Revised Thesis Submission to the University of Glasgow:

Portfolio of Compositions

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Department of Music in The School of Culture and Creative Arts

Commentary

Partial requirements for the degree of Doctor of Philosophy

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This submission refers to soundfiles, and performance materials. The Max patches submitted are personal improvisation tools. My performances with those tools have been guided by the scores submitted. There is also a copy of this commentary. The contents of each folder is outlined below.

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ACKNOWLEDGEMENTS

I am grateful to have had the guidance and support from Nick Fells during my process of investigation. I would not have been able to develop and improve my practice without his attention and expertise as my supervisor. I am also grateful for the overall support and encouragement within the music department. Particular thanks to Louise Harris, for serving as my second supervisor, and giving me the encouragement I needed during this process. Thanks to Martin Dixon, who was one of my examiners, and Bill Sweeney and Jane Stanley as well. I am also grateful for Martin Parker's insight and support into my work, and for serving as my external examiner. Everyone's interest and positivity has pushed me forward in my artistic development.

I am grateful for all who have participated in the music-making process with me during the formation of my work. Thanks to Adam Tendler, Dave Stockard, Olivier Jambois, Monica Schmidt Andersen, and Anthony Allen. Thanks to Alejandra Amador for proofreading. Thanks to Paul Wilson, Eric Lyon, Simon Vincent, Gunnar Geisse, and Yannis Kyriakides, for sharing their creative ideas with me as well. Many thanks to Curtis Curtis-Smith and David Loeb.

Finally, thank you to my parents, Jill and Jerry Rozanoff, and Abe.

ABSTRACT

This composition portfolio contains seven pieces which explore different ways to create strategies for composing and performing with instrumentalists when digital technology is involved. Through these works, I aim to create musical dialogues exploring the following broad relationships: composer-performer, performer-improviser, pre-recorded and live sound, and open and fixed forms. These relationships are regarded as continua, rather than binary opposites – I aim to compose with the musical dialogues that emerge from them. Working with these relationships has led to an approach which is largely a synthesis of processes borrowed from experimental practice found in jazz, improvisation, classical, and electronic music production techniques. The dialogues found in the works rely mainly on a solo instrumentalist providing sound as a source material, either performed live or pre-sampled. Two of the pieces rely on pre-recorded instrumental sound and require no live instrumentalist in their presentation; the rest are for laptop and another instrumentalist.

INTRODUCTION

This portfolio comprises seven works that explore different ways to create strategies for composing and performing with instrumentalists when digital technology is involved. There are a number of research problems that arise in this medium stemming from the following relationships thrown up in performance between composer-performer, performer-improviser, pre-recorded and live sound, and open and fixed forms. Some of these problems are practical, such as ambiguities around communication between players and ambiguities in listening, such as the problem of identifying who is making any particular sound material, and whether a given collaboration demonstrates cohesive musical interaction. Some of them are more conceptual, such as compositional form, player roles, and shaping musical dialogue. My aim in creating this portfolio has been to explore and address these problems, with a view to providing some models and strategies that could be adopted.

In my works for laptop and one other player, starting with *New Pages*, my strategies were aimed at creating musical interaction, progressing toward a more coherent musical interplay between players. Throughout that process, I learned how to more effectively manage issues arising from personal encounter, software instrument design, and responsive listening.

In my acousmatic works, I developed compositional strategies, managing issues of form, orchestration, and the use of digital tools. These strategies emerged through a reflective listening process; I shaped the collision between source material and their digital abstractions, working toward a more effective organization of materials generated in the studio.

Cross-cutting themes

My portfolio demonstrates possible ways to shape and manage relationships musically, during a work's construction and performance – relationships with the technology and the users themselves. The combination of themes each work is concerned with, serves as an outline or a skeleton for my compositional strategies.

Below is a table, listing the works and the themes they embody. The works are found at the top of each column, and the associated themes are listed at the beginning of each row. The work titles, which have been shortened, are in the following order: *New Pages, Percussionmusic, 6 Surfaces, Violamusic, Variations, Music for Electric Guitar and Laptop,* and *Extended Play*. An explanation of the themes is given after the table.

	WORKS						
THEMES	New Pages	Perc	Surfaces	Viola	Var	Guitar	Ext
Interdependency	X	X			X	X	X
Stability / Instability	S	X	S	S	I	X	X
Idiosyncrasy		X	X		X	X	X
Freedom / Constraint	X	X			X	X	X
Micro		X	X	X			
Noise		X	X	X		X	X
Fixed / Indeterminate	F	I	F	F	X	I	I
Solo / Accompaniment	X	X	X		X	X	X

Interdependency is a concept in performance, particularly for those works in my portfolio which require laptop and one other instrument. This concept refers to the players' way of balancing their own musical decisions in performance.

Stability / Instability is a continuum of the relationship between a player and electronic sounds in performance. An 'S' or an 'I' is given demonstrating where a work is leaning more toward in this continuum; an 'X' is given expressing a mixture.

Idiosyncrasy refers to an instrumentalist's ability to rely on his/her personal approach to playing.

Freedom / Constraint is a continuum describing the level of constraint influencing a player's decisions in performance.

Micro relates to textures developed from small samples of instrumental material.

Noise refers to its use as a layer highlighting or filling out textures in a composition

fixed / indeterminate is a continuum demonstrating a tendency to fix or place things before performance, opposed to deferring the decision making until performance. An 'F' or an 'I' is given demonstrating where a work is leaning more toward in this continuum; an 'X' is used where there is a mixture.

solo / accompaniment is a continuum relating to the prominence of solo and accompanimental roles. The works which have been labelled with this theme, demonstrate varying levels of soloing and accompaniment.

Composer-performer

The dual role as composer and performer is explored in my works *Percussionmusic, New Pages, Variations, Music for Guitar and Computer,* and *Extended Play,* where *composed* aspects of technology are implemented in performance. I create Max patches to perform with, "rather composing an “instrument” in the form of a pre-designed and predefined interactive musical system" (Dudas, 2010, p.29). Throughout the works in my portfolio, the player's role in performance extends to composing on the spot, sometimes improvising either fixed or indeterminate sound material. Thom Holmes' approach, derived from his observations when performing with electronic instruments, was a helpful starting point for me when managing improvisation between players. Holmes (2012, p.416) describes his process as "listening, reacting, augmenting, and creating".

Performer-improviser

In working in this medium we confront the problem of managing the interplay between performers. I was particularly interested in how improvisers or aspects of improvisation could be utilized in composition. A way of managing interplay found in my work, is demonstrated in an improvisatory practice offline. Trevor Wishart suggests it is an issue of timescale, thinking of the composer as a studio improviser. The process of working in the studio is "akin to "slow improvisation" – improvisation as a material-generating device or a means of transforming existing musical material, rather than as a performance device" (Vassilandonakis, 2009, p.10).

The management of interplay also requires responsive listening during performance. One example of this action is by American jazz trio Gateway, where in their self-titled album (1975), track six demonstrates the players'

interplay of small harmonic, melodic, and rhythmic adjustments, and subtle thematic alterations. They are a trio of electric guitar, drumset, and double bass. Although I do not work in a jazz idiom, their approach to musical interplay is worth consideration. Gateway's individual members seem to act as composer-improvisers. Their method of managing the mapping of lead roles abandons the notion of a jazz rhythm section. What results is a type of musical interaction, where individual players shift away from their fixed role of accompaniment and soloing.

Pre-recorded and Live Sound

My works aim to manage pre-produced and live materials in performance. Therefore, the computer's role was a potential issue to consider. A computer can "simulate and perform"[1], and although it may not be able to give visual cues the way the body can, my position is that an audience can successfully comprehend a composition where this device has been used either in the work's construction or performance, regardless of the seemingly ambiguous role it plays. Instead of focusing on whether the direct causal relationship between musician and instrument has been broken, we can strive to think of the computer as giving rise to what John Croft (2007, p.59) refers to as an "extended instrumentality".

In my work, strategies for musical development that might be characterized as accompaniment, soloing, agitation or separation, and leading, were used to develop form in my performances. These roles have given rise to a process of interrelation between players, similar to performances by individuals who perform in groups such as The Uri Caine Ensemble, Paul Motian Trio, and Death

[1] Ian Andrew's article *Post-digital Aesthetics and the Return to Modernism,* describes the computer like a portable studio where it can behave as a synthesizer, media player, sequencer, or mixer/processor.

Ambient. In *Gustav Mahler in Toblach* (1999), Caine's group developed improvisations around Mahler's own music, where DJ Olive's turntable playing controls live electronics from his desk. In Motian's trio, Bill Frisell's electric guitar playing shifts its identity to that of a controller of loops and creator of ambient soundstreams with digital processing. *At the Village Vanguard* (1995) is representative of his approach to performance. Ikue Mori's approach to performing with laptop in the experimental ambient trio Death Ambient, demonstrates how "...noise and pitches commingle freely, at her command. They are sometimes rhythmic and structured, but often more amorphous..."(Holmes, 2012, p.432). *Drunken Forest* (2007) is representative of how Mori adds color and texture to the music of the other musicians she plays with. The artists' approaches which I have mentioned, served as a starting point when I began considering how to manage mixtures of electronic and acoustic sounds in my portfolio.

My approach to mixing live sampled and pre-sampled sound is similar to what Robert Rowe (1993) calls sequenced and transformative techniques in performance. I was able to enhance the sonic palette in my compositions through these techniques. Rowe describes a sequenced technique as an algorithm using pre-recorded music responding to data which can be varied in performance. Rowe's transformation of musical fragments may not be recognizable to the original; this original fragment is the input.

Open and Fixed Forms

Morton Feldman's *De Kooning* (1963), a chamber work for horn, percussion, piano, violin, and cello, demonstrates timbral combinations, or "verticalities stretched out horizontally or melodically of a duration determined by the performers" (Tyranny, n.d). Although Feldman's work determines a very limited choice of player-interaction, I used the overall performance of *De Kooning* as a starting point for building my own musical possibilities between relationships within an open context.

My notation describes a way of playing and listening which gives players direction for keeping flexibility and openness, encouraging them to respond in their own way. This approach when working with players is similar to the attentional strategies deployed by Pauline Oliveros (1998). She aims to create an interactive music in which "participants take a share in creating the work rather than being limited to expressively interpreting pitches and rhythms". Her style of interactivity directs players to compose and perform drawing on their own musicianship. My scores are guides for managing player roles and their relationships; varying levels of constraint are shown by a mixture of notation and text.

Relation to the Wider Field

My particular synthesis of practice draws on approaches borrowed from artists associated with a variety of genres. The developments of these artists can be viewed in the following traditions: free-jazz, progressive jazz, experimental improvisation, avant-garde classical, ambient electronica, glitch, and noise. Relating to the work found in my portfolio, I have borrowed aspects of compositional techniques found in the works of Morton Feldman, Pauline Oliveros, Claude Debussy, and Alexandre Scriabin. The work in my portfolio has also been influenced by the approaches of the following laptop performers: Ikue Mori, Christian Fennesz, Yannis Kyriakides, and Gunnar Geisse. I have also borrowed from the studio approaches of Luc Ferrari and Trevor Wishart.

The strategies used in my compositions comprise a way of playing and listening, which have been influenced by the methods of Pauline Oliveros (1998), where she aims to activate "unpredictable and unknowable possibilities". My own strategies aim to also direct the attention of the player to seemingly predictable and repeatable musical results. The dialogues outlined in my scores and notations result in the transformation of musical material, requiring a player to learn how to listen to many layers of sound activity during performance. In my work, some of these layers are derived from spontaneous modification of non-pitched sound, such as timbre, rhythm, layers of filtering, and effects. These enhancements and modifications can be found in the digitally processed routines of the laptop performer and studio musician, as well as the acoustic instrumental performer. All of these particular instances are illustrated in the discussion of each piece in the commentary below.

COMPOSITIONS

The works discussed below are in the order in which they were created.

New Pages for Piano and electronics (2013)

My goal was to design a composition where the piano successfully intermeshes with the electronic sounds. The two interlock through time, demonstrating what John Croft (2007, p.62) describes as a *responsorial/ proliferating* paradigm. How might I pit what Croft (2007. p.63) calls the "fallible, limited human' against a 'disembodied, infallible and potentially infinite generator of sound", used in *New Pages?* Within this antiphonal relationship, I was concerned with musical shaping between the voices of the piano and laptop. In order to address this question, it was clear the coordination of the two components would need careful attention in order to produce a cohesive voice between the players. I was influenced by the range of subtle coloring heard in the collaboration of Christian Fennesz and Ryuichi Sakamoto. An example where this interaction occurs can be heard in track one (Audio Example 1.1) of their work *Cendre* (2007). Here, the piano and electronic sounds are interdependent, resulting in a large composite gesture. Each track in this collaboration illustrates a specific musical dialogue where Sakamoto's expressivity is able to fit alongside Fennesz's computer generated performance.

New Pages was written for pianist Adam Tendler. I chose to use a traditionally notated score for Adam, seen in Figure 1.1. That score would show him when I would be triggering the electronic sounds with a laptop during performance. I chose this style of notation in order to provide a simple way to coordinate our performance. In Figure 1.2, I augment Adam’s performance, situating myself behind him. This conventional setup was for the purpose of drawing the audience’s attention to the pianist’s performance (Figure 1.3).

