Portfolio of Compositions with Commentaries

NUI MAYNOOTH

Ollscoil na hÉireann Má Nuad

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Contents

1 Disc 1 - Compositions included in this Portfolio

Track	Title	Date	Duration
1	Lucid	2008	8:40
2	Glow	2009	11:22
3	Oniqu	2009	5:18
4	Lapis	2010	9:44
5	Stop/Run	2010	11:28
6	Virga	2011	6:29
7	Iso	2011	5:39
8	Opalesce	2011/2012	7:19
9	Innate	2012	15:12

Acknowledgements

Abstract

This portfolio analyses the creative means by which a number of audio and visual compositions were realised. It attempts to dissect the influential factors in the creation of such pieces and to explore the technological processes involved in the creation of such work. It is a personal analysis of a body of work which represents a hybrid of influences, spanning several years. It is supported by three DVDs, which contain audio and visual material and software files which were used in the composition and performance of these works.

2   Introduction

This compositional portfolio discusses a number of styles, concepts and techniques used in the production and performance of a number of audio compositions and visual performances. It documents a research term of four years, and discusses the evolution of both artist and compositional ideologies formed within that time. A commentary on a compositional portfolio is quite a personal entity: one tries to dissect the creative streams involved in producing and performing such works, while maintaining a degree of objectivity. In theory, this portfolio represents the accumulation of four years' work. However, I cannot fully endorse this somewhat myopic view. By subscribing to this mindset, it would stand to reason that any influences which impacted on my work, or me personally, were only prevalent during the last four years. It is my belief that this portfolio is more representative of a body of work which has been evolving for over a decade.

The primary catalyst for the evolution of compositional ideologies explored in this portfolio stems from an amalgamation of sonorities and interests formed from an involvement in various strains of electronic music. As a teenager, I was exposed to production software and DJ culture. This experience, fused with later explorations into the realms of turntablism, formed the basis for my interest in the expressive qualities and possibilities of the turntable. As time progressed, my focus shifted slightly, away from DJing and I began to focus more on production which was aided by the use of relatively primitive production software. The software was concerned with manipulating pre-recorded loops and samples which could be edited and arranged as desired, but it also allowed users to import their own samples. With the use of an audio editor, I was able to record and edit chunks of audio and integrate them into my tracks. This was my first foray into sampling and processing, as the wave editor allowed for some simple file manipulation such as transposition, filtering and reversing. It was the first time that I could personalise and introduce elements of 'found sound' or recorded material into my

own productions. This early flirtation with DJ performances, sampling and production formed the basis for my early artistic ideologies and still influences my productions. Pursuing a course of study at Diploma and later, Degree level, in the field of Music Technology, allowed me to further develop my interests in computer-based production and performance. It enabled me to spend more time learning about different musical platforms and how to further develop my own productions.

It wasn't until I pursued an MA degree in Computer Music that the dichotomy of influences became more evident. Until then, I had been producing electronic music within commercial production environments. On entry to the MA course, I was introduced to a new mindset and method of working. With free, open source computer music tools, more emphasis was placed on the notion that one could become an instrument builder, of sorts. Within this more liberal mindset, one could conceive of an idea for a compositional tool and realise it relatively easily, presuming one was conversant with the software and concepts involved. From my early sampling explorations, synthesis became something which interested me and I began to compose my first electroacoustic pieces. This was a step away from the sonorities of more commercial pieces of software, and a step into a world of depth, texture, dynamic spectra with a fantail of timbres. The sonorities of this sound world began to dominate the majority of my productions and I began presenting tape pieces and became somewhat more comfortable with the notion of myself as a composer. My artistic ideologies had completely shifted, in the sense that the process of designing instruments and environments within in which to compose and perform, was now just as important as the resulting sonorities. As I embarked on my PhD studies, one of my aims was to incorporate the turntable into the composition and performance of electroacoustic music. It was my intention to convey and input my interests and influences, gained over years, into this field of music, at which I was relatively new. In light of this, one can view this portfolio as an account of the evolution of an idea: the creation of a personalised hybridisation of influences

which have motivated my mind, and career to date.

2.1 Influences

As I strived to create my own voice in the field of composition, a number of composite elements from a variety of genres stimulated the evolution of these works. The topic of "genre" is a contentious area within the realm of electronic music and as a young aficionado of electronic music, discussion of genre was never something to which I paid particular attention. Initially, my interests were in the processes involved in the production of electronic sound and, coming from a DJ background, I was more concerned with the physical interaction with DJ tools and hardware. It was not until later in my academic that the division between genres became more obvious. At one time, I was content with the notion that anything I produced on a drum machine, computer, or synthesiser was deemed to be 'electronic music'. Later, I began to realise that this was not always the case, and that there were different means of deciphering a genre. This section attempts to clarify some of these issues, with the overall aim of de-fogging any ambiguities which may arise when these influences and genres are referenced throughout this commentary.

2.2 Electronica – Beats and Pieces

In my mid-teens, I started down a road of electronic production with the exploration of turntables, records, drum-machines and synthesisers - technology which was readily available within the my home. I viewed electronic music, and to some extent still do, as an art which marries technology and human imagination[1]. While I still produce, using computers, records and drum-machines, the content of these early explorations contains streams of material which might be described as "*Electronica*". This term,

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[1]Thom Holmes, *Electronic and Experimental Music* (New York: Routledge, 2002),7

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I believe, is more in keeping with the dance orientated styles I was interested in at the time. Emmerson (2007) pays particular attention to content streams which summarises the aesthetic of Electronica, which can be summarised as 'a rhythmic stream, a rhythmic bassline, a sustained ambient layer, real world sounds and finally a melodic line'.[2] Artists like Aphex Twin, Autechre, Fourtet, Squarepusher and Amon Tobin effortlessly moulded these streams together, yet still retained their own voice. The work of each artist resonated with different areas of my interest: Aphex Twin's *Drukgs* married intense drum programming with emotive synth lines and quivering, low-fi piano recordings, while Autechre's early albums *Amber* and *Incunabula* exuded other worldly electronic domains. In recent years, the work of Four Tet in albums like *Rounds* and *Ringer* contributed to a more playful and engaging use of found sound and electronica streams. These are but a few of the artists whose work captivated me at a time when my artistic ideologies were changing rapidly. I was stepping away from the dance music of my teens and into an area of electronica which seemed to possess more substance.

2.3   Spinning Matter : The Influence of the Turntable

The turntable was championed by John Cage as an instrument which 'would help usher in a new era in the history of music'[3]. He seemed to have possessed an extraordinary foresight into the potential of the turntable since, just over a decade later, the expressive qualities and interactive nature of the turntable, were the primary modes of production at the inception of Musique Concrète. While there were early explorations into the field of turntable based composition, with Paul Hindesmith and Ernst Toch,[4] and Cage's Imaginary Landscape No.1, Musique Concrète, was the first genre to fully embrace the use of the turntable as a means of editing and manipulating source material. With the use of filters, microphones and reverb chambers, phonograph turntables

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[2]Simon Emmerson, *Living Electronic Music* (Aldershot: Ashgate Publishing, 2007), 86
[3]Ibid, 266
[4]Simon Emmerson, *Living Electronic Music* (Aldershot: Ashgate Publishing, 2007), xv

and records were used in a variety of ingenious ways: Locked grooves for generating rhythmic material, variable playback speeds for pitch-shifting and volume control on a mixer to envelope the sound to create fade-ins and outs[5]. These ingenious techniques formed the basis of the first Musique Concrète pieces, in the *Etudes de bruits* series, which featured a collage of found sound recordings. The processes of production and collage of sonic material became points of interesst for more contemporary artists, one such being DJ Shadow, whose own production processes mirrored that of Schaeffer, but four decades later. In particular, DJ Shadow's *Entroducing* album, captivated me with the breath of material used and the overall aesthetic of the album. These collages of beats, melodies and found sound were forged together by means of sampling, scratching and totally re-contextualising the material. These processes began to impinge on my own work in electronica and provoked further explorations into turntablism.

> Lead by pioneers like Christian Marclay and Grandmaster Flash who started
> to play the turntable in the late 1970's, turntable performance has become
> a distinctive form of musical expression.[6]

The turntablist culture emerged from the intensely colourful world of the Hip-Hop culture of the 1970's and, as the above quotation conveys, DJs within this culture were more concerned about using the turntable as an instrument. Through the development of scratching and beat juggling techniques,[7] the turntablist was required to perfect a skill set, much like any performer learning an instrument. As Holmes (2002) notes, these 'techniques are for the turntablist what the finger exercises are for the piano player'[8]. Experimenting with these techniques and the notion of using the expressive qualities of the turntable as an instrument impacted hugely on me and seemed to rejuvenate my,

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[5]Thom Holmes, *Electronic and Experimental Music* (New York: Routledge, 2002), 92

[6]Takuro Lippit, *Realtime Sampling System for the Turntablist Version 2:16padjoystickcontroller*, NIME, 04 Proceedings, 211

[7]http://www.youtube.com/watch?v=d98_cAv4o5E - Video showcasing some scratch and beat juggling techniques

[8]Thom Holmes, *Electronic and Experimental Music* (New York: Routledge, 2002), 267

otherwise waning interest in the context within which turntables could be used. After several years of performing and exploring the worlds of turntablism and electronica, it was within the context of academia that a more personal hybridisation of influences began to emerge.

