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Original Citation

Rich, Jonathan (2010) Exploring the Synthesis of Musique Concrète and Visual Media in Popular Culture. Masters thesis, University of Huddersfield.

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Exploring the Synthesis of Musique Concrète

and Visual Media in Popular Culture

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A portfolio of original audiovisual work and commentary submitted to the

University of Huddersfield in fulfilment of the requirements for Masters by Research.

December 2010

Abstract

This practice-based research project will examine the link between the contemporary genre of Musique Concrète and the visual medium, through a portfolio of audiovisual pieces. By undertaking in-depth research into audiovisual principles demonstrated by Michel Chion and Walter Murch, I will first outline the various relationships that audio has with vision, and vice-versa, drawing on ideas from theorists like Denis Smalley, Rick Altman and Paul Rudy. Then, by subsequently analysing the definitions and interpretations of Musique Concrète by musicologists such as Pierre Schaeffer and Pierre Henry, I will look at the issues and debates surrounding *acousmatic sounds,* as well as the way the listening audience receives and perceives sound. Finally, I will amalgamate these ideas and concepts into a theoretical framework, and strive to answer the question of how Musique Concrète could potentially manifest itself visually. As vision is generally seen as the most dominant of the senses[1], the importance of having aesthetic compatibility between the audio and visual elements of a piece of work is imperative. Therefore, study into this area will help to develop a specific integrated framework for effectively analysing or creating audiovisual work involving concrete music.

Drawing inspiration from various video artists such as Rob Chiu and Chris Cunningham, the portfolio comprises three audiovisual pieces, each with the common goal of demonstrating a marriage of concrete music and its accompanying visual stimuli. However, each piece explores a different approach to achieving its unified objective, by adopting various methods of realisation through utilising an assortment of visual production techniques, based on conceptualising the creative process. This will be accomplished by looking at the schematisation of Musique Concrète, and the parallels that run between its concrete to abstract compositional process and that of video editing. Interpreting these concepts visually will help to

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[1] Chion, M. *Audio Vision* (London 1994)

develop the foundation for an enhanced, sympathetic audiovisual relationship. The soundtrack will also be extrapolated into varying degrees of abstracted syntax, as well as explored for aural and mimetic discourse, revealing how it evokes imagery and metaphoric messages through environmental context, and the impact this has on the video.

The popular culture element of the research project will look to consolidate these ideas of a concrete sound and video hybrid, and present it in a modern-day popular context. By studying modern Musique Concrète artists such as Matthew Herbert, whose seamless blend of Jazz and concrete samples produces a unique and popular soundworld, to more traditional artists like Michel Chion, Pierre Henry and Luc Ferrari, the portfolio accompanying this project will consist of sounds from everyday objects, integrated with samples of electric guitar and bass, and manipulated through the use of software plug-ins and granular synthesis. The result is an industrial soundworld contextualised within various genres of popular music.

Exploring the Synthesis of Musique Concrète and Visual Media in Popular Culture

Ever since the dawn of video, there has always been an overriding emphasis placed on the visuals, with the soundtrack seen as the less prevalent aspect of film. As a result, the audio aspect usually takes a back seat when it comes to analysis.[2] This trend has undoubtedly derived from the tendency of the film's visuals to dominate the senses, with over 75% of sensory information being received through the eye.[3] Therefore, it is arguably the soundtrack that suffers the most from a lack of audience appreciation. Bearing this in mind, it is important to understand the principles that will enable the construction of a positive and balanced relationship between the visuals and the sound, without overshadowing its counterpart. To achieve this, an examination of the different elements of sound and vision, such as concepts and principles, will help to construct a fundamental framework for generating the right conditions for audiovisual aesthetic compatibility.

1. Audiovisual Principles

A key audiovisual principal that this project will look to examine and utilise is that of *acousmatic sound*, and its counterpart, *visualised sound.* Acousmatic sound has an important role within audiovisual work. It can play with the audience's natural tendencies to place identification on the sound's origin,[4] through a process described by Denis Smalley as *source-bonding*.[5] This technique lends itself well to allowing control over how the viewer should react when watching a film, using the notion of an audience's investigative ear to place emphasis on the concurrent visuals. Deprived of its original cause, meaning and identity, acousmatic sound

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2 Altman, R., *Sound Theory Sound Practice* (New York, 1992), 1
3 Shuker, R., *Understanding Popular Music* (Oxon, 2005), 168
4 Lack, R., *Twenty Four Frames Under* (London, 1997), 320
5 Smalley, D., 'Space-form and the Acousmatic Image', *Organised Sound,* 12 (2007). http://journals.cambridge.org.librouter.hud.ac.uk/action/displayFulltext?type=1&fid=971864&jid=OSO&volumeId=12&issueId=01&aid=971860 (22 December 2010)

objects are judged on their own merit through a process referred to as *reduced listening*[6]. This is one way for the sound designer to grant the sound primacy over the visuals, by generating sonically interesting sound objects.

Acousmatic sound also gives filmmakers the opportunity to generate a perceptual vacuum[7], in which a sonic experience can lead to 'multi-sensory interactions'[8] where all the senses work in tandem. By removing a sound from its source, it opens up a host of interpreting possibilities, encouraging the audience to look more carefully at the audiovisuals for a deeper meaning. Paul Rudy expands on this, stating that 'acousmatic sound is a visual sensory experience'[9], meaning that other senses, such as vision, are triggered through expectations and preconceptions the audience has with the sound object. The result of this is more audiovisual creativity and freedom, granting the filmmaker greater control over the extent at which to engage with the viewer, either consciously or subconsciously, through juxtaposing acousmatic sound and image.