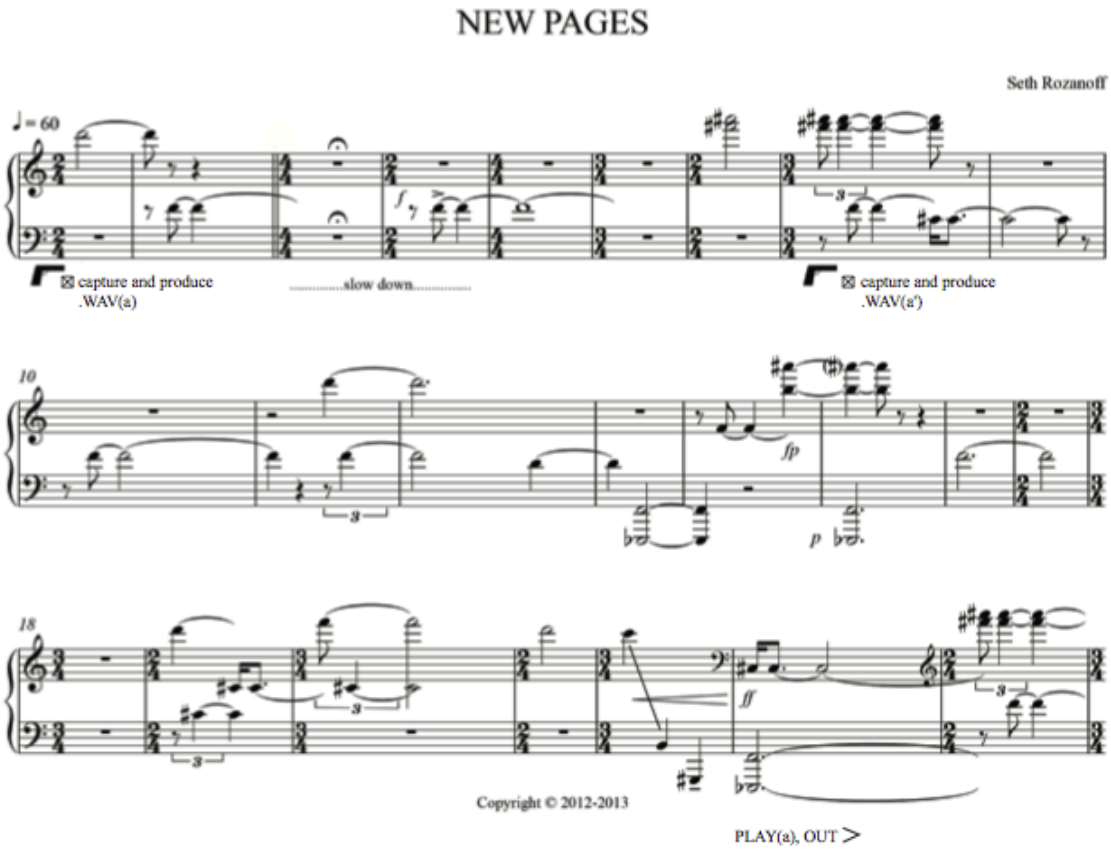

Figure 1.1: An extract from the score for *New Pages*

Figure 1.2: Concert setup at the premier of *New Pages* at Roulette (2013)

The listener will notice expanded gestures resulting in the composite sound between the piano and laptop, heard approximately at Around 4'33" through 6'10" (Audio Example 1.2). That selection is an example of where the work demonstrates what Croft (2007, p.64) refers to as an *instrumental* paradigm. This paradigm arises from an "attempt to create a composite instrument", where "the performer plays the instrument-plus-electronics". It was my aim to develop this concept between Adam and myself in performance. The beauty of the work would emerge from pianistic figures mixing into the composite electroacoustic sound. Another example of when the piano and laptop sounds are interlocking comfortably, can be heard at 8'33" through 9'30" (Audio Example 1.3), and the piece ends shortly after this moment.

Figure 1.3: Adam performing *New Pages* at Roulette (2013)

My method aims to combine pianistic musical gestures with real-time capturing and processing of those gestures in the laptop with Max software. The piano gestures themselves are influenced by ideas found in both Scriabin's *Vers la flamme* (1914), and Debussy's *Cathédrale Engloutie* (1910). In their scores, both composers use expressive markings which guide the performer in shaping these gestures. Scriabin requests the pianist to allow a new texture to emerge from the previous one. He states avec une émotion naissante[2], which calls for a continuity of emotion as the music moves vers la flamme (towards the flame) (Audio Example 1.4). My aim too is to achieve an *emergent* sound quality, with regard to

[2] In the online recording, at 2'08" through 3'06". Scriabin marks his score directly translating to 'with an incipient emotion', all material is developmental material, constantly transitioning until the piece comes to its climax at the end.

the composite relation between piano and electronics. Debussy, in *Cathédrale Engloutie*, uses static and wide-spaced intervals, indicating are for doux et fluide (soft and fluid) as a way of guiding movements, not necessarily relating just to dynamics. This concept of *soft and fluid* guided me to shape the pianist's gestures in New Pages as well.

In *New Pages*, the pianist starts with very little force and projection of sound; subsequently, the score maps out a continual expansion, leading to the building of larger harmonic sonorities. The electronic part develops a fluid synchronicity with the piano based on motivic fragments in the instrumental part (Audio Example 1.5). Figure 1.4, shows an example of piano figures which are to be processed by the laptop during performance. This extract corresponds to Audio Example 1.5.

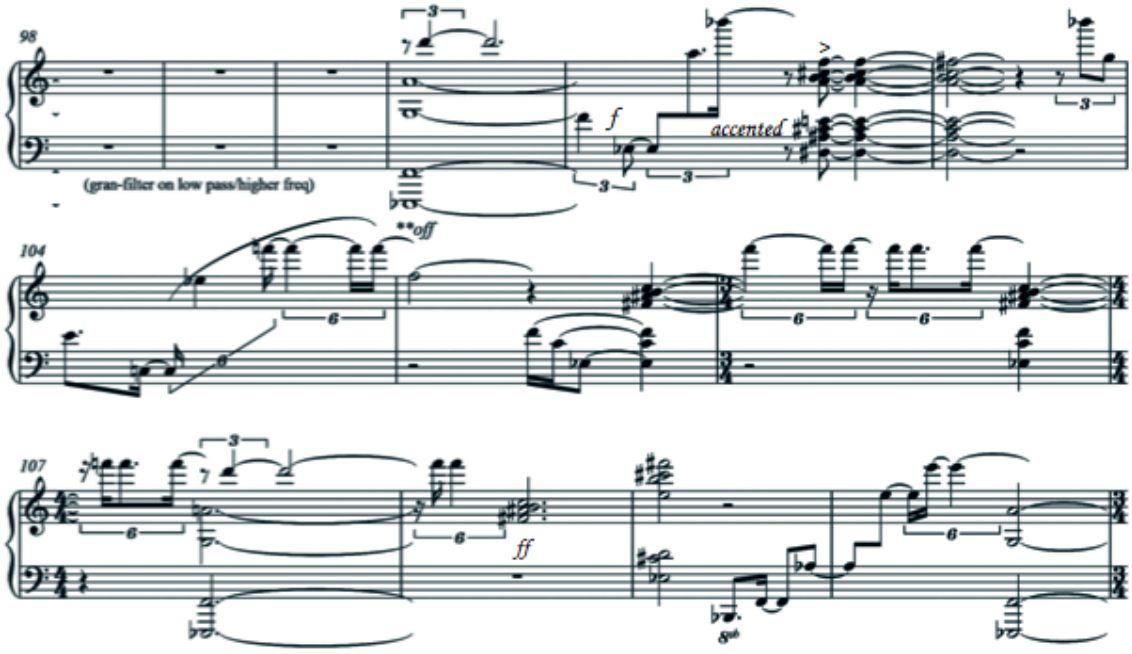

Figure 1.4: Example of music processed by the laptop

The score helps to situate the pianist in partnership with the laptop. Managing the musical conversation embodied in that relationship and its resulting sonic gestures is a key skill in composing this type of work. The notion that the score is a monolithic representation of the ultimate sound of the piece collapses in this type of hybrid electroacoustic practice. Control over the relationship between pianistic gestures and the layers of electronic manipulation is not enshrined absolutely in the score; rather the score creates space for negotiation and ambiguity.

Reproducing *New Pages*, requires that I always perform on laptop. I aim to produce a different musical interaction between the piano and laptop sound, each time with another pianist.

Percussionmusic for Percussion and electronics (2013-14)

In *Percussionmusic*, I have brought together two types of musical material which have been superimposed on one another, at times sounding like an interweaving of treated and untreated sounds. This approach to musical dialogue is a result of my collaboration with multi-instrumentalist Dave Stockard. I had performed with Stockard on a number of projects in Belfast and Glasgow; some of which were freely improvised. When performing just as a duo, we also developed a habit of performing next to each other, seen in Figure 2.1.

Figure 2.1: Performing next to Dave Stockard at Glasgow City Halls (2014)

Since my first encounter with Dave, he has always been more comfortable expressing his music performing with fewer instruments. In my view, this economical approach is his specialty, and influenced my decision for composing *Percussionmusic* for shekere and grip hand-bells (Figure 2.2).

Figure 2.2: Shekere and hand-bells

My approach when combining pre-produced and real-time processed source material in *Percussionmusic*, was based in the rhythmic energy of the repetitive musical pattern of the shekere. The pre-produced fixed audio material is played simultaneously with the percussionist's performance. Two types of granulation are applied intermittently to those instrumental sounds; granulation examples can be heard in Audio Example 2.1. The results are similar to one of John Croft's (2007, p.64) *conditions for instrumentality*, where my strategy here is to "allow the performer's action to be perceived as the source both of direct sounds from the 'real' instrument and of those from the loudspeaker".

During the period I was composing *Percussionmusic*, I was listening to Ed Bennett's *String Factory* (2001) for Violin and soundtrack. Inside Bennett's soundtrack, reverb, pitch modulation and tempo adjustments only process the

violin samples. The soundtrack is very recognizable violin derived material, and Bennett uses the soundtrack as an accompaniment to very long melodic lines in the live part. This is an example where the relationship between processed sound and the physical properties of the instrument are distinctly perceptible. I wanted such instrumental perceptibility prevalent throughout *Percussionmusic.* The piece starts with the shekere in the fixed track. Subtle adjustments in timbre have been made using a narrow range of processing methods: equalization, compression, and filtering were applied to the source sounds. The hand-bell sounds were mixed later into the fixed track. The *sound complex*[3] in *Percussionmusic* was designed with the aim of unifying live instrumental sounds and their digitally processed counterparts by weaving them together.

My role was to support Dave during performance, expanding the color and timbre of the percussion, allowing Dave to work out his performance against the fixed track. This fixed track can be thought of as another player. This aspect of performance demonstrates another type of instrumentality; Croft (2007, p.64) suggests the following about 'learnability':

"The relationship must be learnable by a performer. The performer's connection with his or her instrument is an intimate one, learned over many years; while this level of connection would be an extravagant demand for this broader form of instrumentality, something resembling this must nonetheless be sought from the relation between performer and computer".

The *learnable* relationship present in *Percussionmusic*, is supported by my method of notation. The score instructs the player to stay synchronized with the perceived meter of the fixed track. I suggest a repeating triplet pattern be performed, seen in Figure 2.3. These events are notated, but not on traditional

[3] Croft. John. 2007. p.64, A condition of instrumentality where there is a fusion between the untreated instrumental sound and the response of the electronics. In the case of *Percussionmusic*, the shekere, hand-bells, and their processed counterparts.

percussion staves; only verbal instructions are given, requiring the player to improvise a pattern guided by the perceived tempo in the electronics. In Audio example 2.2, we can hear the percussionist's improvisation alongside the electronic sound contribution. The score explains approximately when the processing will be applied. The timings are not exact, and require both performers to signal each other in order to help clarify cues in the score.

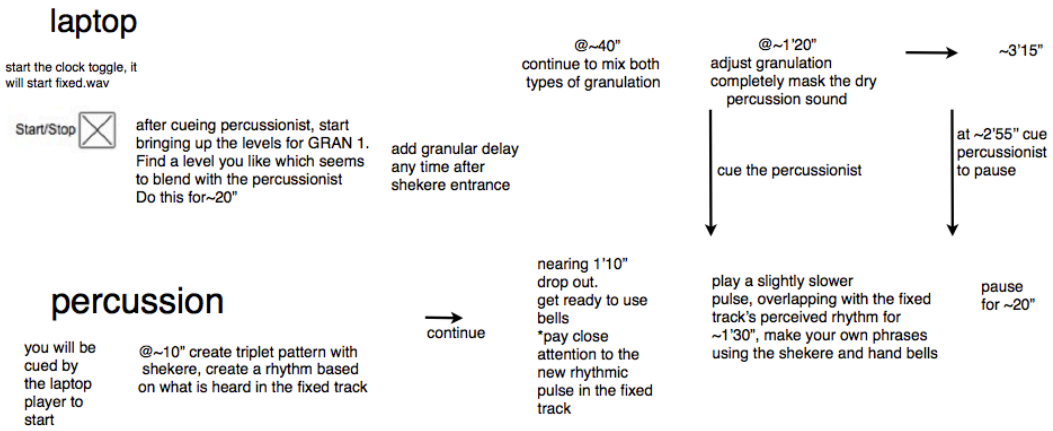

Figure 2.3: *Percussionmusic* score extract

The laptop performer has instructions for processing, but these are to be freely interpreted. Adjustments made to grain size, grain distribution, delay, and panning spread, are done manually via the user interface in Max (Figure 2.4). The timing relationship, then, between the percussionist and the electronics is fluid, but guided by proportionality in the score. The percussionist must derive a performance from what is heard in the electronics. The performer can learn to situate herself by actively listening, making intuitive adjustments in performance. The compositional strategy described here, strives to strengthen the relationship between both performers – the percussionist and the laptop player.

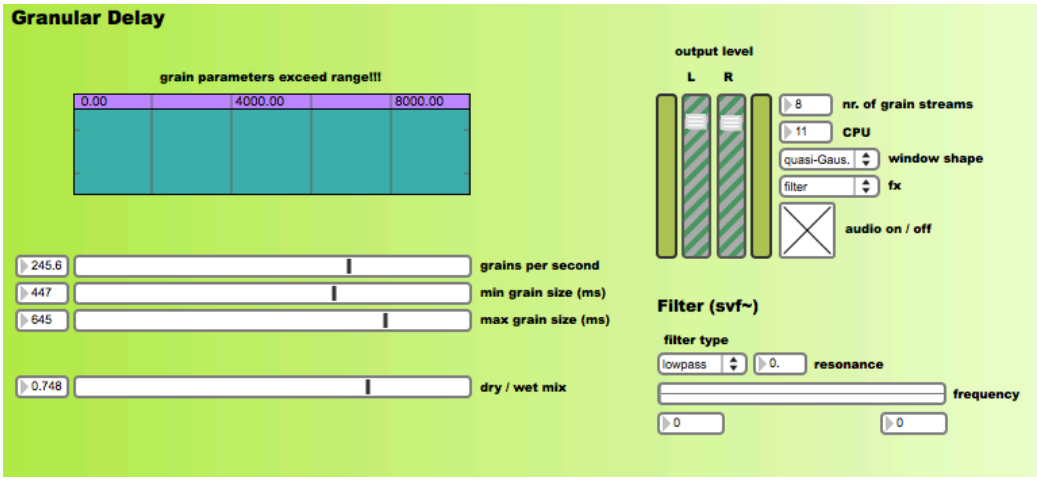

Figure 2.4: Grandelay by Michael Dzjaperidze

Percussionmusic brought together treated and untreated sounds by superimposing seemingly contrasting textures of live instrumental and electronic sources. This procedure created the illusion of a unified musical character (Audio Example 2.3). Unlike *New Pages*, *Percussionmusic* did not have a strategy to create shape and gesture when bringing the electronics and percussion together. The percussionist's performance was based on listening to the perceived rhythmic changes in the electronics, therefore having more flexibility when synchronizing with the electronic sounds. *Percussionmusic* demonstrated a less rigid approach to controlling elements of accompaniment, interaction, and timing, compared to *New Pages*.