2.4   Computer Music : Towards Hybridisation

> As a DJ with a background in electronic dance music I have always experienced some degree of hostility toward my performance practice and musical discipline. Admittedly most of it has been facetious in its intent, nevertheless such derision stems from a culturally ingrained disposition that a DJ is not a real musician because he or she plays other people's music.[9]

Initially, within the culture of the more academic strains of electronic music[10], my previous influences in electronica and turntablism did not seem applicable. Mirroring the sentiment conveyed in the above quotation, there was never a context within which I envisaged previous influences impacting fully on the academic manner in which I composed or performed. This was creating two very distinct paradigms for the manner in which I produced and performed. In one respect, I was still very much exploring sampling, rhythms and melodies which were inherent to the electronica domain. On the other hand, I am a student and researcher of electroacoustic music, which is concerned with using electronics to modify sounds from the real world[11] and embodies an entirely different aesthetic. The streams of electroacoustic music cannot be broken down into such simple segments as explored in electronica. Instead, one is left with a more liberal approach to content streams:

> Electroacoustic music on tape allows us to claim that this is the first musical

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[9]Paul Bell, *Integrating the Live*, PhD thesis, from: `http://www.itchymuzik.com/phd-thesis/` xiii

[10]Simon Emmerson, *Living Electronic Music* (Aldershot: Ashgate Publishing, 2007), 87

[11]Thom Holmes, *Electronic and Experimental Music* (New York: Routledge, 2002),7

genre ever to place under the composer's control an acoustic palette as wide

as that of the environment itself.[12]

Combining this limitless palette of sonic material with the Schaefferian mode of reduced listening,[13] a further dichotomy between influences became apparent. While these influences existed separately, there was one strand of the production process which began to promote a fusion of influences. While computer music is not a purely institutionalised influence[14] in today's technological climate, at its inception it was very much an entity of research institutions like CCRMA, IRCAM or Bell Labs. This was primarily due to the cost and knowledge required to run and maintain these computer systems[15], as the pioneering forces in the field were themselves a hybrid of composer, scientist or mathematician. One such example of these figures is Jean-Claude Risset, who was a Physics graduate, drawn to the realm of computer music as a means of furthering the level of input a composer could have:

> I like the idea that a musical score is a tool of data for the student composer
> to learn composition – a program is a score of data for the microstructure
> level of musical composition, a notation of the sound structure.[16]

Risset seems to imply that the computer empowers the composer, to compose not only by traditional methods, but also by delving deeper into the structures which define these methods. This, I believe, is the essence of computer music and is epitomised in software like Csound, Pure Data, Supercollider or Max/MSP which encourages the development of original computer music tools with which to perform, experiment and compose. The evolution of computer music stems from the work of Max Matthews in the late 1950's

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[12]Simon Emmerson, *The Language of Electroacoustic Music*, (London, MacMillan Press Ltd, 1986), 18

[13]Reduced Listening – Schaeffer's ideology that one does not need to know what causes the sound we hear, (Simon Emmerson, *Living Electronic Music* (Aldershot: Ashgate Publishing, 2007, 5)

[14]Software like Pure Data, Supercollider or Csound is open source and free to download, so it is accessible to anyone with a computer and internet connection.

[15]Joel Chadabe, *Electric Sound*: The Past and Promise of Electric Sound (New Jersey: Prentice Hall, Inc. 1997), 126

[16]Ibid, 128

and his Music N series of computer programs, which generated sound, compiled and composed using a computer. This notion of utilising computers to compose, therefore, is by no means a new concept. However, the amalgamation of techniques and software in the current technological climate has allowed for a greater influx of multi-disciplinary artists to use the computer as a technological mediator between genre and culture.

2.5   Influential Implications

As separate entities, each strand of these influences bore interesting and engaging means by which to further explore the realm of electronic music. They gave me a deeper understanding of the technical and conceptual processes behind certain genres. As these lines of distinction began to blur, a more fertile sonic space emerged, one which allowed for a more original and personal approach. In the context of this portfolio, it is my belief that these pieces are a sonic representation of a hybridisation of influences. From the faint melodic timbres and rhythmic pulses of *Lapis* and *Innate* to the fully hybridised performance system of *Opalesce* and *Iso*, these pieces are a sonic diary of the evolution and amalgamation of different streams of cultures, genres and sounds which have shaped and occupied my mind.

3   Technical Side of the System : The Beginnings

As an MA student, I was introduced to Pure Data, an open source and free data flow language developed by Miller Puckette. This software allows the user to develop audio/visual processing tools and allows for some basic interface design. After primarily working with code in Csound, and creating basic interfaces using widgets, Pure Data was a refreshing way to create graphical user interfaces. Having explored synthesis techniques and various methods of audio processing, I recognised that it was a quick and engaging way of introducing a graphical interface to my Csound instruments, which allowed for more real-time interaction. Towards the end of my MA studies, I would often use the csoundapi~ object within Pure Data, which allowed for the two programs to communicate with each other, enabling me to fuse the processing power of Csound with original interfaces in Pure Data, and this enabled me to fully embrace the notion of instrument/interface design. I began experimenting Max/MSP, mainly because I was interested in the visual processing power of the software's visual processing engine, Jitter. My forays into visual work did not happen until later in my research. However, with the introduction of Ms Pinky and its Max/MSP capabilities, it would seem that I had changed programs at the right time. Early experiments with this system formed the basis of my work for the next few years, throughout the course of my PhD research.

3.1   Vinyl and Ms Pinky : A Love Story in Time-Code

During the last century, vinyl played an intrinsic part in the evolution of innovative and revolutionary sound worlds and cultural movements. Acting symbiotically with the pioneering forces behind these genres, the vinyl medium has existed as a somewhat cultural mediator of a variety of aural demographics. From the early experiments of Paul Koch in Berlin, to the medley of uses of the turntable in contemporary culture, vinyl has enjoyed a varied and interesting existence.

Drawing heavily on processes and concepts involved in Musique Concrète, vinyl, as a household commodity, was then co-opted into the Hip-Hop and Club Culture of the 1970's as a means of creating, producing and performing. A new wave of sonorities, ideologies and techniques emerged with the DJ culture, the core of which is still evident today. Vinyl and record players experienced something of a lull as CDs became more prevalent and popular, for music lovers and DJs alike. It was around this time that the first time-coded vinyl systems began to emerge. With the introduction of programs like *Serato*, DJing was becoming more and more computer based, and within the last decade, the influx of software and applications for use with turntables and computers, has created hybrid a DJ, whose proficiency with his/her instrument must match his/her computer skills.

As my approach to composition became more of a hybridisation of influences, I felt that it was appropriate to explore the possibilities of the time-coded vinyl systems in the performance and composition of electroacoustic music. I was aware of platforms such as *Traktor* and *Serato*, but I had never felt a huge desire to experiment with these platforms. While this may have been somewhat of an oversight, I believe that my mindset at that time was very much focussed on developing my own tools and interfaces for performance and composition, primarily due to the ideologies instilled in me throughout my MA year. The only program which seemed to interest me at the time was Ms Pinky, where the time-coded vinyl relays information from the record to a Max/MSP object. The design of the program and environments, like Binky Toy, were very much a makeshift version of more commercial timecode systems but without the slick interface. This particular time-coded system works similarly to M-Audio's Torq, as described by Chad Carrier: the time coded vinyl record relays three pieces of information to the computer - the speed of the record, the direction of the record and finally the position of the stylus on the record. The record itself is comprised of only a single tone, formed from two different frequency bands.

One frequency band caters for the pilot tone, while the other deals with the position stamp element of the tracking. The pilot tone is a simple sine wave tone, which relays pitch information to the Max/MSP object, by making the speed of the record proportional to the pitch, thus allowing for control of the speed of the audio file being used. Aside from speed information, the pilot tone also relays directional information to the computer, by using a method called Stereo Phase Shift. This concept exploits the fact that the pilot tone is a stereo file and makes use of the phase information, or starting point of the signals, on the left and right channel. By making the left and right channel 90 degrees out of phase with each other, when the record is playing forward the right channel will be 90 degrees ahead of the left channel, while the opposite is true for when the record is playing in reverse. This phase information is then evaluated by the computer, which provides a value to indicate direction. The last cue needed, for the people using time-coded software, is the position of the stylus on the record. While I do not make use of this in my system, it is a very important piece of information for users, in order for their system to function like a real DJ system.

> The position stamps are digital numbers encoded as analog audio signals
> which are placed on the record at regular intervals.[17]

These stamps, together, are fixed points along the record, so these values are used in conjunction with the velocity values, which are then interpolated to arrive at a more precise value for position.

3.2 Ms Pinky and Max/MSP

Having access to velocity and directional values in the Max/MSP environment, made it extremely interesting and inviting to begin developing a turntable/computer based performance and composition environment. Early experiments revolved around audio file

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[17] Available from `http://mspinky.com/Some_Technical_Info_on_VInyl.pdf`

manipulation in Max/MSP v4.6, but later evolved into visual and audio-based processing, incorporating the Cycling '74 visual processing engine, Jitter, to fully complement the audio processing and performance. While each patch contains different combinations and variations of similar techniques, there were a number of common threads in each patch. This section will delve, in a little more detail, into the nature and composition of these threads, to provide more insight into the techniques behind some of the performances mentioned throughout the analyses of compositions.

3.2.1 Conditionals

A subpatch which appears throughout my Max patches is 'conditionals'. Conditionals within the turntable system allow me to use the velocity and directional values of the vinyl record in a more efficient and varied manner. Conditionals in the system allow for different parameters, to be assigned to the gesture of the turntablist. For example, in Figure 1 on the following page one can see a simple application of these conditionals. Upon receiving directional and velocity values from the 'receive direction' box, the values are subdivided into the two ways in which one can move a record, clockwise or anti-clockwise. With the addition of the velocity values in these conditionals, one must move the record back/forward at such a speed as receive a bang from the 'if' statements, which can then be sent to other elements of the patch e.g. in the parent patch of the Figure 1, every time the send forward box receives a bang, it will freeze a reverb tail, then every time the send backward is banged, this will unfreeze the reverb tail, essentially making a button/toggle like controller through the use of the record. These conditional controls form the basis of numerous patchs and contribute greatly to the visceral and instrumental nature of the combined computer and turntable system.
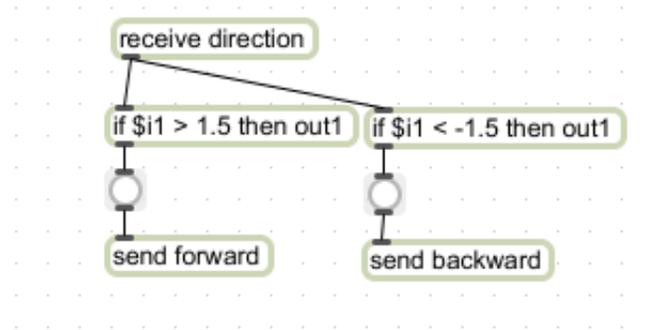
Figure 1: *An example of the use of conditionals within Max/MSP*

3.2.2 Sample-Flicker

This element of my system was developed out of necessity, rather than from any pre-conceived notion. It is one of a few, smaller elements, which I continually use in my patches and it creates the impression of dynamic and evolving material. It allows the user to increment through a bank of pre-defined material using only a vinyl disc. The system relies on the physical gesture of the performer, in so far as the user must move the record at a certain velocity, in a clockwise motion, to incrementally step through the material. The foundation of the flicker is based around conditionals and utilises the counter~ object in Max.