At the opposite end of the spectrum, sound can directly relate to the onscreen visuals, either implicitly through imagery, or explicitly through witnessing the cause. This concept, expressed by Chion as *Visualised Sound,*[10] also has its own set of unique compositional tools at the disposal of the filmmaker. Allowing the audience to see the original cause of the sound brings with it the added benefit of satisfying the listener's curiosity as to what the sound is, inviting them to pay more attention to the sonic qualities of the sound. In terms of the beneficial permissions this grants the audiovisual composer, it enables them to mould the soundtrack and film together with more flexibility, allowing more creativity over audio and visual connections,

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[6] Landy, L., *Understanding the Art of Sound Organisation* (n.p., 2007), 73

[7] Murch, W., 'Stretching Sound to Help the Mind See', *Film Sound,* 1 October 2000, http://filmsound.org/murch/stretching.htm (13 June 2011)

[8] Rudy, P., 'Three Requiems and a dream: The language of electroacoustic sound in film', *Electroacoustic Music Studies Network,* http://www.ems-network.org/IMG/pdf_RudyEMS07.pdf (13 June 2011)

[9] Ibid 1

[10] Chion, M., *Op. cit.,* 71

which would not be possible if the acousmatic sound object intrinsically invited audience interpretation. However, the risks of this are apparent, as the listener may stray from the composer's original intentions of the work.

Another audiovisual tool based on visualised sound, coined by Chion as *synchresis*[11] (synchronised synthesis), enables connections between sound and image to form through a synchronised audiovisual event. This process helps to assign connotations and metaphorical implications to the synchronised image, allowing both diegetic and non-diegetic sounds to fuse with the accompanying visuals, regardless of whether or not it makes logical sense outside the film's world. These on-screen fusions of sound and visuals can be used and utilised by the filmmaker, yet again, granting them permission for symbolic and metaphoric exploitation in the film.

2. Musique Concrète Principles

As a critical component of this project, Musique Concrète forms the platform for which to model a dexterous framework. It was Pierre Schaeffer who pioneered this experimental music genre, developing the concept of using recordings of real world sounds to create avant-garde music. Through altering or removing the characteristics of each sound, such as attack and decay, he manipulated the samples with the intention of eliminating any connotations that the listener might associated with the origin of the sound, creating in essence what he describes as a sound object *(l'objet sonore)*[12].

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[11] Chion, M., *Op. cit.,* 63

[12] Kane, B., 'L'Objet Sonore Maintenant: Pierre Schaeffer, sound objects and the phenomenological reduction', *Organised Sound*, 12 (2007)
http://journals.cambridge.org.librouter.hud.ac.uk/action/displayFulltext?type=1&fid=971840&jid=OSO&v olumeId=12&issueId=01&aid=971836 (18 December 2010)

There are two trains of thought that composers tend to go by, when it comes to creating Musique Concrète pieces; that either the listener is conscious of the origin of each sound, or is unaware, either through manipulation or acousmatic placement.

On the one hand, theorists and composers, like Terence Dwyer and Schaeffer himself, intentionally want to hide the sounds original cause from the listener, stating that 'we don't even want them to *wonder* what made them'[13]. This approach sets out to create music intended to showcase the aesthetics and timbral qualities of the sound over anything else. It also allows the composer more creative freedom over the sounds used, relieving them from the restrictiveness imposed by being limited to specific sounds and their related meanings. With the listener denied of information about the sounds origin, they become focused on the acoustic properties, rather than the meaning of the sounds, which in turn opens up scope for interpretation.

On the other hand, composers such as Pierre Henry, Luc Ferrari, and more recently Matthew Herbert, all strive to uphold each sounds contextual environment, either through apparentness or implication. Henry's work is based on the ideology of preserving semblance of the source sounds, in order to utilise attached meanings to portray the composer's intentions more succinctly.[14] Ferrari's work displays similarities with this principle, where he acknowledges and admires different sounds for their capacity to make connections with the real world, not just through hearing, but also through the other senses.[15] Although his work conforms to Musique Concrète's conceptual framework, it retains a correlation with the environment in which it was recorded, making the compositional process anecdotal, rather than concrete. Herbert's approach to his work is slightly different, as he conceptualises all his work, usually addressing political or controversial matters through the use of concrete music.

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[13] Taylor, T., *Strange Sounds* (New York, 2001), 14

[14] Ibid 23

[15] Kim-Cohen, S., *In the Blink of an Ear: Toward a non-cochlear sonic art* (New York, 2009), 177

Although his pieces hold value as a standalone piece of music, the fact that he makes apparent the ideas and concepts behind his work reveals a new dimension, providing the listener with a new perspective on his compositions. It is with this that Herbert manages to take the idea of using real world sounds to the next level, and incorporating associations with the sound to further his messages. Herbert succinctly describes the importance of sustaining meaning behind each recorded sample, stating that 'I don't want music to be dismembered from the body it sings from'.[16] By describing his recorded samples as 'that sound', rather than 'found sound', he places emphasis on the importance on contextualising sounds to fortify the messages he intends to get across, meaning that he is more interested in the sound of a particular object, rather than that of just any object.

