Commentary on the Portfolio of Compositions

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Declaration

I hereby declare that this thesis, submitted in candidature for the degree of Doctor of Philosophy at Trinity College Dublin, is entirely my own work and has not been previously submitted for a degree at this or any other university. I agree that the Library may lend or copy the thesis upon request.

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Composition Portfolio Contents

Acoustic

Forget and Remember (2012) – string quartet – 8'

Friction (2012) – solo cello – 7'

Resound (2013) – open instrumentation – 5'

Dopamine (2013) – three classical guitars, violin, keyboard accordion – 5'

Moments (2013) – clarinet, trombone, cello, percussion – 8'

Tripping (2013) – solo alto saxophone – 6'

Now (2013) – violin, viola, cello, double-bass – 5'30

Electroacoustic

Gliché (2011) – laptop orchestra – 5'

Music as Sound, Sound as Music (2012) – flute, clarinet, violin, cello, piano, tape – 7'

Two Point Oh (2012) – laptop orchestra – 9'

The Alphabet Song (2013) – laptop orchestra – 10'

Place (2013) – flute and tape – 9'

One to N (2015) – flute, clarinet, violin, viola, cello, double-bass, piano, percussion, electronics – 30'

Theatrical

Big Scary Numbers (2012) – three speakers – 3'

Total: 115'

Contents of Accompanying CDs & DVDs

This portfolio is accompanied by 2 audio CDs, 1 data CD and 1 DVD.
Some of the audio recordings differ to the score for various reasons, including mistakes during the performance and also discussions with the performers which led to a freer interpretation of some elements. In all cases, the score most accurately represents the piece.

CD 1: Audio Recordings

Track No.
1. Gliché
2. Music as Sound, Sound as Music
3. Two Point Oh
4. Forget and Remember
5. Friction
6. Resound

CD 2: Audio Recordings

Track No.
1. Dopamine
2. Big Scary Numbers
3. Moments
4. Tripping
5. The Alphabet Song
6. Place
7. Now

CD 3: Data CD containing patches and accompanying files in the following folders:

1_Gliche
2_MusicAsSound
3_TwoPointOh
4_TheAlphabetSong
5_Place
6_OneToN

DVD: Performance Recordings

1. Gliché
2. Forget and Remember
3. Big Scary Numbers
4. Now

Abstract

The portfolio contains fourteen compositions with varying instrumentation, ranging from string quartet to laptop orchestra. Of the fourteen compositions, seven are acoustic, six are electroacoustic and one piece is for theatre. All works, except *One to N*, have been performed and recorded, with many receiving subsequent performances. *One to N* is the largest work in the portfolio, with a duration of approximately thirty minutes, whilst the other thirteen range from three to ten minutes in duration. The commentary provides an in depth discussion on each composition and how each piece encompasses the composer's use of form, humour and theatricality.

The acoustic works in the portfolio are: *Forget and Remember*; *Friction*; *Resound*; *Dopamine*; *Moments*; *Tripping and Now.* The electroacoustic works are: *Place; Music as Sound, Sound as Music; Gliché*; *Two Point Oh*; *The Alphabet Song and One to N*. The theatrical piece, *Big Scary Numbers*, demonstrates the composer's compositional voice without the use of music, incorporating form, humour and theatricality.

Acknowledgments

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List of Equations, Tables and Figures

Introduction

This commentary presents a discussion on the fourteen pieces in the portfolio and outlines the compositional process, motivations and use of musical and non-musical material. The instrumentation varies significantly in the portfolio, from string quartet to laptop orchestra to flute and tape. Performances of the pieces in this portfolio have taken place in Ireland, The Netherlands, Italy, Austria, Poland and the United States. I have mostly concentrated on works of short duration ranging from three to ten minutes. The final piece in the portfolio, *One to N*, is a larger work approximately thirty minutes in duration and so will be discussed at a much greater length than the other pieces.

Throughout my portfolio, a key aspect that has become a focal point of my composition is the experience and perception of the listener. As my study progressed I found the audience or listener to have an important role and influence in my compositional process. While I compose I reflect on how the audience may or may not respond to something within the performance, be that musical or non-musical material. I am not interested in affecting the listener in a particular way, but rather creating a situation to which the listener may respond. In the same sense that each composer is different, each listener is different and so listeners may perceive musical and non-musical material differently. For example, what may be surprising for one listener may be expected or ordinary to another. My aim is not to control how a listener responds to my music, but instead to observe it. I predict the responses of the listener based on how I may respond myself as the listener.

The following outlines the important characteristics in my music; humour, theatricality and use of form. A brief introduction to how and why I use these characteristics with respect to other composers' use is given. This is to provide a basis from which my own works can be discussed, rather than an extensive review of the use of humour, theatricality and form in music.

Humour

The idea of making someone smile or laugh with music appeals to me at a deep level. Silence, engagement and applause are expected of an audience and an audience expects to give them. A smile however, is an involuntary response, caused by chemicals releasing in the brain, in response to stimuli.[1] This releases positive emotions and makes the listener continue with an activity as the brain has interpreted the events as being beneficial for the listener.[2]

I use aural and theatrical surprises to produce humour that may encourage the listener to smile. This may not induce a pleasant response; perhaps the smile is a response from what the listener perceives as audacious, or unexpected. It is never my intention to make an audience feel a great amount of discomfort, however, nor is it to please them. I am constantly mindful of how my music might be perceived, but this is only to achieve my own intentions, not to deliver something sought by the audience.

Many composers have incorporated humourous elements into their work, such as Haydn, Satie, Hindemith and Ligeti. Composers express humour in different ways, from Satie's satire, Haydn's wit and Kodály's musical sneeze[3]. I like to use surprise as something unexpected within the context of the music. This surprise can be both musical and/or non-musical. This form of surprise triggers what Huron refers to as the appraisal response, which is a conscious response to the situation. "[The] appraisal responses can involve conscious thought that often draws on complex social and contextual factors".[4] Therefore, my use of surprise must extend beyond the content of the piece, and consider the performance space and the concert programme. I often use surprise to

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[1] D. Nettle, *Happiness: The Science Behind Your Smile*, (OUP Oxford, 2005).
[2] Ibid.
[2] Ibid.
[3] D. Clark and J. Staines, *Classical Music: The Rough Guide*, (Rough Guides, 2001) 258.
[4] D. Huron, *Sweet Anticipation: Music and the Psychology of Expectation*, (University Press Group Limited, 2008) 15.

reengage the listener, since surprise creates an increase in attention and encourages sensory focus back to the performance.[5]

The second movement of Haydn's Symphony No. 94[6] is a classic example of the use of humour in music. Haydn's surprise is not only within the context of the movement or entire work, but also in the context of the symphonic form. Typically in 18th century symphonies, the second movement has a slow tempo.[7] The sudden *fortissimo* beat in mm.16 contradicts that and it is this unexpected event that causes surprise. Given the nature of the surprise, a loud dynamic, this first would trigger a reaction response[8], before a conscious response would be triggered. Haydn successfully sets up the context in which surprise can occur. The movement begins with a rhythmic melodic line that is limited in variety and voicing. He builds expectation through these early bars and surprise is created through contrast. The materials that Haydn uses to solicit a surprise reaction, whilst unexpected, remain musically cohesive. Haydn's intention was to 'astonish the audience by something new'.[9]

Erik Satie's humour is evident in the titles of his music as well as the musical content. He had many humourous titles to pieces, including "*Trois Morceaux en Forme de Poire*"[10] (Three Pieces in the Form of a Pear). He also wrote humourous instructions to performers, for example in *Vexations*[11], he wrote "to play this motif 840 times in succession, it would be advisable to prepare oneself beforehand, in the deepest silence, by serious immobility". It is not clear whether this was a joke by Satie, or if he intended the motif to be performed 840 times in succession, or, indeed, if it is a thought experiment. Regardless of the uncertainty, John Cage organized the first known public performance of

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[5] Ibid.

[6] Joseph Haydn, *Symphony No.94 in G Major* (Brussels: A. Cranz, Ed.2403, n.d. Plate C. 45167., 1791).

[7] Preston Stedman, *The Symphony*,   (Prentice Hall, 1979).

[8] Huron, *Sweet Anticipation: Music and the Psychology of Expectation*.

[9] Max Unger, 'The First Performance of Haydn's 'Surprise' Symphony,' *The Musical Times* 73/1071 (1932): 413-15.

[10] Erik Satie, *Trois Morceaux En Forme De Poire* (Paris: Rouart, Lerolle et Cie., 1903).

[11] Erik Satie, *Vexations* (Paris: Max Eschig, 1893).

Vexations, performed by a group of pianists.[12] Subsequently it has been performed by a single performer, in what resulted in a 28 hour performance.[13]

In the second movement, *Son Binocle,* of *Les Trois Valses du Precieux degoute*,[14] Satie politely writes, "Tres lent, s'il vous plait". I believe this gentleness reveals character that would transfer to the performance of the piece. Satie wrote much more humourous text in his works for example in his preface *Unappetizing Chorale* to *Sports et divertissements*,[15] he admits he wrote before breakfast and he both advises and pokes fun at his critics by writing "Don't look for anything else here" and "I dedicate this chorale to all those who do not like me." Not only is the text humourous, but the piece is also a parody of the chorale.[16]

Ernst von Dohnányi's *Variations on a Nursery Song*[17] is full of wit, poking fun at many composers by writing variations in many famous composers' styles. Written on the score was "Freunden des Humors zur Freude, den Anderen zum Ärger" (To the enjoyment of friends of humor, to the annoyance of the others). This subtext was not printed however in the published work.[18] This work begins with a largely dramatic introduction, leading the listener with brass and timpani. There is a pause and sudden change two bars before rehearsal mark 6 to the nursery rhyme "Twinkle twinkle". This change is implied or hinted at beforehand, with a rhythmic phrase in the horns. Whilst listening to the piece, the implication of the rhythm may not be apparent but instead the listener becomes aware of the relevance of the rhythm after the change has occurred. I believe this technique contributes to the overall cohesion of the piece. I have used this technique in *Moments*, at the end of section of A as a way of affirming section B's place in the piece and for overall cohesion. The clarinet and

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[12] Stephen Whittington, 'Serious Immobilities: On the Centenary of Erik Satie's Vexations' (http://www.satie-archives.com/web/article3.html, 15/01/2014).

[13] Reinhard Kopiez, Marc Bangert, Werner Goebl and Eckart Altenmüller, 'Tempo and Loudness Analysis of a Continuous 28-Hour Performance of Erik Satie's Composition "Vexations",' *Journal of New Music Research* 32/3 (2003): 243-58.

[14] Erik Satie, *Les Trois Valses Du Precieux Degoute* (Paris: Rouart, Lerolle & Cie., 1915).

[15] Erik Satie, *Sports Et Divertissements* (Paris; New York: Editions Salabert, 1914).

[16] M. E. Davis, *Erik Satie*, Rb-Critical Lives (Reaktion Books, 2007).

[17] Ernst von Dohnányi, *Variations on a Nursery Song* (Berlin: N. Simrock, 1914).

[18] I. von Dohnányi and J.A. Grymes, *Ernst Von Dohnányi: A Song of Life*, (Indiana University Press, 2002).

trombone especially hint at the new motif heard in section B. I would expect this only to be understood retrospectively. Only when the change has occurred does its relevance become apparent.

Paul Hindemith intentionally wrote an *ugly* movement in *Sonata for Solo Viola, Op.25 No.1*[19] mvt.IV. He wrote the performance direction as "Tonschönheit ist Nebensache", meaning "Beauty of tone is secondary". Hindemith also wrote slapstick humour in his string quartet *Minimax*,[20] scoring *wrong* notes. This is something I explored more subtly in *Forget and Remember*, where the viola plays a C sharp on mm.45. The purpose of this dissonance is to prevent the listener from getting too comfortable in the harmonic language and to also suggest that this language is to change.

Marc-André Hamelin encompasses the annoyances of the concert hall environment, that of an audience member's phone ringing in his work for piano solo "*Valse Irritation d'apres Nokia*". Hamelin's performance instruction at mm.40 reads, "as if dialing a touch-tone phone". This is not intended to sound pleasant and is in stark contrast to the preceding passage, which is elegantly scored.

Gyorgi Ligeti's use of humour as well as his use of sound inspired many ideas in this portfolio. His focus on timbre and subtle theatrical gestures has influenced how I approach these elements in my own works. There is humour within his sound world, for example a conversation takes place in *Artikulations*[21] through which "artificial language", "impulsive outbreaks and humour, charring and whispering"[22] are heard. Ligeti's most common expression of humour is theatrical. In *Aventures*,[23] besides the use of props, there are many instructions to performers in the score that may evoke a comedic response. In mm.32 the instructions read "Den Mund mit beiden händen zudecken" translated as 'cover mouth with both hands', with *fortissimo* as the dynamic. This

[19] Paul Hindemith, *Viola Sonata, Op.25 No.1* (Mainz: Schott Musik International, 1922).
[20] Paul Hindemith, *Minimax* (Mainz: Schott Musik International, 1923).
[21] György Ligeti, *Artikulation* (Mainz: Schott Music, 1958).
[22] György Ligeti, *Liner Notes, Continuum / Zehn Stücke Für Bläserquintett / Artikulation / Glissandi / Etüden Für Orgel / Volumina* (Germany, 1988).
[23] György Ligeti, *Aventures* (Frankfurt: Peters Edition, 1966).

restricting of the vocalisation is realised by Dean Robinson[24] as heaving to which the audience responds with laughter. This is just one interpretation so it is difficult to know if this is exactly as Ligeti wished, however in this incredibly precise score, it is evident that humour is an important element of the piece.

Andrew Hamilton uses humour in many forms, from his titles, for example, *Music for People Who Lose People*,[25] to the strikingly contrasting material in his works. Hamilton's music is highly repetitive, but jarring, often featuring irregular rhythmical patterns. Hamilton sets out to create something mundane that encourages the listener's mind to wander, before jolting them and reengaging them. This is just another side to the humour in his music. This boldness pokes fun at the classical music world and indeed at his own music. Hamilton says "… I use a lot of repetition to create a state of unease, ambiguity, and sometimes joy, and also to laugh at the world.[26]" This does not devalue his music in any way. The humour in his music is no reason for it to be perceived as any less serious, or he as a less-serious composer. Notwithstanding the difference in musical material, there are certainly similarities in both our compositional outcomes, even if our approaches differ. His humour is direct and unhidden, even down to the detail of the titles. I prefer a more subtle approach, where I lead the listener in one direction to build expectation and either deliver on the expectation or use it to create a surprise through contrast. An example of this can be seen in *Forget and Remember*, where there is a sudden change in musical material in section B.

Perhaps Hamilton's most direct use of humour is in *In Beautiful May*,[27] for violin and tape, what I believe to be his most audacious work to date. The tape part is made up of fragments of pop songs from artists including Take That and Kavana alongside Schumann's *Im wunderschonen Monat Mai*.[28] Perhaps he is

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[24] Psappha Ensemble, conducted by Nicholas Kok and performed at Lancaster University, Feb. 2008.

[25] Andrew Hamilton, *Music for People Who Lose People* (Unpublished, 2008).

[26] Charlie Wilmoth, 'Composers Who Matter: Andrew Hamilton' (http://www.dustedmagazine.com/features/749, 02/01/2014).

[27] Andrew Hamilton, *In Beautiful May* (Unpublished, 2008).

[28] Robert Schumann, *Im Wunderschonen Monat Mai* (Leipzig: C.F. Peters, 1840).

poking fun at the practice of musical quotation. These quotations overlap with violin fragments and a violinist shouting. The contrasting material that comprises the piece borders on the absurd, but the boldness of this material and his use of it create a captivating atmosphere. These quotations are carefully placed. When the shorter quotation fragments are introduced, the contrast surprises the listener. However, when the slightly longer fragments are presented, the listener has time to recognise the quotations from the well-known pop songs, aesthetically not dissimilar to James Tenney's Collage # 1[29] or John Oswald's Pretender[30]. While pop quotations have existed for a long time, there still remains a boldness in bringing this music into the concert hall environment. This is a surprise within the context of the instrumentation, the concert environment and within the context of contemporary classical music.

Generally I prefer a more subtle approach to my theatrical elements. In *Dopamine*, mm.76, guitar 1 is instructed to "take out phone to check time". Although this could be very dramatic, I want it to appear very casual. I prefer not to offer a lot of instruction to performers on the performance of theatrical elements, as I would like it to be quite natural. In the premiere performance of *Dopamine*, I did however offer some further clarification, only to specify that the gesture should be subtle and if only the audience members in the front row saw the gesture that it would be enough. This gesture is also a moment of self-reflection in the piece, where it looks to poke fun at itself for potentially being boring enough for the performer to check the time.

[29] James Tenney, *Collage #1 ("Blue Suede")* (Smith Publications, 1961).
[30] John Oswald, *Pretender* (Seeland, fony, 2001).

Theatricality

Theatrical elements, in my music, produce an outcome similar to that achieved through humour. Often I also use it to communicate something within the music more effectively, exaggerate something, or to communicate a separate idea.

> Cage's work—especially the piano pieces he had written for Tudor in the 1950s—had shown that no new kind of music theatre was necessary, that all music is by nature theatre, that all performance is drama.[31]

> "Theatre becomes music not because it incorporates the use of music, but because it musicalizes itself."[32]

Musical performance, at least in the traditional sense, is inherently visual and theatrical. Perhaps it can also be thought that music becomes theatre because it theatricalises itself. It is rare that when composing I begin with the theatrical elements in mind. Theatrical ideas tend to find their way out of the music. I imagine the visual performance as I am writing and theatrical elements come to mind. In *Dopamine*, I thought about how the performer for guitar 1 might have felt during these rest points. I thought maybe he/she is curious about how long they have been playing and so it felt only natural to have a performer look at their phone to check the time, even if it is a little joke at the composer's expense as if to say 'why didn't you write anything for me here?' In reality, the performer would no doubt be more focused during a performance and to do this, without instruction, would be disrespectful. I am highlighting this as an example of my inspiration for the theatrical elements in my music. This gesture is not for the performer's benefit, but to illicit a reaction for the audience members who see it.

The naturally occurring theatre within this piece, that is the periods of activity and inactivity, offers space for additional theatrical elements. In the

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[31] P. Griffiths, *Modern Music and After*, (Oxford University Press, USA, 2011) 191.
[32] Varopoulou. Living Theatre, 2002, as quoted in D. Zavros, *Music-Theatre as Music: A Practical Exploration of Composing Theatrical Material Based on a Music-Centric Conceptualisation of Myth*, (University of Leeds (School of Performance and Cultural Industries), 2008) 2.

Dopamine example, the musical pause is occupied by a theatrical gesture. This gesture works because of the musical and visual content of the piece. It would not be effective to include some theatrical gesture for every long rest.

> Berio Sequenza VII for Oboe
>
> A B natural must sound throughout the piece. The sound-source should preferably not be visible, this can be an oscillator, a clarinet, a pretaped oboe, or something else[33]

In the performance notes for the Sequenzas, Berio has written many notes indicating his focus and concern with the theatrical and visual elements of his work. In the piece for oboe he is concerned that the sound source of the B natural, if visible, would take away from the live performance of the oboe.

> Berio Sequenza V for Trombone
>
> Vocal sounds produced with the lips away from the mouthpiece, turning the head to the right hand side with a small and quick movement[34]

I admire the subtlety of his notes. For the trombone there is of course no need to direct the performer in his or her physical actions on how to realise the sounds, however Berio does so because of its visual impact. In my work I avoid highly specific theatrical instruction because I am concerned about over instructing and producing something less natural and forced.