The conditional allows a bang to be sent each time the velocity/direction of the signal is greater than 1.35001, as shown below: This is then connected to a counter object, which increments with every bang, through a range of numbers, which can coincide with numerous different audio files. Figure 2 on the next page, shows the contents of the subpatch *sample-flicker,* evident throughout the Max patches accompanying this portfolio. This little subpatch outputs bangs, which are connected to three different audio files within in the parent patch. Upon each number being banged, a new audio file is loaded into a buffer to be processed. When the last sample is reached, the counter will re-initialise, and the first audio file in the bank will be re-loaded. Incorporating a technique like this into a performance allows for continually changing material and one
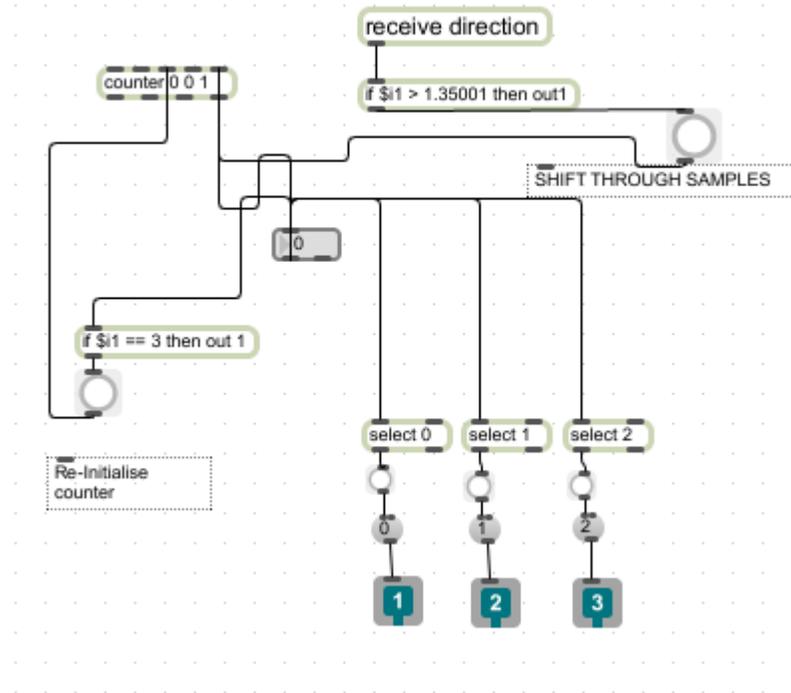
Figure 2: *Sample-Flicker*

can map out different sample banks for each element of the performance, e.g. a sample bank with mainly high frequency material, a bank with low frequency sounds and a bank with more melodic stream. While I do incorporate this technique into many of my patches, I feel that the piece *Iso*, exploits the versatility of this technique. As described in the notes, a guitar sample was recorded and broken down into its constituent chords. Incrementing through each sample allowed me to develop a melodic theme and, in essence, play a chord progression, using a record. This notion of incrementing thrrough a sample bank was one of the main projects which occupied my mind while at STEIM, as can be seen in my STEIM Project Blog[18]

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[18]From `http://www.steim.org/projectblog/2010/03/09/refining-`

```
ain1,ain2    ins

ksmooth invalue "smooth" ; parameters for Max|

fim    pvsanal  ain1+ain2,1024,256,1024,0  ; pvoc analysis
fou    pvsmooth fim, ksmooth, 0.09         ;
aout   pvsynth fou

outs (aout),(aout)

endin
```

Figure 3: *Csound code for use with the csound˜ object in Max/MSP*

3.2.3 Csound˜

Within Pure Data, the Csound language is accessible through the csoundapi˜ object. Similarly, in the Max/MSP domain, it is accessible as csound˜, an object created by David Pyon, which elaborates on earlier work by Matt Ingall's csound˜ object and Dr Victor Lazzarini's csoundapi˜ in Pure Data. The object allowed for Csound opcodes, instruments and processing to be integrated into Max/MSP with ease, using the opcode *invalue* to allow the user defined parameters of a Csound instrument to be recognised by Max/MSP.

Figure 3 shows a simple code for a *pvsmooth* opcode, which is then used in a Max subpatch. The 'ins' take real-time input in Max and the k-rate parameter is the parameter in Csound which will be fed with values from the time-code record. The majority of instruments I designed in Csound were based around the pv opcodes developed by Dr Victor Lazzarini. Opcodes such as *pvsfreeze*, *pvsmooth* and *pvsblur* contributed hugely to the mechanical textures evident in the performances and recordings of the turntable piece. Perhaps the most obvious examples of these sounds, are at the start of *Iso*. The sonic terrain is a deeply ambiguous one as the blur and smooth opcodes dissolve any prominent characteristics of the source material. Upon interaction with the record, some harmonious tones can be heard, as guitar timbres protrude and retract in quick succession, creating a hugely engaging and other worldly sound.

3.2.4 Michael Norris - SoundMagic Spectral Audio Units[19]

I first came across these audio units when looking for a way to incorporate some of the synthesis techniques available in Csound into more commercial DAW interfaces (before Csound for Live was available). The package contains various real-time spectral analysis audio units, which allow for high quality spectral processing, similar to the pv analysis opcodes available in Csound. They are relatively simple to use but harness some very interesting timbres. The 'Dronemaker' and 'Sample Gate & Hold' units produce some very rich textures and ambient drones, while the spectral granulation and partial glide introduce some more advanced techniques. As interesting and powerful as these plug-ins are, I believe that they must be used with some discretion, mainly to avoid becoming complacent when composing. In a sense, it would be easy to impose these plug-ins on any audio, without fully understanding the processes or techniques behind them, but in the mindset of an instrument builder and computer musician, I try to use them sparingly to avoid becoming too un-attached towards my compositional approaches.

Within the portfolio itself, these units are used in pieces, like *Lapis*, *Opalesce* and *Iso* and also feature more prominently in my first installation work, *Oniqu*. The most common units used were 'Spectral Blurring', 'Chorus' and 'Spectral Gate & Hold'. Similar to the sonorities of the 'Dronemaker', the 'Sample Gate & Hold' unit essentially freezes sections of the audio when a signal passes a user-defined threshold. The resultant sonorities leave a very rich and engaging texture, which is used within the piece in this portfolio as a means of sustaining different elements, or as a sonic fog, creating a backdrop for more visceral material. In Figure 4, one can see a typical use of the audio unit within the Max/MSP environment. The *pinkyworkings* subpatch audio drives the audiounit~ object which houses the 'Spectral Gate & Hold' unit. Another unit which features is 'Chorus', which contributes to a sound reminiscent of the incredibly polished mechanical aesthetic of Autechre's untitled album, *LP5*. In contrast to this very clean

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[19]Available from `http://www.michaelnorris.info/software/soundmagic-spectral.html`
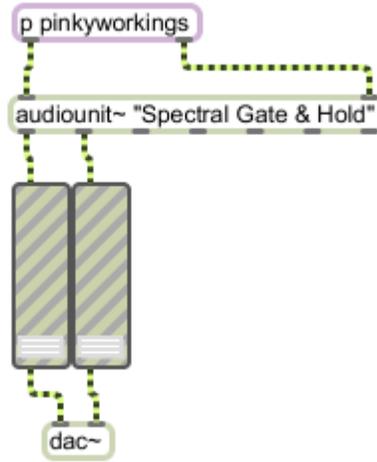
Figure 4: *Audio from an Ms Pinky subpatch being fed into a spectral audio unit*

aesthetic, the 'Spectral Blurring' imposes a breath-like effect on any audio and is used throughout the portfolio as a means of filtering quite harsh material, with the added effect of creating depth and a wider stereo image within the pieces.

3.2.5   Jitter Workings

My initial desire, to work in Max/MSP, stemmed from an interest in the visual processing engine, Jitter. My early work in Pure Data, and Gem, influenced me greatly in this decision and provided the perfect environment in which to learn this particular style of programming. While I did not have a huge array of influences within the realm of visual processing, I was always interested in the manipulation of geometrical shapes and the exploration of textures and colours within this domain. A particularly intense visual influence would be the work done by Alex Rutterford with Autechre. Gantz Graf[20] personifies the effortless morphing and syncopated chaos that I was interested in at the time. In another vein, low-fi recordings of home movies and old VHS tapes were of equal interest to me and I believe that this is a visual correlation to my interest

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[20]From: http://www.youtube.com/watch?v=Z1RrVa_axRY

in this aesthetic within the sonic domain. The source materials for the visual media in these compositions were sourced in a similar fashion to the way I would approach compositions in the sonic domain. The visual material, such as a train journey or a ramble around a city, all contain a similar concrete aesthetic which is processed and manipulated in a similar style to the audio material. Visually, the pieces are processed in a similar fashion to the audio domain, in the sense that the information from the vinyl is fused with external units to create a more personalised approach to performance and resultant sound worlds.