My attitude toward *Percussionmusic's* reproduction is similar to *New Pages* – I am motivated to develop the work through encountering a new musical relationship between laptop and percussionist. Therefore, I am interested in *Percussionmusic* to resonate with musicians who have developed a relationship with their instrument, stemming from an extensive background in performance.

6 Surfaces for Percussion and electronics (2014)

6 Surfaces aims to digitally alter percussion source material, and arrange their abstractions, creating three sets of compositions. Each set is grouped under the following focus ideas: bowing, drumming, and metals. Each set contains two different pieces. My general approach, the same as in *Violamusic*, was to shape my source sounds in order to "alter the perception of the sound's musical potential" (Young, 2004, p.12).

In the first track of each set, I used samples of percussion sounds Dave had produced for me, which he made from playing individual pieces on his drumset. After hearing these samples, I freely arranged the sounds in the studio with their abstractions, aiming to highlight the sounds' weight or materiality.

I organized all the abstracted sounds arising from the processed source materials. Within a set, the first piece is an arrangement of collected materials derived from each set's focus idea. The second piece is a foundational track, derived from the first piece, which is then mixed with another recording of a performance of one sound object. The performance material is influenced by the foundational track. The percussionist was asked to improvise a performance from listening to that foundational track. The contrast between each piece arises largely from the relatively untreated sounds contained in the performance track.

My process in the studio was intuitive when determining a given work's level of completeness; the work was finished when I had constructed a narrative or musical context which described the track. For example, the pieces in the first set are meditative, in the second set they are mechanical and machine-like, and the third set is playful. These concepts helped guide me in the work's completion.

I view *6 Surfaces* having an inherent stability, making it easy for the listener to hear a unified sequence of events – one may hear the abstracted percussion material staying in focus amidst contrasting layers. For example, the first set is

based on bowing, and the first piece in the set works with materials derived from bowed hi-hat cymbals (Audio Example 3.1). Additional material has been added to build up the low register, which we can hear starting at the 5" mark. The short motive which starts, develops intermittently until the 55" mark, and it will rarely be heard again after (Audio Example 3.2). I was aiming to achieve a cohesive blend of metal sounds here. I attribute this sense of stability, as a result of paying close attention to the overall pacing and transition of how materials are juxtaposed. Piece two is created from a bowed metal box, and recorded 'box-playing' is featured along with disassembled tracks from piece one. This bowing mimics a stringed instrument, throughout the track, but gives a grittier, rougher texture. The second set is based on idea of shaping metal sounds. The first piece's core sound is cymbal glissandi. This piece creates an illusion of a loosely connected arrangement of cymbal sound fragments. The second piece contains the captured performance of scraping sounds. By limiting the number of different instrumental sounds in each of these short pieces, I have tried to sustain a coherent, distinctive character. Another example is in set three; drumming is the basic idea. Dave made many recordings exploring a variety of attacks on multiple percussion instruments. Highly processed material was blended with recognizable percussion sounds, attempting to maintain timbral consistency. The studio environment allowed me to detail the smaller and more crisp attacks, layering or blending these details into the composite sound. An illusion is created, where one player seems to perform multiple instrumental figurations. In the second piece, the percussionist was asked to play on one instrument of his choosing, and to use one method of exciting that instrument. In this piece it is easy to recognize the brush attacks in the track as a result. Dave's method of performing with brushes, further highlights the expanded percussion instrumentation of this set (Audio Example 3.3).

We find a related approach to arranging materials in Luc Ferrari's *Petite symphonie intuitive pour une paysage de printemps* (1977), where the core

sound stream is found in the instrumental contribution. His result gives the impression that his process has also been led subjectively through listening. Throughout the piece Ferrari experiments with extending the core recorder sounds, and then building auxiliary textures from that core. Ferrari chooses to mix in untreated instrumental textures, and add their abstractions gradually at later times throughout the composition. The listener hears the process of this transformation. One aspect of Ferrari's abstractions is found in his method of altering the instrumental textures, subtly mixing synthesized sounds, creating a totally new instrumental texture. An example of this can be heard for about five minutes starting at the 12'45" mark in the piece (Audio Example 3.4). These textures are due to very interesting blends of vocal and recorder samples with the sustained organ layer. The synthesized sounds are introduced in order to mirror the instrumental contributions in the piece. This was a method that I employed in my own process of transforming instrumental sounds in *6 Surfaces.*

Luc Ferrari's studio techniques transform core sounds or themes slowly over time, however I was not interested in completely transforming the original sounds into something unrecognizable. I wanted to preserve a consistent 'percussion' sound class throughout a given set, and also convey a sense of captured performativity. Integrating Dave's improvised performance would be another tool attempting to create continuity among loosely arranged sound fragments. I found working this way in the studio with a live performer limited the dramatic effect of improvisation, however the studio environment gave the control required to refine that improvisation. My method was a way of building material based directly on an improvised theme. This differed from my arrangements in *Violamusic,* which were largely unstructured in terms of determining how to develop abstracted material. However, in both pieces, I ultimately had to decide when I had built up my arrangements in a way that expressed continuity.

Violamusic (2014)

Violamusic is a set of three compositions based on source material sampled from the viola. The main focus sound sampled was a static gesture created from small continuous tremolo-like playing, not very dense, but conveying a sense of movement. This source sound has been processed, arranged, edited, and mixed in the digital audio workstation Reaper. This DAW has given me the ability "to subtract or add with discrimination" (Eno, 1979). My method of altering the source sound is the continuous revisiting of fragments of sounds that have been layered together; this leads to the creation of new motives and new alterations. This procedure was similar to that undertaken in *Percussionmusic.* My method is reflected in John Young's (2004, p.9) view of musical sounds as complex morphological events:

"....electroacoustic technology allows aspects of sound morphology to be abstracted, transferred to other sounds, and provides the composer with processing routines that can impose a new morphological imprint on an existing sound....shaping of an acoustic event, with the morphology that it creates capable of being used to externally reshape other sound events".

My process of abstraction maintains an intuitive approach or self-guidance when determining whether the work is completed; hearing the 'good' parts leads my decision making in the studio. This way of working with the acoustic sound, shaping and re-shaping, becomes a process that can potentially go on forever. Young (2004, p.10) also describes this aspect of exploration:

"..the process of repeated audition itself enables us to listen ‘into’ the sound ever more acutely, which can alter the perception of the sound’s musical potential during the compositional process, as listening contexts evolve through generation of new materials and the process of testing of these against each other. The musical sense of a guiding gestural morphology is therefore context dependent, relying on the order in which materials are presented, the subsequent patterns of their development, and the emphases created through their unfolding in time".

I found that through listening and constantly reflecting, I was afforded the freedom to decide when the composition was complete. Each piece in the set demonstrates a different perspective on organizing mixtures of processed and source sounds. My aim was to expand and modify a micro-texture, while retaining a core reference sound. Amidst the core textures, additional related layers were added.

There are numerous examples in the acousmatic repertoire of course, but in particular in Trevor Wishart's *Tongues of Fire* (1994), he takes different abstractions of vocal material and creates new gestures from contrasting combinations of those abstractions. Between 21"- 46" in *Tongues of Fire*, we can hear gesture based on the opening short vocal sound (Audio Example 4.1). Wishart continues to transform this vocal material for roughly the first six minutes of the piece. The work later progresses, developing density through a procedure of layering many contrasting sounds together.

I had processed samples of viola micro-textures with Michael's Dzjaperidze's granulation tool (refer to Figure 2.4). The resulting sounds' vitality and timbre, seemed to enable me to build a sonic environment through the accumulation of multiple layers of these sounds. During the time I was composing *Violamusic,* I was influenced by layering techniques I heard in Cristian Fennesz's *Black Sea* (2008), and Alva Noto's *Xerrox Vol.1* (2007). Fennesz's style in the track titled *Black Sea,* is made from combining many seemingly thin layers of highly processed material. The density which results in this technique, in my view, demonstrates expressive continuity. Whereas, Noto arranges sonic events, forming a seemingly fragile soundscape.

In *Violamusic*, I wanted the listener to hear subtle perspectives or variations based on the delicate, 'transparent' quality of the source bowing sample. In the first piece of the set, I wanted to create subtle contrasts in the rhythmic figurations heard in the lower register. This music would be re-mixed and blended

into the track as time progressed. The core sound is a transparent ambient wash. Sound events are recycled over time and fed back into this wash, sometimes with subtle changes to density and timbre (Audio Example 4.2). The second piece is capricious and agitated in character due to the presence of quicker, shorter gestures. The opening two seconds is the basic gesture from which the rest of the piece is developed from (Audio Example 4.3). One starting point for this was the crackling noise-infused sounds I have previously stated, which can be heard in Alva Noto's work. The process of modifying the texture of fine-grained streams through time creates an ‘ambient’ character, and forms the core of the composition. Within the Alva Noto set, *Haliod Xerrox Copy 111* in particular maintains an ambient wash of ever-changing fine-grained noise-like texture. On a much smaller scale, Noto's micro composition *09-10-19 Astoria* contains very delicate grain-like figures as well. Overall Noto's *Xerrox* series demonstrates a variety of contexts for fine-grained sounds that gradually transform. The third piece in my set focuses on delicate 'crackling' and 'blurred' bowed sounds. In this piece I decided to create less complex events, so that one could hear clearly another type of contrast between bowed texture and processed material (Audio Example 4.4). My approach to sound design in *Violamusic* comprised essentially an improvised arrangement of sounds led by a process of critical and reflective listening.

Variations for Bass-recorder and electronics (2014)

This composition for bass recorder and laptop explores musical accompaniment. Each variation demonstrates a reconfiguration of musical accompanimental procedures. There are periods where either the electronics or bass recorder could support one another. The result is a distortion of traditional accompanimental behavior. The purpose of this behavior is not to build a 'harmonious' relationship between electronics and recorder, rather to create drama within the dialogue. Throughout *Variations* can be heard, disagreement or deliberate juxtaposition of different expressive characters and moods. An example of this juxtaposition can be heard in Variation I starting at the 1'55" mark, until the end. We can hear how the laptop disrupts the bass-recorder's utterance, by covering it completely (Audio Example 5.1). Another feature of the work is the difficulty for the listener to distinguish the electronic contribution from the instrumental sound in performance. This difficulty becomes apparent from the coupling together of performed and pre-sampled recorder sounds. The sampled recorder sound is not highly processed, and therefore preserves the recognizability of the recorder. The piece then exploits the illusion of causality between the sounds produced by the recorder and the laptop. Each variation demonstrates a different way of playing with this illusion.

One related work is Oscar Bianchi's *Crespuscolo* (2004) for contrabass recorder and electronics, in which he creates an illusion based on spatializing the recorder sound. The recorder sound is mostly untreated, but multiple layers of material are spread and directed to 16 loudspeakers. His composition builds a dialectic between those individual points in space, creating a polyphony, where lines clash or blend with each other. *Crespuscolo* is an example of Ian Andrews (2000) calls "elaborating process". The computer has a fixed role, functioning only to execute the spatial patterns. Andrews feels there is a need for a physical boundary, which "reduces the ambiguity of the role of the computer, and the performer/composer,

for the audience" (2000). In performance, the audience would see separate functions of the computer and contrabass recorder. Conversely, in my work *Variations,* the computer is played by another performer, creating a duo with the recorder; the laptop player is required to improvise with processing and live sampling, and so the computer's function is not fixed. The recording for *Variations* was produced with recorder-player Monica Schmidt Andersen, seen in Figure 5.1. I performed with a Max patch which I designed, seen in Figure 5.2. My patch presents various possibilities for making sounds, enabling the laptop player to play along with Monica.