> Berio Sequenza III for Female Voice
>
> The performer (a singer, an actor, or both) appears on stage already muttering as though pursuing an off-stage thought.[35]

This note is particularly interesting as it changes when the piece begins. The piece now begins before the performer has even entered the stage, however the audience would surely be unaware of this. I prefer to play with when the piece ends, as I have done in *The Alphabet Song* for laptop orchestra, where the

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[33] Luciano Berio, *Sequenza Vii* (Basel: Universal Edition, 1969, rev. 2000).
[34] Luciano Berio, *Sequenza V* (Basel: Universal Edition, 1966).
[35] Luciano Berio, *Sequenza Iii* (Basel: Universal Edition, 1965).

performers stand, the audience interprets this as an ending and begins to applaud but only to be interrupted with a final note.

> Hand, facial and bodily gestures besides those specified in the score are to be employed at the discretion of the performer according to the indicated patterns of emotions and vocal behavior (tense, urgent, distant, dreamy, etc). The performer, however, must not try to represent or pantomime tension, urgency, distance or dreaminess… but must let these cues act as a spontaneous conditioning factor to her vocal action (mainly the color, stress and intonational aspects) and body attitudes. The processes involved in this conditioning are not assumed to be conventionalized; they must be experimented with by the performer herself according to her own emotional code, her vocal flexibility and her 'dramaturgy'.[36]

I believe with this note Berio is trying to ensure some subtlety (without using the word) by asking the performer to keep it within her comfort zone and her interpretation while still producing what is scored. Again there is a strong focus on the visual and theatrical elements of the work.

George Crumb also creates audible theatricalism alongside his visual theatrical elements. For example in *Black Angels*,[37] for electric string quartet, the second violinist bows a tam-tam. This theatrical gesture, much like many others in this score, serves primarily as a timbral element. However, for the most part, combines these gestures to serve both purposes. Another theatrical example is the cellist's and first violinist's use of the maracas, with left hand pizzicati. The rhythm scored is inherently theatrical, the back and forth between the two performers, and is again both visually and timbrally inspired.

Mauricio Kagel not only uses theatre visually, but theatre can be heard in the sound world he creates. When listening to a recording of *...den 24.xii.1931: 'Garbled News'*,[38] for baritone, four strings, piano two hands and two percussionists, the performance can almost be seen through the music. Kagel uses theatre to communicate his ideas. One particularly interesting element in

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[36] Ibid.
[37] George Crumb, *Black Angels* (London: Peters Edition, 1970).
[38] Mauricio Kagel, *...Den 24.Xii.1931: 'Garbled News' for Baritone and Ensemble* (1931).

this piece is the conversation between the ensemble and baritone. For example, "… pause for reflection, to which the ensemble responds blankly with repeated notes…"[39], I have produced a similar example of this in *Moments*, where the clarinet hits the triangle and the percussionist responds by stopping what he was playing. The audience perceives this unspoken communication and as a result may engage with the piece on another level. This theatrical gesture is quite deliberate and purposeful. Much of Kagel's theatrical work has a great sense of purpose, even if the exact purpose is unclear. For example, *Repertoire* from *Staatstheater*[40], has a clear sense of purpose and intent, which I believe is what makes it so compelling. This intent may also be responsible for the resulting humour in some of his works, such as *Con Voce*[41], for three mute players. Its deliberateness is not just within the theatre and sound world he crafts but also within the frame of concert hall music. It is written for the concert hall environment and clearly is making fun of that environment, by instructing the performers, who are to wear black suits and black bow ties, to "remain quite long in playing position and begin just before the listener's level of attention is in danger of crumbling." He may also be making fun of contemporary music by giving clear instructions as to what techniques to use, some of which are extended techniques, whilst also requiring that the performers produce all of these sounds through "oral events". The delivery of the performance with "rigour and complete seriousness" is what makes this piece so successful and compelling.

I have aimed to produce a similar effect through complete seriousness and deliberateness in *Big Scary Numbers*, whereby the performers recite a new phonetic alphabet without showing emotion. There are a few moments however where this seriousness and strength is broken when some emotion is shown by the performers, however the deliberateness and intention is still maintained. Another similarity between the two pieces, *Big Scary Numbers* and *Con Voce*, is the dark material behind the piece.

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[39] Ian Pace, 'Music of the Absurd? Thoughts on Recent Kagel,' *Tempo*/200 (1997): 29-34.
[40] Mauricio Kagel, *Staatstheater* (Universal Edition, 1967/1970).
[41] Mauricio Kagel, *Con Voce* (Litolff/Peters, 1972).

> *Con Voce* was written against the backdrop of the Warsaw Pact invasion of Czechoslovakia in 1968 and dedicated to friends living under Communist occupation in the country. Kagel's typically absurdist humour serves to underline the piece's urgent message: that life without freedom of expression is intolerable, a tragedy for the people of the country.[42]

Big Scary Numbers is written in response to the Irish recession that began in 2008 and its impact on language. Although it is not stated beforehand, the audience may become aware that the new alphabet is designed for the next generation to learn that 'A' no longer stands for 'Apple', but now stands for 'Austerity'. This suggests that life in Ireland, during this period, is not about learning and growing, but is instead oppressive, due to the presumed impact that the recession will have on the next generation.

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[42] Mauricio Kagel, *Program Note: Exaudi Voice/Off* (2015).

Form

This section will focus on my use of form and specifically my use of a sectionalised form. Many of the pieces in the portfolio are heavily influenced by the aesthetics of moment form.

> Moments are defined as self-contained entities, capable of standing on their own yet in some sense belonging to the context of the composition.[43]

Equally important in my music, and much like moment form, is continuity vs. discontinuity. Much sectionalized music which has influenced this portfolio will be discussed here. I compose in a non-linear manner, where sections do not necessarily lead from one to another and material does not need to be developed and transformed as the piece progresses. For me, writing in a linear way can often be predictable because of intended musical expectation. I tend to move against the idea of pre-audibility[44], where musical expectation leads the listener to almost 'hear' the upcoming phrase before it is performed. Instead I use form to influence predictability and expectation.

My music generally contains sudden changes and juxtapositions of ideas and materials, which is a shared characteristic of moment form. There is still a connection between sections, otherwise why are they part of the same piece? I am aware of the jagged edges and anti-developmental approach in my music. I do not see an issue with sudden tempo changes, which do not easily flow into one another. I present an idea, a thought or a moment in a section and maybe some of that moment will carry through to another section or maybe it is isolated and self-contained.

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[43] Jonathan D. Kramer, 'Moment Form in Twentieth Century Music,' *The Musical Quarterly* 64/2 (1978): 177-94 (181).
[44] Gérard Grisey, 'Tempus Ex Machina: A Composer's Reflections on Musical Time,' *Contemporary Music Review* 2/1 (1987): 239-75.

In my music, these moments are often overloaded with material. Regardless of pace, moment form music typically contains more information, because it need not continue an idea, but it can continuously be discontinuous.

> …the musical experiences that are most memorable are the magical moments when expectation is subverted, when complacency is destroyed and when a new world opens.[45]

Assumptions can be made on the piece based on the environment, performers, instruments, composer and any other information available, before it has even been heard. This information does not give away the piece but it does influence the listeners' perception before anything is even heard. Additionally, the programme note reveals something about the piece in writing. In some of my works where I try to achieve moments of surprise, I could use the programme note to further lead the listener down the wrong path or give away the surprise before it occurs. However, neither option suits my musical style. Nonetheless, in most cases, one is still expected to write a programme note. I have found myself writing shorter and shorter notes for pieces in this portfolio and in my other works that lie outside this portfolio.

I have attempted to achieve these moments of surprise and subversion in a number of my pieces, most successfully perhaps is in *Forget and Remember*. An expectation and an understanding of the piece are formed through the use of romantic string writing. When this is contrasted, the audience's perception of the piece must change. The sudden change is a transforming moment in the sound world of the piece. The physical movement of the performers, the introduced spatialisation and humour in the piece signifies this transforming moment where the piece is recontextualised into something new. These contrasting sections in the piece are self-contained, although their relationship to one another is of significant importance to the piece overall. This effectiveness of the contrasting sections is also part due to the concert hall environment and the instrumentation, because of the implications that these carry.

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[45] Kramer, 'Moment Form in Twentieth Century Music,' 177.

Julia Wolfe's use of form is often sectionalised and I believe she works with contrast and juxtaposition in a very effective way. In her highly intense piece, *Fuel*[46], rapid demisemiquavers in small intervals are heard almost non-stop for ~14' and then suddenly contrasted with an expressive section 'like Vivaldi', as seen in Figure 1.

Figure 1: Wolfe, *Fuel*, 285-301

There are smaller contrasting moments prior to this in the piece, where the rapid notes go from foreground to background. This builds expectation and suggests a more significant contrast or shift further on in the piece. However, just because an expectation is built up, the contrast itself cannot be predicted. I have used a similar technique in many of my pieces, for example in section VI of *One to N*.

Igor Stravinsky's work has also been an influence in my compositional writing. His use of continuity and discontinuity is well balanced. Stravinsky in *Symphonies of Wind Instruments*[47] has used discontinuity to an extreme extent,

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[46] Julia Wolfe, *Fuel* (New York: ASCAP, 2007).
[47] Igor Stravinsky, *Symphonies of Wind Instruments* (London; New York: Boosey & Hawkes, 1920, rev.1947).

whilst returning to musical cohesiveness. The piece sounds as though sections were chopped up and relocated, which is Stravinsky's cut-and-paste technique.[48] When discussing the fugue from Orpheus, Stravinsky says:

> … I cut off the fugue with a pair of scissors… I introduced this short harp phrase, like two bars of an accompaniment. Then the horns go on with their fugue as if nothing had happened.[49]

I have used a similar process in some of the later pieces in the portfolio. I have not used carbon paper, as Stravinsky did, but I often compose blocks of material as he did.[50] I then print scores and reorder the sections by marking them with pencil and reorder with notation software. Laying the pages out on a desk helps me better see the entire piece, literally as well as figuratively. I can view the piece outside of time and then structure it in time. After the restructure it is often necessary to make changes. The beginning and end of sections may need reworking to get the desired contrast or flow at the intersections. I often remove sections or write a new section and so the process must be repeated.

The perception of the piece is significantly altered when the largely typical linear structure is removed. The use of repetition and discontinuous structure keeps the listener engaged throughout. The piece moves back and forth and appears to jump around, at least up until mm.246. This non-linear structure creates unpredictability within the piece, which creates tension, again holding the listener's attention. The structure and juxtaposition of material may appear arbitrarily placed, this may be an intended effect, but not at all arbitrary. For example, the opening passage appears in arbitrary locations in the first half of the piece. The passage is repeated at measures 9, 36, 96, 132 and 143. The spacing between its appearances becomes wider and then narrower again. The number of bars in between each instance of the passage is: 6, 24, 57, 33 and 8.

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[48] Gretchen Horlacher, 'Running in Place: Sketches and Superimposition in Stravinsky's Music,' *Music Theory Spectrum* 23/2 (2001): 196-216.

[49] E. CORLE, *Igor Stravinsky. Edited by E. Corle*, (New York: Duell, Sloan and Pearce, 1949) 298.Quoted in Mark McFarland. Debussy: The Origins of a Method (Journal of Music Theory, 2004)

[50] J.N. Straus, *Stravinsky's Late Music*, (Cambridge University Press, 2004).

This macrostructure keeps a perceptible motion in a perplexing structure and contributes to overall cohesion.

The idea of creating something that makes sense without being able to clearly define why or how it makes sense is very interesting to me. I am reminded of the work *Teeth Tea Cup* by the sculptor Lily X. Su, which appears to make sense and yet is difficult to describe.

> The ultimate challenge in my opinion is to create something that makes sense but can't be explained. I believe that the subconscious outsmarts logic. I create objects that may not necessarily make sense in the waking world but may very well exist in the subconscious.[51]

Figure 2: Teeth Tea Cup

Switching between sections in my music often means switching characteristics of the piece. Although it is necessary for sections to have commonalities and shared characteristics for the piece to feel unified.[52] Otherwise, what differentiates a piece as containing movements, sections or a series of miniatures? I contemplated, as a fundamental difference, that the sections in my music could not be performed in isolation, whereas movements could. For example, it would not be acceptable for a single section to be played from *Friction*. That notwithstanding, in *One to N*, I rethought this definition and

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[51] Lily X Su, 'Lily X. Su' (http://lilysu.com/home.html, 12/01/2014).
[52] M.D. Albaugh and West Virginia University, *Moment Form and Joseph Schwantner's "Aftertones of Infinity"*, (West Virginia University, 2004).

concept, and while it is the case for *Friction*, it does not apply to *One to N*, where it is acceptable for a single section to be performed solo. However, the sections in *One to N* are not movements, nor are they miniatures.

Each piece of mine is made up of sections and each section is independent yet shares some commonalities, be they overlapping ideas, theatrical elements, visual elements, gestures, motifs or phrases, etc. In most of the pieces, except *Friction* and *One to N*, the order of these sections is fixed. *Friction* and *One to N* are both written in a non-linear and non-fixed structure whereby the performers determine the order of the sections, however with *Friction* all sections need to be performed, this is not the case with *One to N*. The order in much of my work cannot be flexible due to my use of surprise, which is generally within the context of the piece and so one section may need to be heard after another for the surprise to occur. Throughout the portfolio I have developed my use of form, with the later pieces showing a more refined approach than some of the earlier pieces.

Dublin Laptop Orchestra

> Much of the live/electro-acoustic music composed for real-time electronics is improvisational to some degree and this music is also increasingly more inter- active. The hope of many composer/performers is that by creating this kind of experience, the excitement of traditional performance in all of its various aspects can be preserved and enlarged.[53]

Before discussing the works for laptop orchestra, it is first necessary to introduce the concept and setup of the Dublin Laptop Orchestra (DubLOrk), of which I am an active member.

Dan Trueman and Perry Cook in Princeton University created the concept of a laptop orchestra, or LOrk. They setup the first LOrk, the Princeton Laptop Orchestra or PLOrk, in 2005.[54] During Trueman's visit to Trinity College Dublin in 2011, the Dublin Laptop Orchestra was founded. The aim of a LOrk is to create many parallels to a traditional orchestra in terms of communication and experience. For example, each performer has his/her own speaker and is thus in control of his/her own sound, much like an acoustic musician. An issue with live electronic music, for some, is the lack of visual stimulus. DubLOrk aims to address this issue by bringing theatricality into electronic music. It is important to me that the audience has a connection between what they see and what they hear. This connection can be created with the use of controllers interfacing between the performer and laptop, introducing both implicit and exaggerated physical gesture that can further strengthen this connection.

I am a founding member and co-director of DubLOrk and since its creation I have written a number of pieces for the group. My compositional methods in writing these pieces are influenced by my acoustic composition and previous electronic work, but I have also developed a different approach in writing for laptop orchestra that has significantly evolved through the last few years. Similar to my open scores or graphical notation, even though the methods and

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[53] Barry Schrader, 'Live/Electro-Acoustic Music — a Perspective from History and California,' *Contemporary Music Review* 6/1 (1991): 91-106 (97).
[54] Dan Trueman, 'Why a Laptop Orchestra?,' *Org. Sound* 12/2 (2007): 171-79.

process are varied, the outcome is nevertheless the same, a composition in my voice.

When composing for an acoustic instrument, such as a violin, we can assume that the performer knows their instrument very well and that the audience has a general understanding of the instrument. This is not necessarily the case when composing for electroacoustic instruments. Composing for laptop or laptop orchestra for me involves creating an instrument: building a software instrument, defining a way of playing that instrument, through the use of a controller or keyboard input, etc., and then scoring a piece utilising the instrument. This is not necessarily a linear progression, through scoring the piece a new technique or timbre might be desired, which would require modifying the instrument. The difficultly with this approach is not that there are more steps in the process, but that it is new every time. There is really no set repertoire for laptop. Of course, as in all performance settings assumptions are made, but any sound that can be recorded, conceived or synthesised is available. The sound world is unlimited and it is up to the composer to limit it and to create boundaries for the instrument.

In acoustic music, performers have a certain degree of interpretation or improvisation within the score. For example, standard notation allows composers to indicate musical elements such as tempo, duration, pitch, technique, etc. but vibrato is less commonly indicated, at least throughout the score. This is often left to the interpretation of the performer as well as many other elements such as how to interpret a crescendo. I am concerned as to how to translate this flexibility of performer interpretation in electronic music. In a purpose-built electronic instrument, these non-notated elements may not be possible or may not be controllable and will likely differ from instrument to instrument. It is for this reason that I have found heavily notated performance instructions for laptop orchestra to be cumbersome and detrimental to the performance of the piece. Whilst I speak of parallels between acoustic and electroacoustic performance, the inherent differences must equally be addressed. For example an acoustic instrument typically needs a performer,

whereas a laptop does not and so the role of the performer in the performance of an electronic instrument needs to be addressed, beginning with the question of whether a performer is even necessary. Being a performing member of DubLOrk has given me insight into laptop composition. I have found heavily notated pieces with little flexibility to feel machinelike and missing an element of performer interpretation. I believe this is most likely because the role of the performer has not been fully established. In addition to the role of the performer, precision is another important difference between electronic and acoustic instruments. A computer can perform electronic music with precision of which a performer and acoustic instrument are not capable. A repeat performance of an electronic piece can sound exactly the same, excluding acoustic and other environmental considerations.

> In performed music rhythm is largely a qualitative, or accentual, matter. Lengths of events are not the only determinants of their significance; the cultivated performer interprets the structure to find out its significance; then he stresses events he judges important. Thus, for good or ill, every performance involves qualitative additions to what the composer has specified; and all composers, aware or unaware, assume these inflections as a resource for making their works sound coherent.[55]

As my electronic composition has progressed I have found the less notation I have used the better the performance and the greater the energy in the performance. I often use verbal or text-based notation to communicate the structure, feel and the expected result. I have also found that having the piece communicated in this way allows for the performers to better hear each other and feel like an ensemble/orchestra. This is not to say that all laptop orchestra works should be written in this manner, but this is the approach that enables me to achieve what I set out to achieve in my laptop orchestra works. Although my approach to writing for laptop orchestra differs to that of my acoustic work, the compositional focus on form, theatricality and humour, remains the same.

I use humour and surprise in many of my laptop orchestra pieces. For example, in *Gliché*, before a new section begins the keyboard-percussion

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[55] Charles Wuorinen, *Liner Notes, Time's Encomium* (1970).

performer must *accel* to as fast as he/she can play and only when physical strain is visible on the face of the performer can the ensemble progress to the next section, allowing the performer relief. This creates a tension that can be clearly seen and easily understood by the audience.

Controllers

Performers of live electronic music use a range of controllers. The following highlights some of the controllers I have used in my works for laptop orchestra and why I have found these to be effective.

Tether

The 'tether' is a golf controller called a GameTrak, invented by Elliott Myers.[56] It is designed for use with a golf game for the Sony Playstation, Microsoft Xbox and PC. It is a human interface device and with a bit of hacking is compatible with MaxMSP,[57] as well as a number of other systems. Whereas many MIDI controllers go from 0 to 127, this controller goes from 0 to 4095 and therefore is much more resolute. The tether has a footswitch and two strings, with X, Y and Z axes on each. By interpolating the data you can determine movement in a three dimensional space. This resolution allows the performer to be very expressive. These interfaces are particularly desirable to me because of their gestural capabilities. For example, the composer can decide to require large gestures to result in small changes to the sound, or small gestures to result in large changes to the sound, or anything in between. This is something that is not possible, or at least not easily possible, with acoustic instruments and thus leads to a new parameter to consider when composing a piece using this interface.

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[56] Gerry Block, 'Exclusive Gametrak Interview with Developer In2games' (http://ie.ign.com/articles/2006/04/14/exclusive-gametrak-interview-with-developer-in2games, 16/01/2014).

[57] MaxMSP is a programming environment developed by Cycling '74.