Another theoretical aspect that can be derived from Herbert's methodology is the idea of providing the listener with additional information on the concept behind his pieces. The cover and inside booklet from his album *Scale*[17] shows pictures of every object and piece of equipment used to create each piece. This kind of visual representation could be utilised by the audiovisual composer, helping the viewer realise the piece's construction. It also suggests that the concept itself can play an aesthetical role in the audience's viewing experience. Accompanying visuals can help to provide the audience with this insight by being able to show the sound in it's original environment, which would not be possible with the soundtrack alone, or relying on the album cover or programme notes.

This project's intention was also to look at how it might be possible to bring Musique Concrète into a popular domain, through utilising visual media. Returning once again to Matthew Herbert, he has helped to bring concrete music into the mainstream, by infusing other musical genres such as jazz, dance and electronica. His pieces are also firmly rooted in traditional western music, as he avoids using the more avant-garde approach of creating

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[16] Herbert, M., 'Matthew Herbert: Writings', www.matthewherbert.com/writings.php (20 December 2010)

[17] Herbert, M., *Scale.* K7 B000EXZIGO (2006)

soundscapes lacking in definite beats, and experimental music that previous Musique Concrète composers have adhered themselves to.

Herbert's talent for *Acoulogy,*[18] (in which one is able to recognise potential in real world sounds for appropriately placing and organising within a musical context, due to the musical characteristics of the sound) has enabled him to give concrete music in its rawest form a mass general appeal. It is possible that this might be due to Herbert keeping sounds quite recognisable, giving the listener, as theorist Leigh Landy describes, 'something to hold on to.'[19] Although an untrained listener may grasp the concept of Musique Concrète, they may, however, find it difficult to listen to a contemporary piece of concrete music. This may be because they are relying on their instinctive drive to place understanding on what they are hearing, subsequently disregarding the appeal of the sonically interesting sound objects. They may also be listening out for aural discourse, a criterion that most conventional Musique Concrète compositions fail to satisfy.

What this means is that concrete music can become more accessible by allowing the audience to be able to understand the inner workings of the piece, by allowing them specific information on what they are hearing. Landy also describes the way in which the use of natural sounds, and the way in which they can be related back to the sound object's origin, tend to be more *digestible*, allowing the untrained listener to feel more at ease with the piece of music. With the added benefit of having the accompaniment of visuals, it is possible to take the previously mentioned theories to a new dimension by literally showing the audience each sound's origin, and by satisfying the criteria for *source bonding*.

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[18] Landy, L., *Op. Cit.* 78
[19] Ibid 74

3. The Synthesis of Audiovisual Principles and Musique Concrète

By combining these Musique Concrète ideas and principles with the audiovisual principles discussed earlier, it is possible for the resulting synthesis to successfully contribute towards formulating an audiovisual framework, by recognising that, in a similar fashion to Musique Concrète compositions, acousmatic and visualised sound allows the audience to connect with the work in various ways. It is deciding at which point to give the audience an opportunity to match certain sounds with their cause through the visuals that provides the composer with powerful tools to control the emotions, thoughts and understanding of the work with greater accuracy.

A key concept behind this project is the debate about how Musique Concrète could be visually represented – Schaeffer states that it is like a figurative painting, or collage of visible objects,[20] whereas Lévi-Strauss suggests similarities with abstract paintings[21]. Francisco López also draws comparisons between a Schaefferian composer and a painter.[22] These ideas stem from the composer's desire to manipulate the concrete samples beyond recognition, desensitise any connotations or associated meanings with the original sound source. The composer is faced with a palette of sounds that can then be used creatively to form the building blocks of a musical piece of work, much like an artist uses a palette of colours to paint a picture. Alternatively, Musique Concrète could be comparable to a collage of sound objects arranged to form a piece of work, in the same way that a visual collage is made up of pictures, carefully positioned in such a way as to represent the artist's expressive intentions.

Another interesting parallel between Musique Concrète and images is that of de-contextualising images, in much the same way concrete music strives to disassociate itself from the sound objects original source.

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[20] Schaeffer, P., *Traitè des Objets Musicaux* (Paris, 1966), 23
[21] Lévi-Strauss, C., *The Raw and the Cooked* (London, 1986), 22
[22] Kim-Cohen, S., *Op. Cit.* 126

Schaeffer drew interesting parallels between the compositional process of traditional music and concrete music. The former sees the composer begin by developing musical ideas, whilst the latter initiates the compositional development by collecting the concrete material. Whilst the abstract process strives for a concrete performance by musicians, the Musique Concrète composer will endeavour to generate ideas and inspiration from the samples already collected.[23] By examining this process, it is possible to understand the mechanics of concrete music, and apply them to the video editing process, in an effort to build audiovisual rapport.

4. Outline of work

The portfolio accompanying this research project will demonstrate the principles discussed earlier in this commentary. This will not only help to produce a synergetic audiovisual relationship, utilising the sound design principles to allow greater flexibility over audience perception, but also provide a foundation to analyse the results, and enabling an effective critical evaluation of the work.

To effectively demonstrate the proposed framework through a broad range of audiovisual work, each piece was approached with a unique composition process and objective in mind. Using Simon Emmerson's 'language grid'[24], which provides a formulated correlation between aural and mimetic discourse of electroacoustic music, and its abstract and abstracted syntax, each piece occupies a specific location within the grid, ensuring a diverse assortment of compositions. Along with Emmerson's grid, each piece will also take a different compositional approach, whilst maintaining a successful manifestation of the proposed audiovisual framework.