In the first variation, the role of the laptop is to accompany the recorder, through a polyphony based on real-time sampling of the instrument (Audio Example 5.2). It is my intent to encourage interaction between the players. Todd Winkler details this type of interaction:

"Interactivity comes from a feeling of participation, where the range of possible actions is known or intuited, and the results have significant and obvious effects, yet there is enough mystery maintained to spark curiosity and exploration". (Winkler, 2001, p.3)

In a discussion I had with Monica, she mentioned her experience as it relates to our interaction:

"It was very interesting for me to experiment with you and the piece because you had an open approach where we could find sounds together... it was important to interact with the electronics and use it for the recorder part instead of the recorder part being a solo with track. It was new to me working with electronics in the way and I enjoyed playing the piece...." (Appendix C.2)

Figure 5.1: Monica at EMS-Stockholm (2014)

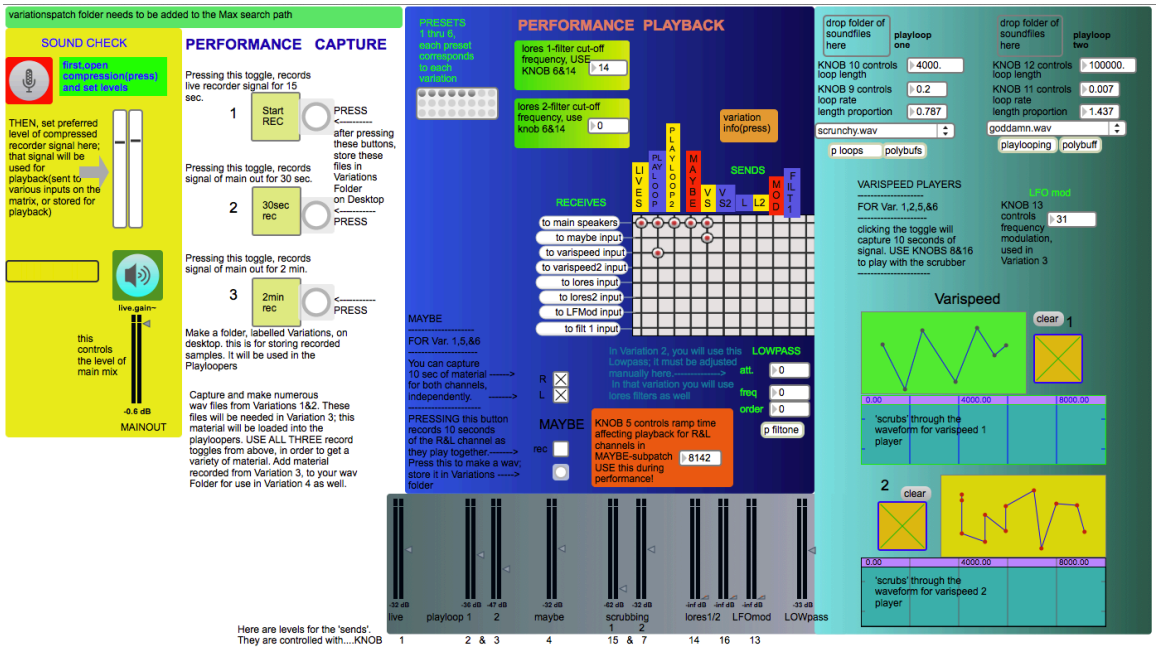

Figure 5.2: Patch for *Variations*

My particular approach to designing an interaction strategy, enables players with less experience in playing with live electronics, like Monica, a ‘way in’. Monica's performance was guided by the score's notation (Figure 5.3). The performer is meant to use this guide to assist themselves to create a personalized performance. Like *Percussionmusic, Variations* requires the player to fit themselves into the electroacoustic sound world. However, *Variations* presented a new challenge – fitting into what seemed to be a freely improvised environment. Monica's response to this challenge, seems to point toward her needing to be more familiar with the notation beforehand.

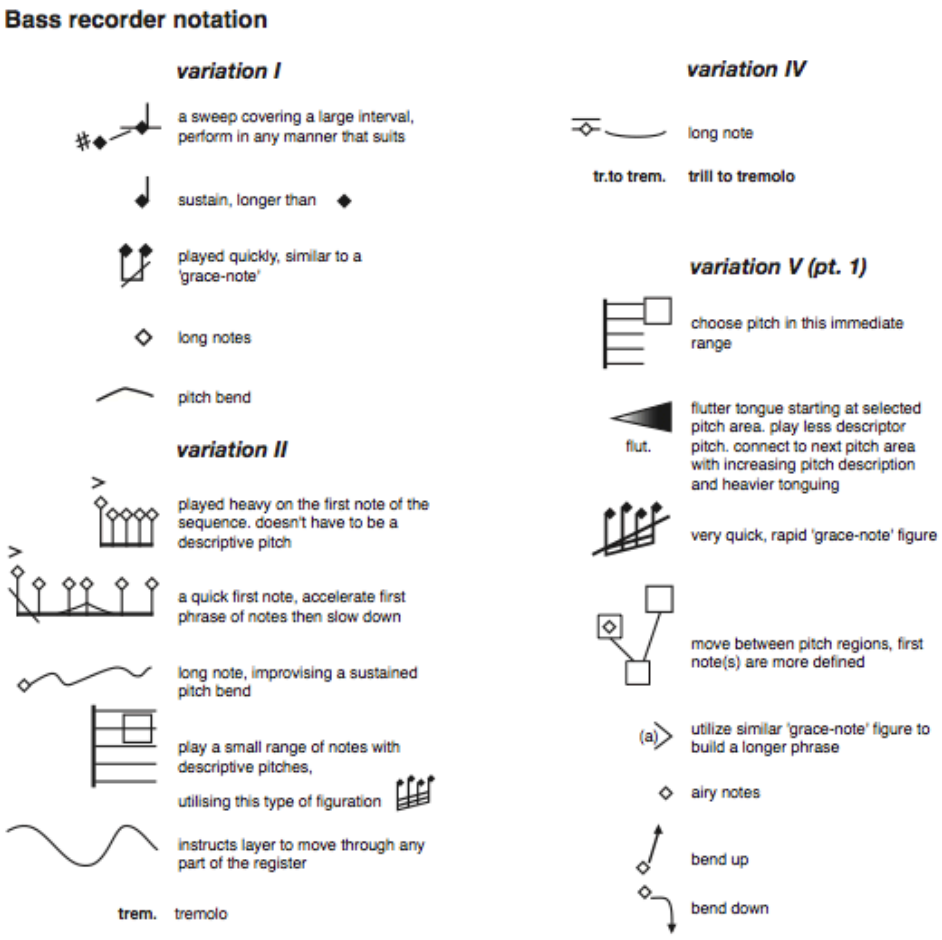

Figure 5.3: example notes on the recorder notation

Monica's view on my score:

"even though it is open notation it is still something where I could have spent even more time working on the elements alone to be able to do more musically...I think there is a difference between this and a piece based more on free improvisation". (Appendix C.2)

An example of the open notation used in *Variations,* can be seen in Figure 5.4; there is a loosely designed pattern of non-descript pitches. My reason for giving a player these types of figures to perform with, is so the player is not constrained, and invites a personalized way of playing.

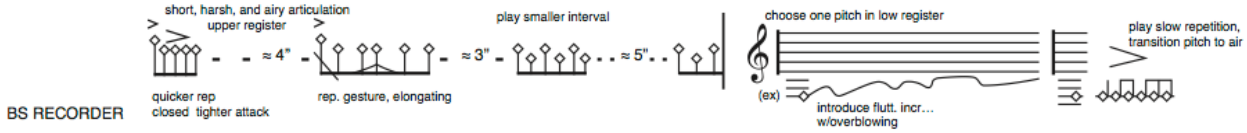

Figure 5.4: extract of *Variation II*

The second variation contrasts more reserved, static music, with aggressive, restless material. This contrast can be heard starting at 1'15" until the end (Audio Example 5.3). Both laptop and recorder share the responsibility of expressing both elements of this contrast. In *Varations III*, the live recorder sound is almost completely absorbed into the sound of the electronics (Audio Example 5.4). It is very difficult to distinguish the electronics from the live recorder sound. Even with the clear physical boundary in performance between the electronics and the instrumentalist, the live recorder sound still becomes smothered by the electronics, presenting the illusion that all of the sounds are emerging from the laptop alone. The instructions for *variation III*, seen in Figure 5.5, sets up this blurring of boundaries in performance. In *Variation IV*, the electronic and live recorder sounds unravel with one another, tending to be different or develop apart from each other (Audio Example 5.5). Finally, the fifth and sixth of my variations are analogous to the first, developing interaction through expressive continuity.

Bass Recorder	wait a long time before coming in, roughly 3' enter with a trill-type figure abruptly, then fade out
Laptop	choose an assortment of large instrumental samples of recorded bass-recorder material. Load them into playlooping patch and perform with them

Figure 5.5: *Variation III*

With *Variations,* I am attempting to develop my own performance model formed from the range of possible configurations of the laptop and bass-recorder duo. Although the scoring for the bass recorder throughout *Variations* helps to shape the performance by giving pitch, rhythm, and tempo structures, there is no particular playing style implied. Therefore, this leaves the interpretation of the recorder notation open to many new approaches for expanding accompanimental procedures between laptop and bass-recorder.

Music for Electric Guitar and Computer (2015)

I have structured this work as a series of movements again exploring different relationships between a solo instrumentalist and digital sound processing. An important aspect of these pieces is my collaborative relationships with one particular guitarist, Olivier Jambois. He is highly adaptable in his electric guitar playing, and has great technical ability based in improvisatory practice with other players. My aim was to create a performance building on that relationship, creating a dialogue that would exploit Olivier's particular strengths. The piece then represents a number of musical scenarios for shaping our behavioral relationship in performance. These scenarios demonstrate a way in which both players can negotiate their performances with each other. Text instructions (Figure 6.1) and graphic indications are given to direct that negotiation. The goal of this type of *scoring* is to remind both players to perform with various degrees of freedom of tempo and expressive form. The frequent openness of the text aims to promote subjective listening for the individual performers. The aim for this work is to encourage unexpected musical contrasts and dialogues between the players.

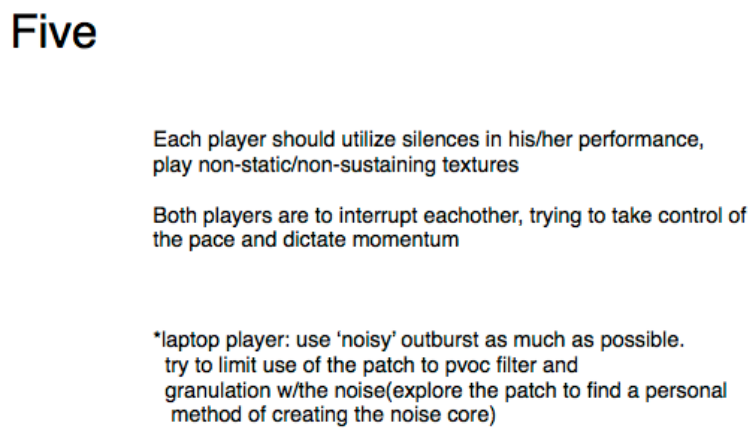

Figure 6.1: Example score from *Music for Electric Guitar*

My aim in these pieces was to allow for spontaneous individual exploration, and to encourage the development of relationships intuitively. A vital aspect of this way of working is based in personal encounter – the players' willingness to learn how to produce the music together. Excitement and uncertainty was present during this process, playing with Olivier. This extract of a conversation Olivier and I had about our collaboration, describes our mentality as a result of our efforts (Figure 6.2). Olivier's expression, "if it works, it's strange!", reveals a positive attitude we both experienced in performance. Ultimately, Olivier and I began to realize that our friendship is based on a mutual exchange of information, where we both learn from each other.

ME:
I was too obsessed with how to construct a patch.

Olivier:
I was also obsessed with my material. what will I do.
now the thing would be completely different.

ME:
in the process of us playing, that's really what allowed me to construct not a score but a set of instructions....

Olivier:
It could be interesting to not write anything, and to find again, this kind of (thing) – 'we were like kids'.

ME:
I was just waiting and listening for you, and then I would go through a set of presets, and I would maybe make some adjustments with those presets.

Olivier:
I think we were exploring....you have to investigate..if it works its strange!
After that, it would be great to make music with this...I would be happy to make it again.

Figure 6.2: Extract from Appendix C.3

Each movement explores different relationships between the electric guitarist and laptop. The first, *A Bit of Chamber Music,* comprises an unrestricted dialogue, where the laptop player and the electric guitarist must determine their individual involvement through active listening. An example of this type of dialogue can be heard in Audio Example 6.1. *Eight,* the dialogue between the players is ambiguous; the instructions ask the players to alternate 'taking the lead' in performance. The perceived blend and complementing of timbres heard in this track between the players is indeterminate, but occurs as a result of 'on the spot' listening. This can be heard starting at 1'13" until 2'33" (Audio Example 6.2); the guitar and laptop sounds balance more equally due to the complementing timbres of the pre-produced harp samples. In *Five* the dialogue between players is characterized by interruption (Audio Example 6.3); the instruction given is "both players are to interrupt each other, trying to take control of the pace and dictate momentum", shown before in Figure 6.1. *No disruptions* also uses listening as a guide for interaction between electronics and guitar. Here, the guitarist is asked

to *mimic* what is being played by the laptop, but there are no specific instructions describing how to develop the dialogue. An example of Olivier's playing for this track can be heard in Audio Example 6.4. In *singsongy* the guitarist is meant to 'be in the background' more so than in *No disruptions* (Figure 6.3). *Singsongy* is based on ever increasing reverb and an expansion of the ‘weight’ of the sound material. This concept can be heard in Audio Example 6.5. In contrast to *Five*, *To Fennesz* explores the player's dialogue. An extract of the score, seen in Figure 6.4, details an arrangement of musical changes throughout the work's duration, suggesting a contrast of behavior between the two players, still aiming to maintain consistency. It was my goal that a seamless and effortless consistency could be heard gradually as the performance unfolded.

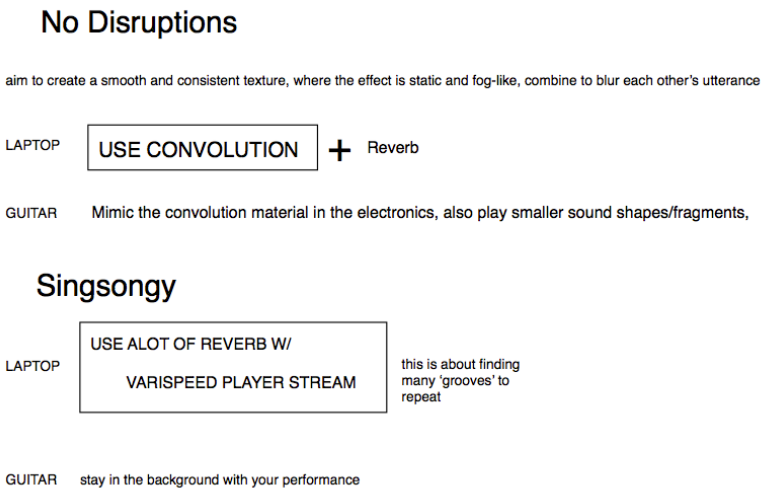

Figure 6.3: Score for *No Disruptions* and *Singsongy*

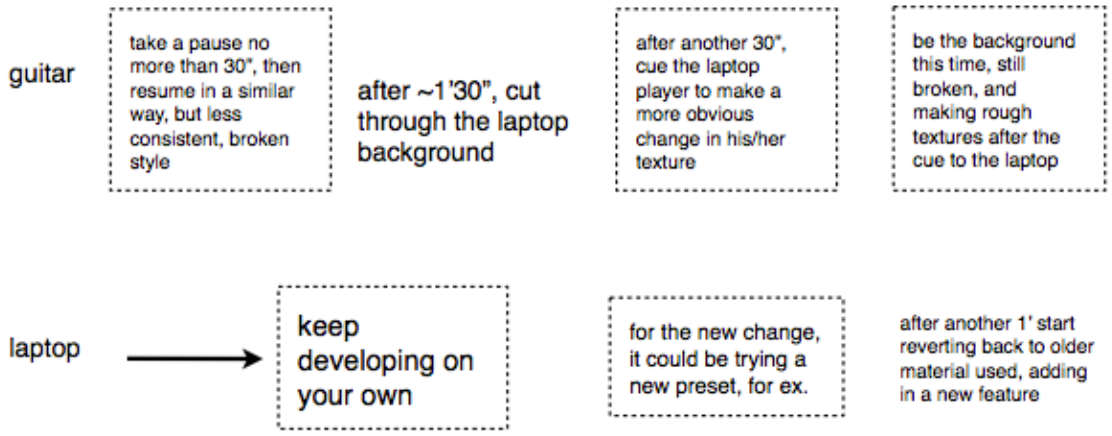

Figure 6.4: *To Fennesz* score extract

At the time Olivier and I were working together on *Music for Electric Guitar*, we were both listening to the duo of Gunnar Geisse and Marc Ducret (2012). In a conversation I had with Olivier, he discusses what he saw in that duo's performance, seen in Figure 6.5. Olivier and I demonstrated a similar scenario – wanting to create beautiful music, at times struggling with balancing ourselves.