Figure 3: Tether playing

Keyboard

The M-Audio's Axiom 25 is a twenty-five key MIDI keyboard. This has eight touch pads as well as a modulation wheel. I have used this keyboard extensively in my laptop orchestra pieces. For example in *Two Point Oh*, the modulation wheel maps to a phasor object that controls the speed of the 'wobble'. Often to control these parameters it is not necessary to use a controller, however I chose to do so because it adds to the theatrical element and a keyboard is an interface an audience can easily understand and thus enhances the communication between the performer and the listener.

Sudden Motions Sensor

An Apple Macbook includes a sudden motion sensor that functions to shut down the hard drive if the macbook is dropped to minimise damage.[58] These sensors expose their data for use and the parameters that are accessible are gyroscope and accelerometer information. Interpreting parameters such as the

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[58] Apple, 'Mac Notebooks: About the Sudden Motion Sensor'
(http://support.apple.com/kb/HT1935, 16/01/2014).

orientation of the laptop, tilted left, right, etc., offer expression to the performer and provide a visual element that is easily understood by the audience. These gestures and movements using the laptops also offer something new to the audience, a new way of experiencing electronic music that is not only aural, but also visual and performative.

The pieces for laptop orchestra that I include in my portfolio are *Gliché*, *Two Point Oh* and *The Alphabet Song*.

Portfolio Pieces

The pieces are presented in the order in which they were composed, starting with *Gliché* and finishing with the largest work, *One to N*.

Gliché – 2011

Gliché is written for five laptops: four on tethers and one on percussion, via a MIDI keyboard. It was performed and recorded at the Curious Broadcast radio station in Dublin on 18th December 2012.

The title *Gliché* is an amalgation of the words glitch and cliché. The aim of the piece is to be fun to perform and to be very energetic. I am very interested in noisy timbres and although glitch is considered possibly cliché in modern electronic music, I am interested in the timbral possibilities of the aesthetic. The piece includes two patches built using MaxMSP for tethers and percussion/keyboard.
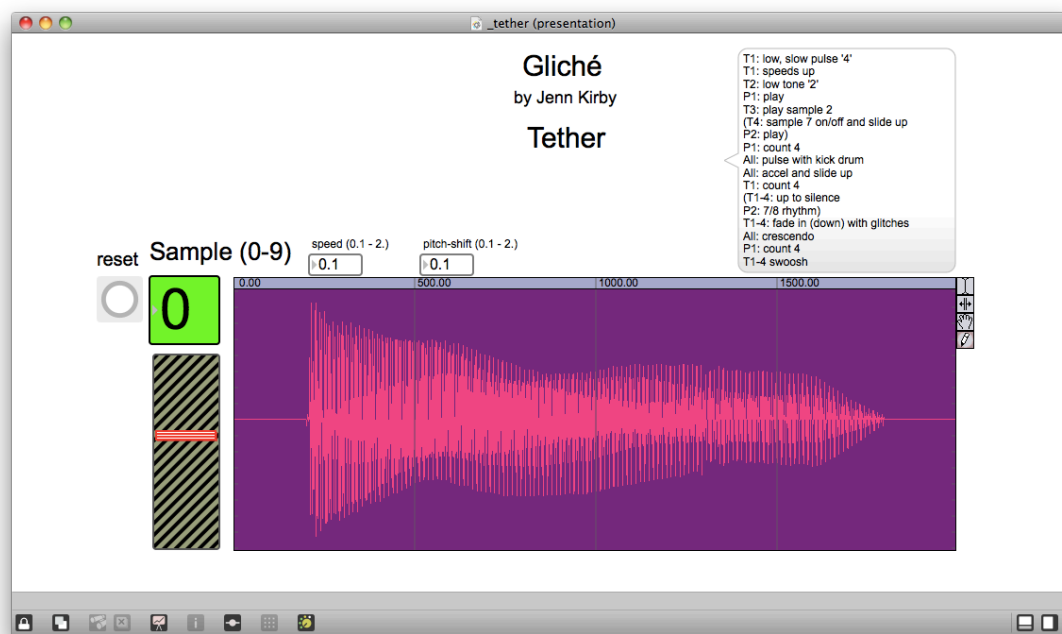

Figure 4: *Gliché* **MaxMSP patch**

The above patch is controlled using the tether. The patch allows the performer to select an area of the waveform of a preloaded sample to play back and also control the speed and pitch of playback individually. The performers have ten samples to choose from. These samples were recorded from acoustic instruments, such as a cello, piano, trombone and also some electric instruments, such as an electric guitar. The amount the performer can alter the timbre however will remove identifiable sound source information in most cases. I chose these sound sources because of their timbral richness. Although this timbre is hugely manipulated, other interesting timbres are only achievable due to the richness of the instrument samples. The 'noisy' timbres that are created are inspired by the Japanese noise artist Merzbow, whose works such as *Gman,* contain a wall of sound and stasis that encourages the listener to focus on the timbral development within the piece through the 'constant shifting of noise and emotion…'[59]

Below is a table indicating the mapping of parameters from the controller to the patch.

Parameter	Control
Left Hand Z	Start point of waveform
Right Hand Z	End point of waveform
Left Hand X	Volume
Right Hand X	n/a
Left Hand Y	Speed of playback
Right Hand Y	Pitch
Footswitch	Change sample

Table 1: Tether parameters

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[59] Midnight Sea Records, 'M.N.S.030: Merzbow - Gman//Hjyugtf2 C30' (http://archive.is/myYL, 7/02/2014).
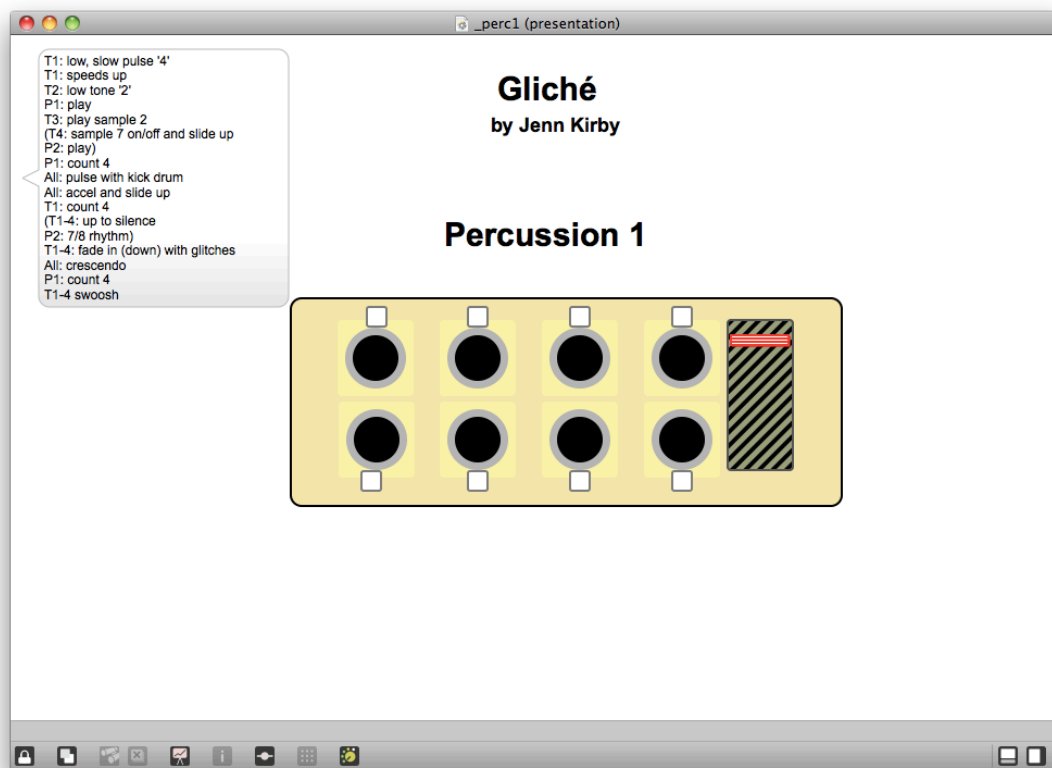
Figure 5: *Gliché* percussion MaxMSP patch

The percussion patch is performed using the 8 pads on an M-Audio Axiom 25 keyboard. The pads on the keyboard correspond to the 'bangs' in the patch. The performer also has control over the volume output from the patch. Each 'bang' corresponds to an individual percussive sound. These sounds are again timbrally focused and many of the sounds were developed from real-world sounds, such as a spray can, plugging and unplugging a cable into an amplifier and the beeping of an alarm clock. The low bass sound was created using Csound.[60]

This piece was initially heavily scored, however with each performance it became freer. When performers became familiar with the character of the piece, the score seemed no longer necessary and so was replaced with a structural outline for new performers. The score is still available for new ensembles and a

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[60] Csound is an audio programming environment.

shortened version is embedded within the patches. The score outlines the sections of the piece, what performers are to do in each section and the transition between sections.

Since the score largely provides an outline for the structure of the piece, this results in a lot of room for improvisation. Performers listen to each other and respond to one another much like they would in an acoustic improvised setting. As well as the structure, the score also depicts some specifics and fragments as guidelines for the performers. I have found this depiction model ideal for much of my electronic music. The process of stripping the piece back to its core details has also given me insight into elements I see as core in my music. The structure of the piece is one of these core elements that I focus on, within which I pay particular attention to the beginning and the ending of sections within the piece. This applies in many cases to my acoustic work as well as my electroacoustic work.

I imagine if I were not performing my own pieces in the Dublin Laptop Orchestra I might not be as free in my electronic works. Perhaps I am able to relinquish some compositional control, given that I still retain some improvisatory control. Although DubLOrk have performed *Gliché* as well as other pieces without me, I have always been there in rehearsals to guide the improv, intentionally or otherwise. I would like to see in the future this work performed by another group without my influence. The outcome may indeed be quite different.

Music as Sound, Sound as Music – 2012

The Association of Irish Composers commissioned this piece for their Open Music Project. The concept of the project was to produce a composition with openness or flexibility in mind, be it within the instrumentation, the score itself or the environment, etc. This piece is written for flute, clarinet, violin, violoncello, piano and tape. There is a great degree of openness within the notation in the score, allowing for a much freer interpretation.

The piece was performed and recorded in the Kevin Barry Room, National Concert Hall, Dublin on 19th May 2012.

We often compose for the perfect acoustic environment. We typically think of a standard concert environment as being a silent room with a silent audience and a well-lit stage to produce the perfect performance. In reality there is no perfect environment and there is certainly no silent one. We listen to music, especially music recordings, in many different environments. Listening to music in different environments and situations might mean listening through monitors in a studio, on headphones in a quiet room, or in a more active environmental setting; such as while walking, jogging, dining and traveling on a bus, train, tram or car. These listening scenarios have many invasive and unwanted sounds inherent within them. This piece aims to incorporate these unwanted sounds as part of the ensemble. Background noise is recorded from various listening scenarios or scenes, including dining in a restaurant, jogging, traveling by bus and train, a car journey and a leisurely walk. These recordings are edited only to create start and stop points. The recordings are then compositionally arranged to create the tape part. The sounds that are presented on tape and the instrumental sounds combine to form the ensemble, where sound becomes music and music becomes sound. The tape and the instrumental work are composed together. The 'music' played on the piano, clarinet, flute, violin and cello, is composed to these recordings. The acoustic instruments and tape blend

and it becomes difficult to distinguish between tape and instrument sounds and often the instrumental sound imitates the tape.

Figure 6: Focus shift between instruments and tape, *Music as Sound, Sound as Music*, **3-4**

The instruments are not intended to accompany the tape, nor is the tape intended to accompany the instruments. They have equal importance, although sometimes the focus changes.

The scenes change suddenly throughout, for example from a train journey to jogging. The transitions are sudden but are carefully considered. The train scene ends as the doors open and transitions into the jogging scene with the sound of pounding feet. The recording process involved attaching microphones on each foot of the jogger and additional microphones close to the jogger's mouth and clothes and to capture the sound from the environment. The aim of this recording was to capture the sound from the joggers perspective rather than what a bystander hears from a jogger. This recording approach was taken to

hear the internal sounds of the jogger and the music as one and to produce a realistic sound. The scenes themselves were not rearranged in any way, as the point was to highlight these interesting 'unwanted' sounds we hear when we are listening to music and as such I was conscious to present these sounds as they are heard. The editing of the recordings exists in the transitions from one scene to another rather than manipulating the scenes themselves. One of my motivations for this approach was to highlight the harmony and dissonance that is created by chance when listening to music on headphones whilst also hearing sound from the environment. I found some of these sounds, such as bus engines, as having distinct pitch material that can often be dissonant or harmonious with the music I was listening to using my headphones. I found the presence of these environment sounds enhanced my listening experience and I often enjoyed listening to the music more when it was accompanied with environment sounds. I was not trying to create the same effect with this piece, this was the inspiration for it, but I was trying to entangle music with environment sound and environment sound with music.

Music as Sound, Sound as Music is presented in the score in minutes and seconds rather than in beats and bars. Each page represents 30 seconds. A digital clock is required to guide the performers through the score. A MaxMSP patch is also supplied which both displays the time and can be used to playback the tape part.
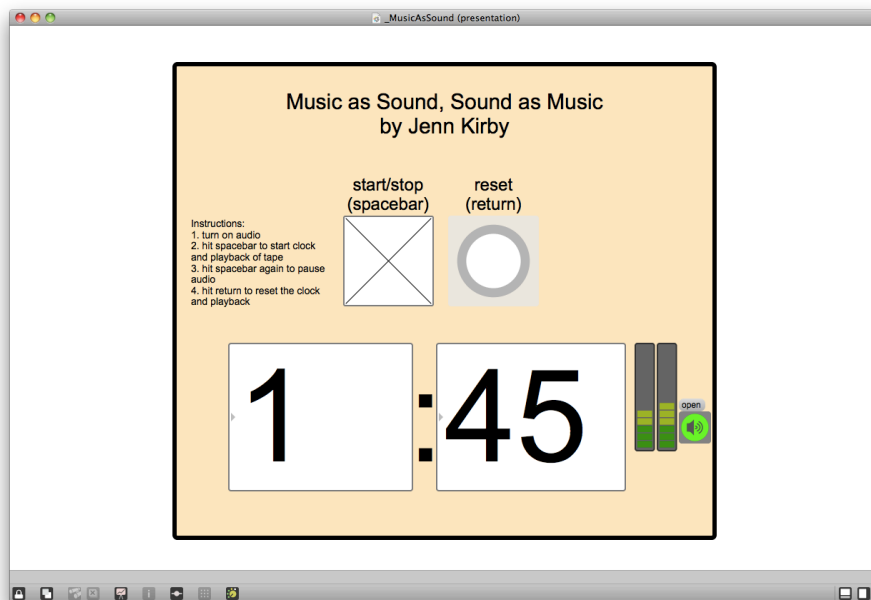
Figure 7: *Music as Sound, Sound as Music* **MaxMSP Patch**

There are also time indicators on the page of the score. The clock would show seconds and minutes to the performers, which means that they can only synchronise to the second. This makes synchrony between performers and tape very difficult.

Two Point Oh – 2012

Two Point Oh is written for 4-5 laptops and performers, 2-3 performers interface with laptops and SMS (sudden motion sensor) and 2 performers interface with MIDI keyboards. It was performed and recorded in the Printing House, Trinity College Dublin on 22nd May 2012.

There are two individual patches designed for this piece, one for the keyboards, shown in Figure 8, and the other for the 'bleeps', shown in Figure 9. The two keyboards play almost identical parts and the bleeps are identical.
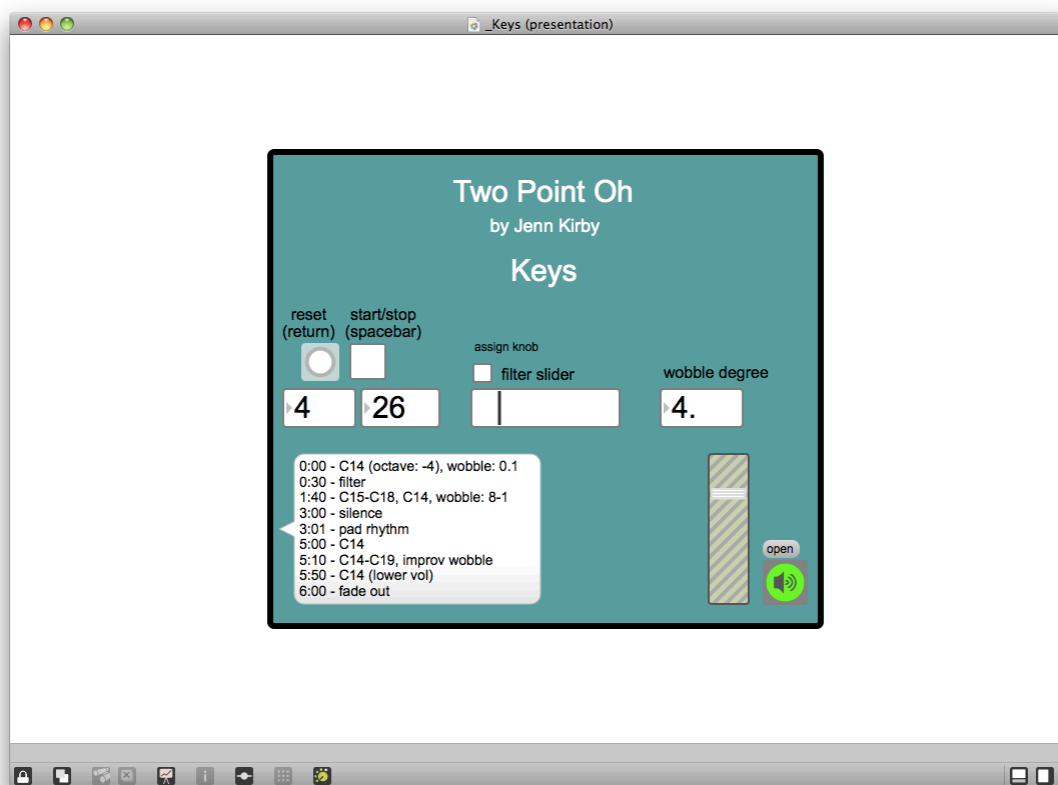

Figure 8: *Two Point Oh* **Keyboard MaxMSP Patch**

The keyboard patch includes a part with instructions with respect to the clock time.

