the character in the film but cannot ascertain any clear narrative. This in my opinion, is due to the lack of storytelling, as the film does not explain where she is going or why she is on the different forms of transport. The way in which I intended to apply loose forms of narrative and represent the emotions of the character was via surreal synchronised glitch sounds that create a sense of erratic behaviour in the soundtrack. I aimed to connect the glitch-like timbres with what the character is feeling in each moment (for example, on the train at *01:59 - 02:03*). I wanted to portray emotions such as vexatiousness and anxiousness to correlate to the train's jittery mechanical components.

Michael O'Pray's book *Avant-garde Film: Forms, Themes and Passions* (2003) looks in depth at the concept behind the irregular yet coherent structure in Buñuel's film:

> *Un Chien Andalou* has a dramatic structure rather than a narrative one, though Buñuel inserts mock illogical 'narrative' intertitles. The film is a series of both ordinary and bizarre events whose dramatic and shock qualities derive from their realistic rendition but which have no narrative, cause, source or logic.
>
> (Michael O'Pray, 2003, p. 25)

In my project, I intended to have films created with "realistic rendition" (O'Pray, 2003, p. 25). I wanted a non-abstract and representational aesthetic to the films but to still, at times, explore some more experimental film techniques. I hoped that by studying surreal cinema, I could incorporate a sense of ambiguity within the soundtracks.

Many abstract films that relate to my work make use of visuals with contrasting levels of blurriness, graininess and temporal elasticity (Chion, 1994). The concept of applying elements of abstraction to recognisable visuals was something I wanted my filmmaker to explore within my films. Even though I wanted the filmmaker to look into visual abstraction, I proposed that the films should remain primarily representational and abstraction was not the dominant feature. Additionally I was drawn to combining sonic abstraction and representational landscape and urban imagery.

The use of landscape imagery can be found in Nick Cope and composer Tim Howle's *Son et Lumières* (2006). What is loosely comparable between *Son et Lumières* (2006) and my project is the balance between the non-representationalism of abstract cinema and the videography of landscapes used in a non-narrative manner. The subtle levels of abstraction in the visuals are matched by ever-evolving soundscapes. Abstraction is also used when matching temporal behaviour between film and sound, with glitch-like time stretched sounds used to match the slow motion footage. When this work evolves into non-narrative landscape shots, the audience is then able to recognise some form of realism within the image even though the visual is still using intentional abstraction. This is something that I wanted to use within my works, to extend the concept of how realistic landscape imagery can be interwoven with abstract sonic ambiguity.

Another film that can be related to my project is Zai Tang's film *Window Music* (2009). Zai Tang describes his piece by saying: "This work is a reinterpretation of a piece of music composed entirely from sounds recorded outside of a window in north London. It explores the cyclic nature of sound activity within the environment and the role the soundscape plays in our perception of urban space." ("Window Music | Zai Tang", 2009). *Window Music* (2009) and a number of my films draw upon the importance of "the role the soundscape plays in our perception of urban

space" (Tang, 2009). Whilst composing to the films, I aimed to draw upon the landscape environments and elicit sonic ambiguity, to create a juxtaposition between the image and sound. One way I did this that offers similarities to *Window Music* (2009) was the use of location sounds and manipulating them to create a sense of surreality. For instance, in Zai Tang's film, the sound of bird song, expresses emotions of tranquility and calmness, providing some form of realism to the visual. The sound of the bird song then drastically evolves into something eery and irregular. This sudden change in the sound links to the image's increased use of visual saturation and experimental filming techniques (such as abstract shapes, lines and colours). In the *Idyllic* film, I too used a sample of bird song that can be heard at *04:27 - 05:09*. The original bird song sample can be heard more evidently at *04:27 - 04:36*, loosely synchronised with the robin in the image. Similarly to *Window Music* (2009), I wanted to transform the sound to imply ambiguity. From *04:36 - 05:09*, the bird song almost becomes unrecognisable, due to the use of heavy sonic manipulation.

2.3 Further Audiovisual Works

In this section, I will briefly summarise further audiovisual works that relate to this project.

Stephen Callear - In Perpetuity: The Linden Trees (2011)

The constantly evolving movement and elasticity within the soundtrack is parallel to my general approach to time and matching visual moments of movement to sound. Extreme time-stretching noise elements are used in the soundtrack of Callear's film that provide movement and subtle levels of sonic abstraction. This is comparable to my film *Idyllic*, with the use of digital extreme time-stretched noise being loosely synchronised to the gently fluctuating movements of the vegetation at *00:00 - 00:24*. Similarities also occur with the use of visual light energy being linked to sound. The amplification, movement and swell-like qualities of noise timbres at *00:07 - 00:30* in *In Perpetuity: The Linden Trees* (2011), matches the enhancement of visual colouration, saturation and intensity of the image. This effect can be found to some extent in the *Travel* film, with tightly synchronised bright and tinny timbral elements matching the intense flickering sunlight at *04:01 - 04:11*.

Visitation Adagio (2011)
Visuals: Richard T.C. Nelmes
Sound: Diego Garro

This work can be compared to my project due the lack of *conventional* narrative and use of representational imagery. The heavy use of audiovisual synchronicity and elaborate sound design techniques also relate to this project, with the use of glitch-like timbres, including digitally created timbres, amplification of processed artefacts and degraded audio being paramount to enhance the abstract visuals. An example in my work that can relate to the synchronistic qualities of *Visitation Adagio* (2011) is the use of ambiguous glitch sounds in the *Horror* film. The glitch-like timbres that produce staccato, digitalised and malfunctioning sounds are synchronised to the erratic movements of the character at *02:02 - 02:17*. The temporal bond between sound and image increases tension, unease and matches the visual's flickering activity.

Justin Ascott - SOUND : BRIDGE (2014)

> This film is an enquiry into the affective emotions we experience when in the presence of monumental urban infrastructure… The cave-like environment, sacred water element, and massive supporting megalithic-like columns, can be viewed as archetypal symbols of the collective unconscious. The car tires traversing the road joins, on the trunk road above, create a soundscape of base frequency thuds, similar in affect to shamanic drumming… These visual and sonic qualia create an hypnotic atmosphere, that invokes deep unconscious resonances.
>
> ("Sound : Bridge", 2014)

The use of representational landscape imagery and "urban infrastructure" (Justin Ascott, 2014) combined with wild sound forms similarities to my work. Even though this piece employs cinematography that is not at all abstract, whereas some of my films use elements of abstraction, the simplicity and representational style is something that is comparable with my films. The use of large reverbs on the percussive timbres in the soundtrack of *SOUND : BRIDGE* (2014), in my opinion, represent openness and spatial expansivity, matching the scenes under the bridge and enhancing the "cave-like environment" and "massive supporting megalithic-like columns" (Ascott, 2014). This is somewhat comparable to the use of spatial effects in my film, *Urban*. At *02:23 - 02:30* and *04:08 - 04:*24, drone shots play a role in representing the expansiveness of an urban location. I automated reverbs and EQ's to create the perception of the viewer being in the air, linking to the idea of the expansiveness of the city through the soundtrack.

2.4 Reflection on Audiovisual Art in Relation to this Project

In my opinion, my work is situated on the edges of what can be defined as audiovisual art. This is due to the minimal use of visual abstraction within this project. However, my project can be linked to audiovisual art due to the non-narrative nature of the films and abstraction being more evident within the compositions. I aimed to draw upon a number of audio techniques that can be found in surreal cinema and explore how I could utilise them in my work to enhance the integration of sonic abstraction. I aimed to explore how this could aid the connection between my representational films and more abstract and ambiguous soundtracks.

3. Methodology
3.1 Working with the Filmmaker

My initial plan for this project excluded any form of collaborative input with regards to filming. This meant that I would be completing both filming and compositional tasks. However, due to my lack of knowledge of filmmaking, I decided instead to work with a filmmaker. This was so that the outcome of the project, specifically regarding the quality of the visuals, had higher standards than if I had created the films myself.