Looking at Marc Ducret

Olivier:
That duo with Marc Ducret...its comletely improv...and they didn't rehease, its in the moment, i am pretty sure, and ...sometimes it doesn't work actually...

for example a very big question i think, before making any notes or sound is volume. maybe gunnar, maybe he was too loud...he has only has his amp(Ducret)

referring to balance with a guitarist

you cannot play with a normal amplifier

but they are always trying to make music, I am sure of that, you see the attitude they have and...they are trying to interact.

the sound of the laptop is so dominant. I think this is the first thing to address.

Figure 6.5: Extract from Appendix C.3

The use of presets was introduced to promote a sense of continuous flow during performance. Presets are used to recall musical states in the patch. In *Generative Music and Laptop Performance,* Nicolas Collins (2003, p.75) describes the preset as how "one may wish to engineer a return to some effective material to which the audience responded". In my patch, specific combinations of filters, playback techniques, and spectral processing can be brought back for the laptop player to perform with. An example of when presets are used to organize structure, is in *A Bit of Chamber Music.* We can see in the score, shown in Figure 6.6, the presets are labelled in a green color. As I move through the presets, notes are given in a box adjacent to the preset, instructing me how to adjust sound in performance. These instructions read as a way to mix various levels of sound, sending and receiving signals on the maxtrixcontrol, ultimately enabling the player to craft textures which are supportive of the electric guitarist's creation of a solo (Figure 6.7). By comparison, the laptop part in *To Fennesz* was performed entirely with one preset.

A more simplified approach was used for guiding the interaction between electric guitar and laptop players, in *Staticmass.* The laptop and guitar are asked to perform at a congruent level of intensity with each other. The instructions call for a start with great force and to proceed dissipating together slowly (Figure 6.8). It is not clear who is supposed to lead the rate of dissipation. This movement demonstrates a limited form of interaction, but still allows the players to produce almost any type of musical figuration individually.

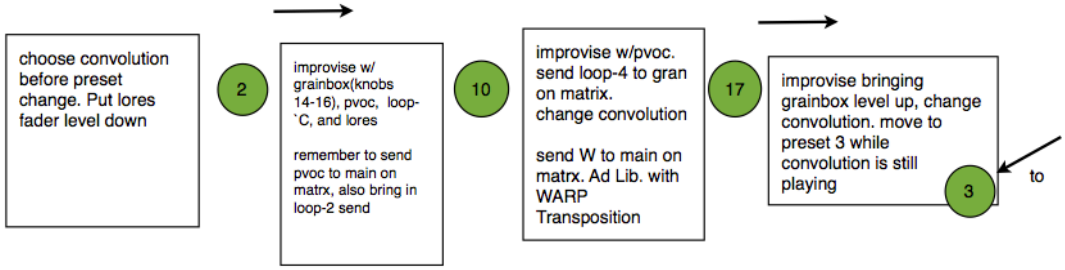

Figure 6.6: Extract from *A Bit of Chamber Music*

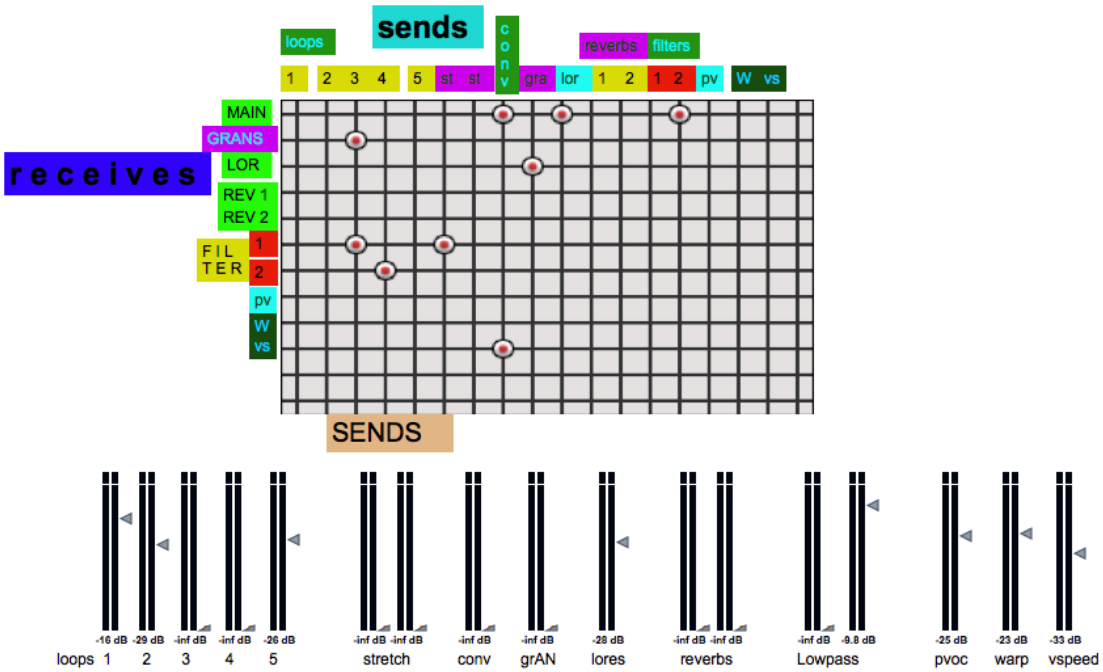

Figure 6.7: mixing signals from the matrixcontrol

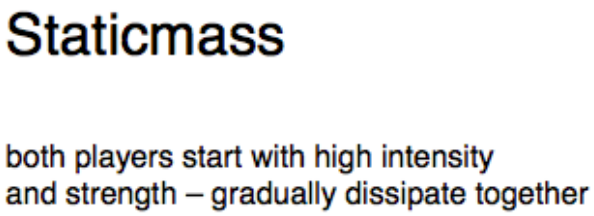

Figure 6.8: *Staticmass*

My interest in an *unexpected music*, has some parallel with the work of Yannis Kyriakides. In relation to *Folia* (2010) for electric guitarist (Andy Moore) and electronics (Kyriakides), Kyriakides makes this statement about the relationship in a conversation we had:

"I wanted to use the idiosyncratic way Andy plays guitar in a form that would both resonate with something older (hence the folia connection), but that would be true to the sound and approach that Andy and I make together". (Appendix C.4)

Another aspect of Folia which Kyriakides' mentions as being analogous to the approach found in *Music for Electric Guitar,* was in his method of using Moore's personal approach to playing:

"The process started with me asking Andy to record a bunch of his sounds. I was particularly interested in the different tunings and harmonics he used. I made some pre-processed textures based on the material he gave me - using Supercollider and Kyma. Then I composed a harmonic structure based around Folia incorporating some of this pre- made material. So I set out the form of the piece with space and some ideas about what Andy could do". (Appendix C.4)

One personal aspect based on my encounter with Olivier is reflected in my own instructions found in *a bit of chamber music* (Figure 6.9). The *score* allows the guitarist to draw on his/her own style of musicianship. For example, in my

performance with Olivier, he chose to use a minimal setup of pedals for all of the parts in *Music for Electric Guitar*. In my view, Olivier's setup demonstrates a practical approach to his performance, better able to coordinate his performance with me.

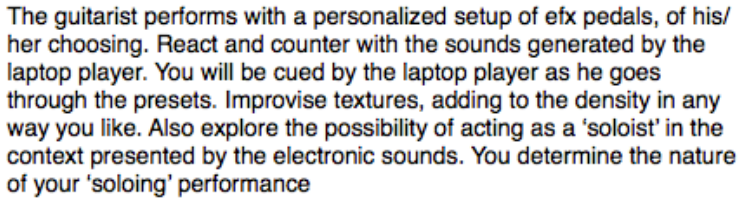

Figure 6.9: Instructions for the guitarist

The reliance on another player's approach to their instrument in order to design sound for live electronic performance is an aspect of composition found in *Folia* and in my own work. Both works integrate improvisation. Kyriakides discusses his process:

"we got together and tried different material for the different parts - Andy went away and composed the melodic motifs that he plays in the beginning and middle of the piece - the main motif of the piece so to speak... Then based on what he was playing for the different parts - I decided how to approach the live processing - what kind of processes to use where - where there can be more improv - where it can be more strict... " (Appendix C.4)

The personal encounter, then, coupled with the textural element of noise as a core musical feature, are the key materials upon which this work was built.

Extended Play (2015)

In *Extended Play,* the Double Bass and laptop players aim to match each other musically, building on personal encounter. Similar to *Music for Electric Guitar*, *Extended Play,* often times, asks players to match one another musically. I chose to work with Anthony Allen; I was much less familiar with how he played, and how we would perform together. This is opposite the musical relationship I had with Olivier in *Music for Electric Guitar*, where familiarity informed our musical decisions. I also chose to give Anthony only text instructions, suggesting a way to interact musically with me during performance (Appendix B.8). Those instructions required the player to improvise their performance, generally complementing the laptop's performance. These instructions seemed to be more simplistic than the score for *Music for Electric Guitar*. My reason for directing a bassist in this way, was to try another approach when bringing players together. Figure 7.1 shows Anthony's view on creating his performance from my instructions.

Is it too simple??(the instructions)

Anthony:
it puts you in this really strange state of mind..... its like a word association game; someone says cat, you say dog, its the same kind of thing just with a sound, and your mind is like, trying to come up with anything as quickly as possible, so in that way its quite hard, its like be-bop improv.

ME: How so?

Anthony:
the sounds keep coming at you, and you are not really sure when to predict a change in mood , you always need to be prepared to stop youself, you need to makes sure whatever the figure is that you are interpreting come to a conclusion before you step in, or to accompany underneathe, you need to make that decision on the fly – as the sound is happening. But, in another way it does make it easy because.. you know you are within the borders of the piece, the restraints of the piecce, and you are quite happy that you are achieving that...

in some ways that takes a lot of effort. in some ways you know there is not too much pressure on you.

Figure 7.1: extract from Appendix C.7

My aim in *Extended Play* was to allow for a fluid, open and concentrated way for the Double Bass and laptop to play together. My aims are similar to improviser Simon Vincent's, where he strives for 'two improvisers balancing themselves electro-acoustically and in terms of their joint real-time decision making'. An example of this is found in his *Study Nr.2* with Graham Halliwell, for electronics and saxophone. In a conversation he had with me, Vincent explained their way of playing:

"Somewhat unknowingly, we had managed - from the starting point of our initially mutually exclusive sound-worlds - to 'meet each other in the middle', as it were, making our respective materials as malleable as possible so as to produce some moments where neither of us was sure who was responsible for which sound". (Appendix C.5)

This idea of *meeting each other in the middle*, found in Vincent's duo, seemed to have musical possibilities at its core which would influence my own thinking on how to setup the performance for *Extended Play.* In Vincent's statement above, I

believe he alludes to both players being ready and open for working together to create a composite musical identity, arising from each other's treatment of material in *Study Nr.2.* It can be heard throughout this piece that Vincent and Halliwell take care in how they introduce and adjust to each other's material in performance.

In my work, I have chosen to make a score, which combine text and graphic instructions. The graphic instructions in the laptop guide me when introducing electronic sound into the dialogue with the bass player (Figure 7.2). My aim of ultimately maintaining a fluid dialogue in *Extended Play* is like Vincent's goal for creating in real time. He explained to me his rationale when collaborating with other instrumentalists:

'The malleability of materials that I use, be they acoustic or electroacoustic. By that I mean I always endeavor to use a set up and materials which allow me to sculpt sound in such a way as to create textures or gestures in real time, regardless of what those materials may be. This I suppose is related directly to methods of performance which in themselves through extensive practice would free the performer from the constraints of the materials themselves and enable them to create freely.' (Appendix C.5)

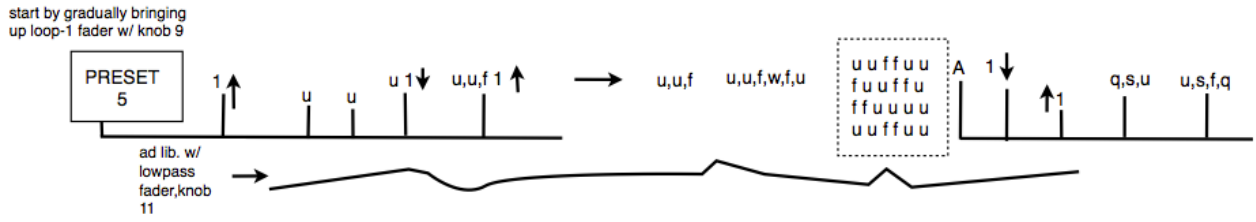

Figure 7.2: Example of graphic instructions

My position is that malleability emerges within a musical encounter due to the willingness of both individuals to explore and adjust to each other's way of playing, through carefully listening and responding in performance. An example of when Anthony and I are forming a cohesive performance, can be heard throughout Part II (Audio Example 7.1).