Due to the loose timing, the bleep performers can be heard in chorus. This chorus and general unsynchronised sound is particularly important for the end of the piece.
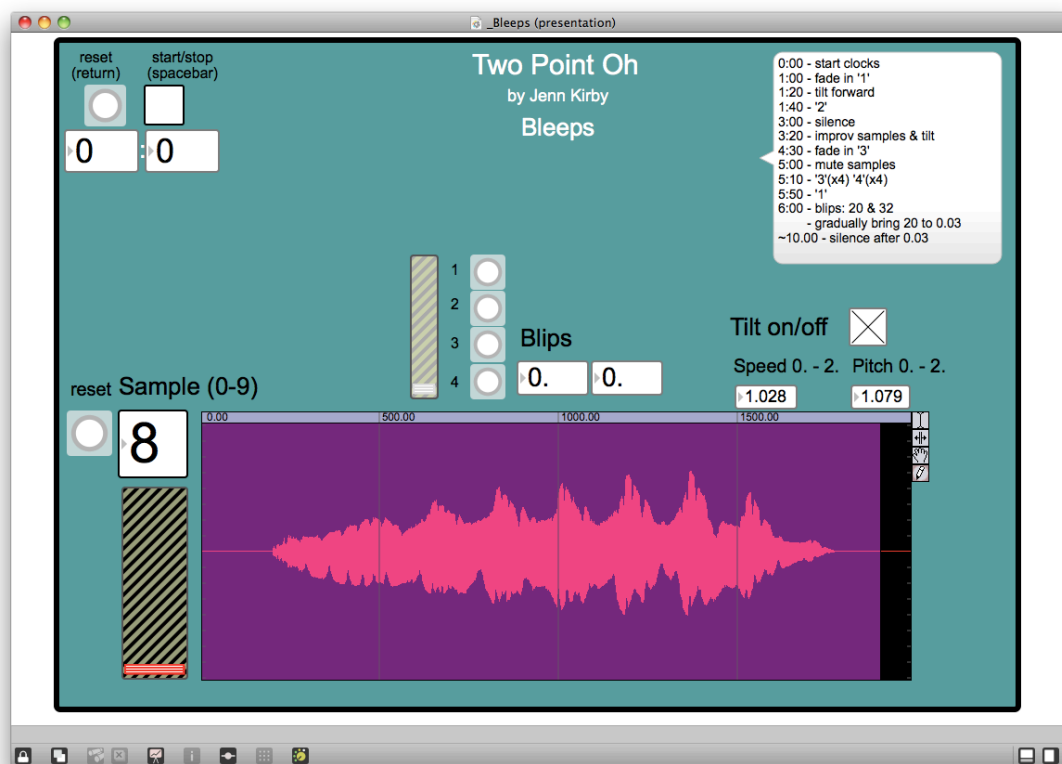

Figure 9: *Two Point Oh* **Bleep MaxMSP Patch**

The piece is structured in minutes and seconds. The performers each have a clock built in to the patches and the piece begins with all the performers starting the clocks at the same time. The performers start the clocks in unison by hitting the return key after a bar of four beats is conducted and the keys start playing immediately.

The piece has three sections. The first is slow and relatively static, opening with the keyboards followed by the bleeps a minute later. The second section begins after three minutes and follows a brief pause to build anticipation. This

section is more active with a faster tempo, more intricate rhythms and more theatricality. The final section begins shortly after six minutes and only the bleeps are heard. A slow rising glissando begins to emerge from the otherwise somewhat chaotic sound world. This glissando gets slower and slower taking longer and longer to reach the top note. Each time the top is reached the performer immediately reduces the speed of the glissando, resulting in a longer glissando each time. Overlapping glissandi are heard from the bleeps and the chorus effect becomes more prominent. The performers slow the glissandi to a point where it takes almost a minute for the last glissando to be heard in full. After the performers reach this slowest speed (0.03), their part is finished.

In works by Mauricio Kagel, improvisation by performers served to uncover new sounds and theatrical modes of expression.[61] I have found similar emerging outcomes through improvisation. The most interesting aspect of this piece is the resulting confusion nearing the end of the piece. During the slowing of the glissandi, it becomes difficult to determine who has played the slowest glissando and finished and who is yet to reach it. This is not only difficult for the audience to determine but also for the performers. This results in a need for gestural indications between performers to indicate that they are finished, before the performers can turn to the audience and indicate that the piece is finished. In all performances to date this has resulted in laughter from the audience and so the humour in this piece is certainly being conveyed.

Besides this theatrical humour, there is also humour within the sound world. Some of the sounds I am using might be considered cliché due to the gliding pitches, which are a throwback to early electronic music. I have overused these glissandi to a point of deliberate silliness. I am also aiming to blend these early electronic characteristics with a relatively new characteristic; the bass 'wobble', heard in the keyboard part, which is predominantly heard in dubstep[62].

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[61] B.R. Simms, *Music of the Twentieth Century: Style and Structure*, (Schirmer Books, 1996) 353.
[62] Martin Clark, 'The Year in Grime / Dubstep' (http://pitchfork.com/features/grime-dubstep/7728-grime-dubstep/, 16/01/2014).

Forget and Remember – 2012

> The degree of salience of a sound or a sequence can help it to be memorized. A violent, unexpected sound, for example, can leave a lasting trace. This is the very purpose of contrasts.[63]

The soundSCAPE festival commissioned this piece for string quartet. It was performed and recorded at the festival in the Auditorium Citta' Di Maccagno, Italy on 6th July 2012.

The piece is written in two halves, the first half is designed to be forgotten and the second, remembered. The idea of new and old is in context of the piece and also within the context of classical music. The sound world of Part A is made up of warm romantic strings and a tonal harmonic language. The aim is to draw in the audience with the idiomatic string melody and ornamentation.

Figure 10: Use of ornamentation, *Forget and Remember*, 9-17

At mm.58, there is the first in a series of contrasting changes. The performers fake bow the notes, followed by a change in timbre, from sul tasto to sul ponticello, to behind the bridge, creating a rough jarring texture between the instruments. This contrast is the first point of surprise in the piece.

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[63] Grisey, 'Tempus Ex Machina: A Composer's Reflections on Musical Time.'

Figure 11: Contrast with fake bowing, *Forget and Remember*, **58-63**

The piece almost begins again at this point, with a more dissonant sound world. This is until a second sudden change, which further contrasts both previous moments in the piece. The performers then leave the stage and move to the four corners of the room. This next section is a hocket, spatialised around the audience. The idea here is that the performers are literally departing from that sound world and entering a new one.

Figure 12: Hocket example, *Forget and Remember*, **91-92**

The pitches become much less important to the rhythm during this section. The pitches' importance returns as the performers return to the stage. Again something 'new' is introduced. Performers detune each other's lowest string as they play a simple melodic line. This detuning distorts the melody.

Figure 13: Detuning example, *Forget and Remember*, 127-134

This is meant to symbolise the distortion of the traditional string quartet. Again pitch is removed and we just hear percussive sounds as the performers leave the stage while still playing and leave the room.

Although speculating as to how the listener might interpret certain material and theatricality within my music is a highly subjective matter, it is also a huge motivating factor for my music and so I must engage in this speculative and subjective practice. In Gerald Barry's string quartet, *First Sorrow*, he guides the listener with a very slow and "hushed" melodic line, almost at the border of being too slow, but just at a fast enough tempo to be perceived. This slowness shows fragility in its simplicity. The piece builds expectation through simple repetition, jumping from no vibrato to extreme vibrato and back to no vibrato. The introduction of the performers singing the nursery rhyme *Twinkle Twinkle*, brings about a huge shift through contrasting material. *First Sorrow* can be thought of as being in three sections. However, I find the final section where the performers sing "twinkle twinkle" to be most memorable. I tried to produce a similar result with *Forget and Remember*, whereby if listeners' were to describe the piece, I would expect them to discuss more elements within the latter half than within the first half of the piece. I expect this because the first half was familiar and was, to an extent, expected, whereas the second half, within the context of the piece, was unexpected. The first half creates the context for which

novelty and surprise can occur. This is not necessarily the case with *First Sorrow*, however the surprise is very important to the piece and it is likely to be mentioned in reviews and descriptions of the piece, as is the case in the following reviews and descriptions.

> Gerald Barry's unamplified string quartet First Sorrow, a mostly quiet, hesitant exercise in viol-like poignancy, with an almost startling diversion into intense vibrato, and a daring ending which has the four players singing quietly to their own accompaniment the words (but not the familiar tune) of Twinkle, Twinkle, Little Star.[64]

> Gerald Barry's music is not known for its measuredness and serenity, but that's what was projected in *First Sorrow* for string quartet. Written a few years ago for Crash, the work alludes to a story by Kafka about an acrobat whose day-to-day life is lived at the zenith of the trapeze, and who never wants to descend from that point.
> In duos the strings describe stately pianissimo lines, changing from one pair of players to another, the music delivered senza vibrato, sometimes in unison doubling. After ten minutes the piece briefly flares before lulling again. The four strings then sing a nursery rhyme together while playing out - *Twinkle, Twinkle, Little Star*.[65]

> For string quartet *First Sorrow* is based on the story by Kafka about a trapeze artist who is only happy when aloft. The work is unique in that the quartet ends with a hymn sung to the words of 'Twinkle, Twinkle, Little Star' which all the players are required to sing whilst simultaneously playing their instruments.[66]

I suspect that Barry is not concerned whether or not this is mentioned within the review or description, however its mention reflects on the perception of the listeners. In the same sense, I would not be disappointed if a listener was not concerned with the latter half of my piece and its non-traditional elements. I am expecting listeners to perceive and sometimes behave in a particular way based on how I perceive and behave as a listener. However, it is impossible for this to be the case for all listeners, but this for me is something interesting to observe.

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[64] Michael Dervan, *Review: Crash Ensemble / Pierson* (The Irish Times, 2008).
[65] Liam Cagney, *Works by Jacobtv, Barry, Dennehy, Etc.* (MusicalCriticism.com, 2010).
[66] Amazon, 'First Sorrow 2006-2007: String Quartet' (http://www.amazon.com/First-Sorrow-2006-2007-String-Quartet/dp/0193359561, 21/07/2015).

Friction – 2012

> "… a given moment is not merely regarded as the consequence of the previous one and the prelude to the coming one, but as something individual, independent and centered in itself, capable of existing on its own."[67]

Friction, for solo cello was written for Kate Ellis, for the Irish Composers' Collective Solo Series. It was performed and recorded in the Kevin Barry Room, National Concert Hall, Dublin on 8th February 2013.

Friction pushes the boundaries of my sectionalised form by following each section with a strong pause, to the extent that it is almost comprised of miniatures. There is little crossover between the sections. Although the material varies significantly from section to section, the structure quickly becomes predictable. This piece is not intended to shock or majorly surprise the audience. Instead they are presented with ideas that are not developed, just statements.

> They are forms in a state of always having already commenced, which could go on as they are for an eternity.[68]

Material is not developed, instead ideas are presented as fully fledged and are not introduced, nor concluded. These jarring contrasts between sections in this piece are the most pronounced in the portfolio.

The visual element is developed throughout the piece. In C, the left hand pizzicato is introduced. In D, the left hand is used again for pizzicati. In a similar way to *Now*, I feel this piece only fully makes sense at the end of the piece. Style and timbre helps hold this piece together in an otherwise seemingly strange array of sections. Sections relate to each other in intensity and gesture and again this only becomes apparent at the end. The relationship between sections is as follows: A-E, B-D and C-F.

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[67] Heikinheimo, 1972 as quoted by Albaugh and University, *Moment Form and Joseph Schwantner's "Aftertones of Infinity"*, 4.
[68] Ibid.

Figure 14: Use of gesture and timbre, *Friction*, B 1-3

The relationship between B and D is more gestural than timbral.

Figure 15: Use of gesture and timbre, *Friction*, D 26-33

The material is neither progressed nor developed. The development exists visually and timbrally, however this only becomes apparent retrospectively. The piece has no sense of forward movement, nor does it feel static.

In section A, the number of beats in the bar matches the number of consecutive bars with that time signature and it scales up to seven beats and seven bars.

Figure 16: Time signature matching number of measures, *Friction*, A 8-19

Figure 16 shows a time signature change to five beats at mm.9 for five bars, followed by a change to three beats at mm.14 for three bars and two at mm.17 for two bars.

The pause between the sections is something new I explored in this piece. I felt that in some instances, for example, from A to B the pause was effective. However in other transitions, such as from E to F, it was less effective. I wrote this piece with a fixed order of sections. However, upon reflection I realised that while it is important for all sections to be performed, the order need not be fixed, because regardless of order the relationships between sections would still be upheld. I have adjusted the score so the performer can reorder the sections. This was done after the piece was first performed and so the recording on the CD accompanying the portfolio is of a performance of a fixed order, from A to F. The performer now has the choice of the order in which to play the sections. However, no sections can be repeated, nor can any be omitted.

Resound – 2013

The Platypus Ensemble first performed *Resound*. It is written for unspecified instruments, to be performed with a minimum of four performers and conductor. The performance and recording took place in Echoraum, Vienna, Austria on 3rd October 2013.

The piece has a lot of open elements, including the duration. The conductor controls the pace of progression through the score, by instructing the performers to move from one bar to the next. The conductor may also be a performer, as was the case in the Music Educators Orchestra's (MEO) performance of the piece. Each bar contains performance instructions, for example in Part A, 'play what you hear', means that all performers in Part A should play what they hear. As written in the performance notes, what they hear refers to environmental sounds, not sounds from other parts. Dynamics are indicated in the score, however it is void of other standard musical indications such as tempo, pitch and rhythm.

The performers create sound and music based on what they hear, be that from the other performers or from sounds within the performance environment. The performers, audience and environment become part of the music. Sounds from the environment and the audience are incorporated into the piece via the interpretations of the on-stage performers. Therefore the environment and audience become somewhat off-stage performers with significant influence to the overall sound and performance of the piece.

There are large elements of theatricality involved, where performers have to move and sit with the audience. This is a similar idea presented in *Place*, where the performer dissipates the boundary between performer and audience. Here it is taken a step further where the performers sit with the audience. The inclusion into the sound world and performance is represented physically. This is a

moment of surprise in the piece and also signifies a sonic change in the piece, where we hear the voices of the performers.

The piece consists of two main sections. The first section introduces the sounds of the room, while the second section is more focused on the sounds made by the performers.

bar	11	12	13	14	15	16	17	18	19	20
cond	1	2	3	4	5	1	2	3	4	5
A	A3 speaks	A4 play D3's sound *f*	all play D's sound *f*	$>n$					play B's sound *f*	*p* $>n$
B	B3 speaks	B4 play C3's sound *f*	all play C's sound *f*	play A's sound *f*	$>n$			play C's sound *f*	$>n$	play A's sound *p* $>n$
C	C3 speaks	C4 play B3's sound *f*	all play B's sound *f* $>n$		play B's sound *f*	$>n$	play D's sound *f*	*mp*	$>n$	play A's sound *p* $>n$
D	D3 speaks	D4 play A3's sound *f*	all play A's sound *f* $>n$			play C's sound *f*	*mp*	*p*	$>n$	play A's sound *p* $>n$

Figure 17: Focus on performer sound, *Resound*, 11-20

A Chinese whisper scenario is created where a performer interprets the sounds created by one performer and the sound is transformed as it is passed along. Eventually the performer who initially performed the phrase repeats it after it has gone through all the interpretations and manipulations from the other performers. It may, at this point, be unrecognizable, or almost identical, to the original phrase. Performers can interpret different attributes of the sound, such as the rhythm, pitch or timbre. Indeed what attributes they interpret may be subject to what instrument they are playing, for example a percussionist, playing unpitched percussion, might choose to focus on the rhythm, whereas a flutist may focus on the pitch material. Of course it is not only the instrumentation, but also the style of the performer as interpreter that is important and arguably more important that defines the sound world. I would consider it likely that multiple performances with the same instrumentation with different performers would differ more than different instrumentation with the same performers.

bar	11	12	13	14	15	16	17	18	19	20
cond	1	2	3	4	5	1	2	3	4	5
A	A3 speaks	A4 play D3's sound *f*	all play D's sound *f*	>n					play B's sound *f*	*p* >n
B	B3 speaks	D4 play C3's sound *f*	all play C's sound *f*	play A's sound *f*	>n			play C's sound *f*	>n	play A's sound *p* >n
C	C3 speaks	C4 play B3's sound *f*	all play B's sound *f*	>n	play B's sound *f*	>n	play D's sound *f*	*mp*	>n	play A's sound *p* >n
D	D3 speaks	D4 play A3's sound *f*	all play A's sound *f*	>n		play C's sound *f*	*mp*	*p*	>n	play A's sound *n* >n

Figure 18: Sound transformation path, *Resound*, 11-20

Figure 18 shows the 'whisper' path of the sound, from source to its final destination, through all the transformations. D, along with B and C play what D originally spoke in bar 11.

This piece incorporates environmental sound similarly to *Music as Sound, Sound as Music*. Where *Music as Sound* includes a fixed use, through various recordings of environmental sound, *Resound* incorporates sound from the live environment, which is far less controlled. How the piece progresses from one bar to the next, or from one section to the next, is similar to the pieces for laptop orchestra, *Gliché* and *The Alphabet Song*. In these pieces the performers determine the pacing and therefore the duration.

Dopamine – 2013

Dopamine was commissioned by soundSCAPE for the 2013 festival. It is written for three classical guitars, violin and keyboard accordion. It was performed and recorded at the festival in Auditorium Citta' Di Maccagno, Italy on 9th July 2013.

The piece is inspired by how music can encourage dopamine neurons in the listener's brain to initiate a smile and how the use of surprise can illicit this response.

The piece opens with soft-noise textures. The performers rub and scratch the guitar strings and bow palm-muted strings on the violin to achieve these textures. Rhythms are then introduced and an initial sound framework for the piece is established. In section B the instruments have solo lines, directly addressing the timbral differences in the ensemble. Each solo line is ended with a percussive hit from all instruments in the ensemble. For the accordion's line however, all instruments tap the rhythm. This singles out the accordion from the ensemble, highlighting a separation from the group. The accordion, in response, pulls the bellows as wide as possible as a grand gesture to show off the instrument and affirm its place in the ensemble.
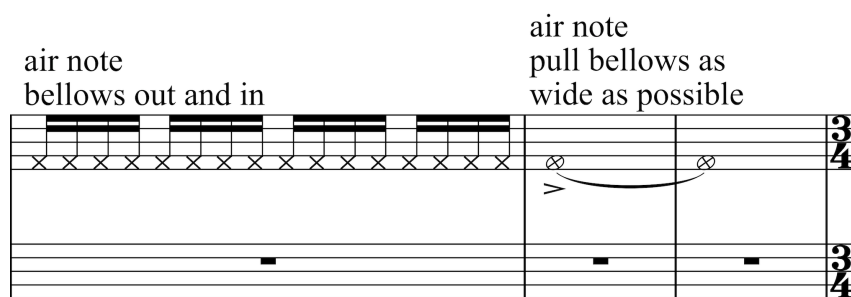

Figure 19: Accordion bellows gesture, *Dopamine*, 31-33

A significant stylistic change occurs in section C with the introduction of a tonal melodic line. This has a slower pace than the previous sections and whereas the previous sections highlighted instrumental and timbral differences,

this section aims to bring the instruments together as an ensemble. Section D is gentler and more tonal, with repetitive overlapping melodic lines. The melodic lines are of differing lengths and so phase with one another, as seen in Figure 20. The different line lengths imply a circular motion and stasis. Messiaen produces this effect through different means in *Chronochromie*.[69]

> Time stops because the forward movement of the music thoroughly baffles any attempt to comprehend it: there is no direction here, only a tissue of motivic connections operating horizontally and vertically, forwards and backwards.[70]

I have created a similar circular motion as heard in *Épôde*[71], but instead of through chaos, the effect is produced through the use of melodic lines that overlap and move through the ensemble.

Figure 20: Overlapping melody, *Dopamine*, 60-61

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[69] Oliver Messiaen, *Chronochromie* (Paris: Alphonse Leduc, 1963).
[70] P. Griffiths, *Olivier Messiaen and the Music of Time*, (Cornell University Press, 1985) 193.
[71] Messiaen, *Chronochromie*.VII

Guitar I contains the main melody in 7 beats. The melody in guitar II is in 5 beats and so phases over the first line, lining up again after 5 bars, on mm.65 and again on mm.70. Section D has forward motion, unlike *Épôde,* which circles for approximately four minutes before coming to an abrupt end. In this section, a prominent E note protruding from the melodic lines creates a forward motion. This note protrudes more and more until it reaches a climactic moment at the end of the section. This section differs stylistically from much of my portfolio, because it features sentimental melodic lines. Sentimentality is rarely present in my music, however I have used it here because I have a sentimental relationship with the guitar, having studied it from a young age, and I wanted to explore that relationship in this section. This indulgence into sentimental melodic lines is short and with the introduction of section E, the listener is brought back to the original context of the piece through the use of similar material to the earlier sections. This switching back and forth may leave the listeners feeling confused. The performers empathise with this confusion with the violinist asking guitarist II "Where are we?" Guitar I, bored with the pause, checks the time on his phone. This is a subtle gesture, not necessarily seen by all audience members, but is intended to infuse humour into the performance.