The relationship between myself and the filmmaker worked as follows; I would create a moodboard and brief with clear instructions stating what type of atmosphere, mood and overall structure I wanted for each film. I listed details regarding what type of shot I wanted for certain moments and aided the filmmaker in gathering ideas specific to the genre of each film. I wanted the filmmaker to feel like they had creative input into the project. With that in mind, I made sure that the filmmaker felt they could be expressive and experiment with filming techniques and concepts. Allowing the filmmaker to have creative freedom and only working from a loosely structured brief enabled them to be inventive. To help with time management and the structural processes behind the soundtrack, I would ask for the filmmaker to send me early drafts of each film. This enabled me to begin thinking about how I was going to shape and connect the soundtracks to the films and subsequently understand which visual motifs I would be able to take inspiration from to develop my glitch aesthetic. During the editing process, if I was drawn to a specific section of imagery that could be linked to the soundtrack, I would ask for more. The instructions to the filmmaker included; my preferred length of film (most films having a duration approximately 5 minutes), photographs of inspirational film shots that I would like to replicate, descriptions of film shots, inspirational films and the type of filters or colour grading to use for the film. The order in which I have submitted my films, is the order that the filmmaker's final cut was completed.

3.2 Exploring Audiovisual Relationships
3.2.1 Creating Sonic Counterparts for Visual Motifs

In this project, I wanted to accept all possible real world (or concrete) sounds as musical material that could be used in the soundtracks. I accomplished this in the soundtracks by modifying pre-existing real world sound recordings and carefully placing them in the soundtracks. One reason why I manipulated pre-existing samples was so I could create sounds that linked to the visual and *real world* sonic behaviours of particular materials and objects in the films.

By precisely time-aligning sounds and the use of synchronised automation, I aimed to create a temporal cohesion between the motion in the films and in my soundtracks. I took inspiration from Chion's description of temporal elasticity[4] to explore how "hooking auditory continuity with visual continuity" (Chion, 1994, p.62) could be used. In this project, I used Chion's concept of temporal elasticity to evaluate and explore where a synchronistic relationship between sound and image could be freer. On the other hand, there were also moments where the relationship of vision and sound needed to be more precisely synced. I focused specific sections of the soundtracks around important representational imagery such as light, kinetic energy, colour, age of footage and real world objects by finding sounds with appropriately matching characteristics and behaviours.

The categories are shown in table 3.

Light Energy	Electrical Energy	Mechanical Energy	Nature/Natural Energy	Thermal Energy
Sunlight Traffic Lights Car Lights Street Lights Building Lights	Electrical Devices TV's	Machine Motion Car Motion Train Motion Human Motion Head Turning Eye Movements Walking & Running Button Pressing	Water Wind Birds Plants & Foliage	Molten Lava Heat Waves Sparks Fire

Table 3. Categories of Kinetic Energy.

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[4] Temporal elasticity is a term used by Chion to explain how synchronised sound and foley can be linked with "an analysis of movement" (Chion, 1994, p. 61) through diverse visual techniques such as slow-motion. As Chion discusses with the example of a punch: "On either side of a characteristic synch point such as a punch the capacity for temporal elasticity can become almost infinite" the use of accented sync points, such as the punch "allows the time around it to swell, fold, puff up tighten, stretch or, on the contrary, to gape or hang loosely like fabric" (Chion, 1994, p. 62).

I established that between the contrasting types of energy or motion, the visual and sonic behaviour differed. I wanted to highlight these differences through the soundtracks.

For example, if a light source in a film faded or became less impactful in an image, (such as the sun causing camera lens flare) and then changed to a dimmer light, I would purposefully change the sound to match the shift in intensity. To sonically reflect this change in intensity, I chose to apply differing processing FX's to clearly relate to the visual alterations. I would automate low pass filters or remove saturation plugins that were there to highlight the intensity of the light source, and in some cases, add pitch bend articulations to represent light sources fading away into the distance and out of the shot.

A clear example in which I adopted a method of automating specific processing FX's to match the visual changes in behaviour can be found at *02:56 - 04:06* in *Idyllic*. This example also relates back to the concept "temporal elasticity" (Chion, 1994). In the first 10 seconds of this example, the sound is more precisely aligned to the image. I did this to make the listener-viewer focus solely on the camera lens flare's flickering qualities. To represent this sonically, I applied small changes in volume and altered the rate of a tremolo plugin to match the subtle movements of the lens flare. I then decided to use temporal elasticity from *03:06 - 04:06*. I did this to provide a clear contrast from closely editing the sound to the image, followed by creating an audiovisual relationship that provides a much freer temporal behaviour due to the sonic behaviour only loosely matching the visual activity.

3.2.2 Synchresis

In this project, I aimed to create connections between my glitch aesthetic and the films via synchronicity and more specifically synchresis. (Chion 1994).

> *Synchresis* (a word I have forged by combining *synchronism* and *synthesis*) is the spontaneous and irresistible weld produced between particular auditory phenomenon and visual phenomenon when they occur at the same time. This join results independently of any rational logic… Synchresis is what makes dubbing, postsynchronisation, sound-effects mixing possible, and enables such a wide array of choice in these processes.
>
> (Michel Chion, 1994, p. 63).

In order to achieve an audiovisual bond, I developed an approach to time-aligning sounds and unpacking key temporal activities within each of the five films. For this purposes of this study, I

researched works with no dialogue and narrative. Examples of audiovisual works that exemplify the use of synchresis are: *Linear Dreams* by Richard Reeves (2010), *Son et Lumières* by Dr Tim Howle and Nick Cope (2006) and *Laser Drawing (from the rooftops)* by JesterN (2017).

In my work, I wanted to extend Chion's concept of synchresis, breaking it down into two more detailed categories that would aid my compositional workflow, subsequently linking the use of glitch-like sounds to image. The two categories of synchresis that I introduced for this project are; hyperreal and surreal synchresis*.* This adaptation of synchresis aided me to explore motion in the footage, thus giving me ideas how about to create audiovisual bonds. I aimed to explore these concepts by matching sonic behaviours to visual behaviours, using detailed editing, automation and time-stretching.

One example of the ways I achieved this in the soundtracks was by conveying the motion of vehicles. I wanted the sound to reflect the speed of motion of the vehicles, especially as these changed over time. An example of this idea would be the use of extreme time-stretched, elongated sounds to match the motion of the vehicles driving at a slower pace. This can be found in *Urban* at *02:48 - 02:58* and *03:24 - 03:53.* In these examples, I also automated the tempo of the music in response to the movement of the vehicle. In contrast, the use of intricate rhythmical patterns and *glitchier* sounds were applied to match vehicles driving at a faster speed. An example of this can be found in *Urban* at *01:58 - 02:07* and *03:04 - 03:20*.

As well as this concept of synchresis, I also looked at other ways I could match sound behaviour to visual behaviour.

The idea of sensations, in this project, can be described as applying sounds to match the emotions induced by specific moments of a film. I wanted to match emotions, such as fear and apprehension, to sounds that produced physical sensations like itchiness and unease. I explored how I could replicate this within the soundtrack by creating sounds with high frequency content and metallic-like timbres to provoke the sensation of tingles and itchiness. Thus, I aimed to create "added value" (Chion, 1994) by producing emotional responses in the listener-viewer.

I also wanted to explore spatial perception by linking visual to sonic qualities via spatialisation. If a scene in a film conveyed something further away in the distance, I would create sounds that would represent this. I did this by creating sounds with softer dynamics, automating reverbs to affect the *wetness* of the sound to create a sense of expansiveness and finally, by applying low pass filtering to produce a muddier and less detailed sound.

My work often depends on tight synchronisation. However, similarly to surreal cinema, my soundtracks for each film are not reliant upon the use of realistic sound in combination with the image. I aimed to create sounds with differing levels of plausibility and different temporal behaviours to expand the boundaries of the audiovisual contract.

> *Audiovisual contract*: The audiovisual relationship is not natural but rather a sort symbolic pact to which the audio-spectator agrees when she or he considers the elements of sound and image to be participating in one and the same entity or world.
> (Michel Chion, 1994, p. 222).