Another feature of this work is in the laptop player's use of instrumental samples, such as saxophone, brake drum, and snare drums. Part II in particular, uses an assortment of drums, cymbals and electric guitar samples, which have been assigned to the laptop keyboard (Audio Example 7.2). Here, the score shows how to play the samples – improvising different combinations in performance (Figure 7.3). We can see a cluster of letters in a box, encouraging a pattern of samples to be played. Parts III and IV are similar in their use of these types of samples, but allow the laptop player to improvise with a more limited range of samples compared to Part II.

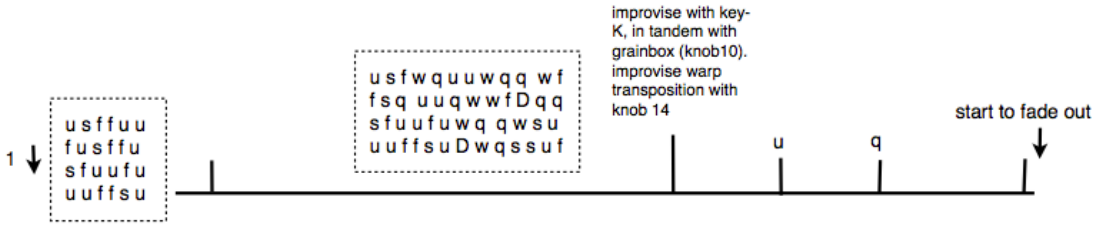

Figure 7.3: Example of notation for laptop improvisation

The pre-composed instrumental fragments are performed by the laptop player, and are meant to compliment the acoustic instrumental player in performance, alluding to the sound of a small ensemble. This procedure of expanding the solo laptop player to a larger ensemble of instrumental sounds is found in Gunnar Geisse's *May I Erase One of Your Drawings.* Geisse had discussed with me his personal approach to controlling his instrumental samples in this composition:

> "I'm now controlling the computer with my guitar, changing the audio signal of the guitar into midi messages by analyzing its spectral components and then back to audio by triggering virtual instruments and samples, altering parameter settings, etc - everything in realtime, or say, almost". (Appendix C.6)

Geisse's setup is an example of how he manages his sounds, supporting real-time adjustments of his virtual instruments. As in Geisse's method and work, *Extended Play* aims to expand an instrumental vocabulary, and use that feature as a way to maintain a dialogue with the bassist in performance.

Theoretical Context

The terms, ‘ambiguity’ and ‘roles’, have been used to describe the relationships which form an ‘ecosystem’ present in my work. I have found that my own definitions of these concepts overlap with the views of John Bowers, John Ferguson, Sally Jane Norman, and Simon Waters. In my portfolio we see two types of ecosystems relating to the interaction between instrumentalist and electronic sound: we might characterize these as *stable* and *dynamic*. One is controlled in the studio, where the other is dependent on a score, software instrument, and performers. Ferguson (2013, p.140) believes these types of control methods in sound design maintain ambiguity, "where the relative mapping of one parameter is affected by the current position and status of another", resulting in uncertainty. Ferguson's definition of ambiguity is limited to the mappings of technology, and does not take account the personal interactions, and poetic responses of individuals. In my work, ambiguity is the result of the social interactions between players, where players are allowed to explore their own identity within the territory of a piece.

In the work of John Bowers (2003, p.74), he describes his systems as "an ecology of interaction devices". This ecology is present in the system when all technical preparations for the work affords each player their own success in developing a contribution during performance. Bowers wants to capture the events of the environment, drawing from a total awareness of the performance space, the machines used, the players' physical gestures, and the sounds derived from those elements. Within his ecology, Bowers aims to create associations among these variables which can be viewed as roles. He refers to 'analytic issues' in his own work, the explorations of which I feel have helped him form design concepts for technology used. The following issues are important for Bowers: *variable sociality*, *variable engagement and interactivity,* the process of

initiation, delegation, supervision and *intervention*[4] (Bowers, 2003, p. 45-48), and *musical materials* (Bowers, 2003, p.48-51). I develop roles similarly to these subjects, demonstrating how players shift accompaniment amongst each other, how they can be in conflict, and how they cooperate and augment each other. I use specific samples and source materials, sometimes allowing the laptop player to re-select materials and adjust controls during performance. I also use a range of acoustic improvisations, and applied digital processing. Although I value the notion of performance ecology, I feel that Bowers does not account for spontaneity and social interaction in a player's decision making during performance.

A contrasting approach is given by Sally Jane Norman's (2013) through her definition of *resistance*. For Norman, resistance arises from things becoming relational, set against one another. Regarding my composer-performer relationship, I 'compose' an instrument, even during performance that instrument is generating "different kinds of resistance and behavioral response" (Norman, 2013, p.275). Therefore, the performer-improviser ambiguity, refers to intuitive approaches of interplay – here the composer and performer are one. This agency generates materials, improvising either in the studio or live.

An ecosystem defined by Simon Waters (2007, p.2), is a tool "addressing contiguities between composition and performance, performer and instrument, instrument and environment". His ecosystem reveals the changing role of the instrument when technology is introduced to the ecosystem – the "sense of mutability between performer, instrument and environment is heightened by our engagement with computers" (2007, p.4). Therefore, when technology is introduced to the ecosystem, he seems to be focused mainly on the changing

[4] Bowers (2003), p.46, Bowers details this pattern of engagement: 'The performer initiates a mechanised contribution, delegating music making to some technical arrangement. Its productions are supervised and, from time to time, adjusted and intervened upon.'

role of the instrument. Waters' view here derives from looking at cases from many artists. These artists use a direct relationship to the environment, drawing on the physical space of the room being performed in. For example, Waters discusses in detail, Agostino Di Scipio's method of using a live electronic performance system, which "acts upon the environment" (2007, p.7). My own use of the term 'ecosystem' is slightly different to this, in that it relates more to my practice based in improvisation, using scores, and software instruments. I view these elements as musical tools which can be used in creating social interactions in performance, which are not so dependent on the space performed in.

CONCLUSION

In my portfolio, a distinctive musical voice has emerged relating to my engagement with a variety of concepts; interdependency, the electroacoustic sound complex, learnability, constraint, micro-texture/noise, indeterminacy, and accompaniment. Many of these issues remain in play, and through managing their interaction, I have explored the boundaries of the composer-performer, and improvisation-score relationships within this technologically based medium.

In works such as *Violamusic* and *6 Surfaces*, the interaction between instrumentalist and the resulting electronic sounds is tightly controlled due to the precise arrangement of sounds having taken place in advance in the studio. There is no transmission loss between the composer and the sounds used. These compositions are somewhat like paintings, where I was "working directly with a material, working directly onto a substance" (Eno, 1979, p.128). This approach creates a stable relationship between player and electronic sound during performance – what we might think of as a stable 'ecosystem'.

I was able to carefully construct a cohesive dialogue between instrumental and electronic sound material. Such dialogue might be conceived as a counterpoint, a relationship defined by equality and balance. Alternatively, dialogue could be conceived using extremes of contrast, or using the stratification of different sounds juxtaposed.

In works like *New Pages*, compared to my other works which use laptop in performance, individual players have more of a fixed role. Here, stability is present due to my conventional use of the piano, effecting the role of the Max patch in performance. I am able to create a coherent musical counterpoint between the laptop and piano; that counterpoint explores a range of soloing and accompaniment within the sound complex.

The rest of my works for laptop and one other player, then, continue to explore a diverse range of dialogues between players. This ecosystem, instead of being stable, is dynamic, made up of relationships which can change or become ambiguous during performance. These changes or ambiguities arise sometimes from the spontaneous actions and decisions of the performers; and sometimes they arise from the sound materials themselves, that may contain unpredictable or unforeseen sound events to which players have to respond. Sometimes, they arise from the nature of the software instrument, where it embodies unpredictable elements. They could also arise from an openness in the instructions contained in the score. So there is a broader ecosystem at work, between performers, score, and software based electronic sounds.

For example, *Percussionmusic* moves away from *New Pages'* limited approach to managing musical dialogue. Compared to *New Pages*, the score offers players more freedom when deciding how they will interact with each other musically, drawing more from their own approaches to performance. Meaning, the score guides the players' responsive listening, resulting in timbral consistency between the sounds from the laptop, percussion, and fixed track. In contrast, *Variations* demonstrates an even more dynamic engagement of elements within this type of ecosystem. Musical dialogue is also built from a wider range of materials; that range exists in a continuum between a fixed and indeterminate relationship. In *Variations*, the score can be viewed as a disintegration of the conventional notation found in *New Pages*, offering the laptop more freedom when placing sonic events against the other player.

In *Music for Electric Guitar* and *Extended Play*, there is a consistent design in the patches used; both pieces rely on a similar range of processing, fixed samples, and presets. However, compared to *Variations,* these works maintain a lesser level of stability, which relates to the sonic relationship between players. This outcome is due to an increased level of openness in the instructions given,

relying much more on the players' personal approach to music making. Therefore, these works demonstrate the most dynamic range of *idiosyncrasy*[5]. Also, in *Music for Electric Guitar* and *Extended Play,* both duos effectively manage a wider range of sonic layers created in the moment.

The compositions in the portfolio were made using Miller Puckette and David Zicarelli's Max software, and it is worth considering some aspects of the software's design. Max was "intended to allow the user to make computer programs that follow the user's choices, not the program's. This was necessary so that Max patches could work as musical instruments" (Puckette, 2002, p.32). Puckette describes Max's process oriented design:

"(There is no built-in notion of a musical ‘‘score,’’ for example.) If we think of a Max patch as a collection of boxes interconnected by lines, the expressiveness of Max comes from its interconnection and intercommunication facilities, whereas the contents of the boxes themselves are usually hidden from the user." (Puckette, 2002, p.35)

So, we can think of Max as having its own standardized system for notation of musical objects, events and information. My scores can be thought of as extending that language, building outwards from the patches I have designed.

In my compositions, where I map out rules or guidelines; the scores map out a field for dialogue in performance, rather than rendering any specific pre-existing idea. This concept mirrors Zicarelli's (2002, p.45) ‘hierarchically related layers of incompleteness’ in Max, where "we see that although the page begins blank, it is not completely free-form: it is a game field that operates according to rules that cannot be invented by the player".

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[5] *Idiosyncrasy* is a theme I have mentioned, referring to an instrumentalist's ability to rely on his/her personal approach to playing.

Similarly, in my compositions that use a digital audio workstation to render sound materials, I use the tools not to try realizing a pre-existing sonic design concept but rather to investigate the collision of instrumental source sounds with their processed counterparts, creating dialogue between the two. In this case, the collision is controlled by me alone, whereas the collision of sounds in my works using laptop and one other player, demonstrates a less stable, indeterminate result. Therefore, the interpretation or realization of the score, and its transmission to another, changes the nature of compositional control. In my compositions, the ultimate musical outcome, the interpretation, is influenced by the idiosyncrasies of the individuals involved. This intervention of players in the construction, arrangement or organization of sound materials completes the ecosystem, the network of relationships between individuals, software instruments and scores. No one individual or tool is more important than another; they are all crucial parts of the ecosystem.

Finally, we need to return to the discussion of the scores and patches as it relates to the ontological status of these works as objects that can be interpreted and reinterpreted, or whether they are descriptions of a process of my own improvisations with other individuals. Are my scores and patches what David Brooke Wetzel calls 'historical objects'? Wetzel details the process which produces this type of work by stating, "works enter the ‘standard repertoire’ after a process of repeated performance and evaluation by an asynchronous and widely distributed pool of interpreters" (Wetzel, 2006, p.273). Therefore, having come through this process of research, the reproduction of the work is dependent on a collaborative process, relying on me to transmit the work to another. This process of transmission mirrors my interactions with players when developing the work. The notation used can be viewed as a way of working, revealing my role as composer in a given scenario, where I aim to organize collaborative music

making. The patches can then be viewed as personal tools for improvisation, influenced by the notation in the score. Motivation regarding the reproduction of my work, is to focus on the social engagement – the potential to develop personal interaction when making music collaboratively.

Appendix B

My Notes

B.1 Earle Brown

Adam and I both share an interest in the pianism in Earle Brown's *Twenty-Five Pages* (1953), and the numerous works of Morton Feldman which contain piano. I particularly enjoy the tonal language, and pianistic resonance in Feldman's *Last Pieces* (1959). The title of my work was not a reaction to Brown's solo in particular, however I admired the technical difficulties present in that work, and made my own variation on his title.

B.2 *New Pages* Setup

New Pages was an attempt to use the laptop in performance, rather than create a fixed track for Adam to play with. My physical presence during the premier of *New Pages*[6] slightly enhanced the musical dialogue between Adam and myself during performance. For the premier, I was able to sit behind the piano, in view of the audience.

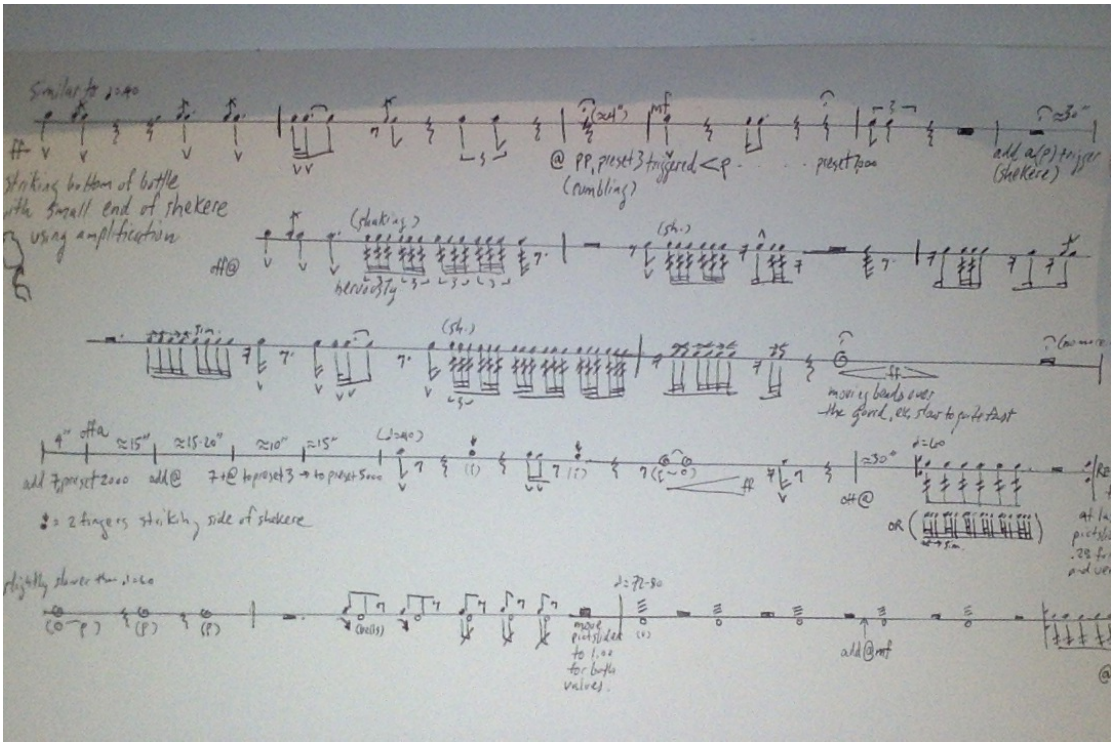
B.3 *Percussionmusic* Afterthought

I was so concerned with understanding differences between approaches in *New Pages* and *Percussionmusic;* strategies for creating gesture, and 'what the piece is about'. It is not about arrangement of sound, but the potential for musical interdependency between players to emerge. There could be other approaches to take with the percussion-derived material, when setting up opportunities for

[6] A link to the video at the premier, https://www.youtube.com/watch?v=uUUQ6oQPgKs

musical poetics to emerge. This particular setup, at the time seemed to give the percussionist a stable environment to situate himself during performance. Future performances of this work could help guide me to different compositional strategies when working with the seemingly delicate hand percussion sounds. I could go further when using layering ideas when composing with my percussion-derived material, possibly demonstrating much larger shapes of sound. The results of increased layering, might open the music to more varied textural contrast.