Figure 21: Theatrical elements, *Dopamine*, 73-76

For the final section the accordion finally gets fully utilized and plays a more central role. The timbre also reverts to a more scratchy and aggressive sound. The ending is anticlimactic. It finishes feeling like there should be more, that the moment has not been fulfilled.

Often my works begin pitch focused and become more timbrally focused through the use of extended techniques, as in *Forget and Remember*, where the performers fake-bow after performing a romantic passage. In this piece however the extended techniques and timbral focus is presented as an introduction to the piece and the more pitch-focused material is heard later in the piece. This piece begins with a definite style, but by section D it has completely dissipated. Here the new material is the traditional, something not at all contemporary, but new within the context of the piece.

Big Scary Numbers – 2013

Big Scary Numbers was originally written for laptop orchestra in 2012 and performed by the Dublin Laptop Orchestra. It was later arranged for three speakers and performed and recorded at the soundSCAPE festival in the Auditorium Citta' Di Maccagno, Italy on 12th July 2013.

The piece is inspired by the recession in Ireland and Europe that began in 2008. The recession increased the vocabulary of the Irish people. Words such as nationalisation, austerity and fiscal became common language. The Irish people were bombarded with new words and 'big scary numbers'. Numbers, we are told, are important. Numbers so large that they were originally only considered in astronomy and cosmology are almost impossible to put in context. €67 billion means little to an individual. However, if we contextualise it by saying that €67 billion is almost €10 from every person on the planet, we might better understand, or at least see the enormity of the situation. When the EU bailout of Ireland was announced in 2010[72], it was also announced that at least the next generation would be taking on this debt. This reality led me to think that maybe children should no longer be learning 'A is for Apple' and rather 'A is for Austerity'. As a parody of the misery that was striking the country, I wanted to create a serious, yet light-hearted piece that dealt with this situation. I wrote a new phonetic alphabet, using these new words to replace the old ones. I used statistics gathered from the Central Statistics Office of Ireland website[73] that represent the figures of the bailout but without context.

As the piece starts with the onslaught of recessionary words, it becomes overwhelming as the words continue. By the letter 'K', I imagine a feeling of despair as the piece drags on and here is the point where humour is introduced: "K is still kitten". The kitten also represents affection, suggesting we may have austerity and debt, but we may also still have affection for kittens. In the serious

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[72] RTÉ News, *Eurozone Agrees €85bn Deal for Ireland* (2010).
[73] CSO, 'Cso - Central Statistics Office of Ireland' (http://www.cso.ie/en/index.html).

context of the piece this is a dramatic shift, surprising, and a brief point of relief for the audience.

Q	Quota
R	Recession, recession, recession (*crescendo*)
S (look at S2)	Stability

Figure 22: Emotion expressed, *Big Scary Numbers*

At 'R', there is another significant moment, 'recession'; the most commonly used word is introduced. The speaker repeats the word with a crescendo, until he/she is interrupted by the second speaker and brought back to the piece. This is the only moment where the performers express emotion and personality. This is similar to the moment in *Moments* where the percussionist is brought back to the piece by the clarinetist. Another little joke is that 'S' stands for 'Stability', referencing the stability of the speaker. The alphabet continues and the last three letters are light-hearted, again stating that the letters are unchanged.
The second page moves onto the big scary numbers. Humour is introduced immediately with the first speaker calling out the number and the second pausing and adding either 'million' or 'billion'. Even though this is not surprising as the numbers continue, it remains humourous.

A third speaker eventually interrupts the two performers and stops their performance. The performers end with the last statement "Due to cutbacks we are unable to finish this piece" and they leave the stage.

10	billion
67	billion *
85	billion

*[S3]
*(walk on stage and whisper "*I'm sorry, but you have to stop*" to S1 and S2)*

[S1, S2]
(pause, look at one another and back to audience)

[S2]
Due to cutbacks we are unable to finish this piece

(leave the stage immediately)

Figure 23: Speakers interrupted, *Big Scary Numbers*

Despite the dark material in the piece, it is presented with a certain amount of hilarity that it elicits a positive response from the audience. Given the global scale of the recession, this piece easily translates to audiences from other English speaking countries.

Although this piece is without instrumentation, I believe it is still a valid piece in my portfolio as it contains all the threads of my other pieces, dealing with humour, surprise, theatricality and a sectionalised form.

Moments – 2013

> Some moments are tinted by allusions to other moments, and some transitions between moments also make allusions to moments already heard or yet to come.[74]

Simms is describing the form in Stockhausen's *Momente*, which was an inspiration for *Moments*.

Moments was commissioned by the Association of Irish Composers for Project Evolution. Project Evolution was a year long project involving collaboration between the Irish Composers' Collective and the Association of Irish Composers, culminating in a performance of new works composed by members of both groups. I was mentored by Dr. Karen Power in this project and had many conversations with her regarding aesthetics, abstract ideas of time, theatricality in music and building expectation in music.

The piece is written for clarinet, trombone, violoncello and percussion (vibraphone, tam-tam, four tom-toms, cymbal and triangle) and it was performed and recorded in the Hugh Lane Gallery, Dublin on 5th January 2014.

The main idea in this piece is the passing of momentary ideas through the ensemble. The piece, although not in moment form, explores ideas of the form with the crossovers between sections and moments implying and alluding to other moments. Motives are passed from instrument to instrument, in particular the clarinet and trombone. It begins with an introduction to two frequently reoccurring motives, the triplet and the 4 demisemiquavers, as seen in Figure 24.

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[74] Simms, *Music of the Twentieth Century: Style and Structure*, 357.

Figure 24: Triplets and demisemiquavers, *Moments*, 1-2

These 4 fast notes in mm.2 are repeated throughout the piece, in each section, with little change. The triplets, however, are developed throughout; they are often just dropped-in in places or they are transposed. This can be seen in the vibraphone part in mm.87 and again in the trombone part in mm.90 in Figure 25.

Figure 25: Triplets transposed, *Moments*, 87-90

This piece is the most connected between sections through the use of crossover material. The motives are used as reflections of earlier sections as well as to create gestural cohesion for the piece.

Section A contains mostly all the material for the piece. All the sections, excluding B, make frequent references back to A. Section B is the most contrasting, harmonically and stylistically. It has a faster pacing than the other sections. It is aggressive and has forward momentum. The other movements have a wider register spread and are generally more spacious. Although initially this section is in direct contrast to the previous section, by the end of the piece its place is affirmed through the reuse of material and gestures. The cello motif is referred to throughout in both the cello and the percussion parts. This can be seen in Figure 26 in the cello and vibraphone parts.

Figure 26: Cello and vibraphone referencing B, *Moments*, 82-86

Section B is a reference to the metal genre, a guilty pleasure of mine. It is showcased as a guilty pleasure of the percussionist to which he overindulges. It is important for me to aim to express some character of the performers, even if this means a superimposed character through scored elements. I want to create extramusical events, moments of theatricality that give more life to the performance. Sometimes these theatrical elements are quite subtle or, in this case, very obvious and dramatic. This creates a pause in the piece that can allow for a different mode of interaction between performer and listener. I believe these theatrical moments bring the performer and audience closer together. These gestures can express character and personality of the performer. This may expand the listener's relationship and understanding of the performer beyond that of a percussionist to that of an individual. I believe these theatrical elements give the opportunity for a closer connection between the audience and the performer. For me, these theatrical elements bring me beyond seeing the percussionist as a performer because I question in these moments what they are thinking and in that way it may lead to an empathetic connection.

Although B is highly contrasting to A, the cello motif in B is introduced in the final bars of A to help one section transition from one to another. Section B is rhythmically driven and focus is steered towards the percussion part more and more as the section progresses, until only the percussion is heard. This solo percussion passage implies a departure from the ensemble, whereby the percussionist is in his 'own world' and becomes less aware of his environment; ensemble and audience. At this point the clarinetist interjects by striking the triangle. This serves to reengage the percussionist and bring him back to the ensemble. This act creates a sense of tension and confusion with the clarinetist moving towards the percussion surprising the audience and also while the audience waits for the clarinetist to return to his own position. This tension is quickly broken by a flurry from the trombone to the clarinet at the beginning of section C.

Section C reintroduces some of the material previously heard in A. Section C is much shorter than the previous sections. I wanted to work with different durations of the sections for this piece so as to create some unpredictability and also to control the overall pace of the piece. Although this section is somewhat self-contained, its placing in the piece allows it to form a bridge between section B and D. Section D, although it has the same tempo, has a much slower pace and introduces a stillness that contrasts the earlier sections, which contain a great deal of motion in the material. This stillness is also produced through the use of space in the pitch material. For the *rallentando*, the cello plays harmonics and the clarinet, trombone and vibraphone are generally in the middle registers, leaving a space in the lower end of the frequency spectrum. This produces a sparse sound and a temporary stillness until the cello returns to the middle register and the pace rises a little.

Figure 27: Breathing moment, *Moments,* **62-65**

My arrangement of sections in this piece is fixed. The sections are loosely grouped as A – C, B – E and D – F. All sections are also linked to A. Although I do not expect the audience to be consciously aware of this relationship between sections, I believe a structure such as this one establishes cohesion and thus encourages understanding of the piece.

The piece finishes on an overuse of the triplets and the repeated fast notes heard throughout. This retrospectively centres the piece on the triplet. The last moment says this is what the piece was all about, but also leaves it feeling slightly unfinished, creating a sense of openness to the listener, for which their thoughts conclude the piece.

Tripping – 2013

Tripping is written for alto saxophone. It was written for Carolyn Goodwin, for the Irish Composers' Collective Solo Series concert. It was performed and recorded in the Kevin Barry Room in the National Concert Hall, Dublin 11th December 2013.

Walking around Trinity College Dublin campus I noticed someone stumble on the cobblestones and I thought about the feeling of tripping or nearly falling. Much like any other frightening situation, time can appear to slow down. I remember a time falling recently where I could feel myself falling and although I felt like I had a lot of time in the fall, I was not able to stop myself. I find the moment where you may fall or you may recover interesting. You can balance on either side of this, you may think you are going to recover and then lean to the other side. This piece takes the different stages of tripping as a narrative for the piece. However the piece does not necessarily represent the stages linearly.

The first section, A, looks at the initial stage of tripping where you almost dance trying to recover. It begins with this tripping feeling. The material interprets the movement of the falling person, elaborating on the sudden movements to flowing gestures and that teetering point of recovering or falling. The section interprets the falling persons movement as he/she struggles to stay upright. The narrative continues with a second stumble depicted in a higher register, to imply that the situation has possibly gotten more severe. The interpretation is always playful, imagining a theatrical and comedic sketch of a person tripping. The staccati at the end of section A represent a pivotal moment where the person has either survived the near fall or has indeed fallen.

This leads into section B which is, as notated in the score in Figure 28, 'like a bouncing ball coming to a stop'. Here the person has lost items out of her pocket and they bounce around before coming to a stop. The rhythmic notation here is loose and should be interpreted by the performer. This phrase also introduces

the lower register, which has been up until now unheard. This timbral change helps signify a new section.

Figure 28: Introduction of lower register, *Tripping*, 78

C introduces new timbres with flutter tonguing and a bouncing between registers. The middle register is used more towards the end with a few flurries serving as a reminder to section A.

Section D is again a plummet to the lower register. Tempo and pacing slows at this point. The frantic moment is over but still there is residue of fright. The staccati from A and the vibrato and humming from B are further explored in this section. The rhythm becomes more predicable and animated as this section progresses. This is a reflection on tripping, with focus on humour.

Figure 29: Humourous rhythm, *Tripping*, 178-197

It finishes with a Morse code rhythm (... -- ...) representing the letters SMS. This rhythm was used as a ringtone in Nokia mobile phones in the late 1990s and early 2000s and so it is very recognisable. The rhythms leading to this point have become so playful that the introduction of the ringtone overstates this playfulness, where the piece looks in at itself, making a joke at its own expense. The piece ends on the overblown 'D', introducing a new timbre right at the end. The purpose of this is to signify the end of the rhythmic section and the end of the piece.

When approaching this piece I set out some loose musical guidelines for each section. Section A begins in the middle register and moves up into the upper register. The lower register is not heard until B. This timbral difference alters the characteristic of the piece and helps signify the new section. The pitches then gradually move back up and swap between registers in section C. Section D is a reflection of the previous sections, taking the most prominent characteristics and developing some phrases.

Although this piece has a clear narrative, I do not expect the audience to extract this from the piece. Instead I use the narrative as a way of guiding the material and influencing the form of the piece. The narrative could be included as a programme note and perhaps then the audience might connect more with the piece. However I am more concerned with the audience connecting with the musical material, for its own sake, rather than connecting the sections to parts of the narrative. I am also aware that audiences differ in this respect; some listeners might enjoy a detailed programme note, some may choose not to read it; some may listen for a narrative and some may listen acousmatically. The title is a hint at the narrative but could be interpreted in a few different ways or barely considered.

The Alphabet Song – 2013

The Alphabet Song is written for 5 laptops and performers. Each performer uses a microphone as an interface. This piece was performed and recorded at the Hilltown New Music Festival Launch in the Contemporary Music Centre of Ireland on 13th June 2013.

The piece is a sonic exploration of the English alphabet. Preparation for the piece involves writing the alphabet on a piece of paper which then gets passed between performers during the performance. The performers pass this amongst themselves, selecting and crossing off a letter each time. The letter selected is vocalised by the performer and, using the Max patch built for the piece, the sounds they produce are looped. Over time a collage of all the sonified letters is created and the performer modifies the rich timbres that are produced. The performers must first select a vowel each (A, E, I, O or U). These vowels are sung together at the beginning, first acoustically and then it is heard looping again through the patch. They progress from this by selecting consonants. The pronunciation of each letter is at the performers' discretion (for example hard or soft 'g'). The performer chooses the pitch, duration and rhythm of the letters, for example rapid 's s s' or a sustained 'sss'. Once a letter is selected and crossed off the paper it cannot be vocalised by another performer. When all the letters have been used, the paper is torn up and thrown on the floor. This is a cue for the performers to fade out the sound and sing the vowels they started on to end the piece. The performers then stand and sing the vowels again as loudly as possible, while remaining coherent.

The patch includes the score and also provides the performers with functionality to overdub the recordings and apply effects to the recorded sound. The effects include delay between the six channels, since this piece is designed for hemispherical speakers with six speaker outputs, seen in Figure 30. This allows for a spatial effect. However, since these speakers are not very common,

the piece does not require them to be performed, but instead can make use of them if they are available.

Figure 30: Hemispherical Speaker

Other effects include, reverb, pitch-shifting, overdrive and filtering. The patch allows the potential for the sound to be transformed beyond source recognition. The degree of transformation is at the discretion of the performer, since the sound source will be different every time, but the guideline given to the performers is that it should remain someway coherent until approximately halfway through the alphabet.
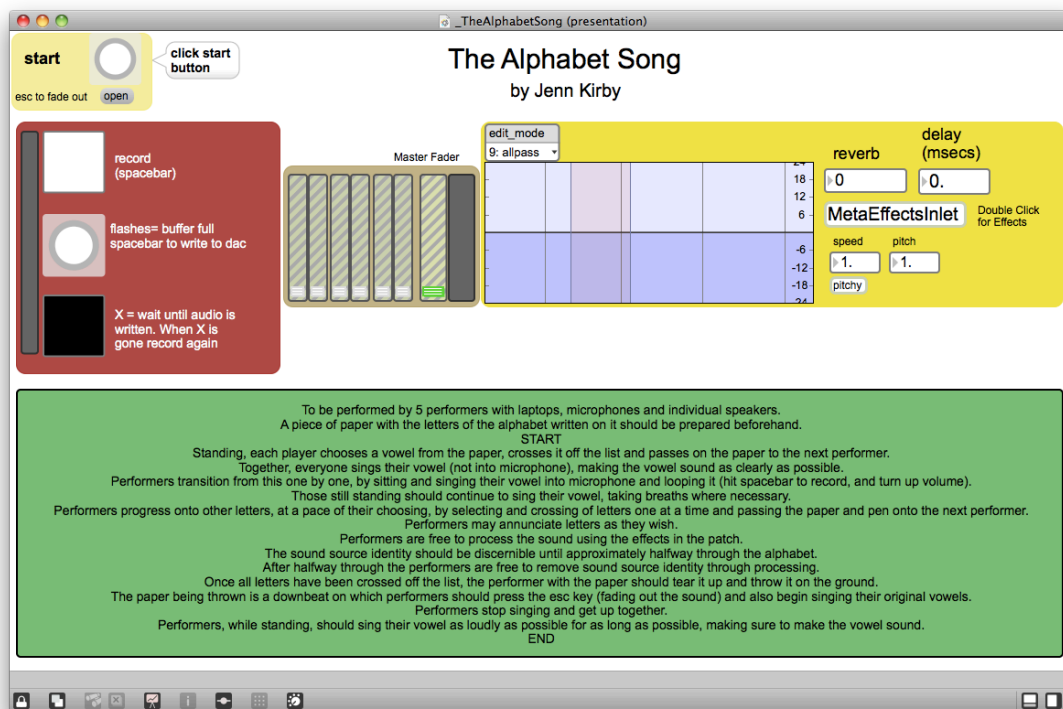
Figure 31: *The Alphabet Song*, **MaxMSP patch**

The indeterminate nature of the piece ensures that it never sounds the same twice. While I believe this is an interesting aspect of the piece, it also means that sometimes it sounds better than others, or, sometimes it sounds worse than others. Due to the degree of improvisation and especially the overdubbing of the material in the piece, the sound world produced often comes as a surprise to the performers as much as it might to the listeners. This is one of the interesting aspects of improvisation that something unexpected is produced.

The performers determine the pacing of the piece, as they individually decide when to pass on the piece of paper. After numerous performances, I have seen that the piece typically lasts 10 minutes. It is up to the performers to respond to the piece and determine the pacing as they move through the alphabet.

There is no gestural controller used in this piece. The theatricality comes from the passing of the paper. The audience can see a piece of paper being passed between performers and they may or may not determine its purpose and

content. I expect that at least some of the audience may figure this out from the title and by the sung vowels at the beginning and end of the piece.

The piece is in four sections. The first is the unprocessed vowel and consonant sounds. The second is when the processing is introduced. Thirdly you hear the removal of the electronic sounds and just have the performers singing. Finally the vowels are heard very loudly. The fourth section is of course the most unexpected; as this occurs when the listeners may think the piece is finished, and they may be applauding at this stage. The piece has a clear linear progression through timbral development with moments of surprise and theatricality.

Place – 2013

Place, for flute and tape, was written for William Dowdall for the Irish Composers' Collective Solo Series concert. It was performed and recorded in the Kevin Barry Room, National Concert Hall, Dublin on 19th April 2013.

Within this piece, my aim was to rethink the place of the performer and the audience in terms of the concert hall performance environment. The physical position, presence and air of perfection, often created in the performance environment, can create an ethereal barrier between the performer and the audience. Although I do not wish to discredit the professionalism of the performer, I do wish to strip away that boundary, as I believe it denies a closer connection between the performer and the audience. There are many performances that achieve this by allowing the audience to freely roam the environment. However, I wanted to explore the process of dissolving this boundary through the use of theatrical elements, such as changing the physical position of the performer.

In section A, there is a pause where the performer adjusts the music stand. I propose that this is something one would not expect to see in the score and thus the audience might assume there is an issue and try to determine why the performer needed to adjust the stand. This pause is brief and is followed by a confident flurry and a return to the piece, as seen in Figure 32.