3.2.6   Audio Saturation

Searching for a more in-depth manner by which to incorporate the turntable into my performance system, I came across the "Frames of MSP Signals" tutorial, within the Jitter tutorial files. The tutorial is concerned with using the average amplitude of an audio signal to control the brightness of a jit.brcosa object in Max. While there are some adaptations of this technique throughout the portfolio, this is, in essence, the primary role of any intensity subpatch found within the submitted Max files. The subsequent data from this subpatch is normally sent to different receiving points within the patch, via the send and receive objects: this not only allows for a tidier interface but also makes the subpatch more versatile, as once there is one instance of the send object, numerous different receive points can be created to control different parameters in the patch. The influence of this technique can be appreciated in the piece *Cali*[21]. The piece was completed for the Community Scratch Games, which is an annual event celebrating turntablist culture. This technique is perhaps the most accessible aspect of the turntable and computer-based system. In contrast to the innate composite elements of my patches, for instance the sample-flicker, this technique is accessible directly by the audience as they can have a visual representation of both cause and effect of visual

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[21]Appendix B

Figure 5: Video of hand being processed from left to right with various objects from the *Auvi* bundle.

and sonic stimuli.

3.2.7 Auvi Image Processing Externals

The control of video from the turntable again centres around the information being received from the record. The direction and velocity values transfer easily to the visual domain and allow for real-time manipulation of visual material. While researching this area, I came across the work of Daito Manabe[22]. What attracted me to this particular style of visual processing was how each element morphed and flowed together, in time with the record interaction. This style and means of performance really captivated me and early experiments in the area were relatively successful. However, once again the area of sustainability arose within the performance patch. The sample-flicker concept featured heavily in the early versions of *Opalesce* and, as in the audio domain, the concept allowed for evolution of sounds and textures through a fast clockwise motion of the vinyl. As with the spectral audio plug-ins, I used a bundle of external Max objects for more intense and abstract visual processing. The Auvi bundle[23] is a powerful group of externals for Jitter, which caters for quite abstract and high quality processing. In Figure 5 one can see the results of some simple videos processed using these externals. The results of these externals can be seen throughout this portfolio, from relatively simple mirroring effects to more abstract colour processing.

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[22]http://www.youtube.com/watch?v=NbnFqQ1qiBw&feature=relmfu - Shows the artist experimenting with Ms Pinky using Jitter

[23]available from http://www.auvi-software.com/

4 Connections In Time : Installation Pieces in this Portfolio

These installation projects represent the exploration of a quite different avenue than that conveyed in this composer's portfolio. Within the sonic domain of performance, composition and development of computer music tools, there were years of work and research involved in striving to develop my own voice within the field. These installation pieces represent a more playful and interactive aesthetic. I approached these projects in a similar fashion to that of my composition and performance work, in so far as I wanted to fuse my interests and influences with those of the project criteria. The projects, which feature commissioned work by the CMC (Contemporary Music Centre), an interactive piece for the EAR-Plugged festival and a piece for a performance installation by audio artist Ed Devane, were projects which cover diverse areas of interest and subsequently catered to a varied demographic.

4.1 *Oniqu*

This installation was based on utilising the aesthetic and symbolism of the turntable in an attempt to eliminate the division between artist and audience. When designing this project, I had no experience of installation art and so it was conceived as being in direct correlation to my own interests at the time. Before developing Max patches using Ms Pinky, I was exploring the use of the turntable and records in a different manner, primarily using the records as source material for further processing. After some exploration in the area, I devised a patch which emphasised and exploited the interactive nature of the turntable. The patch, which combines processing in Csound with an interface designed in Max/MSP, uses two records as source materials. The processing in Csound caters for two aspects of the sonic terrain, but both cater to some form of pitch shifting. The first instrument in Csound is a harmoniser instrument, catering for the lower end of the spectrum and produces a rich, smooth texture which

I used as a foundation for other material. The instrument uses only the wet mix of the harmoniser and contains very low (0.05) pitch shift ratio and a maximum delay time of 0.15 seconds. As this processes the input material in real-time, there is immediate sonic gratification upon interaction. To complement the malevolent timbres produced by the harmoniser, I used another Csound instrument to cater for the other end of the spectrum.

This instrument is based on the re-synthesis of audio material and has a control rate variable which allowed me to scale the frequencies of the input after it had been analysed. The value of this parameter being a k-rate is that this enabled me to use it in conjunction with the Csound~ object in Max/MSP. After some exploration of various ways in which to utilise this variable, I came across the pitch~ external object, which is a pitch estimator. When this was used with an input source it supplied rough estimates of the pitch of the signal. Within the patch, the output of this pitch object was connected to the k-rate variable which controlled the frequency scaling of *pvsadsyn* opcode in Csound. This meant that the pitch of the record was controlling the degree of the scale/shift of the material on the record, in essence creating a truly visceral and symbiotic aesthetic within the patch. Both of these processes created an instant sonic result, upon interaction, so in terms of dynamic and evolving spectra I wanted to create something which would evolve with more intense manipulation of the record.

I used Michael Norris's 'Spectral Gate & Hold' audio unit within the patch to allow for this dynamic evolution of material. This unit and its respective sonorities seemed to fuse together the two extremes of the spectrum described above, the heaving, low timbre of the harmoniser and the more sparkling sonorities of the *pvsadsyn* opcode. It allowed for a more ethereal string sound to emanate from the patch, once the system was driven with an input from the record. What was also interesting about incorporating this unit into the system was the subsequent evolution of timbres and their relationship with the material on the records used. With records containing a fuller frequency spectrum

and a more compressed dynamic spectrum, as one may get in bass heavy, Hip-Hop records, the timbre and evolution of the sounds were lower and had a more gradual onset. However, with records that had less energy in the spectrum, the timbre attacked more quickly and had more energy at the upper end of the spectrum. While there were some other aspects involved in the patch, these were the dominant processes in the patch and produced the most engaging results. Aside from the internal workings of the system, there were also some constraints with the hardware which needed to be factored in. I was using a sound card with only a stereo pair input, so the feed from the turntables could not be split, as they were being fed into a DJ mixer, which was then fed into the interface. I had envisaged that this installation would feature two turntables, each contributing to different aspects of the patch. The solution to such a problem became a characteristic of the system and, in a way, made the system more versatile.

On the DJ mixer itself, I panned hard left and hard right for the respective channels. This divided the signal into two mono signals, each being fed into the sound card, which I could then use as two separate channels within the patch. In the end, one turntable catered for the lower frequency sounds of the harmoniser and spectral processing, specified as adc~1[24] in the patch, while the other turntable catered for the more sparkling processing of the *pvsadsyn* opcode. This allowed me to present the installation in a manner which meant that there was no apparent emphasis placed on the technology. With the computer, soundcard and mixer hidden, the two turntables were now accessible to the public, each contributing to very different sonorities and processing within the patch. The first time I presented this was at the EAR-Plugged Festival, held in The Lab, Foley Street, Dublin. As noted above, the only visual manifestations were the turntables, with which people could freely interact, thus removing any barriers between performer and audience. At the end of a long corridor, two turntables stood,

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[24]Taking an input from the left channel of the audio interface

dormant, on two white pedestals, pleading to be touched, felt, pushed and spun.

The second setting for this installation was in the courtyard of the CMC buildings, Dublin, which was a much more intimate affair. It was run in collaboration with the CMC as part of Culture Night 2010 and again attracted a varied and different demographic. The same sonorities and patch were also used briefly, at a showcase for my work, in STEIM, Amsterdam, as I felt they best described my area of interest in the field of computer-based turntablism. The last place theses sonorities commanded airspace was among the Bohemian trader stalls at the Islington Mill, Manchester. The installation featured as a last minute addition to the Mantis Festival of 2011 and took place while composers waited for the Mill's daytime trade to finish. Overall, the installation was well received and I think that the use of the turntable is an intrinsic factor in this. The cultural symbolism of the turntable covers a wide and varied field. For some, the turntable and records were the only means of listening to music when growing up, while others would see this once household commodity as a tool of the DJ culture. Younger participants, who may not possess either cultural view, seemed to be attracted to the inherent interactive qualities of the turntable: spinning a large disc was easy to do yet harnessed some powerful results. The sonorities of the patch were pieced together to compose a piece for submission in this portfolio and a recording is also available through the CMC audiobook site[25], in which I provide an overview of the processes discussed above. The resultant sounds from this installation were assembled within Logic, to produce *Oniqu,* a recording submitted in this portfolio.

4.2   *STOP/RUN* Installation Performance

I was invited by audio artist and instrument maker Ed Devane to compose a piece and perform it at his STOP/RUN installation, which focused on the use of non-traditional

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[25]from `http://audioboo.fm/boos/187768-eoin-smith-introduces-about-his-interactive-turntable`

handmade instruments[26] as source material. The instruments, which feature resonators, string instruments and woodblocks, became focal points for several composers. The performances varied on the night, with some composers improvising live, while others performed to visual scores and incorporated vocals and feedback loops to process and enhance their pieces. This piece was a chance to further explore the Max/MSP system, which I had initially developed for my piece *Iso*, using different source material. The main processing techniques remained quite similar, using spectral audio units, live sampling and the manipulation of audio files via the turntable. While some composers spent some weeks becoming accustomed to the instruments, I needed some time prior to event, to record material and begin piecing together a somewhat cohesive structure and development within the piece.

The material differed greatly from that of *Iso* and it was interesting to hear and use the system with more low-fi, inharmonious timbres from these instruments. Structurally, the piece emerges with some subtle pitch variations of bell strikes, using the turntables. As the piece evolves we are introduced to the characteristic sound of the Csound *pvsblur* and *pvsmooth* opcode, used to smear the harmonious guitar content in *Iso*. The terrain becomes more populated by higher frequency material as chimes and ambient drilling are introduced. Meshing these areas together are subtle freezes of the material, using the *pvsfreeze* opcode in Csound. After some exploration of these timbres, harsher material is again introduced and an ebb and flow of quite ambiguous material begins, resolving itself only for momentary breaths of air before once again becoming enthralled in a fray of aural discomfort. The piece was performed on the 18th of December 2010 and took place in the Severed Head Gallery, in Dublin.