Tunnel Vision

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[23] Manning, P., *Electronic and Computer Music* (New York, 2004), 22
[24] Emmerson, S., *The language of Electroacoustic Music*, (Basingstoke, 1986), 17

The first video, *Tunnel Vision,* was intended to be visually dominant, playing with the audience's investigative ear to vary the degree of acousmatic and visualised sound, in an attempt to achieve greater control of the audience's emotional response to the piece. The piece's soundtrack covers a lot of Emmerson's language grid, however, it sits predominantly in the centre, combining an aural discourse with a mimetic one. It utilises a combination of sounds for both effect and perception of the environment, morphologically traversing between acousmatic and visualised sounds through an inter-diegetic process. It remains in the realms of abstract and abstracted syntax, shifting between playing a narrative role in creating atmosphere and synchresis, to providing conventional musical gestures and phrases.

The compositional approach to *Tunnel Vision* began with the visuals, allowing the sound design to take a back seat in the creative process. The intention for this was to explore and trial different visual techniques without limitations imposed by the sound design. It also opens up potential to investigate the relationship between the sound and video, in terms of experimenting to find a good balance between the two competing senses.

Tunnel Vision also experiments with the methodical parallels between Musique Concrète and a 3D photographic projection technique, in a rational attempt to bond sound and visuals through conceptualisation. This projection process, involving generating a moving scene from a single photograph, provided an opportunity to explore how the concept of Musique Concrète could manifest itself visually. This technique mirrors a certain number of its attributes. Musique Concrète sets out to create music from sounds that, individually, do not fundamentally possess conventional musical characteristics. 3D projection succeeds in taking a still photo and creating an environment for producing live-action footage. This literal interpretation of both Musique Concrète and 3D projection allowed experimentation to see if matching these two concepts together would enhance, or make a negligible difference, to the audience's viewing experience of the film.

The Concrete Factor

The Concrete Factor was a direct attempt at experimenting with *source bonding*, allowing the viewer to visualise each sound. The soundtrack reflects this, demonstrated through the strong reliance on each sound object's contextual environment, resulting in a strong mimetic discourse. This positions it on the language grid between the abstract and abstracted syntax poles, for each sound was chosen for its particularly interesting sonic properties, yet the rhythms, melodies and phrases became apparent through a natural process, determined by the way the samples intrinsically sounded.

In contrast to the other films in this portfolio, the idea behind *The Concrete Factor* was to create a piece where both the sound and visuals play an equally important part. This was attempted by concurrently composing both the soundtrack and the visuals in an effort to coalesce the audiovisual aspects of the film.

The piece utilises the theories previously discussed about how the concept of the work can play an aesthetical role, in an effort to appeal more to the casual listener. By revealing this conceptual dimension, much like Herbert does on his album *Scale*, it was intended to investigate whether this can be achieved to a similar or higher standard with the added benefit of having accompanying visuals. Also, little sample manipulation ensures that the sounds remain relatively *digestible*.

Sonoluminescence

The third piece in the portfolio, *Sonoluminescence* attempts to grant ear primacy to the listener through utilising various film techniques, as well as cultivating favourable conditions for Schaeffer's *Reduced Listening* technique to take place, by manipulating samples beyond recognition, resulting in acoustically interesting sounds. In terms of the soundtrack, the sounds, whilst still conforming to Musique Concrète stipulations, resides predominantly within the aural

discourse of Emmerson's language grid. The piece begins by experimenting with an abstracted syntax, and then evolves to become more inclined towards the abstract syntax pole, whilst morphing from an acousmatic sound to a visualised sound, through inter-diegesis.

Both from an expressive and a reception point of view, this piece occupies a similar territory to a music video. The compositional approach looked to engage the audience primarily through the soundtrack, by beginning with creating the sounds first, and then consequently constructing the visuals in a harmonising manner. Through utilising this process, and the idea of Schaeffer's Reduced Listening, the piece will hopefully demonstrate a successful alternative to audiovisual realisation.

Audiovisual Portfolio

This commentary will provide an analysis and critical evaluation of each piece, outlining the intentions of the work, influences for both the audio and the visuals, and how it attempts to contribute towards developing a language for future audiovisual projects firmly rooted within the creative realms of Musique Concrète.

Tunnel Vision

Tunnel Vision takes place in a dark and desolate subway, located within a vivid and dynamic urban environment. Unsatisfied with her walk through the tunnel, the main character begins to imagine the bright colours and sounds from the surrounding metropolis slowly seeping in, until she is finally engulfed by her own vision.

The inspiration for this film came from a number of different places. In terms of the visuals, I drew inspiration mainly from the styles of Chris Cunningham, who often uses glitch-like edits, distortion effects and quick cuts to create a sense of digital malfunction. An example of this style can be seen in his music video for Aphex Twin, 'Come To Daddy'[25] (1996), in which tension is built up through his use of these particular effects, intermingled with distorted images imitating a broken TV, or bad reception. For *Tunnel Vision*, I decided to utilise some of these effects in order to create a similar build-up of tension, as the main character begins to see her vision.