Figure 32: Subtle theatre, *Place,* **5-14**

Section B is filled with flowing triplets, to be unmeasured. The pitch direction is most important in these gestural triplets. B is a very free flowing section which is contrasted by the following section, C, which has very rigid rhythms. B ends with another theatrical gesture. The performer repositions the music stand closer to the audience, reducing the space between the performer and audience. This is followed by stasis; a static rhythm repeating the same pitch. This stasis gives no indication as to the direction of the piece.

Figure 33: Static rhythm, *Place*, 23-31

The timbre changes again from tone and air, as in A and again the music stand is moved forward and the space between performer and audience is again reduced. The tension is relieved with a reference to the triplets heard in B, although not slurred. Finally we get back to the slurred triplets, but heard slower this time as semiquavers. When the stand movements begin to occur more frequently, from mm.94, it may become apparent that these movements are part of the performance, rather than an issue with the performance. In a repeated passage, the stand is moved forward three times. The sound eventually fades to 'barely audible' staccati, where the visual, theatrical aspect and physical presence of the performer becomes more important than the musical material. This helps to build expectation, leading to a significant shift in the piece in the form of the introduction of electroacoustic material. The performer then walks to the back of the room while flutter tonguing.

Figure 34: Performer moves to back of room, *Place*, 98-106

This concludes the first half of the piece, where the focus was on the performer, more visually and theatrically than sonically. The second half of the piece is significantly contrasting, whereby the performer is out of the audience's line-of-sight and a different sound world is introduced through the use of tape and amplified flute.

The tape part begins with the performer at section E. The place of the tape changes from background to foreground throughout. The tape replaces the performer, by being played through loudspeakers at the front of the room, while the performer plays at the back of the room. This creates a shift in the performance dynamic and may elicit a confused and humourous response from the audience, which ultimately asks the question of them, to where or to whom do they direct their attention? I recently attended a performance of John Luther Adams' *Across the Distance*[75] whereby the performers progressively outwards, both surrounding the audience and continuing beyond. This produced a very interesting spatial effect but also asked the question of the audience to where do I direct my attention and do I move with the performers?

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[75] John Luther Adams, *Across the Distance* (2015).

> The horn players begin in a central location and over the course of the piece move farther and farther out into the surrounding cityscape. Listeners may choose to follow the musicians or to sit in one place and listen as the music recedes into the distance.[76]

As mentioned previously, I am interested in how an audience perceives and behaves. In this piece, more so than others, I have created a situation to which the audience can respond, that being the movement of the performer, when he walks to the back of the room. This of course is similar to what I have done in my piece for string quartet, where the performers left the stage. However, since the performer makes small movements throughout the piece, the walking to the back of the room may be less surprising than the movement in *Forget and Remember*. The performer walking through the central isle, if one exists, and walking through the audience signifies the dissolution of the boundary between the performer and the audience.

This performance scenario is an experiment because it is unclear how the audience may react, will they keep looking straight ahead, despite the performer not being there anymore, or will they turn and watch him at the back of the room. During the premiere performance both occurred, with many looking ahead, whilst most of them turned their heads to watch the flutist at the back of the room. Of course a different audience may behave differently. My intention here is not to make the audience behave in a particular way, but to set up a scenario in which they can respond to and then observe their response.

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[76] Southbank Centre, 'John Luther Adams, Southbank Centre' (http://www.southbankcentre.co.uk/whatson/john-luther-adams-1000982, 20/08/2015).

Figure 35: Prolonged ending, *Place*, 244-251

The piece finishes with a prolonged ending, almost a competition between the tape and flute. The flute fights for its place and since the tape is fixed, it does not compete.

The performance of the piece becomes more important than the material itself, at least in the latter half. The listener will no doubt become aware that the sonic environment has also changed when the performer moves. The shift from acoustic sound to electronically-produced sound is significant. This is not only because of the introduction of the tape part, but also because of the amplification of the flute. This causes a change in listening modes, which may induce a state of "technological listening"[77]. In this scenario, each listener chooses whether to listen acousmatically or to turn and watch the performer in order to have the visual element retained and to see how the sounds are being produced. They still cannot hear how the tape sounds are being produced, however since there are no references or complex sounds in the tape part, it is less likely that a listener will search for a sound source, as the sound source will be identified as the loudspeakers. There might be a short period of investigative

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[77] Denis Smalley, 'Spectromorphology: Explaining Sound-Shapes,' *Organised Sound* 2/02 (1997): 107-26.

or causal listening during the shift. The flute and tape parts have similar sonic properties and so unify as they are heard from the loudspeakers. Depending on the listeners' preferences they can experience this half of the piece acousmatically or visually.

One of the practical difficulties of this piece is how the performer and the tape line-up. The cues in the tape part are subtle and when playing along with these cues are difficult to hear. Since the tape does not contain much rhythmical information, timing in this case is not so important and so this potential difficulty results in an interesting pulling and dragging between the flute and the tape.

Now – 2013

Now was written for the Robinson Panoramic Quartet for the Irish Composers'
Collective. It is written for violin, viola, cello and double-bass.

> The identity of this grouping is not that of a standard quartet with a few
> extra low notes: the shift in roles for viola and cello changes everything,
> and the double-bass adds a wealth of potential textures and timbres.
> Having four distinct voices (rather than two identical ones at the top)
> invites the composer to explore four identities and also facilitates greater
> overall equality because no instrument has timbral dominance.[78]

The piece was performed and recorded in the Kevin Barry Room, National
Concert Hall, Dublin on 3rd February 2014.

Now draws together many of the ideas that have been presented in some of
the other pieces in the portfolio. Some of these ideas include fake bowing and
many other extended techniques. The piece begins with dense chords and harsh
sounding timbres derived from playing behind the bridge. The musical
character changes at B as more attention is given to rhythmical materials.

Figure 36: New rhythm, *Now*, 11-15

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[78] Malachy Robinson, 'A New Kind of String Quartet' (http://journalofmusic.com/radar/new-kind-string-quartet, 03/02).

This rhythm is reintroduced a number of times throughout the piece, however it is altered each time. This pulsing becomes a strong characteristic of the piece.

Figure 37: Altered rhythm, *Now*, **59-66**

Although the rhythm is changing throughout, due to the same pitch use, each rhythm is easily relatable and so contributes to the overall cohesion of the piece. The final section begins with a more intricate rhythm that hints at development beyond that of the static pitches and pulsing rhythm. The movement in the viola, shown in Figure 38, suggests this development.

Figure 38: Rhythmic development, *Now*, **118-122**

However, just when this begins to develop, the piece draws to a conclusion on a fake bow.

Figure 39: Ending in theatrical gesture, *Now*, 145-148

In addition to the fake bowing technique, bowing the tailpiece is used as a theatrical and timbral gesture. The sound produced from bowing the tailpiece will vary as the instrument size and bow position produce a range of timbres. I have experimented with this technique on the cello in works that lie outside this portfolio and so wanted to further explore the timbres available between the double-bass and the cello. This not only allowed me to develop the timbral palette of the piece, but also the theatrical and gestural palette through the use of this visual gesture. The purpose of the visual gesture is to engage the listener on a level beyond the audible. Due to the size of the double-bass, this gesture looks physically awkward and difficult to produce. I am not interested in making the performer physically uncomfortable, but this difficulty is expressive and may show the performer as an individual, which, as I have previously discussed, may create an additional connection between the performer and the listener.

Figure 40: Silent section, *Now*, 102-108

I am also concerned with how listeners might view my music retrospectively. I suspect from this piece, if the listener were to remember one aspect of it, it may be the *silent* section. This is the most contrasting and surprising moment in the piece. This would be contrasting in almost any piece, as you have ensemble sound versus ensemble refrain. Through this refrain only small sounds, produced from the performers' left-hands on the fingerboards, are heard and so the listener must enter into a more attentive listening mode in order to hear these sounds. During the first performance of the piece many listeners moved in their seats attempting to get a better view of the performers, suggesting a moment of causal listening. This movement indicates a significant change in the listening and performance situation. I believe by moving forward to see more clearly the audience is engaging on another level with the performance. Although this *silent* section is unexpected, it still belongs to the piece, as it remains consistent with the overall character of the piece. The piece already has contrasting moments, so in a way something contrasting is expected, however what the contrasting element is, is not expected. Therefore, even if the listener is anticipating something 'unusual', I expect the listener to still be surprised when it is revealed.

Unlike *Forget and Remember* where there are contrasting styles, this piece is stylistically consistent, with contrasting elements within that. Extended techniques exist throughout; the contrast is achieved more in theatre rather than timbre.

One to N – 2014-2015

One to N is written for flute, clarinet, violin, viola, cello, double-bass, piano, percussion and electronics. It is by far the largest piece in the portfolio, with 552 bars in total and an approximate duration of 30 minutes. The piece directly addresses moment form whereby the performers, rather than the composer, decide the arrangement and duration. The piece is comprised of 10 sections in all and the performers choose which sections to perform and in what order to perform them. The instrumentation varies in each section; from solo percussion, to viola and electronics, to the full 8-instrument ensemble.

Section	Instrumentation	Tempo	Bars	Dur	Pg
I	vln, vla, vc, db	100	30	2'	1
II	fl, cl, vln, vla, vc, db, pno, perc (crot, toms, cym, tam)	88	77	3'	4
III	fl, cl, vln, vla, vc, db, perc (crot, cym, tam)	60	81	6'	12
IV	fl, cl, vln, vla, vc, db, pno	80	47	2' 30"	18
V	perc (toms)	120	73	2'	23
VI	fl, cl, vln, vla, vc, pno	72	23	1' 30"	24
VII	fl, cl, vln, vla, vc, db, pno, perc (crot, bd, cym, tam)	80	106	6'	28
VIII	vla, el	100	28	1'	38
IX	fl, cl, vln, vla, vc, db, pno	80	74	4'	39
X	fl, cl, vln, vla, vc, db, pno, perc (bd, tam)	60	13	1'	49

Table 2: One to N Sections

Table 2 shows the details of each section of the piece. The size of each section differs in terms of instrumentation, duration and number of bars. It ranges from as short as 13 bars to as long as 106 bars. While this range is significant it is not extreme. My goal was not to push the sizes of the sections to their extremes, such as having a section containing a single bar and another section containing 200 bars, but instead my goal was to work with and develop my aesthetic within the form.

I mentioned in *Friction*, that the structure of the piece becomes predictable. While in that piece it is not necessarily a drawback, one of the causes for the predictability was the relatively similarly sized sections. This is partially to do

with scale and proportion. The diversity of the sections is proportional to the total size of the piece. In terms of scale, *One to N* is much larger than *Friction* and so the diversity is greater. This diversity leads to unpredictability and was greatly considered when writing the sections of the piece and determining the sizes in terms of instrumentation and duration. Unlike *Friction*, the sections should be performed without any significant pauses. Each section should immediately follow the last, in whatever order is chosen by the performers. For example, no tuning should be done in between sections. It may be necessary in some cases, depending on the order chosen by the performers, to have a slight pause. Performers may take a necessary pause, but long pauses must be avoided.

I use the term sections rather than movements for a number of reasons. The term movement implies discrete units with associations to the Sonata or Concerto forms in the multi-movement works of the likes of Beethoven, Mozart and Haydn. More importantly it can also imply allowed breaks between movements. However, since the choice of order is with the performers, they may indeed choose a fast-slow-fast arrangement and it may share similarities to a multi-movement work. The sections in this case are more pieces of a puzzle rather than self-contained units, although some are more self-contained and self-sustaining than others. It is titled *One to N*, meaning the performers may select to perform only a single section (*One*) or many sections (*N*). This is a significant difference to the other work in the portfolio. As previously mentioned, after writing this piece I realised that *Friction*, could also be in a mobile form and that the performer could order the sections. However, all of the sections in *Friction* must be performed. In this piece however, that is not a restriction and performers could choose to only play a single section if they so wished. This may be valid in a concert environment if perhaps one of the larger sections is chosen, such as III or IX. However some sections such as VIII and X are less self-sustaining and therefore may function better if performed with other sections, rather than standalone. I do not wish to impose this as a rule however, since the choice of sections lies with the performers, who may need to consider the programme of works *One to N* is to be performed alongside. Although it may

sometimes be the case, a section's extent of self-sustainment is not necessarily due to the duration or size of the section. For example, section V's instrumentation is percussion, more specifically 4 tom-toms, and the duration is approximately 2 minutes. While this is relatively short and small, I would consider this section self-sustaining. It explores an idea, albeit a simple one, fully and more extensively than some of the other smaller or shorter sections. Thus, I believe a performance of V alone would be valid and aesthetically successful.

Previous works in the portfolio have addressed a sectionalised form and although most have had characteristics similar to moment form, none have focused on moment form as directly as in this piece. My compositional process involves writing sections and fragments and arranging, rearranging and then rewriting until I find an arrangement that I feel content with. There could be many arrangements from the pieces, but I only produce one. I consider this approach to be non-linear, because one idea does not lead to the next; there are connections across sections, skipping sections, introductions to sections already heard, etc. However, when this process is completed, what is produced can be considered a linear composition. I wanted to compose a piece that is in its entirety non-linear. This approach however is not just a change in linearity and non-linearity; it is also a change from determinacy to a degree of indeterminacy. The piece is indeterminate because it can "be performed in substantially different ways… [and] the performer is given a variety of unique ways to play it"[79]. Since instrumentation, dynamics, timbre and material are defined, overall the piece is only indeterminate in terms of form and duration. Although, there are smaller elements of indeterminacy in some sections which will be discussed later.

When the compositional process is completed, the piece remains in a non-linear and indeterminate form. This non-linear eventuality changed my compositional thinking and process. In leaving the arrangement of these sections open I had to rethink my approach to composition in terms of self-

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[79] J. Pritchett, *The Music of John Cage*, Music in the 20th Century (Cambridge University Press, 1996).

containment, self-sustainment, and contrast and diversity between sections. I kept a stronger focus on non-linearity than in previous compositions. I realised that I was subconsciously ordering while composing and knowing this piece was going to remain non-linear prevented me from ordering it and necessitated a different approach.

In some ways this approach can offer freedom of form and even instrumentation. I found no reason why the instrumentation should be the same throughout and this enabled me to explore other ideas that previous methods did not. In other ways, non-linearity adds complications where ones would not normally exist, such as having to create consistency and flow between sections, which becomes more difficult when the arrangement is unknown. Since my music largely consists of juxtaposing sections, a lack of flow is not necessarily problematic. Previously I would have arranged sections in a way that produced a flow and consistency that I felt was successful. This new method of composing however required me to consider flow on a more embedded level, with more focus within the sections, rather than on the end points.

Outside of the composer's aesthetics, there are logistical issues with this form that need to be considered. For example, if the performers are on stage and not performing during a section would it create confusion for the audience? Some pauses will no doubt be needed between sections for a brief physical rest, or breath, or to coordinate the start of the next section. These issues can all be worked out during rehearsals, but they are issues that need consideration nonetheless.

There are also many performer considerations. The performers, when choosing and ordering the sections, must do a certain amount of curation. Typical considerations for curating a performance, or at least considerations I have made when curating, include how much I enjoy playing the piece, how sonically interesting the piece is and how and where it fits in the programme, etc. These are very subjective considerations that can be broken down further. From the consideration of performance enjoyability, one could consider curation

in a more objective manner, such as the level of performance difficulty and how well the instrument is utilised, etc. There are also practical considerations when electronic elements are included, like whether the performer enjoys working with electronics, whether they have the necessary equipment and whether or not electronic elements fit within the programme of the event. These curatorial decisions must be applied to this piece as a whole and to the section within the piece, in order to choose an arrangement. Only one section features electronics and since electronics require additional performance setup, the performers must consider if it is worth the effort involved and decide if it fits with the other sections chosen and with other pieces chosen for the concert. In a statement on programming music for conferences, Rowe said: "The curatorial system is attractive in that there is one person responsible for the program, so you know as an audience member that someone has thought about the mix of pieces on a given show and even the order of their presentation..."[80] The mix and the order of presentation he mentions would need to be applied to the sections of this piece. These considerations and decisions by the performer/curator may add another level of interest for the listener, as the listener might contemplate the process of the performers' decisions and not just those of the composer. I mentioned numerous times that I am interested in how a listener responds to my music. With this form I can extend my observations of listeners to an observation of the performers behaviour, in terms of which sections they choose and how they order them.

One to N is the final piece written for the portfolio and was written after much reflection on the other works. As previously discussed my music focuses on theatricality, surprise, humour and use of a sectionalised form. On a more detailed level, the defining characteristics of my works are repetition, pulse and fragmented melodic lines and timbre. The emphasis on these characteristics throughout each section helps bind them together and create unity, even if they are not all performed and regardless of the order in which they are performed.

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[80] Carlos Guedes and Pedro Rebelo, 'Reflections on Music Programming for Conferences: The Case of Smc 2009,' *Computer Music Journal* 34/3 (2010): 10-19.

Section I

Section I is written for violin, viola, cello and double-bass. This is the same instrumentation as in *Now*. This quartet is timbrally very different to a standard string quartet; violin I & II, viola and cello. Here I further explore the timbral differences through emphasis on the viola's part with a soft-noise and hazy timbre. This timbre is mainly created through the use of pitch, glissandi, pizzicati and the playing positions on the strings, for example playing on and across the bridge. The dissonance added by the quartertones also gives an abrasive and gritty texture. The lower registers of the violin are used mostly in this section. The motif heard throughout the section, introduced in mm.6, is dull rather than the bright sound that the violin usually offers to the string quartet. The use of register and quartertone pitches is what creates this dull sound and a feeling of tension in this section. As can be seen in Figure 41, many pitches move at semitone or quartertone intervals.

Figure 41: Quarter-tones, *One to N*, I 5-9

Pizzicati are used heavily throughout the section. There is a back and forth between the bowed violin motif and the use of pizzicati and staccati through a bouncing 6/4 rhythm. This rhythm is interjected at points, for example the pulse introduced in the double-bass in mm.20 in Figure 42 displaces the bouncing rhythm. This interjection only lasts a few bars after which we return again to the dissonant motif.

Figure 42: Rhythm Change, *One to N*, I 19-21

These points of interjection occur again later in the section when the upper registers of the violin are introduced. This interjection is more contrasting, since the brightness of the violin has not yet been heard. This creates a timbral shift and release from the tension of this section. The register gap that is created offers the space and tension release. In Figure 43, mm.34, this space is filled back in with the double-bass and viola ascending and in mm.38 with the violin descending.

Figure 43: Register gap, *One to N*, I 33-36

The section is largely a dissonant timbral exploration of the string quartet, through the use of dissonant melodic lines and different string playing techniques, such as sul tasto, over pressure and pizzicati.

Section II

This section is written for the full ensemble: flute, clarinet, violin, viola, cello, double-bass, piano and percussion. It is all centred on a rhythmic pattern in the piano. The rhythm is rather basic, but the tenuti give it a sense that is trying to catch up with itself, almost tripping over itself in the attempt to do so. The rhythm carries throughout the section with some variations as it proceeds. The other instruments colour this rhythm in the beginning of the section. The piano is being exaggerated in its definition as a percussive instrument and the pattern is swapped between the piano and the percussion. The piano eventually pulls out of the pattern with variations in pitch and rhythm, but it remains largely rhythmical and percussive. The change in the rhythm and pitches become more pronounced due to the break from the repetition beforehand. When something is repeated, although one bar might be the same as the previous, we do not perceive it in the same way. We hear it differently because we are not hearing it for the first time. We may hear something else that we did not hear on first, second or third audition. If we listen to repetition for long enough then reduced listening may occur[81]. When the repetition is broken in the piano in the example shown in Figure 44, the contrast is significant because we may change listening modes. Through reduced listening, we may stop listening to the individual pitches and rhythms, instead hearing a single sound object. Rather than hearing a phrase, the listener may hear out other elements within that sound object, or hear it as a collage of sound. When the sound object is changed we are removed from that listening mode and may not hear the successive bars as a sound object or objects, but again as a series of rhythms and pitches.