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[26]Project website: `http://www.stop-run-music.com/index.html`

4.3   *WeeDoodle*[27]

WeeDoodle is an interactive installation, created in conjunction with the CMC as part of the Temple Bar Music Festival. The aesthetic and design of the installation is simple and in keeping with the criteria for the project: it should be accessible to everyone in a family. One of the main reasons I submitted a proposal for this project was the opportunity to create something for children. For *WeeDoodle*, the main interactive element is the Nintendo Wii controller. The controller became the focal point of this project, primarily due to its symbolism within the realm of interactive gaming: children will more readily approach something like the Wii remote, as they have a symbolic reference to such a controller as it used in more commercial gaming settings. Technically, the project is relatively straight forward, but as with *Oniqu*, it is powerful and engaging at both a visual and sonic level. There is very little that one needs to be shown in terms of how to interact with the installation, which left the children, and the occasional parent, free to explore and experiment with the technology.

The project was realised in Max/MSP and used an external Wii object, created by Masayuki Akamatsu, in order to get real-time information from the Wii remote. This external tracks the remote on the x, y, z plane, via Bluetooth, and also has the capability to track the nunchuk, an additional device to the main Wii remote. I had initially envisaged that the Wii remote would act somewhat like a pen, so one could draw more accurately, I realised that it could be more interesting to create something which is not necessarily mimicking the participants' gestures accurately. Instead, the manipulation of the Wii remote produced more random shapes, using the jit.lcd object in Max/MSP. The object, when connected to a jit.window, allows one to use a mouse to 'draw', which in essence is the basis of this installation. This help patch for this object was adapted slightly to use Wii remote information, so that instead of drawing onto the window using the mouse co-ordinates, the x and y plane of the Wii remote information

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[27]This installation is accessible as a short demo in Appendix B

could be used. As this formed the basis for the drawing function, I wanted to include some interesting colours and textures, so a combination of the Auvi externals and Jitter objects was used to create a more engaging drawing surface. With the addition of some further processing, one could have access to different visual effects, via the A and B buttons on the controller, which, in real-time could mirror and split the images drawn using gestural control. Aside from the ability to create static images, one could also control morphing shapes, which shifted from left to right, while the depths were being controlled by z-plane information from the Wii remote. Sonically, the piece mirrors this relatively simplistic view of the visual processing. The audio domain contained a number of different layers, each accessible in the patch by opening gates using buttons on the controller.

The primary layer of audio was the wet mix of an oscillator, the pitch of which was being controlled by the acceleration of the controller in the x-axis. Upon pressing the A or B buttons, an audio buffer containing an audio was introduced, with each button introducing separately processed results of the audio file, again using wet mixes of the results. While it would have been easy to develop sonic material which may have been more accessible to children, (for instance, harmonious bell twinkles or simple oscillators), I believe that this way of processing the audio, being more ambiguous yet remaining within the characteristic sonorities of electroacoustic music, meant that there was no sense of the installation being 'dumbed down' to suit children. It was in my interest too, to respect the younger participants: creating a more simplistic sonic and visual installation, would, in a sense, be depriving them of knowledge of, or access to, an area which they could have an interest. I believe that this was a happy compromise of both engaging stimuli and means of control, presented in a manner which empowered and exploited the tangible curiosity of children and adults alike.

4.4 Postscript

These projects represent a more collaborative approach to the creative use of computer music applications and, in the context of this portfolio, represent a very different path of exploration for me. For me, the most interesting area of these projects was the sense of freedom associated with the production, development and realisation of these pieces and installations. While there were some aspects of each project that needed to be planned, like the target demographic of the installations, overall, they represent a very public and interactive element of my work: it is refreshing and endlessly satisfying to be able to make interactive platforms which people can see, feel, touch and hear. In some ways it makes me re-evaluate why visual art, music and sound are so important to me: they connect people.

5   Prelude To Compositions

Before discussing the technical means used to realise the compositions in this portfolio,
I will examine a number of compositional traits which influenced my work. These,
sometimes less obvious, traits encompass entire genres and exude an aesthetic which
is very much their own. Throughout my work, these aesthetics seem to blend and
cross-pollinate to result in sound worlds which are charged with referential timbres and
techniques, yet exude a more personalised aesthetic.

5.1   Exploring Soundscapes

This portfolio features a number of hyper-real sound worlds whose soundscapes act
as a means of creating imaginary and virtual sound worlds with recogniseable, yet
apparently logistically impossible, elements[28]. They stress the necessity to analyse
sound within its context, as advocated by soundscape composer R. Murray Schafer,
(Proy, 2002) and to introduce abstracted elements[29] into the work. Consider the work
of Canadian composer Barry Truax and his 2009 piece, *Chalice Well.* The work employs
convolution and granular textures to develop the hyper-real space and to explore a
mythical narrative (Truax, 2012).

> Although the convolved sounds were bright and distinct, their hybridity
> blurred the edges of the more realistic source sounds, and supported the
> illusion that one was in an imaginary space.[30]

Water droplets, ethereal feminine vocals and a recording of a temple bowl, envelop the
listener in this mythical, hyper-real space. Part Two of *Chalice Well*[31] examines the
element of the female deity within the narrative and it is interesting since it deploys

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[28]Barry Truax(2012), *Sound, Listening and Place: The Aesthetic Dilemma*, 195

[29]Abstracted in this context would be the processing of sound material, which abstracts it from its
real world origins (Truax, 2002)

[30]Ibid, 197

[31]*Chalice Well* consists of four parts: each explores a different theme within the narrative.

a number of techniques similar to those used throughout this portfolio. Stochastic swells of high frequency nuances, which diffuse against the backdrop of fuller convolved domains, also feature in my tape piece, *Lapis. Iso, Opalesce* and *Virga* also employ similar techniques and concepts, marrying spacious convolved environments with high frequency, stochastically charged, elements. The resultant, hyper-real spaces are heavily influenced by the sonorities of Soundscape Composition. The genre opposes the ideologies of Pierre Schaeffer's 'objets sonore' and the acousmatic paradigm of listening without seeing (Proy, 2002) but strives to analyse sound in its context, as noted above by R. Murray Schafer. It also strives to introduce a more socially aware composer, with terms like "acoustic ecology"[32] being used.

One such example of this is *Kits Beach Soundwalk* (1989), by Hildegard Westerkamp. The piece opens to an unprocessed soundscape from Kitsilano Beach, Vancouver with the composer narrating the soundscape, detailing the intricate and playful water sounds, against a cityscape backdrop. As the piece evolves, the unprocessed soundscape gives way to a more dream-like scene, incorporating some simple equalisation techniques which allow the narrator to indulge in reveries for a moment, then return, refreshed, to the unprocessed, real soundscape. This piece and the work of Truax, resonate in my own composition, *Virga,* which represents a similar compositional aesthetic. The unprocessed material at the introduction to my work, allows for a hybrid soundscape to give way to a more ethereal drone. The successive evolution towards the crux of the piece, allows for a natural narrative to enter, then fade out and dissolve into the relatively ambient soundscape heard at the introduction to the piece; similar in structure to *Kit's Beach.*

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[32]How one can find a balanced soundscape in their environment (Voorvelt, 1997).

5.2 Soundscape Meets Collage

Of particular interest in *Kit's Beach*, is the reference to Xenakis' work, *Concret Ph.*
Hildegard compares a stream of stochastic material to that of the processed recordings
of charcoal in Xenakis' work. The manner in which the composer freely incorporates
an excerpt of the referential work, is quite interesting in the domain of plunderphonics.
At its most basic, a 'plunderphone' can be viewed as an unofficial, but recogniseable,
musical quotation[33], and it is generally associated with the work of Canadian artist John
Oswald. Interestingly, both soundscape composition and the plunderphone aesthetic
rely on a point of recogniseability with the source material. Truax (2002) notes that

> The soundscape composition always keeps a clear degree of recogniseability
> in its sounds, even if some of them are heavily processed.[34].

Hudson(1997) conveys a similar view of the plunderphone aesthetic:

> Oswald's plunderphone aesthetic is always concerned with the recognition
> (if not necessarily the identification) of the original source. [35]

The only difference between the two is found in the source material: while one embraces
the acoustic world around us, the other threads a controversial line. David Sanjek
classifies sampling by the 'recogniseability of the original source' [36], ranging from artists
who appropriate a break-beat sample, to remix artists who use a vocal track with 'new'
accompanying music. In relation to sampling, Sanjek also mentions a collage aesthetic
where 'recordings can be constructed wholecloth from samples to create a new aesthetic'
[37]. The reference to collage in relation to plunderphonic media would not be considered

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[33]Andrew Tholl - *A Plunderphonic Review*, available from
http://www.andrewtholl.com/writing.html, 4

[34]Barry Truax (2002), *Genres and techniques composition as developed at Simon Fraser University*,
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[35]Kevin Holm Hudson (1997), *Quotation and Context: Sampling and John Oswald's Plunderphonics*,
23

[36]Ibid, 19

[37]Ibid

a new concept, as James Tenney, Oswald's 'teacher', could be considered to be the creator of the first known plunderphonic piece, entitled *'Collage #1: Blue Suede',* which was a re-edit of the Elvis Presley track but subjected to various transformations such as pitch shifting[38]. The collage aesthetic is prevalent in Oswald's most controversial work, the *Plunderphonic*[39] CD. The CD is a collage of edited, looped, processed and manipulated popular and classical artists, featuring plunderphonic edits of Michael Jackson, Elvis Presley, Dolly Parton, Verdi and Ludwig Van Beethoven. Even the album's artwork conveys what Hudson (1997) termed a 'plundergraphic style design', with Michael Jackson's head superimposed on the body of a naked lady. Aside from the controversy this caused in the music industry, Oswald's work exudes a deeper level of complexity.

> Oswald's plunderphonics pieces are provocative because they invariably address not only the issue of fragment in its changed context, but also the nature of ownership itself - not merely of a melody or a recogniseable fragment, but even of the most atomistic elements of sound: pitch and timbre.[40]

Oswald's work not only questions the ownership of harmony and melody (issues associated with 'regular' sampling), but also ownership of the inherent sonic characteristics such as timbre and pitch. It is this collage of recontexualised timbres which is of particular interest to me, in terms of my own compositions. Field recordings, Soundscape in character, are sculpted and edited to form an aesthetic, which mirrors the timbral collage of Oswald's plunderphonics.