Another "glitch" effect I used was an RGB split, in which the red, green and blue colour channels are slightly shifted to create a distortion effect. This particular 'diegetic'

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[25] Cunningham, C., 'Come to Daddy', *Director's Series, Vol. 2 – The Work of Director Chris Cunningham* DVD (2003)

effect helps to create a sense of a build up of invisible energy acting on the camera, much like placing a magnet near a screen splits the picture into it's different colour channels. It helps to create a sense of a powerful build up of energy, reinforcing the story on-screen.
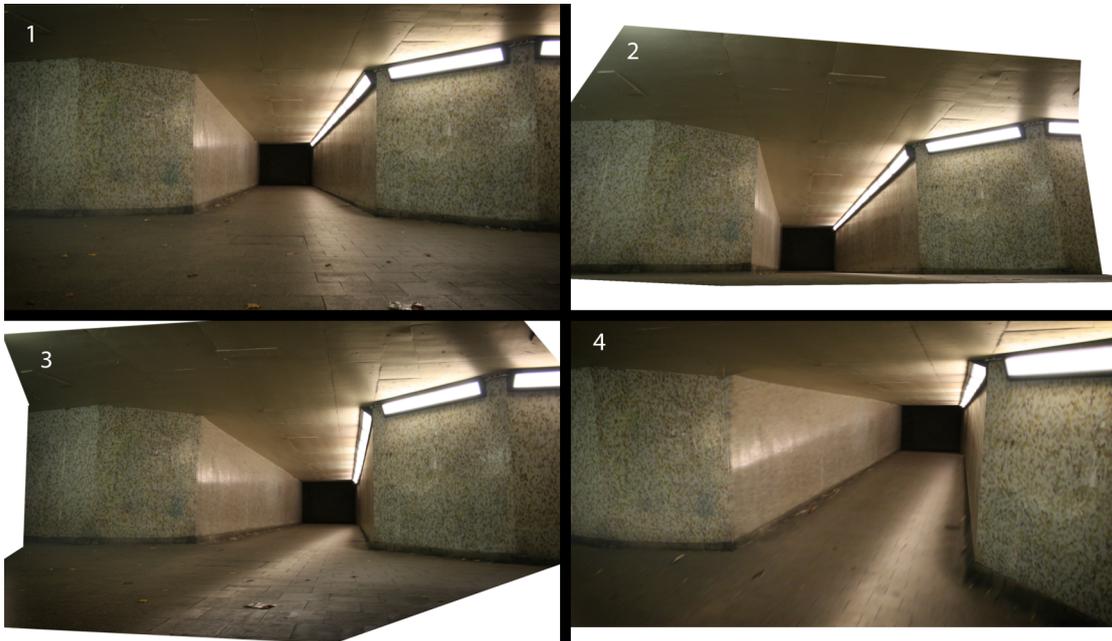
The location was well suited for the 3D projection technique I wanted to employ, as the simple geometric structure of the subway provided an easy reference for the photos to be virtually mapped. 3D projection, which was achieved in the post-production software AfterEffects, requires a 2D photo (Picture 1) to be projected onto 3D virtual planes, which are positioned along all flat surfaces in the photo, using careful referencing of the straight horizontal lines, vertical lines and vanishing points. The finished result is a 3D computer generated environment with limited, but adequate, camera angles. Picture 2 and 3 above show the range of camera angles that can be achieved from one photo. As you can see in picture 4, stretching and pixilation on different surfaces occur when trying to move too far into the photo. There were many reasons why I decided to adopt this technique. Firstly, it provided a simpler and more effective alternative to motion tracking

live footage in order to realistically composite the computer-generated effects into the shot. Secondly, it provided a smooth camera motion that would have been very difficult to achieve without professional dolly equipment, due to the footage being shot completely within a virtual environment.

The soundtrack was mainly inspired by the work of sound designer Ben Lukas Boysen (HECQ). In the short film 'OFFF New York Titles'[26], he uses glitch-like processed sounds to compliment the fast cuts and camera movements used by directors Rob Chiu and Chris Hewitt. The use of synchronisation between sound and video plays an important role in the work, as it emphasises the randomness and jitteriness of the visuals. Adopting this style, I used sounds and samples that I recorded and processed, and synchronised them to the footage. The majority of sounds used are processed samples of passing traffic, and manipulated through experimenting with different settings of a granular synthesiser and software plugins. Other samples used are recordings of sounds from within the tunnel itself. I felt that it was important to use recordings associated with the visuals, as even though they have mostly been manipulated beyond recognition, certain characteristics and acoustic properties of the samples can still be distinguished, and therefore, provide strong unification with the on-screen visuals. It also allowed me to vary the degree of *acousmatic* and *visualised* sounds to utilise the benefits of both methods, creating a balanced relationship between the audio and visuals.

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[26] Chi, R., Hewitt, C., *OFFF New York Titles,* http://www.vimeo.com/7366368 (20 December 2010)

Tunnel Vision demonstrates a lot of the points discussed in this commentary. It generates a perceptual vacuum through the use of its acousmatic sounds, allowing the audience to receive multiple levels of sensory information, operating on different levels of the consciousness. This can be seen when the tunnel is empty, and there is a sense of something building up off-screen. The soundtrack at this point helps to build the tension, and set the atmosphere for the scene. It transforms from a non-diegetic soundscape to a diegetic audio representation of the waves of energy on screen. By processing concrete samples to sound like electricity, and linking them to these energy waves, I attempted to attach associations of electricity and power to the visuals. The audience should not only receive this connection through direct synchresis, but also experience the connotations of the diegetic connection through multi-sensory interactions. This is what enriches this scene with a sense of forebodingness and apprehension.