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[81] Adam Lockhart, 'Cognitive Implications of Musical Perception,' in *Computer Music Modeling and Retrieval. Sense of Sounds*, Richard Kronland-Martinet, Sølvi Ystad and Kristoffer Jensen (eds.), vol. 4969, Lecture Notes in Computer Science (Springer Berlin Heidelberg, 2008) 172-80.

Figure 44: Rhythm change, *One to N*, II 31-35

The break in repetition is a change in rhythm and a small change in dynamic. A break in repetition occurs again later in the section in the piano, seen in Figure 45. The contrast is greater because the rhythm and pitches deviate further than in the previous example. Another timbre is introduced with the percussion playing the same part as the piano and as a result I would expect the shift in listening modes and the perceptual shift to be greater.

Figure 45: Pitch Progression, *One to N*, II 42-47

I use a lot of repetition in my work and it is greatly exaggerated in this section and a couple of other sections in this piece. There is a great deal of repetition in the string and wind instruments. I also introduce some phasing patterns in this section, which I have done previously in *Dopamine*. I found it be very effective at inducing a different listening state and altering the sense of motion. I have also used this cyclic technique in *Now*. The different phrase lengths produce a circling motion, where the piece appears to loop back onto itself through different sized circles – where the circles represent lines of different lengths. Figure 46 illustrates this phasing technique, where the left-hand of the piano and the double-bass have a repeated 6 beat phrase over a repeated 4 beat phrase in the other instruments.

Figure 46: Phase Pattern, *One to N***, II 30-34**

Another feature of my music is the 'barely audible' dynamic or sometimes inaudible miming from the performers. This is both a theatrical gesture as well

as an extreme use of the dynamic range. Towards the end of this section the flute mimes a sound, notated as 'gesture only', at an inaudible level and a tom-tom is hit at a barely audible level of '***pppp***'. Ligeti explores this 'limit of audibility' in *IX Vertige*, from his *Études for Piano*. [82]

Figure 47: Ligeti, Études pour piano, *IX Vertige* 82-84

Ligeti's instruction "at the lowest limit of audibility" in Figure 47, is very similar to my "barely audible" instruction. The difference in our approach to the extreme dynamics is that Ligeti's changes in dynamics are done in a much shorter amount of time in the *Études*, often suddenly changing from very soft to very loud. My use of the limit of audibility is usually subtle and gradual. The example in Figure 48 shows the gradual diminuendo and also the inaudibility of the miming note in the flute. My use is often not just for a sonic purpose but also for a theatrical purpose.

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[82] György Ligeti, *Études Pour Piano Premier Livre* (New York: Schott, 1985).

Figure 48: Subtleties of sound and gesture, *One to N*, **II 70-72**

I use the lower limit of audibility to draw in the listener and change the performance situation. An element of vulnerability and fragility is introduced at this quiet level. The gradual introduction of these subtle elements allows the ears preparation time to change the listening mode. This listening mode is delicate so there are no sudden dynamic changes. Figure 49 shows the barely audible tom-toms. Depending on the concert venue, this might be barely audible to the performer and some listeners and likely inaudible to other listeners. This also depends on the performer's interpretation of the instruction 'barely audible'.

Figure 49: Barely Audible, *One to N*, **II 73-75**

This section also explores space more than the previous section. Although not much longer in duration, this section has 2.5 times the number of bars. This

additional length affords more time to consider and develop space and density. Through repetition and density a cluster is created from mm.29 that leads to the shift in the listening situations as mentioned above. This is used throughout this section and used again in later sections. In this section it is achieved through the dense capabilities of the piano, although the focus of the piano always remains percussive. The section ends with the barely audible rhythm that was repeated throughout. The rhythm is repeated so much so that it may be lingering as an earworm[83], whereby the listener might imagine hearing it even if it is inaudible to them.

Section III

This section explores the ideas of pulse and space. I considered space in terms of silence between the notes played. One cannot consider silence in music without considering the work of John Cage. Voegelin describes the silence in Cage's *4′33″* as "a musical silence not a sonic silence"[84] – or a sonic non-silence. I would describe my use of silence in this section as the opposite, a sonic silence, not a musical silence – or a musical non-silence. There is no sonic silence in the concert hall and 4′33″ makes you aware of that non-silence by encouraging the listener to hear the subtleties and non-subtleties of sound and silence. This section's focus is on a musical non-silence, rather than the resulting sonic silence or non-silence. The musical non-silence has more tension than the sonic non-silence because rather than being an exploration of causal sounds of the concert hall, the musical non-silence is a sonic pause in performance whereby focus always remains on the performers and therefore the silence is anticipatory. The anticipation in the sonic non-silence in *4′33″* dissipates early into the performance, even if it exists at all, given the fame of the piece. Both the sonic non-silence in *4′33″* and the musical non-silence in this section induce an attentive and active state of listening.

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[83] Lassi A. Liikkanen, 'Music in Everymind: Commonality of Involuntary Musical Imagery,' *Proceedings of the 10th international conference on music perception and cognition* (2008): 408-12.
[84] S. Voegelin, *Listening to Noise and Silence: Towards a Philosophy of Sound Art*, Music/Sound Studies (Bloomsbury Academic, 2010).

I considered how much silence I could use in this section by exploring how far I could push the space in-between the notes. The space and silence is pushed further at each interval, resulting in a maximum of one minute of silence at the peak of the silence and space. I have explored subtleties of sound and creating space previously, but silence, or the absence of playing and the absence of miming is not something I have fully investigated. I wanted to create a sense of tension through this absence of playing; the non-playing performers do this through a visual counting of beats. As the gaps in playing get wider and wider the tension builds, which explores vulnerability and fragility in the performance. Amongst this vulnerability and fragility the performer plays confidently with a single note strongly ringing out. The non-playing performers support the cello, at least to a point, until the absence of this visual counting creates a greater sense of space, openness, stillness and silence in the isolation of a single note.

This is one of the largest sections in terms of duration however much of the section has little to no playing. There are 42 empty bars, from the first empty bar at mm.27, to the end of the section at mm.81. Out of 54 bars, 42 are empty. This is by far the furthest I have taken space, created by an absence of playing, within my music. The empty bars are empty in the sense that they are absent of playing however there is gestural counting, so while these bars may be absent of music, they are not absent of performance. Comparatively in *4'33"* the performer may not be playing however the performer is still delivering a performance.

This space is contrasting to the usual density of my music however it is not in contrast to my compositional style, but serves to push me outside of my comfort zone. The section still includes elements of my style such as gesture, expectation, it plays on a sense of stillness in time and it is a little tongue-in-cheek.

When the counting eventually stops, an even greater sense of suspense is created, which is gently broken by a chord spread throughout the instruments as shown in Figure 50.

Figure 50: Chord breaking silence, *One to N*, III 71-81

This chord signals the start of this spacious, pulsing passage in mm.20. Although the pulsating begins at the beginning of the section in mm.2, the role of this pulse only becomes fully apparent in mm.20, when all of the other instruments fade away and the chord is heard. The chord projects out from the ensemble and adds an animated contrast to the silence and the pulsating from the cello. The chord is used as a signifier to the beginning of the passage in mm.20, the beginning of the visual counting, to the end of the pulses/the beginning of the end, and finally to the chord growing upwards to end the section. The use of the chord is an interesting way to interject the silence. The use of pizzicati and the striking of the bell of the cymbal ring out in a quiet space. Depending on the reverberance of the space the silent bars in-between the chords may not be so silent and may instead be filled with the decaying sound.

Events are stretched out and slowed down, encouraging the listener to slow down with them. Without this perceptual shift the listener may be bored while waiting for the next event. In my own experience of listening to music with a great deal of stillness or silence, I find I must give in, abdicate my own sense of time in order to appreciate it and understand it on its terms. For example, Ken

Ueno's Talus[85], opens with a scream followed by ~30 seconds of silence – a highly intense gesture followed by an absolute stillness. The piece ranges significantly from sparsely slow paced gestures to the densely fast paced gestures.

> …I was interested in how our experience of silences and quiet sounds are transformed, made more intense, with potential energy, after experiencing an aggressively kinetic gesture.[86]

When listening to this piece I feel as though I must submit to the pulling and dragging of the different time scales, in order to experience what I believe the composer wants me to experience. This could simply be described as connecting with the music. In the case of this section, that connection allows the listener to slow to the pace of the piece and to focus on the subtleties such as the decay of the pluck of a string.

Section IV

This section is written for flute, clarinet, violin, viola, cello, double-bass and piano. A motif on the cello is introduced in the mm.4 and leads the other instruments through the section. The viola mainly adds texture through the use of glissandi and by playing behind the bridge. The violin adds a soft noise texture almost throughout. This is an exploration of one simple idea. The motif on the cello is clean and clear and sits at the forefront, surrounded by gritty, noisy and sometimes shrill sounds. The wind instruments add a fuller sound to the section.

Extreme dynamics are present in this section, whereby there is a large build up to mm.28 and then just the cello is left as it begins to fade away, until it becomes 'barely audible'. As in section III, the dramatic shift is achieved gradually; getting quieter each bar. Similarly there is a crescendo in mm.37,

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[85] Ken Ueno, *Ken Ueno: Talus* (BMOP/sound, 2010).
[86] Ken Ueno, *Ken Ueno: Talus - Liner Notes* (BMOP/sound, 2010).

shown in Figure 51, rather than a sudden change in dynamic, which offers some listening preparation for the listener as well as builds expectation.

Figure 51: Extreme Dynamics, *One to N*, IV 33-37

The piano is then introduced and a larger spread of registers is used, which produces a much denser and larger sound. The cello is less clean and clear here, with over pressure and glissandi used. There is an element of controlled chaos with the polyrhythms in the piano and strings. Figure 52 shows three overlapping rhythms; the primary rhythm is from the piano right-hand and cello, the secondary is from the piano left-hand and the tertiary rhythm is from the viola.

Figure 52: Polyrhythms, *One to N*, **IV 41-43**

This rhythm continues only for two bars (42, 43), then the violin, cello and piano right-hand line up and the viola and piano left-hand line up for a single bar. This rhythm is not particularly complex, but the syncopation makes it feel disjointed. My inspiration behind this rhythm was the back and forth looping effect that is produced from glitches in digital audio. This creates a sense of backward cyclical motion. This effect is however only interesting for a short period of time, which is why only a few bars make use of this technique. This surprise irregularity in the pulse may grab the attention of the listener and reengage them in the piece. Figure 53 shows the return to a reduced and steady rhythm.

Figure 53: Reduced Rhythm, *One to N,* **IV 44-45**

Section V

This section is written for solo percussion; four tom-toms. The section explores simple ideas of rhythmic patterns without any rests. I began by imposing a limitation for this section in that I could not write any rests into the score. I decided to break this rule at the end of the section to offer contrast.

The section begins with a very steady 4/4 pattern, which is interjected by a 6/8 pattern.

Figure 54: Rhythm Patterns, *One to N*, **V 1-3**

This counterpoint in Figure 54 runs throughout the section. The first pattern almost functions as a home key with variations and all the other patterns settle

back onto this steady beat. There is nothing complex about this, the patterns are generally simple, but the clarity and sense of purpose in the rhythms, I believe can keep the listener's attention throughout. The *accels*, *rits* and dynamic changes add focus and substance to the simple pattern. The tempo changes and dynamic changes work non-intuitively by speeding up and getting quieter or by slowing down and getting louder, as can be seen in Figure 55.

Figure 55: Dynamics and Tempo, *One to N*, V 35-40

These subtleties again add focus to the rhythm and are basic but deliberate. This deliberateness and simplicity illustrate a sense of confidence in the material. The section is quite short with 74 bars, realised in less than 2 minutes. Rests are introduced 7 bars from the end and the number of rests and space created is increased as the section progresses. This technique, although simple, works in contrast to what is otherwise a dense section. The widely spaced soft notes at the end add some unpredictability and humour. The listener might expect the section to end 2 bars previously, but the additional bars build anticipation and add something unexpected and humourous into a section that is otherwise quite static and relatively predictable.

Figure 56: Prolonged Ending, *One to N*, V 68-74

This prolonged ending, shown in Figure 56, shares similarities to Josh Levine's *Transparency Part I*[87]. At the end of Levine's piece a piece of sandpaper is scraped along the floor. The notes are spaced in a similarly intense manner as in this section, as can be seen in Figure 57. Levine's meaning behind this differs, in that it is not for the purpose of humour, but for focus on the quietness and

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[87] Josh Levine, *Transparency (Part I)* (2004 (Revised 2010)).

details within the sound. The similarity to the end of this section is that they both have focus and intent but while they might be sonically similar their meanings differ. Levine has achieved this with space and precise rhythms. I have done this in this section with space and an exaggerated rhythm.
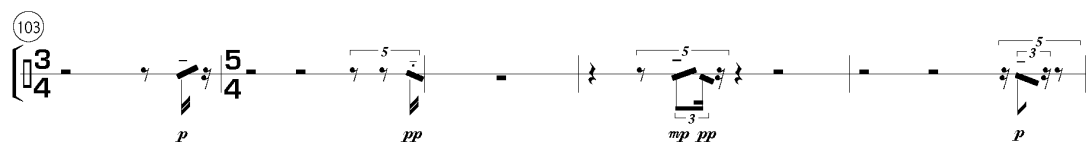

Figure 57: Josh Levine, Transparency Part I, 103-107

There is a sense of repression in this section. There is an indication that it might burst into something more rhythmically complex. An expectation is built up to what could be a much freer passage, but instead it remains controlled and confined. In Figure 58, pace and dynamics are increased, like drawing a large breath in preparation for something, only to simply let it go as the same pattern is returned.

Figure 58: Building Expectation, *One to N*, V 41-54

This section has 2 levels; the steady beat and the fast rhythms, and it is desperately trying to get to a third level with more rhythmic complexity, but ultimately it never does. This is another way of dealing with surprise and playing with expectation. If I were to always build expectation and then subvert it and expect it to be unpredictable it would in itself become predictable. This rebelliousness against expectation is an alternative way of working with surprise. In this section and throughout this piece I aim to find that balance between predictability-expectation and unpredictability-surprise. Sometimes you may expect the pattern to go back to the steady beat, it comes as no

surprise, but other times you may expect that third level might be introduced, although it never is. This is anti-climactic but rather than ending in disappointment, the humour of the long drawn out final beat at the end offers a different release and an assurance that this is the end of the section.

The back and forth between the 2 levels as I have described them is also present in section VII. However unlike this section, where it is confined within the 2 levels, further levels are explored in VII.

Section VI

This section is written for flute, clarinet, violin, viola, cello and piano. It begins with a fast rhythm on the piano, alternating between 2 notes a semitone apart. This rhythmic pattern functions as a gesture that later gets lost in the background of the ensemble. It can be heard as a sound object and a platform from which the other instruments stand upon. There is a seemingly arbitrary placement of single notes or pulses in the left-hand of the piano, seen in Figure 59. This disrupts the steady rhythm of the right-hand. The off-rhythm also works as a point of focus, becoming more interesting than the incessant trilling and thus enabling the sound of the right-hand to fall into the background.

Figure 59: Off-rhythm Left-hand, *One to N*, VI 1-2

The right-hand of the piano is pushed further into the background with the introduction of the flute and clarinet. The texture from the violin also becomes background. In mm.9 the bright sound from the flute and the harmony from the clarinet protrude outward from the ensemble. The semitone change in the piano left-hand, in Figure 60, signifies the emerging flute and clarinet. The piano left-hand moves from the off-rhythm single short notes to a steady pulse. The strings also follow suit with a very steady pulse.

Figure 60: Emergence of Flute and Clarinet, *One to N*, VI 11-12

This leaves space for the wind instruments to add colour and build upon the momentum in the piano and strings. This begins a constant rush and buildup for the section. The bright flurry from the wind instruments is only heard for a short period of time, until they merge with the pulse and the forward momentum. The clarinet merges with the cello. The flute, although it is still bright through the use of a higher register, begins to sit within the pulse and to drive forward with the ensemble. The flute is at the forefront of the buildup, controlling and leading with rhythmic staccati. The viola and cello increase tension by stepping up by a semitone or tone each bar. The buildup is simple but deliberate. It asks the listener to wait and strongly implies there is something significant worth waiting for. Each bar gets louder, but keeps a steady pace. In mm.23, shown in Figure 61, the section ends with a playful gesture from the flute and clarinet. This buildup could have led to almost anything, other than a repetition of the buildup. It could have resulted in a wash of noise and dissonance, soft string harmonics, a cough from one of the performers, or simply an empty bar. I chose a playful ending because the buildup is a little insincere; almost pretending to be ominous. The buildup itself is almost playful and even cliché and so a playful gesture at the end is fitting.

Figure 61: Playful Ending, *One to N*, VI 23

This section could accompany a chase scene from a cartoon, in a similar vein to the animated series Tom & Jerry. While it is not written with this in mind, it shares a similar playful tension present in these types of cartoons.

This is one of the shorter sections in the piece and certainly feels as such. This is not necessarily because of the duration, but because of a long introduction, which implies the section is leading somewhere but only to a short conclusion. The concise ending is unexpected and thus feels short, potentially leaving the listener expecting more. Depending on how these sections are arranged, this section may function as an introduction to another section. If it were performed on its own, then it may function as an introduction to another piece of music or perhaps as an ending. This openness of form required a lot of consideration during composition and requires a lot of consideration from the performers. Firstly whether they should perform the section at all and then where to place it with the other selected sections, if others are selected. The order of the sections may in fact dictate which sections are chosen. If an order chosen does not seem to fit, the performers may need to revisit the selection of sections.

Section VII

Section VII is written for the full ensemble. This section introduces some indeterminacy, in terms of pitch. I was concentrating more on gesture for this section and thus notated approximate pitches for a dense passage, which gets repeated throughout. The rhythm for this phrase is a little complex and a little muddy. I wanted the performers to concentrate on the rhythm and the gesture, rather than concentrating on being accurate with pitches. I also did not want the

same thing repeated each time, but this is stringent to notate and potentially superfluous. As I have mentioned previously I avoid over instructing, because if I want to give the performers freedom and openness and then instruct that freedom and openness, it becomes prescribed and closed. I am hoping the indeterminacy will produce slightly different pitches every time this phrase is repeated, but if I notated that I would likely get more definite pitches, which would take focus away from the gesture. My choice was either to notate the pitches and make them different each time or to not notate them and hope they will be different. As Figure 62 shows, I chose the latter approach. I am also interested in how the performers respond to this notation. I expect that performers experienced in improvisation might play it differently each time and those not experienced in improvisation might not.

Figure 62: Gestural Focus, *One to N*, VII 1-4

This section focuses on density and space, through the use of clustering in the strings, flowing gestures and harmonics. The strings play within the same register space, creating a cluster within a designated frame. A sense of space is created by the introduction of wind instruments that come in outside of this frame in mm.69, shown in Figure 63. This creates a stark contrast to the previous passage and introduces a new subsection.

Figure 63: Introduction of Wind, *One to N*, VII 64-73

The space is expanded outward by the string harmonics. Stillness is produced, contrasting the chaotic and noisy string phrases heard previously. Although, some noisy textures still remain in the percussion and the glissandi of the viola, shown in Figure 64, they produce a grating against the stillness of the other strings and wind.

Figure 64: Space and stillness, *One to N*, **VII 74-83**

The rhythmic pattern from section II is introduced in the percussion and then the piano. I thought it would be interesting to have a recognizable pattern in two different sections. None, one, or both sections may be performed and depending on this selection, the presence of this pattern is the introduction, a reintroduction, or simply a unique pattern. Either way, this rhythm works here and may provide a link forward or backward in the piece. The rhythm is gently introduced and breaks away from the stillness of the passage, shown in Figure 65.