> It has always been a principle of mine not to copy ideas, but to bounce from them in order to develop new ones instead.[41]

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[38]Ibid

[39]available from www.plunderphonics.com

[40]Kevin Holm Hudson (1997), *Quotation and Context: Sampling and John Oswald's Plunderphonics,* 21

[41]Janek Schaefer, (2001) *AudioOh! Appropriation, Accident and Alteration,* 73

Janek Schaefer's *Boulevard Périphérique* exemplifies this plunderphonic soundscape aesthetic. The piece opens with field recordings which seem to embrace R. Murray Schafer's ideology of analysing sound in its context: however, plunderphone style samples enter to act as catalysts for the formation of a more structured collage. One can also recognise similarities in the hyper-real connotations in *Kit's Beach*, as the more concrete domain gives way to reflective states of edited vinyl material. My own work, *Glow*, is my contribution to this field of soundscape, plunderphonic style collage. The compositional approach mirrors that of Schaefer's, whose primary performance approach derived from turntablist Philip Jeck.

> The work of Philip Jeck in particular was, to me, an incredible example of creating something from nothing. He performed an improvisation using a few aging records in conjunction with a collection of basic effect modules.[42]

In similar style, *Glow* was realised using a number of records and an old effects unit. The manner in which it was composed relates to the plunderphonic aesthetic, yet the material is of soundscape origins. Aside from the audio domain, parallels between the aesthetic of the soundscape composition and plunderphonics can also be perceived in my visual work. The accompanying visuals for *Opalesce* are manipulated recordings of surrounding environments, while *Innate* recontexualises appropriated visual material from films of my mother's childhood.

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[42]Ibid

5.3   Postscript

The Soundscape and Plunderphonic aesthetic are two dominant forces in my work, as explained above. Oswald's plunderphonic work exudes a timbral collage of colour in recontextualised samples and graphics, while Truax's soundscape compositions exploit the innate sonic characteristics of acoustic environments. Fusing these influences, we arrive at a collage of acoustic material, appropriated and recontextualised by the turntable, as evident in the work of Janek Schaefer. Within that collage, referential timbres and hyper-real environments co-exist to form the basis of my own compositional traits and manner in which to employ them.

6 Commentaries on Pieces

Sometimes the most difficult aspect of any creative discipline is the analysis and self-critique involved in a commentary of one's own work. Works and ideas which were born in moments of creative clarity and vision now need to be dissected within a more analytic paradigm. The following exploration of compositions aims to explore the various modes of production involved in the composition and performance of audio and visual pieces in this portfolio. It aims to adopt a more pragmatic approach to the analysis of these works and, in some ways, strives to deconstruct the creative process which propelled their completion.

6.1 *Lucid*

Lucid came into existence in a similar fashion to the other pieces I composed at the time. I had a number of sketches in Blue[43], which were rough experiments exploring various combinations of opcodes in Csound. These experiments existed independently of each other, until some instruments began to yield some interesting results, at which point I would save the instrument in the Blue Instrument pool for further investigation, in a larger project. Having amalgamated my source material with some interesting Csound instruments, I then began to combine the instruments and sonic textures. Initially, the piece would have quite a loose structure with obvious transitions and some simple mixing, then as the source material and instruments began to coalesce, sonic friendships began to evolve and a very definite structure, began to emerge from the interaction between the instruments.

Lucid was the last piece of music I had composed in this rather loose way and, in the context of the portfolio, I believe that it signifies the end of a number of things in terms of my compositional beliefs and the results they had on my composition style. The piece was completed for performance at a concert in Maynooth, early in my PhD

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[43]A front end for Csound which was used extensively for my MA portfolio

studies, and it was at that same concert that I heard a work by Dr Gordon Delap, which provoked some ideas in me. *Heavy Liquid,* consisted of a variety of different water sources, which, in themselves, contributed to a very engaging and lively sonic experience. When this was fused with a live stereo diffusion, the piece really became alive. Dr Delap's piece, which was presented some time after mine, appeared to be so lively and vibrant in comparison to mine. Everything in the piece seemed to move and shift, and there was a heaving mass of sounds, all interacting in a vibrant and playful manner.

I began to realise that this was what my pieces were missing, a sense of movement and a human presence. Revisiting my MA pieces, they sounded quite static, as if they were designed for a theatrical production, where the audio material exists to compliment actors or to set a theme. More and more of the pieces I began to listen to suggested this need for more energy and spirit. From *Ondes Croises* by Bernard Parmegiani to *Psappha* by Iannis Xenakis, I began to appreciate the human influence and gesture which could be heard in the pieces. I thought it would be appropriate to dissect the techniques involved in my piece, with the hope that I would be able to avoid formulaic compositional techniques in future compositions. My manner of composition in Blue, would usually commence with some experimentation, as mentioned at the start of this section. Next, I would work with compositional techniques employed by early Musique Concrète composers, such as pitch shifting, enveloping, filtering and the use of some simple effects. From the spectral representation of the piece, one can see that the introduction to the piece is quite rich in frequency content and one begins to get an image of the dynamic evolution of the piece. The rich content at the start of this piece is pitched down material, which, when layered, creates a very textured sound. Having three separate layers also allowed me to impose different filters and envelopes on each layer. As one butterlp filter decays exponentially, another would rise to compliment it, creating this fluid and dynamic spectrum.

The use of these envelopes allowed for seamless theme development, as dream-like whispers and dissonant drones would be quashed by the more visceral and harsh material of the concrete world. The very contrasting stimuli of the dream and concrete states seem to be embroiled with each other throughout the piece. Towards the end, the listener is somewhat released from this aural struggle as the dissonant drones begin to resolve themselves and we are left with a more harmonious and pleasing pitched sound, mirroring an escape from something unresolved and unnatural to a more optimistic and soothing terrain. From a technical standpoint, all material was processed in a similar fashion, using mainly a wet mix of a harmoniser instrument in Csound together with the pitch-shifting and looping capabilities of *flooper2* opcode. The use of a global Schroeder reverb with some basic low pass filtering on each instrument allowed me to fuse and manipulate quite contrasting source material. I believe it was these formulaic techniques which began to give my early pieces this very drawn out and un-lively characteristic. In some ways, the reason I was attracted to Blue in the first place (the ability to be able to place and edit your score in a more meticulous manner) became something to which I was paying too much attention. Similarly, when using modern DAW environments, one can become too reliant on the visual element of the software and can stop listening. I believe that becoming somewhat complacent in my compositional techniques and ideologies resulted in my pieces of that time sounding static.

6.2 *Glow*

Glow is the first piece in this portfolio which features turntables and records for source material. Sonically, the piece references the work of Phillip Jeck and Janek Schaefer, but particularly the latter, as his piece for the Memory[44] Event is a major influence on this work. In terms of the aesthetic of the piece, I was very interested in the work done by Simon James French in his piece *Vinyl Drag*[45]. The concept of the piece is focused around using the degradation of a vinyl record as a compositional aesthetic. Audio material from a vinyl record is recorded then the record is left out of its sleeve, objects dropped on it and it is generally maltreated. Then the same material is recorded again and arranged so that each recording blends with the other, giving listeners the notion that the record degrades, over time.

This notion of using degradation in this way is by no means a new concept: Christian Marclay would often use damaged records in his sound collages and performances[46]. However, the concept of using degrading audio as a basis for structural evolution appealed to me and it is mirrored somewhat in this piece. Over time, I have accumulated numerous effects units, tone generators and drum machines. As I progressed through academia, I was bombarded with many fresh and new sound worlds, free, open source software and, generally, new ways to process and manipulate audio. As this composition represented a shift from purely computer based composition, I felt it appropriate to resurrect some of my old units, and get back to some 'hands on', basic concepts. So with an amalgamation of new and old technologies, (Rack reverb, a turntable, a DJ mixer, laptop and interface) I began recording.

My primary source material was a beaten old record, which contained numerous different tones and loops. After some simple experimention, I developed an intense and engaging sonic terrain, using some relatively simple techniques. I found that, with some

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[44]available from `http://www.youtube.com/watch?v=nb46XreXVaI`
[45]available from `http://soundcloud.com/sjf/vinyl-drag`
[46]Thom Holmes, *Electronic and Experimental Music* (New York: Routledge, 2002), 268

simple added reverb, the cracks, pops and audio on the record seemed to fuse together, resulting in an extremely rich, string-like texture. What was more interesting about this texture, was that simple equalisation could change the whole tone of the piece, because there was so much energy in the higher end of the spectrum: once this was cut, the piece became more malevolent and sinister. One analogy, which I constantly use in relation to the piece, is that of a storm. There is a brooding sense of foreboding in the opening few minutes, until the intensity and brutality of the storm manifest themselves. Dynamically, the piece mirrors this theme. The ease with which I could morph from a dull, dark landscape to an overpowering and consuming sonic texture, made this piece one of the quickest to realise and compose. Previously, I described how my tape piece *Lucid*, was a representation of how I used to compose. *Glow* can therefore be seen as a direct reaction to that form of composition and what it represented. This piece is the first composition in which I have tried to convey a sense of my own personality, through compositional techniques and the resultant emotive sonic terrain. Within the context of this portfolio, *Glow* represents a shift away from my old style and acts as a marker for the beginning of more interactive and colourful pieces.

6.2.1 *Glow* Visuals[47]

The dense, slowly expanding textures of *Glow* provided ample material with which to explore the visual domain. At the time of composition, I was relatively new to Jitter and I was working my way around the audio control of visual material, utilising the intensity effect explored in the technical section of this commentary. The effect allows for real-time control of saturation of colour in the visual stream using the intensity of the audio material. Combining the audio stream of the piece with a video of a train journey, provided some interesting and engaging results. Neither demanded attention, nor attempted to overpower the other: they simply existed, symbiotically, in a unique

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[47]Refer to Appendix B

space. The visual material was processed in black and white, as the sonic terrain of *Glow*, in my view, is quite dark, with extremely intricate and engaging textures and shades. As the piece evolves in the sonic domain, the intensity of the audio drives the saturation of the visual material: the vitality in these timbres breathes life into the dusty shadows of the visual material. In essence, the structure, combined with the intensity technique, defines the path of the visual material. For this reason, I felt that a combination of both would be best suited to an installation environment and not specifically for a fixed media piece to include with this portfolio.