Another example of where a good rapport between the visuals and Musique Concrète is established is through the *source bonding* that takes place with the colour

balls of light when passing close to the camera. Using processed sounds of passing car, I was able to retain associations of speed and adrenalin, and consign those connotations to the synchronised images, through *synchresis.* The mimetic discourse at this point fuses this experience more successfully.

One technique that was not explored but will be in future work is the use of impulse responses to achieve a greater and more authentic audiovisual synthesis. The use of an impulse response of the tunnel when processing sounds would have improved the sonic compatibility with the visuals, and generate a tighter synchresis with the soundtrack. Another technique that was used but will be utilised more explicitly in future work is the link between the Musique Concrète schematic and the 3D projection technique. What this was meant to achieve was an added aesthetical element to the work, due to the similarities in principles between the processes involved with the two techniques. In this particular film, this technique was not significantly enhancing the viewing experience. However, more work will be undertaken in future projects to strengthen this schematic relationship.

The Concrete Factor

The Concrete Factor came from the idea of creating a piece of Musique Concrète with the additional ability of being able to witness every sound in its construction stage. As Ralf Hütter from Kraftwerk puts it, 'If you walk down the street, you can hear a symphony if you are open enough to listen to it.'[27] Drawing inspiration for this quotation, I wanted to create a piece of music that clearly demonstrates Hütter's vision of concrete music.

I used a visual technique called motion tracking, in which I tracked the motion of a particular object onscreen. The software would then analyse the movement data of the object and move the whole image around that tracked point, creating the illusion that the camera is somehow invisibly attached to the object.

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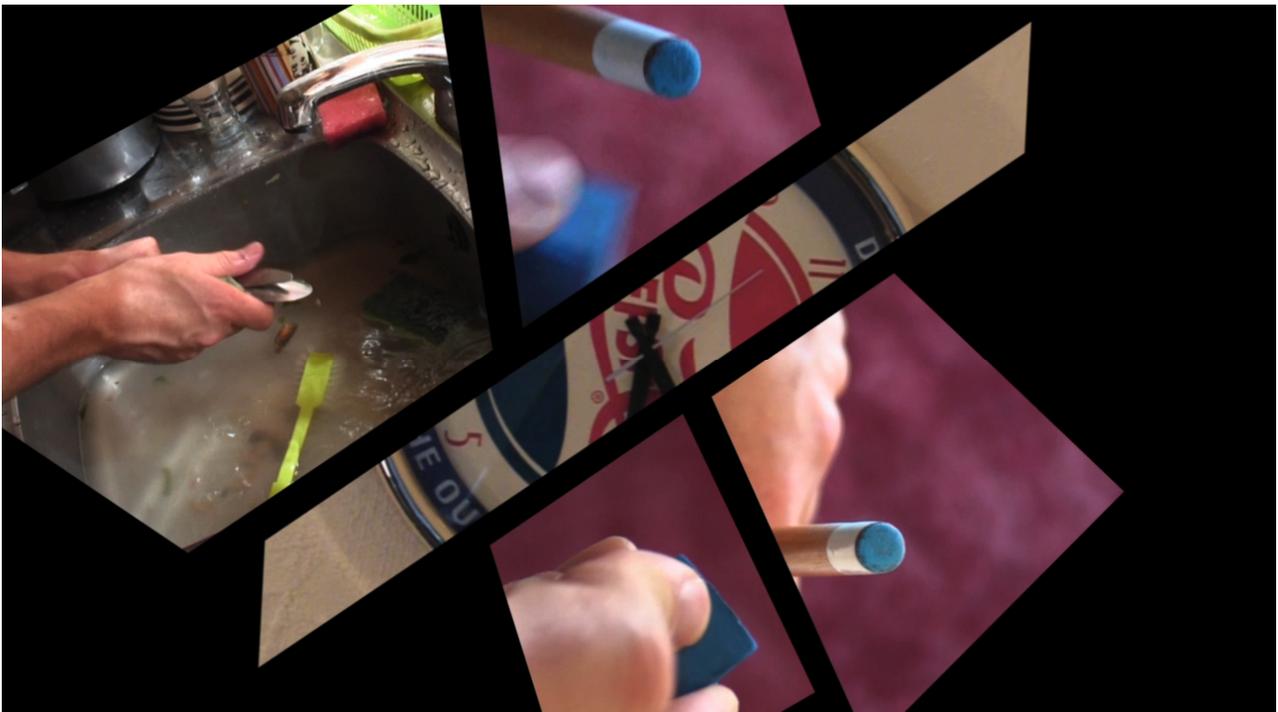
[27] Smaizys S., 'Kraftwerk Interview', *Ripco*. http://pages.ripco.net/~saxmania/kraft.html (25 June 2011)

In this example, the cue tips are tracked so that the clip moves but the cue tip stays in one place. The clock's second hand is also tracked so that it remains horizontal, and the rest of the clock revolves around the centre.

Although the main purpose of the motion tracking technique is not generally used to achieve this particular effect, the novel result it produces subtly focuses the viewers' attention onto that particular object. This technique has been used in a number of music videos, including Boyzone's *When the Going Gets Tough*[28], in which the red ball is tracked so that the rest of the image moves around the ball. I decided to adopt this technique to place extra emphasis on objects, in order to enhance the *source bonding* of the sound and the image. Examples of the motion tracking in the film include the cue tip, the washing-up brush, the dice, the scissors, the torn paper, the pen, and the battery.