Figure 65: Rhythm introduced in percussion and piano, *One to N*, VII 90-95

In this section in particular one can interpret my writing style in terms of sections of fragments. This has sections within the section, but I like the coupling of the subsections too much to separate them. The section breaks away at different points as if detouring, it does not come full circle, but it does return to an earlier departure point. It breaks away to different ideas, but eventually returns and settles on one. This section is still whole and unified, but arguably could be broken into two subsections; bars 1-67 and 67-106, however I think the disparity and detouring in this section produces an interesting flow and a contrast from the other sections. For these reasons, I have chosen to keep this section as one, rather than splitting it into 2 or 3.

Section VIII

This section is written for viola and electronics. This is the only section to include electronics. The electronics are a MaxMSP patch controlled by the performer. I have used electronic elements with acoustic compositions before. In

Place, the electronics were presented as a tape part that was triggered by a sound engineer. The difficulty with this approach is that the tape is inflexible and it becomes hard to follow and can potentially be limiting for the performer. In the case of *Place*, the timing is not so important, so the performer still has some freedom and is not restricted to the beat of the bar. Timing in this piece however is more important and as a result I took a different approach with the electronics. The performer triggers playback of the electronics via a footswitch. In doing so, the performer has greater control over the pace of the section. The drawback however is that additional work is required from the performer, which may lie outside his/her comfort zone. There is also additional setup because of the need for a laptop and a controller. These pros and cons must be examined in each instance of using electronics. In this case the samples being triggered by the performer is preferred to tape playback. The technical complexity involved is outweighed by the musical advantage. I created a MaxMSP patch to facilitate the playback of 4 audio files required for the section.
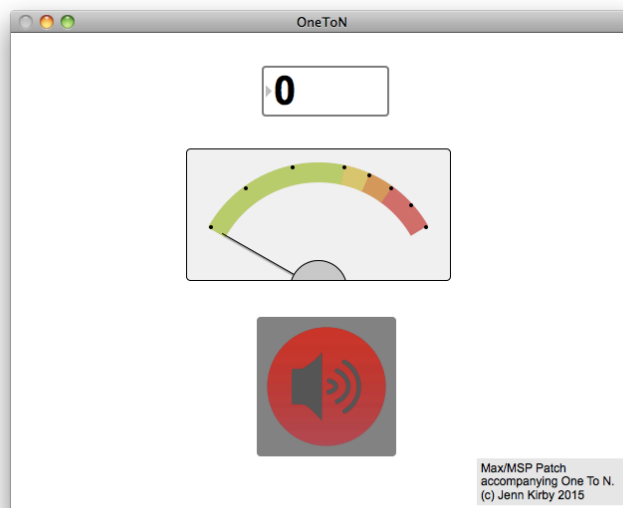

Figure 66: Max Patch (Off), *One to N*, **VIII**

The layout is as simple as possible, showing only what is necessary for the performer to see. After setup it is not necessary for the performer to look at the patch, but it is useful for troubleshooting issues. Elements displayed in the patch

are: the sample being played, the signal level and whether the sound is turned on or off. Figure 66 shows the patch in an off state.
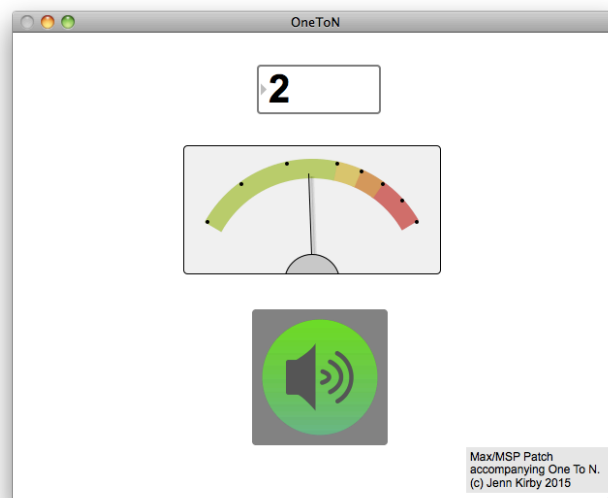

Figure 67: Max Patch (On), *One to N*, **VIII**

Figure 67 shows the patch in an on state; the second sample is playing, there is signal and the output is turned on. This is not to distract the performer, but serves as visual feedback of the electronics. The setup requires a laptop to run the patch, a PA system, an audio interface and a MadCatz gametrak controller, or as referred to in the laptop orchestra community, a tether[88,89] shown in Figure 68.

[88] Gregory Taylor, *C74: An Interview with Dan Trueman* (2013).

[89] Anne K. Hege, *Middle Passage: Reclaiming What Is Lost as Performance and Practice* (Baton Rouge, Louisiana).

Figure 68: MadCatz Gametrak, *One to N*, VIII

To operate, the performer simply presses on the footswitch to trigger the next sample. I have configured the patch to work with the gametrak, but if the performer does not have a gametrak and if I am not in a position to loan one, then another controller may be used. It is also configured to trigger by using the spacebar on the keyboard and this is probably the easiest substitute. I supply the patch with the bundled application so the performers are free to modify it for use with another controller if necessary.

This is one of the shortest sections in the piece. It shares a similar structural idea to that of section V and VII, whereby a phrase is introduced and regularly returned to throughout the section. The phrase in this case is the circular bowing across the bridge. The piece begins with this phrase, creating a noisy texture, followed by rapid bowing and a repeated note. At mm.5 the electronics enter, notated by the x on the electronics staff, shown in Figure 69.

Figure 69: Start of Electronics, *One to N*, VIII 1-6

The writing for the viola or the electronics is not particularly virtuosic, it is timbrally focused and both instrument sounds combine and disconnect from one another. The electronic samples have rhythms matching that of the viola, but sometimes they do not appear in the same place. This idea came from what was accidentally produced in *Place*, whereby the flute would go ahead and fall behind the tape. In rehearsals sometimes this worked very well and sometimes it did not. With this method I can control this effect. In the first sample, in Figure 70, the rhythm of mm.7 will occur in the electronics slightly before it does in the viola.

This is followed by the second sample being triggered and a return to the circular bowing. The performer can take their time leading into this, interpreting the *rit* as they wish before going into mm.8.

Figure 70: Timing, *One to N*, **VIII 7-10**

The second sample is rhythmically the same as the viola and so precise timing is important but not difficult. Although the performer must follow the timings of the electronic part, the performer has control over where it begins and so it does not take too much control away from the performer. The viola and the electronics have equal parts in terms of ensemble; each is sonically equally important, however it must be noted that one has more of a visual presence than the other. I wanted the viola and the electronics to be separate instruments playing together, even if the violist triggers the playback of the electronic part. The third and fourth samples and passages follow a similar pattern; the rhythms are precise and the focus remains on the noisy timbre. The scoring for viola enhances its noisy timbre, through the use of circular bowing across the bridge and pizzicati mainly in the middle registers. Likewise the

electronics are rhythmical and have a discernible pitch, making it sound more like a standard instrument and promoting timbral cohesion.

When writing this section I was inspired by Linda Buckley's piece for viola and tape, *do you remember the planets?*[90] Buckley manages to blend the timbres of the viola and tape to the extent that it becomes difficult to distinguish between the two. Buckley switches between passages of high rhythmical activity and still harmonics. I have attempted to achieve a similar effect in this section through the use of soft noise and rhythmically precise material.

This section is almost an outlier of the piece. Although it shares many similarities; pizzicati and noisy timbres, it is the only section with electronics and thus has significant differences, such as in terms of performance there is one performer, the violist, playing two parts/instruments. What interests me most about this section is how the performers might perceive it, and if they choose to perform it, how the listener might perceive it.

Section IX
This section is written for flute, clarinet, violin, viola, cello, double-bass and piano. This section has the most overstated use of repetition. The clarinet plays the same phrase, which is a single repeated note, almost throughout. This phrase is repeated for 59 bars. The flute alternates between two similar phrases for 58 bars. The viola alternates between similar phrases for 43 bars. The piano plays a single note repeated in triplets for 27 bars. The violin, cello and double-bass have some repetition, but not to the same extent.

The time signature alternates in each bar; 7 beats and 8 beats, almost throughout the section; up until mm.60. The alternating time signature idea is inspired by The Stranglers' *Golden Brown*[91], which alternates between a 6 beat bar and a 7 beat bar. Although the style of the song and this section of the piece

[90] Linda Buckley, *Do You Remember the Planets?* (2005).
[91] The Stranglers, *Golden Brown* (EMI Music Plublishing Ltd., 1981).

are considerably different I wanted to incorporate a similar bouncing energetic quality. By going between the two time signatures it gives it an off-beat, energetic feel. The section is also notated as *rubato*. The effect is rather subtle and is subdued by the strong pulse throughout. The section is 4 minutes in duration and is a constant linear growth; a long vertical and horizontal crescendo. Figure 71 shows how it begins with the flute and clarinet, followed by the strings and lastly the pedaling piano in mm.31.

Figure 71: Piano Entrance, *One to N*, IX 29-32

The structure of this section is by far the most straightforward and does not contain any surprises or anything unanticipated. Instead it is a complete indulgence into repetition. When a repetitious foundation such as this one is established it frees up the other instruments to offer colouration, experimentation, ornamentation and exploration within the sound world. Some instruments add layers of rhythmic density, such as the viola in Figure 71, others have a great sense of freedom with a greater amount of possibilities, such as the double-bass in Figure 71. The flute and clarinet are playing an important role to hold it all together. Although these parts may not be the most interesting, a mistake in the wind instruments would likely cause the section to fall apart.

The double-bass in Figure 71 is expressive and non-essential, meaning it can add ornamentation, make mistakes and cause no harm to the section.

Figure 72: Violin Ornamentation, *One to N*, **IX 21-24**

Figure 72 shows the violin fitting within the rhythm and playing around it. Figure 73 is another example of ornamentation in the violin.

Figure 73: Violin Ornamentation, *One to N*, **IX 27-28**

However as one might expect the rhythmically 'non-essential' instruments eventually align with other instruments by becoming more rhythmical and having more structural importance in the section. This occurs with the triplets in the violin in mm.41. These triplets exits before the cello enters in mm.46, shown in Figure 74, with a phrase covering the two alternating bars.

Figure 74: Cello Phrase, *One to N*, IX 44-47

With the steady pulses, the alternating time signature is barely noticeable, but the phrase in the cello highlights the idiosyncrasy of the section. The violin then goes back to its previous role of ornamentation, shown in Figure 75, and is the only instrument not following the steady rhythm.

Figure 75: Violin Ornamentation, *One to N*, IX 48-51

This is the crest of the crescendo and at mm.58 the instruments begin to drop away leaving the viola for a single bar and bringing an end to the alternating time signatures. Figure 76 shows the instruments' quick reentrance for an even steadier rhythm, pulsating forward to bring about the end of the section.

Figure 76: Steady Beat, *One to N*, **IX 63-66**

There is a notable shift here where the repetition in 4/4 becomes incessant without the slight variation in time signature heard previously. Figure 77 shows the section end with the violin functioning as resonance, quietly but steadily bringing the pulse to rest.

Figure 77: End of Section, *One to N*, IX 70-74

I stated previously that this section is highly predictable with a very simple structure. While this may go against my usual pursuit of the unexpected, the predictable becomes an unpredictable decision for me. I believe it is healthy for my compositional vitality to go against what I would normally do, on occasion. While I was tempted to put a bar or two in the middle of the incessant pulsing that is totally absent of rhythm, I do not believe unexpectedness for the sake of itself is musically valid.

Section X

This section is written for flute, clarinet, violin, viola, cello, double-bass and percussion. In terms of score size, this section is the shortest of the piece with just 13 bars. It is quite different to the other sections in that it does not focus on rhythm and most strikingly it involves improvisation and a much greater sense of indeterminacy. After the introductory bars, the remaining bars are notated simply as 'ad lib', meaning everything is indeterminate except duration and instrumentation. The first bars are notated to offer a seed for the improvisation. In computer science terms, a seed is usually a starting value used to initialise a random number generator. Since computer systems are logical, it is not possible

for them to behave randomly and so a unique seed value is used as an input to an algorithm, which uses it to create a pseudorandom output. I am using the idea of the seed not to introduce randomness however, but to prevent it. The seed bars offer a degree of control, or predictability, for the performers to carry on in a similar vein, rather than to start randomly. This approach can be likened to John Cage's use of chance operations; a seed value is similar to the role of the dice. However, my use of the seed value, as shown in Figure 78, is to reduce chance, which is of course in opposition to Cage's chance aesthetic, but there is a similar "abdication of composerly control"[92].

Figure 78: Seed Bars, *One to N*, X 1-4

The instruments have a different number of seed bars; ranging from 1 to 5, from mm.1 to mm.7. These seed bars construct a sound world from which the performers can 'ad lib'. This sound world is timbre and gesture focused, sparse and absent of pulse. This is indicated by the use of rests, dynamics and extended

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[92] Marc G. Jensen, 'John Cage, Chance Operations, and the Chaos Game: Cage and the "I Ching",' *The Musical Times* 150/1907 (2009): 97-102.

techniques. The seed bars suggest how the performers should improvise, but it does not notate or instruct and therefore cannot be controlled. In the performance notes I have stated, "Section X: ad lib – performers should play or not play at their own discretion with respect to the earlier notated bars." This simply means that the earlier bars should function as seed bars. This sentence may be superfluous, but without some explanatory note, performers may be unsure about how to perform the series of unnotated bars.

The flute and clarinet begin with air notes of different durations and a hint of rhythm. As a result, one might expect the performers to continue to play air notes, but they may immediately start playing pitched notes and they will certainly be listening to the instruments around them. The violin begins in mm.2 with harmonics with different articulations and rhythms for 2 bars. The viola begins with a single note across the bridge in the first bar and more 'creaking' in the second bar. The cello has just one note; bow tailpiece, from which the performer should improvise. This is the least amount of instruction given and I felt it was the minimum seed needed to still give a sense of the aesthetic of the section. The double-bass has the same instruction in the first bar and a slow loud bow in mm.4. The piano has 5 notated bars all involving playing inside the piano; from glissandi to scratching the strings to dampened notes. This suggests that the remaining 6 bars involve some playing inside the piano. However the performer may choose to play all on the keys, or choose not play at all. Since within the first 7 bars, there are empty bars and many rests, not playing at all may be a legitimate and viable choice for the performer. The percussion is notated in a similar manner; 4 notated bars with empty bars and rests in-between. The instructions include using brushes on the tam-tam and circular scratching on the bass drum. This indicates the desired timbre, space and dynamic. Only the tam-tam and bass drum are notated, but the staff also represents the 4 tom-toms and cymbal and there is nothing to suggest that these should or should not be used.

Many of the techniques used in this section are used elsewhere in the piece, for example bowing across the bridge and the bowing in a circular motion.

Many have been used in other pieces, such as the air notes on the flute used in *Place* and the bowing of the tailpiece used in *Now*. Playing inside the piano is not present elsewhere in the portfolio however. Improvisation has been used elsewhere in the portfolio; in the final minute of *Music as Sound, Sound as Music*. Instructions in that piece are "gradual slow, using whatever techniques you like" and "can end before, after or with tape." The idea is the same here, although with less control. Consider the tape as the fixed instrument, then the other instruments have one minute to improvise around that instrument. In the performance of *Music as Sound, Sound as Music*, the performers had audible freedom in this section after a section that was audibly controlled. I am aiming to achieve a similar result with this section, although even freer without a fixed tape part. How the performers will interpret this freedom is no doubt subject to what other sections have been performed alongside it as well as the style of the performers themselves.

This section is considerably different in style to the other sections, but the openness of it may make it easier to assimilate with other sections in the piece. Performers may use the improvised section to lead into another section, or to end the piece, or they may not perform it at all.

Summary

The piece is the largest in my portfolio. Most of my pieces are relatively short, usually ranging from 5 to 10 minutes. While this is certainly a timeframe I like to compose within, this larger work has enabled me to consider different possibilities within a different timeframe and form. For example, the exploration of space and the absence of playing in section VII is something that would not be as feasible in a piece of shorter duration. The longer duration gave me scope to experiment more and develop ideas further than I may have otherwise. Composing this piece has enabled me to further develop some of the characteristics of my style, such as repetition, timbre, gesture, extreme dynamics, space, density, humour and the juxtaposition of ideas.

An interesting result of using the mobile form is that it adds another layer to the expression 'no two performances are the same'. There are in total 9,864,100 unique arrangements of this piece. If performers choose to perform 1 section there are 10 possible arrangements, if they choose 2 there are 90, if they choose 3 there are 720 and so on. Table 3 shows the total possible permutations, without repetition, based on Equation 1.

$$\frac{total\ number\ of\ sections!}{(total\ number\ of\ sections - number\ of\ sections\ chosen)!}$$

Equation 1: Possible Arrangements, *One to N*

E.g.

$$\frac{10!}{(10-2)!} = 90$$

No. Sections	Permutations
1	10
2	90
3	720
4	5,040
5	30,240
6	151,200
7	604,800
8	1,814,400
9	3,628,800
10	3,628,800
Total	9,864,100

Table 3: All Possible Arrangements, *One to N*

The performers are of course not expected to choose from this number of possibilities, instead they no doubt will have criteria to narrow down the selection, such as the duration, the instrumentation, which sections interest

them and so on. Numerically, it is highly unlikely that two separate ensembles would ever choose the same arrangement, however with the aforementioned selection criteria in mind it becomes less unlikely. This is because the performer would likely make a musical selection and not a random selection. However, if this piece were to receive a large number of performances it is still unlikely that any arrangements would be the same and this is an exciting consequence of this form.

Conclusion

Throughout this commentary I have presented developments in my compositional process and in my use of sectionalised form, humour and theatricality. I have aimed to blend form, humour and theatricality together, so that one informs the other and they can become a single element or characteristic of my work. I have done this in many of my works, for example in *Now*, the humour is within the theatrical elements, which impacts on the form of the piece. Similarly, *Big Scary Numbers* is humourous because of the theatrical delivery of the material and the form of the piece.

There are additional characteristics that are seen throughout my pieces, which are outside of these elements. For example many pieces include *'pppp barely audible'* in the score. I have found this gesture to be very successful in drawing in the listener and exploring the space where sound borders on audibility and inaudibility. All of my pieces demonstrate an in depth study of the instruments and use of extended techniques to further develop my sound world, both in the context of traditional instrumentation and electroacoustic instrumentation. Timbre is of great focus in my works and I have explored many non-traditional timbral techniques, such as bowing the tailpiece of a string instrument in the aim to create new and interesting timbres and expand on the sound and gestural palette of the piece. Working in the electroacoustic medium and with the Dublin Laptop Orchestra has enabled me to further explore timbre, theatre and humour, through the creation of software instruments and through semi-improvised scores.

I have expressed the importance of the listener in my music and how I wish to subvert expectation through the use of humour and surprise. Although I can only speak for myself as a listener, I often find myself thinking about and making guesses as to how other listeners might respond to my music. Through the performances of the music in the portfolio and through my observations of

the listeners' responses I have gained a greater awareness of the diversity of the listener and the listening environment. I have spoken at length about creating situations to which the listener can respond and although these situations could be much more grand, I have shown my preference for the more subtle situations.

My style has developed significantly throughout the portfolio, with the final piece, *One to N*, encompassing many of the successful elements of the preceding pieces. This piece in particular has not only challenged me compositionally, due to the non-linearity, scale and partial indeterminacy, it has also made me reflect on the earlier pieces in the portfolio and also inspired me to challenge myself in other ways. Although I am confident in my compositional aesthetic, I am interested in how I can further develop and challenge that aesthetic in my future work.

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