Thus, even though the sounds I use might be abstract, I still want the listener-viewer to believe the objects onscreen are creating the sounds we hear, although we know this is not the case. When we see a train in *Travel* we hear train-like sounds, although they are unnatural and glitch-like.

A key difference between two approaches to synchresis is that surreal synchresis was mainly used to match visual temporal behaviours, but in a more abstract manner than hyperreal synchresis. The amount of glitch-like processing techniques such as degrading audio, modifying conventional instrumental sounds and use of rhythmically erratic granulated patterns was higher in surreal synchresis in order to create a surreal effect, and applied with looser temporal synchronicity to the image. This leads to a non-realistic sound, yet one we still link to the onscreen activity taking place, something that is typically practiced in audiovisual art.

3.2.3 Hyperreal Synchresis

I took inspiration for hyperreal synchresis from hyperreality in mainstream cinema and the postproduction technique of foley[5]. The approach of foley and producing synchronised post-production sound is something that is widely utilised in mainstream movies. I intended to integrate this into my own work to convey how hyperreal sound can be used to enhance realism in representational imagery. Tomlinson Holman's book *Sound for Film and Television* (2002) explains what hyper-real sound is.

> Sound recordings for film and television are often an exaggeration of reality. One reason for this is that there is typically so much competing sound at any given moment that each that is recorded and must be heard has to be rather overemphatically stated, just to "read" through the clutter. Heard in isolation, the recordings seem silly, over-hyped, but heard in context, they assume a more natural balance.
>
> (Holman, 2002, pp. xviii - xix).

An example of hyperreal sound in mainstream cinema can be found in Christopher Nolan's film *The Dark Knight* (2008). In the Joker hospital explosion scene at *01:47:20 - 01:48:20* in the movie, layers of sound design and SFX are added to sonically convey the aggressiveness of the flames, shattering glass and crumbling of the building's infrastructure. To emphasise the magnitude of the explosion, the explosions and flames are exaggerated with sub bass and an increase in low frequency content. Additionally to this, the dynamics of the sounds are severely increased to represent the loudness of the explosion. The use of hyperreal synchronised sounds at this particular part in the film are there to enhance the emphatic rumbling of the explosions that are engulfing the hospital. Layers of tinny and crisp timbres are added with a overtly enhanced high frequency content of the window's shattering to pieces. This is exaggerated even further with automated reverbs also being applied to alter the spatial perception of the surroundings as more windows shatter (Holman, 2002). The dynamic range of the sounds that represent the glass shattering also alters. Sounds that are synchronised to the explosions that occur closer to the camera are dynamically exaggerated. In my work I wanted to elicit the exaggeration of reality (Holman, 2002) and emulate some of the sound processing techniques in *Dark Knight* (2008).

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[5] Foley: a kind of sound effect that is made in a sound studio while watching a picture. The most well-known Foley effect is footsteps, but many other sounds are also recorded in this manner… It has been found expeditious to add many low-level kinds of sounds with the Foley process in order to make the sound seem more real. (Holman, 2002, p. 264).

Similar to the approach of hyperreal sound in mainstream cinema, I intended for hyperreal synchresis to emphasise important moments in the visuals. I did this by creating sounds with exaggerated timbral qualities and dynamics. I used hyperreal synchresis in this project by producing sound to match the temporal behaviour and characteristics of an image, amplifying the vividness of the imagery and creating tight synchronisms between sound and image. One way of achieving this would be enhancing a specific frequency range with an EQ boost. I predominantly did this with sounds that already had a higher frequency content. However, I also would boost the sub and lower frequency content of certain sounds, subsequently enhancing the bass rumbles and increasing the impact of bass in the soundtrack. An example of this can be found in *Machines* at *00:40 - 00:46*, where the exaggerated sounds of the hammer is heard. I aimed to boost the higher frequency content of the sound, thus overemphasising the metallic timbral qualities. I also gradually introduced a low pass filter, to exaggerate the changes in the way the metal was being hit by the hammer.

Throughout this project, I wanted to use real-world sounds through the inclusion of wild sound. I wanted to take as many samples as possible from wild sound capture with the intention of manipulating the sounds with subtle glitch-like methods. Prior to composing for this project, I had a practice of collecting sounds for future compositional use. Before creating each soundtrack, I would watch each film, picking out specific real world objects in the films and then seeking out appropriate samples from my collection that I thought would be useful to portray those real world objects and their behaviour. I would then decide which sounds could be enhanced to create a sense of hyperreality and which others could be manipulated with glitch-like methods to produce a sense of the surreal.

An example of a hyperreal synchresis is the water in the *Idyllic* film at *00:29 - 00:*55. In this scene, the motion of the water conveys a sense of calmness. This then changes to a slightly more aggressive motion due to the water hitting against the rocks. I aimed to produce sounds that texturally changed, so that the crossover from softer to more impactful dynamics was exaggerated. Similarly to the *Dark Knight* (2008) example above, I exaggerated the sound by overemphasising the higher frequencies. I then introduced a subtle bitcrushed distortion effect to

draw the spectator's attention to the water hitting again the rocks. This example provides the listen-viewer with a naturalistic yet exaggerated *real world* sound.

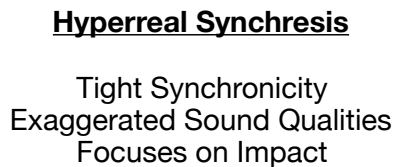Figure 1 shows a breakdown of the key characteristics of hyperreal synchresis.

<div align="center">

<u>Hyperreal Synchresis</u>

Tight Synchronicity
Exaggerated Sound Qualities
Focuses on Impact

</div>

Figure 1. Hyperreal Synchresis Breakdown.

3.2.4 Surreal Synchresis

According to the Oxford English dictionary, "surreal" is defined as: "Having the qualities of surrealist art; bizarre, dreamlike". ("Surreal", 1986). Furthermore, "surrealism" according to the Oxford English dictionary is defined as:

> A movement in art and literature seeking to express the subconscious mind by any of a number of different techniques, including the irrational juxtaposition of realistic images, the creation of mysterious symbols, and automatism; art or literature produced by or reminiscent of this movement.
>
> ("Surrealism", 1989).

Surrealism in this project is defined as deforming realistic sounds to make them abstract and unusual. I wanted to create sounds which would act like the "irrational juxtaposition of realistic images" for my films. The main focus of using surreal synchresis was to match visual temporal behaviours but in a more abstract manner than hyperreal synchresis. I wanted to produce sounds that applied a looser temporal synchronicity to sound and image, giving a "less naturalistic, more readily poetic effect" (Chion, 1994, p. 65).

Figure 2 shows a breakdown of the key characteristics of surreal synchresis.
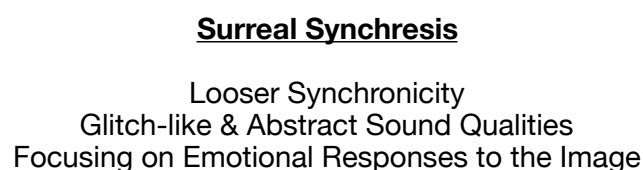
<div align="center">

<u>Surreal Synchresis</u>

Looser Synchronicity
Glitch-like & Abstract Sound Qualities
Focusing on Emotional Responses to the Image

</div>

Figure 2. Surreal Synchresis Breakdown.

I aimed to explore surreal synchresis in the film *Travel*, with the shot of the train at *01:25 - 01:*48. I wanted to create a looser surreal synchronisation with the temporal motion of the train. This refers back to the audiovisual contract (Chion, 1994) and consciously wanting to remove the naturalistic behaviours in the sound yet, still symbolise *some* of the timbral qualities a spectator may expect from the image. I imagined the many mechanical components of the train such as gears, wheel mechanisms, linkages, axles, and hydraulics. I wanted to create sounds with similar timbral characteristics. I produced 'click' and 'tick' sounds, to emulate the metallic and percussive qualities of the train via granular synthesis and micro-looping of specific segments of a sample. The amount of glitch-like processing involved leads to a non realistic sound yet, one we still link to the onscreen activity. Glitch techniques such as degrading audio and rhythmically erratic granulated patterns are created to produce elements of surrealism and are applied with looser temporal synchronicity. Loose synchronisation here means creating and matching sounds to approximately mimic the behaviour as in the image. For example, flickering light might be matched with erratic staccato rhythms. Even though the exact number of flickers was not matched between visual and sound the behaviours are similar. To produce a surreal abstraction of the mechanical sound of the train on the tracks, I used processing such as layered tape delays to portray the fluttering jittery behaviours of the train. I aimed to create a level of apprehension, tension and anxiety via the sonic representation of the fidgety temporal activity of the train. Even though the main character is not visible in this part of the film, I felt that I could use the visual momentum of the train's motion and create sounds that reflected the emotional state of the character.