B.4 Before the Openness



I experimented with a notation which would require the player to perform in a more restrained way; following this score. At that time, this way of notating seemed to have the possibility to get in the way of a player's ability to be expressive on their own. In hindsight I might have been able to notate the work this way, and suggest to the player that he/she freely interpret these patterns.

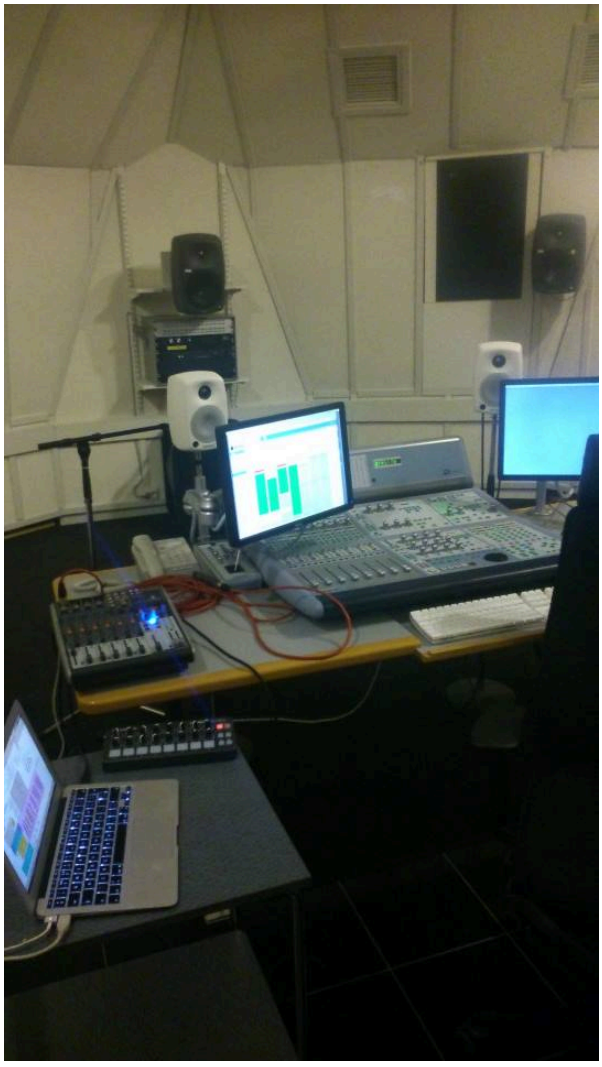
B.5 Attraction to smaller instruments

(During the time I had the pleasure of working with Dave). I had a vision of a large ensemble full of smaller pieces, like the ones in the photo above. I decided to keep the orchestration minimal. *Percussionmusic* does seem to go through small musical transformations. However, using a larger instrumentation could help set up more demonstrative transformations.

B.6 In hindsight; working on *6 Surfaces*

I was satisfied with the overall focus each track maintained. All of the layers seemed to keep a unified sound relating to each track's core theme.

B.7 EMS Studio



I felt comfortable when working in the studio for *Variations*. I was focused on developing the work's musical counterpoint which was managed between Monica and myself. The studio environment supported my search for a way I might demonstrate musical dialogue differently than I had in *New Pages* or *Percussionmusic.*

B.8 Text for Anthony

Extended Play

Part I

player is to familiarize his/herself with the core sample loops. play what seems to be representative of the core. make a performance by improvising combinations of these core shapes. explore variations of these combinations. develop and expand the core trying to create an exclusive sound, apart from what the electronics seem to be doing

Part II

try not to make drone patterns. make small rhythmical figures, match perceived inflections heard in the electronics

Part III

bassist is to complement the musical events heard in the electronics, with more melodic and lyrical content

Part IV

bass player makes a personal solo, with aggression and force. Player extends this solo, improvising a consistent musical character based in the material performed at the start of this part. laptop waits to come in

Part V

bassist is to try to create larger shapes. Build with the laptop player, as he moves through the presets. As each preset is explored, the bassist should try to make their own musical commentary on the narrative that is performed by the laptop. The bassist should feel free to oppose or cut through the electronic sounds if necessary

Appendix C

Correspondence

C.1a Email from Adam

taken and email sent from Adam Tendler in JAN 2017; responses to questions I had sent Adam a long while ago. finally!

when did you think the piece really started to work? what was satisfying for you?

..... (putting it together). Once I heard the digital sound processes and even saw the map of these processes on the computer screen, the piece really blossomed in my mind as an organic, living thing—as opposed to notes on the page for me to learn, interpret and execute. The fixed score began to breathe as a template for something else, something less predictable and more open, which felt satisfying to the degree that I now had a collaborator of sorts with the digital interface. It came as a relief to feel that the piece had gone, in my mind, to something scored for piano (i.e. me) and something truly for live electronics (i.e. us). A sense of freedom came with that shift of consciousness.

did you feel you could create something new, what would that 'something' be?
I felt like we could create something new each time we presented the work— even when we practiced it. Indeed, my touch and tone upon the keyboard affected the processing of the sounds, but also the ambience of the room affected the bedding of sound both before, during and at the conclusion of the work. This felt truly exciting, to create something live and different each time, rather than fixed to a tape or to a strictly rehearse-able interplay between parts. The processor would transform virtually anything it 'heard,' and so yes, what it heard in this experience just happened to be, first and foremost, my piano playing, which of course changes from performance to performance, but also it heard and processed myriad other variable elements. So the result always felt new, fresh and delightfully unpredictable.

what aspects of New Pages might have allowed you to harness the more personal qualities of your playing?
New Pages, to me, presents itself as an exercise in listening. It invites the audience and the performer to listen and engage a sound as it develops *after* the pressing of a key, when we usually experience its decay. It transforms this with an acoustic instrument rather than, say, a sampler or prepared MIDI. So this mix of acoustic instrument and live electronic processing disorients and disrupts expectations.... ....(Seth),as a composer who intimately knows and has studied the piano, has chosen really interesting,

provocative, indeed beautiful sounds to feed into this process. The piece practices a restraint seldom seen in younger contemporary composers. That restraint allows me to execute the piece without compromise—as in, I can actually practice it and integrate its physical challenges without, frankly, making up notes or gestures to supplement impossible writing—and to engage the abstract in a way that still allows for expression and emotional interplay with the electronics.

regarding the score – even though it was a 'traditional' score, again, were you able to bring your personality to the piece?
Absolutely. I try to do this with any piece I play—or rather, it tends to just happen—but again.....(Seth)using his own harmonic and physical sensibilities, so that while the sounds do strike me or many listeners as mysterious, I could still dip into that world and engage the piece emotionally. Every time I hear it, I feel proud to have created something so absolutely compelling—one wants to keep listening—while also performing a work that, in terms of linear narrative, behaves untraditionally, according to its own rules, dictated by a composer's ear, unique sensibility of form, and trust in a digital system that, when activated, sparks life and choice into a fixed score and all the particles around it.

C.1b Some reactions

There must have been 'something' that Adam responded to with regards to what he saw in the patch. For me, I am really happy that he seemed to feel a sense of freedom in the work; the more fixed aspects of *New Pages* were not getting in the way of his performance.

I almost forgot, we did play the work numerous times in New York City. It is interesting to know that when a performer 'gets into the work', the whole environment is sensed.

C.2 Exchange with Monica

An extract from a conversation Monica and I were having on facebook (JAN 2017)

Monica: It was very interesting for me to experiment with you and the piece because you had an open approach where we could find sounds together and that it was important to interact with the electronics and use it for the recorder part instead of the recorder part being a solo with track.
It was new to me working with electronics in the way and I enjoyed playing the piece in Stockholm very much.

me: here - do you like working in the studio with the composer. do you think it is necessary for pieces with computer, that you work directly with the composer?

Monica: I think it is very nice to work with the composer in the studio and also important to know how the sound of the instrument will work with the electronics since it is a duet. So yes, for the best result I think it is necessary

Me: The piece is an experiment in open notation, but how do you feel about working on music that is ultimately trying to be shaped by YOUR personal musicianship, not necessarily relying on the rigid framework of a score.

Monica: even though it is open notation it is still something where I could have spent even more time working on the elements alone to be able to do more musically and find out what the individual elements can or cannot. In that what I think there is a difference between this and a piece based more on free improvisation

C.3 Transcript from parts of a conversation with Olivier (2017)

we were trying to learn how to work together

ME:
I was too obsessed with how to construct a patch.

Olivier:
I was also obsessed with my material. what will I do.
now the thing would be completely different.

ME:
in the process of us playing, that's really what allowed me to construct not a score but a set of instructions....

Olivier:
It could be interesting to not write anything, and to find again, this kind of (thing) – 'we were like kids'.

ME:
I was just waiting and listening for you, and then I would go through a set of presets, and I would maybe make some adjustments with those presets.

Olivier:
I think we were exploring....you have to investigate..if it works its strange!
After that, it would be great to make music with this...I would be happy to make it again.

there are two directions, one is exploring, absolutely saying nothing, and try, and be patient, and listening or playing or whatever we want..

another one would be with guidelines....to try to (keep) the ideas of what was recorded, and try to reproduce not exactly , but reproduce the ideas, and make music with this...

Looking at Marc Ducret

Olivier:
That duo with Marc Ducret...its comletely improv...and they didn't rehearse, it's in the moment, i am pretty sure, and ...sometimes it doesn't work actually...

for example, a very big question i think, before making any notes or sound is volume. Maybe Gunnar, maybe he was too loud...he has only has his amp(Ducret)

referring to balance with a guitarist

you cannot play with a normal amplifier

but they are always trying to make music, I am sure of that, you see the attitude they have and...they are trying to interact.

the sound of the laptop is so dominant. I think this is the first thing to address.

Relating to trying to balance myself

ME:
Lately I have been listening to Sam(Sam Pluta is a laptop player in Peter Evans' group)..even the times that he works with say one other player like whether it's a pianist or Peter himself, Sam i think understands how to balance himself, I think that was maybe for me I was not so effective at times.

what do you feel the role of the score or instruction is?

Olivier:
it can be very simple, we finish like this...just to know where you go. sometimes it helps a lot....and to provoke what you are not used to doing.

Olivier was mentioning just keep it simple, in order to help us play together.

ME:
we have a mutual interest... we enjoy similar aspects of improvisation, for example marc ducret....why do you think that when you and I play, it works out, I know we discussed that the electric guitar and laptop work nicely..

Olivier:
its a human reason...this is the question no?

ME:
we should repeat, but i think it has some potential..because it is, for me its exploration. its not the standard...

Ultimately we realized together that our friendship is based on a mutual give and take of information, where we both learn things from eachother.

C.4 Email from Yannis (2015)

hi Seth

Nice to hear from you.
Great that you are studying with Nick - a very old friend - say hi to him!
The research you are doing sounds very interesting - I'd be happy to give some input about improv strategies used
in Folia - I'll briefly answer you now - and if you want more detail - just come back with more questions or we can
speak on skype…

First what did you feel about the guitar was critical to the collaboration in Folia.

First there was the desire to work on a larger piece with Andy - something that was largely composed. I wanted to use the idiosyncratic way Andy plays guitar in a form that would both resonate with something older(hence the folia connection) but that would be true to the sound and approach that Andy and I make together.

What were some of the performance strategies you used(was there a score, was there any discussion about your interaction with Andy)

There was no score in traditional notation - Andy doesn't read music. The process started with me asking Andy to record a bunch of his sounds. I was particularly interested in the different tunings and harmonics he used.
I made some pre-processed textures based on the material he gave me - using Supercollider and Kyma. Then I composed a harmonic structure based around Folia incorporating some of this pre-made material. So I set out the form of the piece with space and some ideas about what Andy could do. Then we got together and tried different material for the different parts - Andy went away and composed the melodic motifs that he plays in the beginning and middle of the piece - the main motif of the piece so to speak…Then based on what he was playing lice for the different parts - I decided how to approach the live processing -what kind of processes to use where - where there can be more improv - where it can be more strict...

What was your attitude on designing the electronics.

So there are two levels to the electronics - the live processing and the soundtrack. The soundtrack is divided into various layers itself:

Guitar preprocessing (quad processing of guitar using supercollider-kyma - has a granular character - or takes grains of the guitar and oscillates them in the space)
Pulse (pulses ranging from short impulses in changing tempos - to rhythmic patterns using a folk-type of sampled percussion that refers to the Brazilian folk music that is heard near the end of the piece)

Harmonic - this is a sine/tri wave harmonic fields based on the harmonic structure of the Baroque Folia - which is stretched out throughout the piece - comes in an out...

Texture - these are different textures of noise - which are also processed guitar sounds that act more like landscapes of sound.