I recorded and filmed interesting sounds produced by different objects around the house, keeping in mind objects that would lend themselves well to being motion tracked. I then went through each recording to find chance rhythmical and melodic patterns within the same take. I knew that the longer each pattern lasted, the longer the viewer would have to associate the sound with the visuals, enhancing the viewer's experience. In light of this, I purposefully tried to keep each clip a long duration. However, it quickly occurred to me that the piece would have many layers of sounds, and allowing the viewer time to make those connections with the sound object would be more difficult to achieve for every clip. Once I had identified little motifs and rhythmical beats and loops, I started to compose the music. Keeping in mind that I would have to synchronise each video back up to each sound clip, I decided to keep sound processing and manipulation to a minimum. In the final composition, the only sound manipulation used was slicing and time-stretching. Utilising Logic Pro 9's Flex Time tool, I was able to tweak individual beats

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[28] Boyzone, 'When The Going Gets Tough*', YouTube* http://www.youtube.com/watch?v=zjudr5YlzuE (26 June 2011)

to fall in sync with the main rhythm. Flex Time also gives you the option to use different algorithms to interpolate waveform data. I was able to experiment with different algorithms to produce different time-stretch effects, and create interesting new sounds.

Once the sound had been edited, I then set about re-synchronising all the video clips with their sounds, to produce the visuals for the video. Much like the music track is a collection of audio clips, I wanted to accurately portray this in the visuals, so I arranged the video clips into a collage of sound objects. It was my intention for the piece not only to tackle the idea of how Musique Concrète could manifest itself visually, but also to challenge the concept of whether sounds forming Musique Concrète compositions should be identifiable or remain detached from their origins, as separate entities which should be accepted for the sounds they are.

The way this piece utilises the similarities between Smalley's idea of *source bonding* and Ferarri's 'anecdotal' take on Musique Concrète, is what I think gives this piece a strong audiovisual aesthetical compatibility. It combines the theories that Chion's *visualised sound* produce with the unambiguous nature of each sound object manifested through synchresis, to control audience perception and reception of the piece. I wanted to allow the viewer the opportunity to link what they see with what they hear, in hope that this *insight* into the construction of the composition reveals a new conceptual dimension, and adding to the overall enjoyment of the work.

The aspects of the film that I think contribute positively to the piece include the way synchresis is not only amplified, but exaggerated through the use of the motion capture techniques. This connection is reinforced by the way the audience's attention is explicitly directed to the source of each sound. Another goal in which I think this piece succeeds in achieving, is that of bringing Musique Concrète into a more popular domain.

It does this by being as explicit as possible with the concept, as well as drawing on influences from popular culture.

In this film it was my intention to strive for mimetic discourse. The lack of a narrative within the images helps to achieve this. However, a narrative discourse using this same film style is clearly something that could be exploited in future work, in order to give the piece added coherency. A possible solution would be to follow Herbert's example, and choose objects that create 'that sound' (i.e. contextualising sound objects to a deeper extent, and using the sound's origin as a narrative tool).

Out of the three works, *The Concrete Factor* is the piece that, in my opinion, utilises the audiovisual/Musique Concrète framework to the largest extent. It draws upon the idiosyncrasies of concrete music, whilst still maintaining a firm hold of the contextual environment of each sound.

Sonoluminescence

The word 'Sonoluminescence' describes the emission of light, most commonly seen from imploding bubbles in a liquid, when excited by sound. This word's meaning is what played a succinctly inspiring role of my third film, in which I used the soundtrack to generate and trigger the visuals. This was achieved by composing the music first, before any visuals or storyboards were drawn up. This method allowed me complete freedom over the composition, and I was able to stay creatively unconstrained through the composition process. The aim of this was to allow the soundtrack to take precedence over the footage, as the visuals would merely be reinforcing the music through synchresis.

In Alex Rutterford's music video for 'Gantz Graf' by Autechre[29], a similar technique has been adopted to achieve audiovisual synchresis. The video clearly demonstrates a visual manifestation of the soundtrack, visually interpreting its acoustic properties to form a display of audiovisual synchronisation. The result is an engaging music video that demonstrates a complementary audiovisual relationship. Similarly, *Sonoluminescence* strives to use aspects of the soundtrack's visual materialisation to a degree, but using the synchronisation to place emphasis on the sounds instead.

The initial concern I had with this method for making the sound the main focus of the piece was that of trying to stop the visuals of the film from dominating over the music. To do this, I set out to make the sounds more interesting than I intended the visuals to be. I would use shots that would have little visual interest, and little camera movement. Also, I tried to refrain from having too many visual points of interest, so the listener would be forced into hearing out for interest in the music.

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[29] Autechre, 'Gantz Graf', *YouTube,* 5 December 2008.
http://www.youtube.com/watch?v=AyJfHU4GoOQ&feature=related (25 June 2011)