6.3 *Lapis*

As my approach to composition continued to change over the course of my research, my pieces became more personalised and, as a result, became more emotive. Long, ambiguous drones layered with atmospheric, subtle nuances made way for pieces with more feeling and, in my opinion, more depth. These pieces became more relevant to me as they represented a hybridisation of musical influences from composers like Bernard Parmegiani to electronica artists like Four Tet. *Lapis* is a tape piece composed for a concert series in NUI Maynooth. It was composed shortly after a short residency in STEIM, Amsterdam, where after an orientation week, I studied with Takuro Lippit. At the time, my timecode performance system was still in its infantile stages and any extra time I had at STEIM was spent picking the brains of Takuro Lippit, who as an experimental turntablist, was a source of huge interest and a major influence on my work. From this experience, one could view *Lapis* as a release of energy and ideas, as Amsterdam was somewhat of a cultural and sensory overload for me. Having spent a number of weeks focused on the more meticulous nature of crafting Max/MSP patches, the Logic interface and workflow associated with DAWs offered a perfect platform from which to get ideas and sounds together in a quick and engaging way. After some exploration of techniques and audio material, a very definite structure began to take shape, one which flowed effortlessly and whose sonorities became of huge interest to me. From what had started out as a means to sonorise a refreshed and invigorated outlook on culture and composition, a silhouette of a somewhat tribal piece was beginning to emerge.

As this piece evolved from a necessity to realise some ideas, there was no conscious decision as to what software I would use. At the time, I was using Logic Pro 8 for my own productions so it was out of habit that I opened the software to act as a sketchpad. The piece starts out with a synthesised sound, made in Logic's Sculpture Instrument. This midi instrument is an extremely interesting and rich modelling synth. It allows
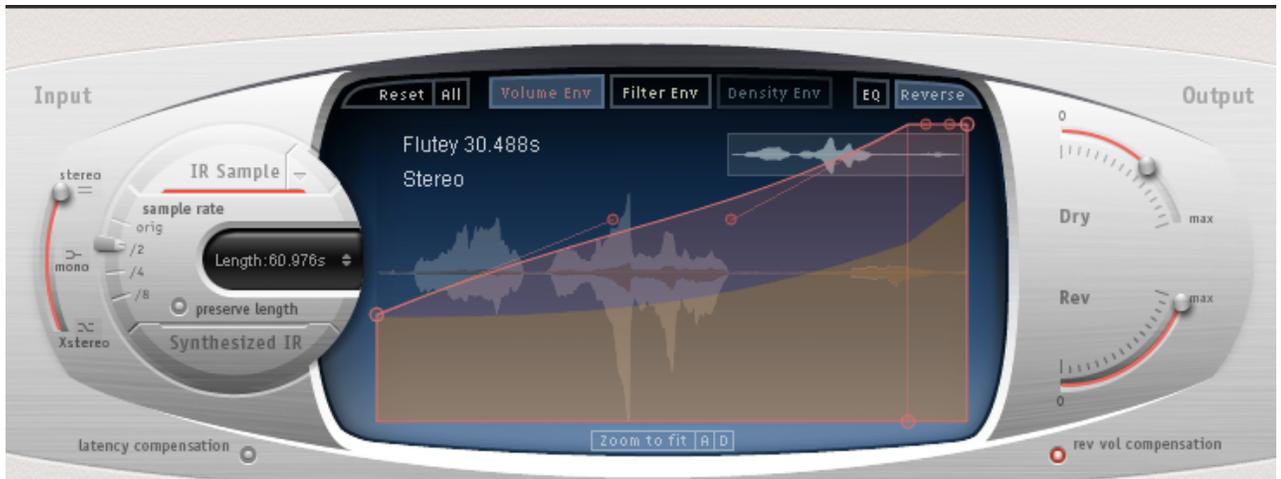
Figure 6: Logic's Space Designer

for users to define how three objects interact with a string, eg through bowing, blowing or as an impulse. This allowed me to synthesise a string sound with some engaging and dynamic characteristics. To complement this sound, I edited some material to create a steady pulse in the background. With these two sections acting as a foundation, I could then build up the piece around it, defining instruments to compliment frequency components of these two building blocks. One effect, which I have always been interested in, is convolution-based reverb. Within Logic, one can access this very interesting and engaging technique through the Space Designer. The essence of this effect is to map an impulse response, user-defined or from a preset, from various rooms to use on one's own mix. A more interesting way to use this effect is to load audio material which would not usually be considered when dealing with impulse responses. From the screenshot in Figure 6 one can see that I have loaded a recording of a wooden toy flute, to be used as the chosen impulse response.

The Space Designer in Logic also allows users to pitch and reverse a chosen response, resulting in extremely interesting and exponentially evolving timbres, which can further be developed by automating the wet and dry mix of the instrument. This instrument and concept has proved very useful with an enormous amount of ethereal tones and source material for different pieces and it featured heavily in my work at the

time. The spectrum of the piece was developed further by the introduction of some low frequency bodhrán hits to contribute some depth to the sonic terrain. Some crunching mid-range material was added to complete the dynamic range in the piece. An aspect of my pieces, of which I have become quite aware, is how well they flow and how sustainable the pieces are to the listener. This sensitivity to structure may arise from my previously inherent difficulty in structuring pieces adequately - perhaps as a result of never studying music from a theoretical standpoint? However, it suddenly became apparent to me as to why certain pieces could be created with relatively effortless flow, while structuring other pieces was a far more labourious and tedious task. It was the association with imagery that was helping me to structure these pieces.

6.4 *Virga*

Nature has always been a source of inspiration for me. Within the sonic domain, we have audio art forms such as Musique Concrète and Electroacoustic Music where the musical make-up and ideologies evolve from the manipulation and re-contextualisation of found sound and field recordings. Within these fields, my own work stems from a deep-rooted interest in sonorities of the natural world and, further, the results one can achieve when this sonic material is married to the advanced technologies of computerised music. However, occasionally one can become distracted by the endless processing possibilities available to the computer musician and what was initially an engaging sound, can become lost in effects and failed manipulations. The essence of *Virga* is concerned with avoiding the latter. It is about combining source material and allowing the interactions of these recordings to fuse and for this unity to define its own structure and space within the listening environment. By definition, *Virga* represents a short blanket of rain which is dissolved into the atmosphere before reaching the ground. Within the context of this portfolio, one can view this piece in a similar fashion, as an aural sorbet, something to cleanse ones sonic pallet before getting into the 'meaty' section, in terms of processing and sonorities. In contrast to earlier works, *Virga's* sonorities occupy a deeply spacious and soothing place within the portfolio. The piece can be seen as an homage to composers and audio artists such Barry Truax, Natasha Barrett, Justin Bennett and Giles Aubrey, whose sonorities range from spacious field recordings to delicately processed found sounds. Upon completing *Glow*, I began using Logic Pro as my main sketch pad for pieces. Working in Logic allowed me to exploit some wonderful spectral audio units developed and made freely available by a New Zealand composer and programmer, Michael Norris which I used here to introduce a warm, soothing texture. This drone, which is introduced at 1:30, is set to complement the effortlessly soothing sound of rain which is featured throughout the piece. While the spectral timbres morph into a warm, enveloping sound, fresh material is introduced, some of

which implies more movement than the previous undemanding spacious material. At the crux of the piece, the listener is introduced to further soothing timbres and faint voices and, as one begins to become accustomed to the sonic domain, these tones diminish leaving no trace of what once was.

6.5 *Iso*[48]

Iso occupies a sonic space which has intrigued me since I first became interested in electronic music. In one respect it is emotive and melodic, while in another, it is chaotic and grating. In similar style to previous pieces, only the completed sonic textures were envisaged: it was up to me to realise them. Proficiency with software like Logic Pro or Ableton allowed me to compose pieces and work relatively quickly. However, there is a compromise which arises when using software like this. As a computer music student, I studied, in detail, the processes required to synthesise a sound. Consequently, I was also learning how to develop computer music tools which allowed students to synthesise and process audio. Coming from that environment, where one becomes an 'instrument builder' of sorts, commercial workstations can seem restrictive (this was before software like Max For Live was developed) and one can therefore begin to depend on clichéd techniques and processes of composition, because much of the environment is already pre-defined. I had already been intrigued by Takuro Lippit prior to my visit to STEIM. In one respect he was a turntablist, as he incorporated turntablist techniques and practices into his performances and gestures. On the other hand, his performances and improvisations resulted in hugely interesting sound collages, reminiscent of some Christian Marclay material, which were engaging and accessible at a different level. This hybrid of styles and the engaging performance aspects influenced me greatly in developing the Max/MSP and turntable based system which I used to compose *Iso*, and one which I continue to develop today.

The system[49], built in Max/MSP, incorporates time-coded vinyl, which allows me to control audio files from my computer, utilising the vinyl discs. I developed algorithms and conditionals which allowed me to exploit directional information received from the record, which was relayed directly to Max/MSP using Ms Pinky. This information could be then used to trigger events and increment through sample banks,

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[48]Performance of piece is available on Disc 3
[49]Explored in more detail in the technical section of this commentary

placing specific importance on the gestures of the turntablist when performing. As this system evolved, I began to develop the ideologies and sonorities of my influences, and to develop an original instrument and performance interface, which would subsequently result in a somewhat new and original approach to turntable composition: *Iso* is the primary result of that system. Previously, I mentioned how this piece occupied an intriguing sonic space. At times, this space fuses melodic elements with grating and coarse material. In terms of more rhythmic electronic music, the Irish duo, Lakker, exemplify this space, fusing elements of processed found sound with melodic, pulsating synthesised and rhythmic material: they are true purveyors of this extremely engaging sound world. What is so intriguing about this sound, is the level of emotion which can be conveyed, even when the listener is being immersed in relatively harsh rhythmic material. The conflicting textures and tones fuse to deliver a very engaging and original sound, one which can be accessible to a varied musical demographic. Away from the world of pulse-driven music, it was my aim to convey similar textures in this piece, and draw on some other influences of the time, such as Nick Drake or Elliott Smith. I began to record some guitar loops, with the idea that I could segment these loops and increment through them, using the sample-flicker method explored in the technical section of this commentary.