Synchronicity was often used to integrate sounds in to the soundtracks to provide some resemblance to the onscreen activity, but in an ambiguous manner. By elasticising the placement of sounds where visual temporal activity occurred, my intention was to draw upon the similarities to the *real world* sonic characteristics rather than copying *exact* visual behaviour and activity happening onscreen. An example of this can be found in *Machines* at *00:18 - 00:27.* I used granular synthesis on a sample of a music box, a sound that already has metallic timbral quality, to enhance the artefacts and elicit further percussive qualities in the sound. As a result of this, I

created a sound that linked to the sonic behaviour of the machine in this example, but did not match the *exact* visual temporal qualities and movements that occurred in the film.

In contrast to this example, some sounds were edited to the *exact* movements of specific visual objects. I did this to make sure that the sonic and visual activity became the focal point of a particular moment in the film. An example of this method can be found at *00:55 - 01:01* in *Idyllic*. By editing the sound to precisely match the movements of the dandelion seed heads being blown in to the air by the wind, a sonic to visual relationship is formed. Even though the sound is not the *specific* sound we expect from the image, the relationship is believable due to the sonic and visual behaviours being explicitly matched.

3.2.5 Conventional Approaches to Sound & Film Music in Mainstream Cinema

For this project, one of my aims was to explore how glitch-like sounds could be integrated within the common musical and instrumental practice of mainstream cinematic soundtracks. I wanted to draw upon traditional musical techniques that are commonly associated with mainstream cinema such as tonal harmony, pitch, and metric rhythmic components. I aimed to include common instrumental sounds in film music such as strings, brass, choir, synthesisers and pianos, to provide the listen-viewer with recognisable traits that are typically associated with mainstream cinematic soundtracks.

I intended to refer to mainstream cinematic soundtracks from not only using traditional instrumental sounds but also sounds that are not commonly defined as *instrumental*. I created glitch-like sounds from samples, and developed them into sounds that had instrumental qualities. In some instances in my work, I also manipulated traditional instrumental sounds. In the *Travel* film at *01:16 - 01:28*, a piano can heard. However, I wanted to create a piano sound that produced similar behavioural qualities to the heat waves' fluttering motion in the visual. I did this by creating two separate tracks playing the same piano melody. I then applied different processing FX's such as a vocal transformer, bitcrusher, tape delay and tremolo to each track to change the sound of the pianos. Thus, an instrumental sound could be used to imitate the behaviour of onscreen activity through sound manipulation, rather than only using samples taken from wild sound for this purpose.

Figure 3 shows images of the FX's used to create the first 'high pitch FX piano'.

Figure 3. High Pitch FX Piano.

Figure 4 shows images of the FX's used to create the second 'low pitch FX piano'.

Figure 4. Low Pitch FX Piano.

Another example of this idea can be found in the *Horror* film. I wanted to use mainstream cinematic techniques and instrumental sounds that are commonly associated with the horror genre. By composing with strings with differing articulations (such as trills and tremolo), brass swells and haunting choirs, I was referring to the conventional horror *clichés* a spectator might anticipate from the horror genre. However, I also aimed to extend this traditional approach to sound in horror films using glitch-like sounds. I did this by imitating the traditional and conventional instrumental sounds by using any other form of sound to create rhythmic and pitched elements from non-instrumental sounds.

4. Commentary
4.1 Travel

This film explores a metaphorical relationship between mechanical motion and emotion. I aimed to explore to how mechanical components and contrasting vehicle motion in the film could be imitated in the soundtrack. I portrayed this in the soundtrack by altering spatial perception, creating tempo curves to match the vehicle's accelerations and decelerations, and designing sounds to sonically link to the technological elements of the vehicle. I also aimed to explore how I could create a relationship between the vehicles' temporal behaviour and the character's emotional state. This film was inspired by the film *Locke* (2014). In *Locke* (2014), the character's emotions play an important role in expressing the narrative. The camera angles and shots used are there to accentuate those attributes of fear, apprehension and unease which is something I wanted the filmmaker to emulate for my film.

For the *Travel* film, my ideas began with my own personal experiences during travel. When I travel, especially on trains, I have a tendency to feel anxious. In my own experience, travel is sonically very noisy and busy. I aimed to use my own emotional responses to travel and explore how I could link them to the mechanical characteristics and sounds of a train. With the physical material of trains and cars being clunky and dense in weight, I believed that I could create sounds with those characteristics to describe the character's emotion. I wanted the audience to perceive the character's emotions such as jitteriness, apprehension and unease. To convey this within the soundtrack, I used surreal synchresis to align distinctive sounds and articulations such as staccato, noise elements and brittle timbres to create a bridge between the visual motif of the transport's motion and the mindset of the character travelling in different vehicles.

One example of this can be found at *02:50 - 02:59* in the film. I aimed to explore how I could represent the sound of the train on the railway tracks, with quick staccato-like pulsing rhythms. To add more density to the sound, layers of metallic timbres are introduced, indicating erraticism and jitteriness due to the train's motion on the train tracks. I wanted to explore how glitch-like timbres could represent the sharp, stab-like and intense qualities of the train's mechanisms and also convey a sense of unease and apprehension within the character.

A second example can be found at *02:03 - 02:07*, where I wanted the shot of the 'door opening' mechanism to be reflected in the soundtrack. I did this by creating a rhythmically pulsating sound to metaphorically represent the electrical currents flowing through the train. I boosted the high frequency content, thus increasing the overall crispness and voltage-like 'ticks' in the sound. The soundtrack provides a subtle counterbalance to the film's lack of abstract activity. I wanted to explore how multiple meanings could remove the "see dog, hear dog" realism" (Sonnenschein, 2002 p. 169) concept of a vision and sound relationship. I did this by creating surreal sounds that produced an unnatural yet clear sonic to visual bond, showing the listener-viewer that "a single sound can have different meanings, depending on the visual context in which it is placed". (Sonnenschein, 2002 p. 169).