Acousmatic sound played an important part in this piece. This was achieved through manipulating the concrete samples beyond all recognition, hopefully encouraging the listener to appreciate the aesthetics of the soundtrack, rather than have their judgement coloured by each sounds contextual meaning. Although this runs the risk of the audience letting their investigative ear naturally search for a sound source, I tried to use visual cues to help the audience listen out for particular sounds. An example of this is where the main character is listening out for sounds underneath the sand. At this point, the camera focuses on her headphones from behind. The small depth of field and the close up of the headphones focuses the audience's attention on the headphones, at which point they are inherently cued to listen out for the sound. The composition of the shot, and the lack of visual stimulation (i.e. from the characters face) also help to divert the audience's attention onto the sound.
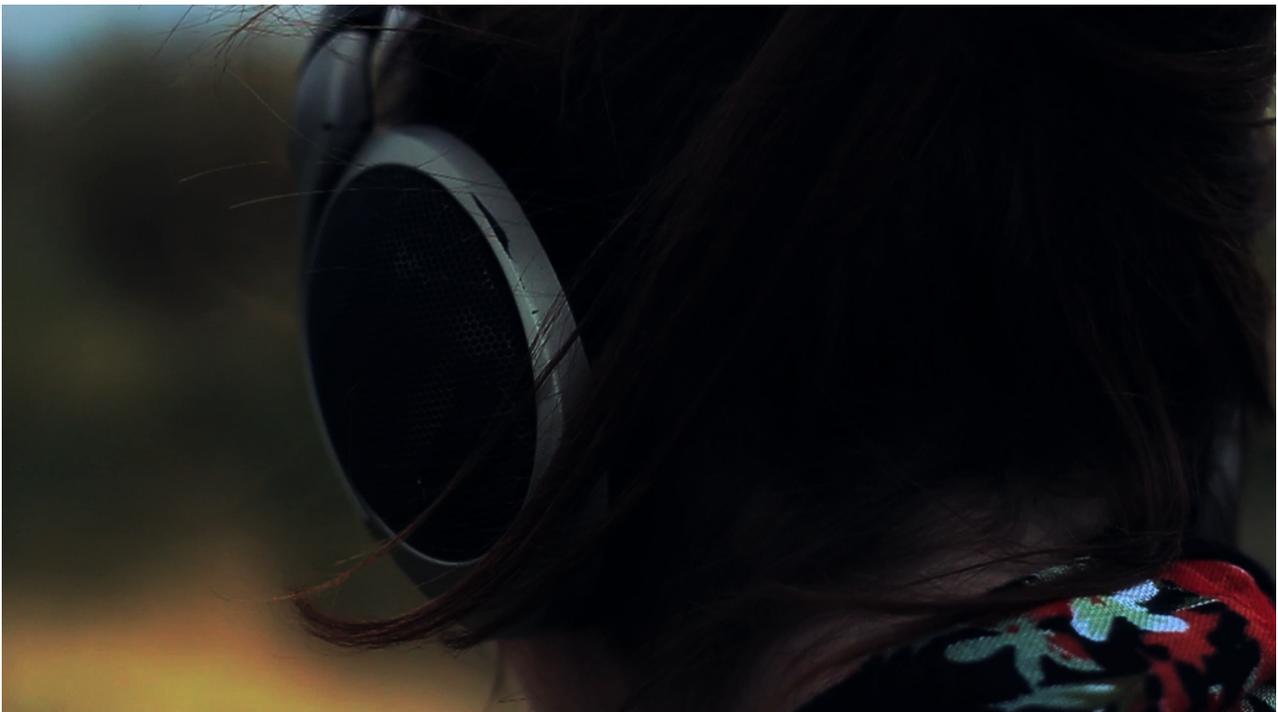
Looking back critically at this piece, I can see areas where it utilises the proposed framework well. This includes constructing a strong narrative, formed through the

reinforced audiovisual relationship as a result of the piece's syncresis. This can be seen more clearly when the emerging lights and waves begin to mimic the diegetic soundtrack.

Even though I intended the visual to take a backseat during the compositional process in hope that this will be reflected in the final output, the visual element of the work still tends to dominate in places. This, in my opinion, is due partly to the repetitive nature of the soundtrack. The audience may become disengaged the more a pattern is repeated, especially when they can seemingly predict what is coming up in the music. As a result, their attention turns to the visuals, which are already persistently fighting for the viewer's attention. It is also the syncresis which may be having the opposite desired effect; instead of generating auditory interest by manipulating the sounds original source, the syncresis is generating a false sense of source bonding, and as a result, satisfying the audience's need to investigate the sound further – a state of reduced listening is therefore no longer achieved. The syncresis of the sounds may also be reinforcing the visuals, rather than the other way round, in which case, an approach that sees less audiovisual synchronisation may yield more auditory dominance.

However, despite this perceptual issue of the visuals dominating the sound, I think the final result of this piece demonstrates strong audiovisual links through actively utilising key aspects of the framework, such as the piece's exploitation of Musique Concrète's tendency to remove a sound's intrinsic mimetic discourse, and how it generates an original palette of sound swatches to form new and unique associations with the visuals, spanning multiple sensory interactions.

In conclusion, by using the suggested framework of rules and theories from composers and music theorists, as well as my own interpretations of the parallels between Musique Concrète and video editing, I have attempted to allow certain characteristics of concrete music to permeate through both the aesthetics and conceptual manifestation of my work. Gaining inspiration from the iconic visual techniques from Cunningham, Chiu and Rutterford, as well as the compositional styles of Herbert, Schaeffer and Ferrari, I have been able to amalgamate certain characteristics of there individual stylistic approaches, to form a range of complementary synthetic audiovisual tools to use in my future work.

By utilising each tool in varying degrees and circumstances, such as permitting the audience an insight into the construction of the piece *The Concrete Factor,* utilising *reduced listening* to emphasise the sounds sonic properties in *Sonoluminescence,* and adhering to the methodical parallels in technique between the sounds and visuals in *Tunnel Vision,* I hope the listener / watcher viewing experience of my audiovisual work is consequently enhanced.

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