I embraced this idea and dissected a guitar loop into its constituent chords, resulting in material which allowed me to develop a noticeable theme in the piece. This dry guitar theme was then fed to numerous different processing subpatches, constructed using Csound and run through Max/MSP, with the addition of some external audio units. Using a turntablist technique called *Scribbles*, in which the turntablist's arm is stiffened, causing minute but fast movement between the needle and record, I exploited a feature in the Ms Pinky object, making the pitch of the guitar sample inversely proportional to the speed of the record. So, when this technique was employed, or when the record was slowing down, one could hear a very high pitched sound or an exponen-

tially ascending guitar sound. Once the vinyl was released, the speed would return to normal. This technique allowed me to create very ambiguous low frequency sections, which would then be resolved into the familiar pitched guitar theme in the piece. As the piece evolves, one is taken away from the melodic textures, into more discordant and unresolved regions. Towards the end of the piece, I employed a production technique which, I feel, gives more depth and separation to certain sounds. In an analogy to an analogue mixing console, new elements are introduced, but only through the send channels, leaving no audible dry mix. To complement this wet signal, I introduced a very harsh and rich texture, which was not processed in any way. Instead, I relied heavily on the gestures incorporated in turntablist techniques to bring this texture to life. Assigning these different textures to a laptop keypad, allowed me to develop the piece and dip in and out of melodic, grating material and to explore the stereo image in full.

6.6 *Opalesce*

Opalesce is a live piece for turntables and visuals. It was the first piece in which I began to fully exploit the turntables as a means of controlling both audio and visual material. The name *Opalesce* refers to the textural composition of the visual material used in early versions of the piece. The name befitted the short, sharp sprite-like nature of the light shades evident in the visual material. The piece and the development of the performance patch in Max, evolved from a conversation I had with my supervisor, after a performance of a more primitive visual piece, in which the topic of generating new visual material arose. This was a concern which I had confronted when designing an evolving and dynamic system for audio material, so it was not as daunting as initially imagined. Having developed the sample-flicker concept I could easily apply this to the visual processing aspect of my patches. The sample-flicker is essentially a sample bank, based on the use of conditionals: once the system receives a certain velocity in a clockwise direction, it will increment to the next sample, initialising back to zero once the system has reached a user-defined maximum value. Early versions were made primarily for audio, and the subsequent bang messages in the Max/MSP patches sent information to change audio settings. However, after altering the patch, it became more versatile and could now be used for incrementing through visual stimuli.

Sonically and visually, the source materials are somewhat similar. The audio material is quite harsh and has a concrete aesthetic, while the video material mirrors this with low-fi urban landscape recordings. After a performance of this piece in De Montfort University in Leicester, it was mentioned that while the source materials were quite similar, the means by which the audio was processed, de-coupled the concrete aesthetic into two different entities, resulting in a quiet, ambient sonic terrain, compared to the backdrop of more low-fi recordings. Something which is also notable about this piece is the presence of a fractured break-beat sample. Initially this sample was selected for inclusion in the patch due to its accessibility in the folder of audio files used for

this project. However, after performing and practicing, using the break-beat sample, omitting it from the piece changed the whole aesthetic of the sonic terrain.

The sample contributed hugely to the overall character of the piece, but one can also view its importance in a different light. Historically, the break-beat was a section of a record where all other musicians would stop playing and allow the drummer to perform a few bars without the backing of the band. The break-beat was then co-opted by Hip-Hop culture as it provided ample rhythmic material within which the producer could sample and re-contexualise. In turn, this shaped much of the sonic terrain in early Hip-Hop records. In later years the break-beat would become a synonymous symbol in popular culture, helping to mould and define the sound track of monumental cultural movements, like Drum and Bass, Trip-Hop and its namesake genre, Break-Beat. The utilisation of a break-beat sample, such as the one used in *Opalesce*, continues to develop the cultural context within which the concept of break-beats can be used. It also further develops this hybridisation of influences and sound worlds, which has become a dominant theme in this composition portfolio.

Furthermore, the context in which this piece has been performed supports this notion of an influential hybridisation in relation to the different sound worlds presented. From the white collar setting of the Jayu Theatre in the Seoul Arts Centre, to the Bohemian environments of the Islington Mill in Manchester, or the Joinery space in Dublin, the sonorities of this piece seem to transcend genre classification and perfect performance conditions. It also further develops what the turntable could symbolise within the field of electroacoustic music. This was a topic which I explored in a paper, using the term 'cultural mediator' to describe the turntable since it was evident that it acted as a unifier of genres and cultures. In relation to this portfolio, *Opalesce* is of huge importance. The sonorities from the turntable and computer system represent some of the most interesting and exciting recordings that I have worked with to date. As the development of my performance and composition environment in Max/MSP continues,

I believe that the techniques and sonorities which are evident in this patch, will form the basis of many more performances and compositions in the future, furthering the development of my own style and voice within the field.

6.7   *Innate*

Innate is a piece for live visuals and electronics. It is the last piece in this portfolio and, in a way, it incapsulates all aspects of the areas covered in this commentary. This piece evolved from a project I was working on with old film footage, depicting my mother's home town. The footage portrays life in a rural town in the South East of Ireland and features religious events and community occasions. I had been conducting a number of experiments within the OpenGL side of Max/MSP and had produced some interesting results. However, the material was lending itself more towards an installation, or perhaps a relatively short composition, rather than a full, cohesive piece. I was beginning to become immersed in this piece to the extent that I was in danger of losing the creative motivation to complete it. During a period of 'creative distance' from the project, I was working with a Max for Live instrument which I was building at the time. The instrument was a more concise version of some of the key effects used in my turntable patches, with the addition of some simple zooming and rotating effects inherent to Jitter. It focused on using the intensity of the audio to control the saturation of the colour of the visual material. Initially, these experiments were very much conducted with an 'Electronica' style in mind, with subtle rhythms and a more intricate development of the synth melody. However, after stripping everything back to just a simple melody, the piece seemed to have a more engaging quality. Its simplistic timbres were allowed to breathe and be carried along on trails of reverb and percussive voices. The minimalistic sonorities were refreshing, as they seemed to contrast completely with my somewhat scattered mindset at the time. Structurally, the piece revolves around the exploration of some relatively simple melodies.

The theme remains constant throughout, but timbres ebb and flow through the introduction and manipulation of reverbs and a slight degradation of the tones. With the use of the looper device in Ableton and two midi controllers, I was able to record and process material live and, in a way, this freedom to experiment with the mate-

rial became the prominent modus operandi of the piece. The technology involved for the performance meant that I was constantly working, dipping in and out of records, filtering glockenspiels sounds on the RS7000 and overdubbing, layering and launching new material in Ableton. In similar fashion to the refreshing sonorities of the audio and simple implementation of the visual material, this manner of production was a very much welcomed approach to composing. It gave me a platform to audition a new means of working in Max for Live and also gave me the opportunity to further develop this hybridisation of computer music, electronica and electroacoustic music.

7   Conclusion

This portfolio provides a concrete representation of the evolution of a composer and the formation of compositional ideologies, over several years. The body of work submitted represents a number of years' work in the field of various strains of electronic music, and embodies, in some respects, a journey to define one's own voice in the field of composition. It also embodies the less tangible entities and ideologies which have acted as catalysts for its realisation. The conversations and meetings with various multi-disciplinary artists, the variety of performances and zealous personal explorations have contributed to the aesthetic of each piece and my ever-changing compositional ideologies. This commentary, therefore, has been an attempt to consolidate and explore these influences.

8   Appendices

A   Appendix A - Disc 2

This disc contains the program and audio files used in the composition and performance of the pieces discussed in this portfolio. A variety of compositional platforms have been used to cater for the different modes of performance and production. In the realm of live turntable performances, Max/MSP and Csound were intrinsic to the realisation of an original live performance system, while Ableton and Logic allowed for more meticulous structuring. These two different modes of production cater for different elements of my compositional approaches with the former allowing for the development of original instruments and performance systems, while Ableton and Logic lean toward the more commercial DAW interface, acting as sketch pads for compositional ideas. These projects and audio files can be viewed in direct correlation to the appreciation of the pieces discussed within this portfolio, as a means of gaining more insight into the source material and compositional approaches used in each piece.

B   Appendix B - Disc 3

The support material on Disc 3 documents the evolution of this portfolio in a more indirect manner. I have included a number of flyers and posters for various performances, gigs and events over the years. They provide a more tangible and concrete platform from which to appreciate the pieces and performances discussed in this commentary and also give evidence of the variety of contexts within which each piece was appreciated. To further complement the evolution of this portfolio, a number of photographs from live performances have also been added. These, I feel, convey a more personal and dramatic 'feel' to the written analysis of a piece.

For this porfolio, I have submitted works which, I feel, best represent the evolution of both artist and artistic ideologies. I have also included a number of experiments, both aural and visual, which have acted as catalysts for the realisation of these pieces, such as inroads into the sonic capabilities of the time-coded vinyl being used with Max/MSP and Csound feature, while the performance of *Cali* represents an exploration of audio and visual material.

As this portfolio transverses the topic of hybridisation of influences, I felt that it was also appropriate to include examples of my own productions in the realm of electronica. The tracks included, which can be found in the 'Taper Jinx' folder of support material, contain streams which hint at a fusion of genres. Streams of rhythmic material, found sound and melodic timbres greatly influence my work in this field, but one can also perceive the influence of the more academic strains of electronic music which, I feel, can be appreciated in parallel with the primary objectives of this portfolio.

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