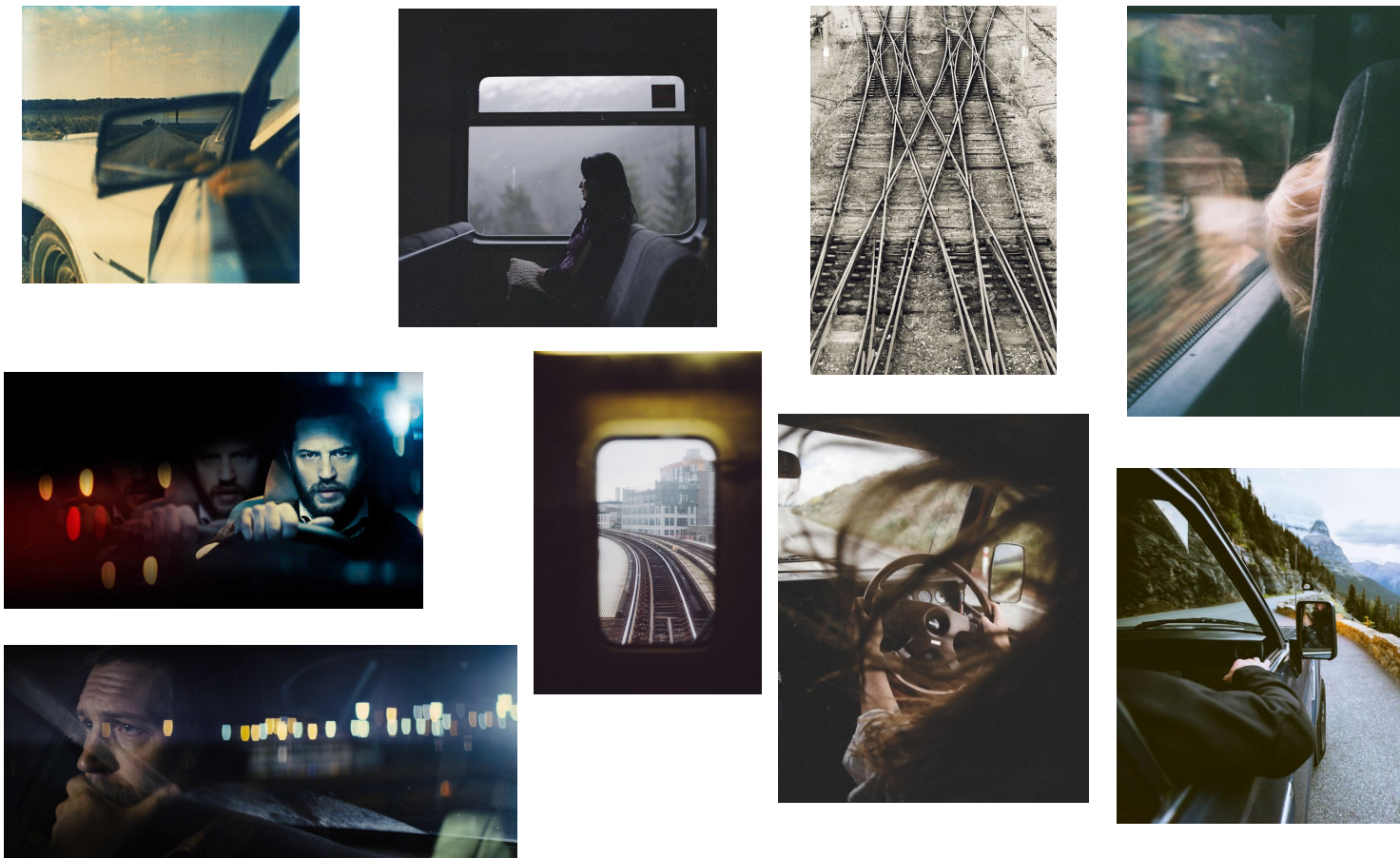Figure 5 shows the moodboard examples for the *Travel* film.

Figure 5. Travel Moodboard Examples.

4.2 Machines

Machines explores how a sonic to visual relationship can be formed by creating sounds that represent the graininess and age of film footage, as well as the machine mechanisms and thermal energy such as fire, lava and sparks in the film.

As the machines film is based on archive footage, the texture and overall quality of the film produces a sense of eeriness. Due to the lo-fi quality, the clarity and detail within the image is decreased. My intention was to utilise these aspects of the film by creating grainy, distorted and fragmented sounds to match the grittiness and degraded imagery. My main focus for this film was to draw attention to the metallic materials and the constant motion of the machines. I wanted to create sounds with the timbral qualities such as clangorous, brittleness and percussiveness to match the machines' metallic material. An example of this can be found at *00:18 - 00:26* and *01:07 - 01:32*. I aimed to emulate the clangour and noisy atmosphere depicted in the film, with the motion and regimental movements of the machines.

Hyperreal and surreal synchresis is frequently used in this film, with certain sounds being linked to the behaviour of visual activity in the image with greater ambiguity, and others tightly synced to produce more precise, 'real world' representation. Flames and sparks were visual elements I emphasised with hyperreal sounds. I manipulated sounds with heavy distortion and bitcrushing FX's to create and exaggerate lo-fi characteristics. I did this so that the sounds matched the aggressiveness of the flames and complemented the lo-fi film quality. Examples can be found at *00:27 - 00:33* and *03:30 - 04:15* in the film. The lo-fi qualities of the visual and sound equally convey a sense of foreboding and sombreness which is visually represented by the gritty, rough conditions of the workers. There is no clear narrative to this film, but nevertheless I wanted match the lo-fi grittiness of the film with a foreboding soundtrack to describe the emotional state of the overworked and fatigued workers.

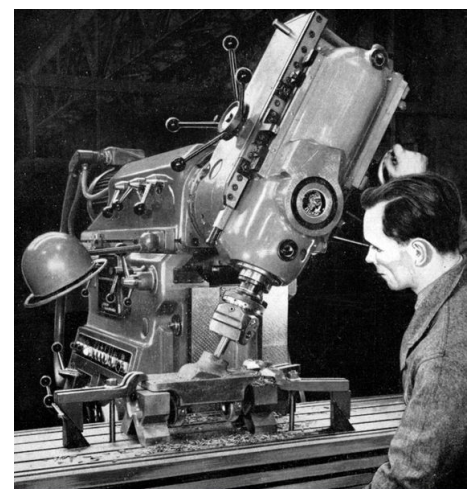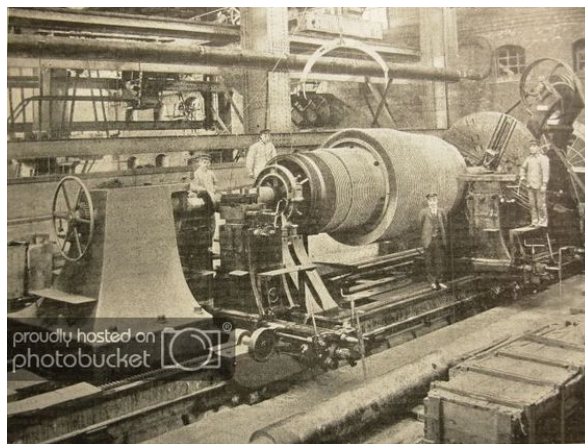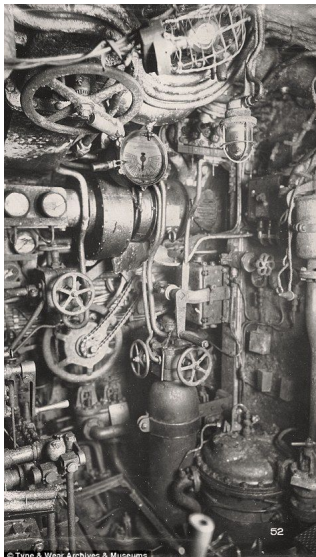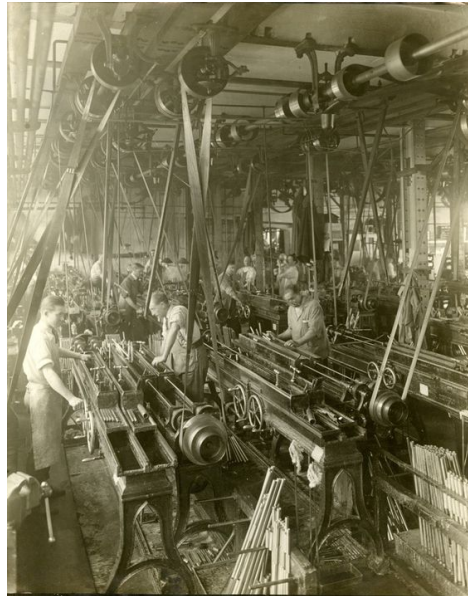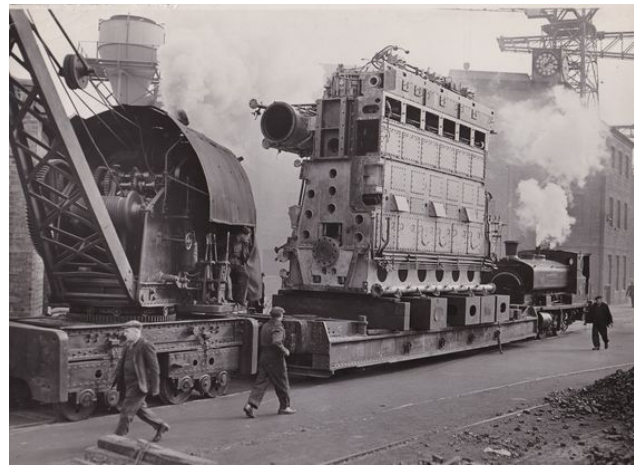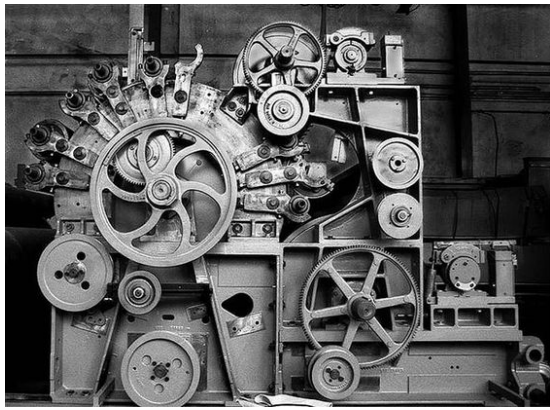Figure 6 shows the moodboard examples for the *Machines* film.

Figure 6. Machines Moodboard Examples.

4.3 Horror

The *Horror* film utilises key features and clichés that are expected from the horror genre. I wanted the film to use locations, objects and characters that are synonymous with horror films such as graveyards, churches, abandoned buildings, and creepy characters. This film explores more surreal and experimental cinematic techniques, with the use of glitch-like visual FX's being applied, such as stuttering images, fuzziness and sped up footage. I aimed to create glitch-like sounds related to these filming editing techniques to mark their appearance in the film. Alongside this, I used more conventional instrumental approaches to scoring a horror film, including the sounds of haunting choirs, string ensembles and brass swells. I also intended to draw upon the use of the monochrome visual effects in my soundtrack. I did this by creating distorted, crunchy and grungy sounds that emphasised the film's eery context. This film was inspired by *The Conjuring* (2013), with filming techniques of close up shots of evil faces and wide angle shots of chairs, tables, staircases, and flickering lights.

I also wanted to synchronise sounds to certain moments in the film to represent the TV static, but more importantly to evoke an abstract eeriness and tension. An example of this can be found at *00:23 - 01:05*, where I designed sounds that replicated the static-like qualities of the TV. In addition, I manipulated a sample of a radio with FX's such as bitcrushed distortion and band-pass filtering to produce a lo-fi, band pass filtered sound that could be associated with old technology.

This film, like the *Machines* film, lacks a clear narrative, so it was important to convey emotive signifiers and horror clichés through sound to provide a subtle narrative arc and shape to the piece. However, unlike in *Machines*, I did aim to create a subtle narrative arc via the prominent characters in the film, such as the creepy girl, to provide a 'typical' horror narrative a listener-viewer is used to. I also wanted to design sounds that represented physical sensations, creating a sense of tingles and scratchiness on the skin for the spectator. This is a reason that I used white noise and crackling high frequency content sounds to create the sensation of *chills* and *itchiness* in the soundtrack.

One concept that I wanted the visuals to explore was the use of flickering lights, time-stretched shots and shaky 'point-of-view' camerawork. The flickering lighting enabled me to create sync points in the music, accenting the flickering shots in the film and creating apprehension via the soundtrack. The time-stretched edits in the visuals allowed me to use abstract, extreme time-stretched sounds that I synchronised to the image to produce a feeling of surreality and ambiguity. An example of this can be found at *01:48 - 01:54*.

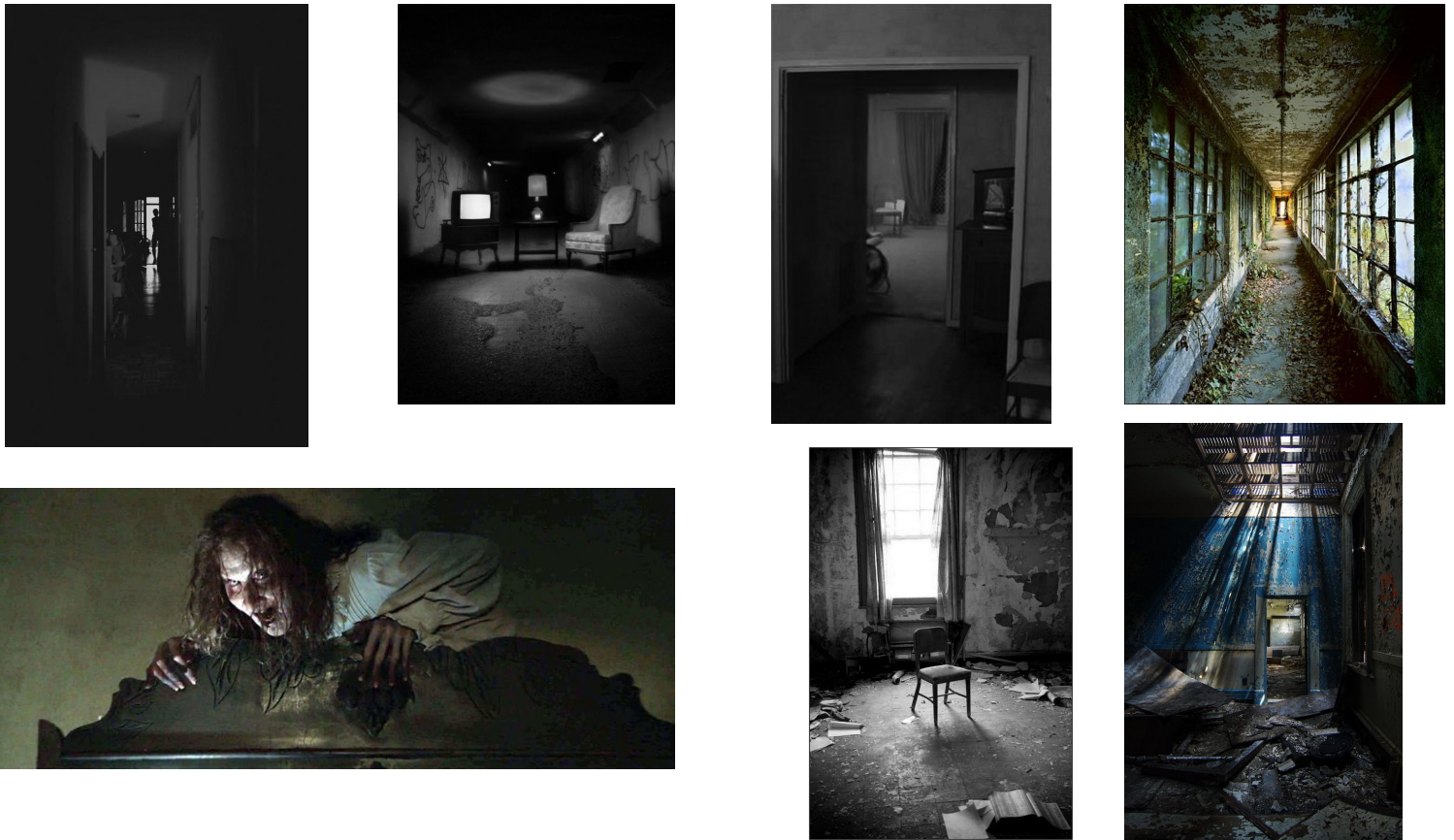Figure 7 shows the moodboard examples for the *Horror* film.

Figure 7. Horror Moodboard Examples.

4.4 Urban

This film explores the behaviour of people living in a frantic urban environment. I wanted all the footage to be filmed at night, emphasising the busyness of urban nightlife and to show the diversity of artificial lighting that occurs in an urban landscape. With the use of drone shots, the film shows the expansiveness of a large city. The visuals for this film were inspired by Ridley Scott's film *Blade Runner* (1982), particularly from scenes that were shot in the franticness of the city and juxtaposed with those of an automotive flying through open-ended futuristic urban landscapes*.* For certain scenes, I wanted the filmmaker to use out of focus camera shots. For me, this reflects the mental fuzziness of being situated amongst busy urban nightlife. To emphasise the visual blurriness, I created lo-fi noise elements and degraded audio using granular synthesis. The music of Alva Noto inspired me to use granular synthesis in this particular work. By using this creative tool to degrade pre-existing samples, I was able to produce glitch-like, grainy and artificial micro-sounds similar to Alva Noto's compositions.

I wanted to create a soundtrack that utilised noisiness in order to relate to the busyness of urban nightlife represented in the film. An example of this can be found in the soundtrack at *00:54 - 01:26* and *02:47 - 02:58*. I wanted the soundtrack to make use of erratic sonic activity that represented the busyness of the city. I did this by manipulating sounds with bitcrushed distortion, and automating reverbs with differing levels of volume, pre-delay and early reflections to match to the acoustic reflectivity of the buildings.

As previously discussed, in this film I wanted to sonically mimic the motion of vehicles. I wanted to reflect how the motion and speed of vehicles can differ from the motorway to city streets. The motion of vehicles driving in the city were represented by sounds manipulated with extreme time-stretching and evolving granular synth pads to simulate to the vehicles driving at slower speeds. Vehicles driving on the motorway were represented through sonic abstraction and glitch sounds, such as microscopic slicing of waveforms, drum patterns with gradually changing tempos. These were also thicker in texture and volume to imitate the high speeds and number of vehicles on the motorway in comparison to the fewer vehicles in the city. An example of this can be found at *03:05 - 03:52*. Here, I intended for the introduction of glitch-like sounds to convey erraticism and

intensity to link to the high level of concentration that is needed to drive on a motorway and represent the sound of cars passing at high speeds.

Drone shots play a key role in presenting the expansive scope of nightlife in the urban location. For the sections where drone shots are used, I wanted the spacial perception within the soundtrack to change and relate to the feeling of being in the air. I did this by automating reverbs and EQ's to evoke the sensation of being in the air, showing the expansiveness of the city. Spatial perception is widely utilised in *Blade Runner* (1982) when the composer of the motion picture, *Vangelis* thickens the texture of the soundtrack by using chamber-like reverbs with longer decay times to create the feeling of elevation when the cars are traveling in the air, looking over the urban landscape. I aimed to reflect the cinematography of close up shots of inner city activity and expansive drone shots within the soundtrack by modifying the spatial perception of sounds, thus, imitating the visual contrasts in perspective. One way I achieved this in the soundtrack was by automating the size and dry/wet percentage of reverbs on specific sounds.

I intended for this film and soundtrack to evoke characteristics that are evident in the thriller genre. In my opinion, *Urban* conveys a sense of mystery due to the film being shot at night. To draw upon the features of thriller film music, I used an arpeggiated bass line with thudding and percussive qualities, emulating the heartbeats of the crowds and the motion of the vehicles. I also create a series of rhythmical pulses throughout the soundtrack with the use of drums and percussion. This not only increases the tension within the audiovisual but also allows the spectator to latch on to recognisable rhythms and pulses.

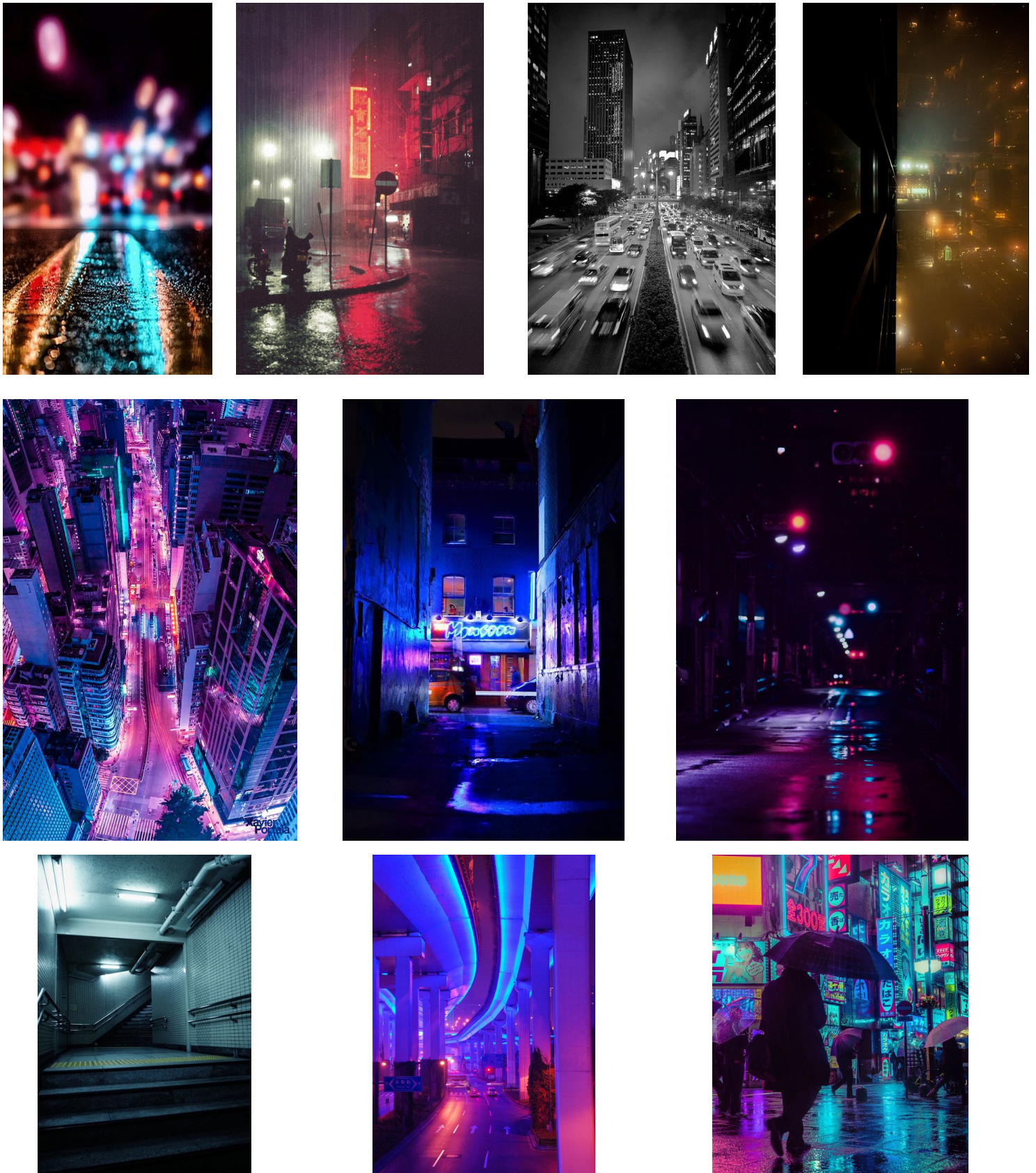Figure 8 shows the moodboard examples for the *Urban* film.

Figure 8. Urban Moodboard Examples.

4.5 Idyllic

Idyllic explores seasonal changes within landscape imagery. The film looks at the changes in physical materials such as grass, trees, water and plants, caused by the changing seasons. This film was inspired by Spitfire Audio's three short films titled *'Between a Tree and a Tree'*, *'Can You See Through'* and *'I'll Ask Him'* (2018). I wanted similar fixed shots of landscapes mixed with the motion of objects in the foreground of the shot.

Within the soundtrack, I aimed to represent the seasonal changes that occur throughout the film. I explored this sonically by creating digitalised noise and extreme time-stretched sounds. This was to produce layers of sonic texture and to exaggerate noise artefacts within the sounds. To mirror the seasonal changes, I sonically imitated the visual behaviour and changes in sunlight, colouration of vegetation and physical materials. An example of this can be found at *00:01 - 00:31* and *01:01 - 01:26* in the springtime section of the film. In this example, I matched the green, healthy foliage and 'warmth' of the sun with crisp, high frequency white noise timbres that slowly evolve into luscious soundscapes and granulated, transient pad-like sounds. In the autumnal section of the film, I wanted to represent the brown, dying foliage with degrading audio, distorted, bitcrushed and boosted low frequency sounds. An example of this can be found at *04:06 - 04:22* with the introduction of harsh, crunchy percussive rhythms reflecting the perception of walking on decaying leaves on the ground.

For this film, my main inspiration was Taylor Dupree's approach of slowly modifying noise timbres with variation in dynamics. I used automation of filters and volume to create a sense of motion in the sound, which in my opinion, is most evident in the springtime section of the soundtrack.

The motion of the water flowing in the springtime section of the film at *00:29 - 00:55*, conveys a feeling of tranquility, peacefulness and calmness. I wanted to match the soft wave-like fluidity of the water with bright noise timbres to produce similar sounds that can be heard in recordings of water. However, I wanted to create the direct antithesis to the water flowing in springtime with the lack of motion the stream portrays in the wintertime section of the film. The stream at *04:39 - 05:00* evokes fragility and brittleness. This is displayed in the image with the water freezing, then

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melting and cracking. This completely alters the motion and behaviour of the water, so I designed sounds with matching sonic characteristics. I created this in the soundtrack with distorted, lo-fi and brittle sounds which were all created from degraded audio. I did this to remove the more naturalistic characteristics from the sound but still sonically represent the cold temperatures that are evoked in the film.

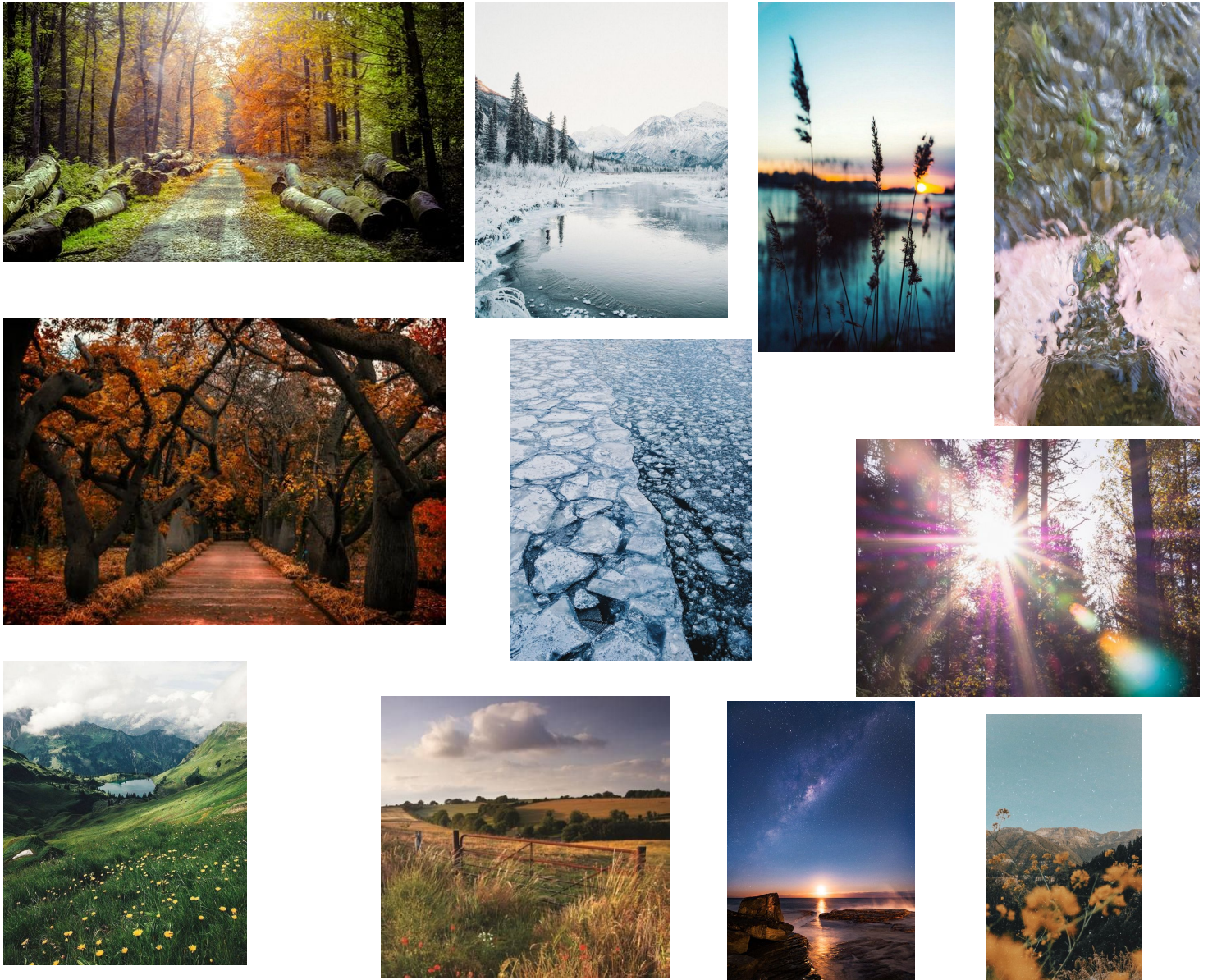Figure 9 shows the moodboard examples for the *Idyllic* film.

Figure 9. Idyllic Moodboard Examples.

5. Conclusion
5.1 Reflection

The main aim for this project was to develop my own sonic glitch aesthetic to represent specific visual motifs, behaviours and motion of real world objects in the films. To develop my personal glitch aesthetic, I researched a variety of glitch artists and audiovisual works that in turn inspired me to create specific glitch-like sound types and techniques for this project. I was inspired by glitch artists such as Taylor Dupree, Matmos and Alva Noto and audiovisual works by Zai Tang, Stephen Callear and Justin Ascott. I aimed to mimic some of their compositional methods and explore how I could develop their specific approaches in to my project.

As glitch music focuses predominantly on the use of sonic abstraction, I felt it was important to create a method that would aid the integration of glitch-like sounds in to the soundtracks to achieve a strong audiovisual bond. One way I did this was by extending Michel Chion's concept of synchresis (Chion, 1994) by creating my own specific approaches; hyperreal and surreal synchresis. In order to integrate glitch-like techniques and aesthetics into the soundtrack for these non-narrative but representational films, I decided to develop Chion's concept of synchresis (Chion, 1994). Hyperreal synchresis involves the enhancement and exaggeration of visual realism through sound. This approach is evident within mainstream cinema with techniques such as foley to match sounds to the images, subsequently amplifying vividness. Surreal synchresis is defined as creating sounds that convey unusual and less naturalistic qualities, removing the expected sonic to visual connection for key motifs. This project has established that by pushing the boundaries of linking representational imagery to abstract soundtracks via motion, real world objects and temporal behaviour, a cohesive bond between vision and sound elements can still emerge.

This project has shown that glitch music techniques and aesthetics can be integrated into music for film and created from any source of sonic material. From a personal perspective, I aimed to produce soundtracks that consciously sought out sonic imperfection. By introducing glitch sounds into the soundtracks, I was able to sonically experiment and explore how non-instrumental sounds could be considered instrumental. I made reference to mainstream cinematic soundtracks with the use of traditional instrumental sounds but also sounds that are commonly

defined as non-instrumental. I created glitch-like sounds from samples, and developed them into sounds that had instrumental *qualities*. By working with pre-existing samples, which I manipulated to create glitch-like results, I was able to create sounds that sonically matched the behaviour of specific visual objects in the films. I hoped that by doing this, I would be able to produce sonic to visual relationships that a listener-viewer would not normally anticipate, but would accept as one entity. Throughout the project, I aimed to do this by developing an approach of time-aligning sounds and analysing important temporal activity in order to match it within the soundtracks.

5.2 Future Directions

The submitted works in this project propose a number of possibilities for future works. One area that I would like to explore in more detail would be to work with surreal and more experimental films. Here, I believe that the audiovisual relationship might be stronger than in this project, due to surrealistic film providing visual abstraction that could be combined with an abstract soundtrack. I also believe that I would be able to create soundtracks with greater levels of sonic abstraction than I have done for this project, due to the experimental qualities and visual ambiguity within surreal cinema being more prominent than in the films in this project. For future works, I aspire to create sounds that utilise a *technological approach to* glitch. I aim to do so by damaging physical materials and exploiting technological failure, taking inspiration from glitch artists that use take this approach in their work.

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