Where there aims to give definition to form and structure amidst improvisation.

in this case the form and structure of the piece came first - but the form was not only an idea of ABACA etc…. - but of how the grains of the material fit into the larger form and making enough room for improvisation - because that is simply how we work together - and having things too fixed would in the end not work (both of us are not good at playing the same thing twice - in fact I have a problem with that more than he does! haha).
My approach to the form of the piece is basically to focus on the material and give enough space and time in the piece - that each bit of material is highlighted in some way with the changing perspectives..

We recently played the piece again (in Berlin) after 5 years of not doing it - mostly people want to hear Rebetika when they book us…
It took a while before we remembered what we did (or how we did it) - I also had a totally different live set up since then - but finally we got to the essence of the piece again - with the difference that 5 years makes!

Anyway - hope this was helpful. And keep me updated on what you are doing - hope our paths cross at some point..

ciao
Yannis

p.s I just recorded Testudo with Dario Calderone - I can send you the recording and score when I've edited and mixed it..

C.5 Email from Simon (2015)

Dear Seth, how are you?

Firstly please accept my apologies for taking so long to reply. The summer has been so busy one way and another and already the autumn concerts are underway. I have a long journey back to Berlin now, during which I can finally get some time to answer you.

I hope my answers provide you with the information you need. I have tried to describe in the best way my approaches, but should there be anything you need more clarification on, or if you have any further questions, please just let me know. I would be more than happy to help.

I have split my answer in to two (roughly) aspects: Setup and Performance Practice.

If it's easier for you, we could even Skype?

I'm also in the process of arranging some concerts in the UK for 2016, and it would be great to see if I could come up
to Glasgow and do a performance/workshop (I'm currently doing a Morton Feldman "Palais de Mari" / Electroacoustic Improvisations Programme).

Very best wishes from Berlin.
Simon

To your questions about setups and sonic goals, the mentioning of my work with Graham Halliwell is actually an excellent starting point.

Already having played together in the VHF trio (Vincent, Halliwell, Fell) Graham and I decided we would like to work as a duo also.

The typical approach - one which in 2000 also happened to be in the air very much at that time - was to do some sort of live signal processing, whereby Graham would play into a microphone and I would treat his alto saxophone sounds in some way independent to his playing, improvising with software parameters used to treat this input as well as those of software and hardware exclusively used for the generation of my own sounds.

After 2 (I think) initial trials, we took a break, somewhat depressed and frustrated by the results, and that is actually no exaggeration. After much discussion that afternoon, we realised why we had felt strange about this normally fluid, open and concentrated way of playing together. The reason was that by taking a signal feed from Graham, treating it and putting it back into the mix - albeit transformed - disrupted what was for us one of the most essential parts of improvising together. Re-inputting Graham's treated sound in to the overall mix resulted in a slight delay in reaction time, partly caused by the effect of hearing oneself 'remixed' and partly due to the fact that an important element - namely that of two improvisers balancing themselves electro-acoustically and in terms of their joint real-time decision making - appeared to have been sidelined at the expense of something that we had hoped falsely, at least for us, would provide a deeply cohesive performance practice. I say "at least for us", as there are many performers who have succeeded in achieving this goal through live processing. It is an approach which I at that point decided to abandon, and to which I have not since returned, even in my current work in progress for piano and electronic sounds.

After this break we quite simply decided that Graham should just play what he plays, and I would just play what I play. The result was much more satisfying and pleasurable if not thoroughly inspiring for us both. Somewhat unknowingly, we had managed - from the starting point of our initially mutually exclusive sound-worlds - to 'meet each other in the middle', as it were, making our respective materials as malleable as possible so as to produce some moments where neither of us was sure who was responsible for which sound.

Not that this is the most important aspect of an electro-acoustic improvisation for me. Indeed many successful improvisations can be

result of starkly contrasted and opposing materials, which remain so through the performance.

Certainly however one of the most, if not the most, important criterion for my improvised performances is the malleability of materials that I use, be they acoustic or electroacoustic. By that I mean I always endeavor to use a set up (which I will explain in a moment) and materials which allow me to sculpt sound in such a way as to create textures or gestures in real time, regardless of what those materials may be. This I suppose is related directly to methods of performance which in themselves through extensive practice would free the performer from the constraints of the materials themselves and enable them to create freely.

Set-ups.
My background as a performer (starting with percussion and piano) has informed much of what I look for in the performability of electro-acoustic music, where the body and perception of the body as decision maker, and initiator/controller/sculptor of sound remains central. There are however examples of my work such as "Transients 1" where, as a performance exercise, I consciously work against my intuition, and any decisions I may (want to) make, to try and create a music that sounds more mechanized and impersonal.

Setup 1: Live FM Synthesis (FM 7 Software), and fixed, pre-composed soundfiles, mediated by a small mixing desk.

Here, through the use of a mixing desk, I would combine fixed, pre-composed soundfiles with live, improvised FM Synthesis to create new live-mixed and live-diffused, materials, whose content and order would be decided on the spur of the moment, i.e. new for and during each performance. These materials would be further shaped through fading and panning at the output-to-speaker stage.

Setup 2
Live FM Synthesis (FM7 Software), live Modular Synthesis (Hardware) and fixed, pre composed soundfiles, mediated by a small mixing desk.

The approach and goals would be the same as above, with the addition of Modular Synthesis in the form of a Nord Micro Modular Hardware Synthesiser. The addition of this instrument led me to create several patches which had random behaviors, resulting in a very 'live' feel, due to the fact that I would be forced to negotiate any sounds which I had not expected interjecting into the performance mix.

That is not to say that I have a complete pre-knowledge of every possible sound combination at my disposal in the Setup Nr 1, but I would have a very general knowledge of sound-types into which I group both the pre-composed and live-synthesized materials.

The mixing desk remains here the mediator of sound sources, and is again used to shape materials through fading, panning and overall balance.

Setup 3:
Live FM Synthesis (FM 8 Software), live Granular Synthesis (Density Software), live Modular Synthesis (Hardware) and fixed, pre-composed soundfiles, mediated by a small mixing desk.

As above, however the addition of live Granular Synthesis marks both an augmentation and substantial shift in my available sound-world, perhaps most easily described as allowing the possibility of a digital focus on the grain of the sound, and not just - as before - the broader approaches generated by the use of FM and Modular Synthesis.

This addition allowed me to create new, more complex and more precisely controlled sound-streams, ranging from single grains, to larger textures and gestures.

Again the mixing desk would be central here to the overall mix, yet the Granular Synthesis software I use allows for the creation and independent output of up to 8 Grain Streams to be mixed internally before output from the computer. I would therefore be mixing before reaching the mixer.

Setup 4 (my current setup)
Live Granular Synthesis (Software), live soundfile manipulation with the use of Granular Synthesis plugins (Ableton Live with GRM Tools Software), mediated by a small mixing desk.

Crucial to this approach is the replacement of FM, Modular Synthesis possibilities in favor of the creation of mixable grain-streams and live soundfile treatment (as opposed to a more rudimentary playback-mix).

The mixer in this case has a purely balancing function used to control the levels and presence of each sound output type.

Performance Practice:
I think from my perspective (and I am quite sure this is a generally accepted observation) it is difficult if not impossible to separate the

instrument from the performance result, and also from the intended goal of the performance, no matter what this goal may be.

As I have been convinced with my own acoustic-instrumental practice as opposed to my electroacoustic-instrumental practice, I am able in the case of the latter, to produce new and often unexpected sound worlds, albeit ones whose constituent parts stem from known, pre-prepared plug-ins and soundfiles. However it is the nature and extent to which these materials can be internally manipulated and externally combined that leads to the notion (whether real or imagined) that 'new' materials can arise.

In the case of acoustic-instrumental practice (and here I am referring to my practice as a pianist), the sound-world is already know, and limited to the - in my case - untreated timbre of the instrument. Of course 'new' combinations of notes and ways of playing such notes may arise, yet I am of the opinion that the set of variables here is more limited than that the set of variables to be found in materials whose internal structure can be manipulated at the level of the digital grain (of course the FM buzz, click or slow/rapid pulse may be considered a type of FM Grain akin to the smallest element of sound available for treatment/output).

So in this sense, my set-up is directly related to the level of sonic manipulation and combination I wish to achieve, in a live situation at least.

Without the use of performance scores, I aim to create structures that will make sense (very grey area terminology, I apologize), in other words, structures that have a distinct narrative shape that could be perceived as composed, or at least have contain references to structural signs that may allow something to contain some notion of compositional goal.

The difference here is that the type of decision making - crucially - the type of audience perception/expectation is necessarily different depending on whether a performance is totally improvised, part-improvised (or part-composed - I am assuming a difference here) or completely composed. Of course the notion of improvisation in composed music is still a relevant one, where improvisation refers to momentary changes in nuances and interpretation, specific to each performance.

I am thinking deeply about structure during my improvisations in the following ways for example:

1)
How to start an improvised performance (randomly, with some general idea, or a concrete idea);

2)
What may be the timbral, structural or temporal (or combinations thereof) implications of such opening materials?
How might they be used as structural markers?

3)
What may come next after these 'opening materials'? Contrast, development, reassessment?

4)
Notions of balance, moving between decisions relating to parameters such as silence, stasis, moment.

5)
Conclusion.
Is fading out the only option, or rather, a more refined, subtle way of concluding, as opposed to a dead stop (no signal)?

Other options are possible, for example, a soundfile which triggers a response from a plugin. The former ends, leaving the respective plugin to output the remainder of its transformation algorithm. This is different to a fade out.

Notions of tempo and pacing are crucial here, i.e. the speed of development and release, as are possibilities of revisiting materials within an improvisation or indeed within a concert.

The software/hardware setup is related to all these (very basically described) elements.

The role of the composer in such performances is indeed an interesting one and in any given situation I can adopt both hats, as it were. This is however another grey area in my music practice: I used improvisation to generate materials in the studio or at the piano with which I compose further, and in improvisation, I acknowledge the possibility to create for myself the chance to think about structure in a compositional way.

In any given situation I could conceivably trigger as many sounds as possible and negotiate the output accordingly, or I may take a single

sound and explore it (without augmentation), making it the focus of a particular improvisation. The latter is of course possible in compositional practice, and so the difference must lie in the act of real-time (as in performance-time) or studio-time (as in composition-time). It is possible to reconstruct a studio in a live performance, yet the addition of any 'audience' brings with it modes of expectation and reception, and as a result non-studio/non-live output, a hybrid form, as it were.

Having said this, as much as I enjoy the 'freedom' (this is a relative concept based on the fact I cannot be any other person other than myself, no matter how many random parameters I may use to create this illusion) of improvisation, I greatly the enjoy the performance of 'composed' forms, which allow pre-sculpted structures to unfold in a different real-time to real-time improvisations. Once again this is dependent on the type of score, notation, detail etc.

In conclusion, I would like to think that even my most tightly-composed works (the piano work "Meditations on Christ" is strictly notated in terms of duration, tempo for example) give the impression that something unfolds in front of the listener for the first time. This rigour of structure is the result of intuitive, and in a sense, 'live real-time' decision making, where the performance is imagined and notated in the studio.

The performance practice implications of such an instrumental work are very different to those associated with the performance and diffusion of fixed, pre-composed electroacoustic music.

As a slight tangent, I have decided to revisit the piano in the setting of an acoustic jazz trio, where the notions of improvisation are different once again, based on compositions as starting points, and collaborative explorations, solos, accompaniments. The notions of practice and of course expectation are very closely related to genre (as naturally they are in the case of electroacoustic improvisations).

C.6 Emails from Gunnar (2015)

March

Hi Seth,

thanks a lot for your nice words!
That's right, Nick and I played together, I remember a piece of him we played in Munich, I think it was called "Allocation dynamics" or something like that, I liked it very much. Please say "hi" from me if you see him the next time.

My approach of using electric guitar and computer changed already once again, actually. I'm now controlling the computer with my guitar, changing the audio signal of the guitar into midi messages by analyzing its spectral components and then back to audio by triggering virtual instruments and samples, altering parameter settings, etc - everything in realtime, or say, almost. I'm really excited about it.
I don't have a video of that yet, but some of the solo concerts will be recorded in the near future.

With Marc everything was done within Ableton. I was processing his guitar signal, adding my own stuff or working exclusively with that. I had a midi controller with joystick, faders, encoders, buttons, controlling a bunch of layered parameters. I was using my computer keyboard as well for the same reason. For extra routing purposes I used the software of an RME fireface.
I guess that's it.

If you have any question, go ahead.

Thanks again & all the best
Gunnar

June

Hi Seth,

I got something new, you might be interested in. It's the video documentation of a solo performance in Brooklyn the other day with my "laptop guitar". So if you like, here's the link:

https://www.youtube.com/watch?v=SmLJEkU5dSQ&feature=youtu.be

all the best,
Gunnar

more in June

Hi Seth,

thank you so much for your nice words!

There's so much to say about the topic you mentioned, it's hard where to start. For now, all I can say is that there is of course an influence both ways.
I developed this piece for instance, because I was deeply impressed with Jeff Wall's staged photography, questions about reality & perception, model & realness, simulation & trueness, image & representation, tradition & renewal, structure & form, dualism. I definitely wanted to work with these issues. And when you think about that, digital technology may be the instrument chosen to work with, at least for me. On the other side, our today's technologies challenge those questions. I decided to play virtual instruments with my real instrument, so you hear an electric guitar combined with a virtual one, and so on, that's the starting point. Structure, form and the composition as a whole, are topics which come next …

Thanks and warm regards,
Gunnar

september

Dear Seth,

First of all: I try to write in OK-English - I guess it was a dumb idea of me to come up with this questionnaire - but anyway, wherever possible please ignore that I'm pretty bad at it, otherwise just ask (not assuming that'll clear it up ;-).

At some point in my life - it was during a concert with my then-band after I saw Ornette Coleman with his *Prime Time* 1981 at Moers Festival - it was very clear for me on becoming an improvising musician.

After that decision I first wanted to learn everything possible on my instrument and started studying electric guitar.
Besides working as a professional the following years, I developed my improvisational skills, repertoire, extended techniques (often evolved

from the requirements of my contemporary music scores in an orchestra) and eventually developed a very simple setup which I played for years, using the electric guitar w/amplifier, a volume pedal, and a signal interrupter.

After a climbing injury where my right hand got badly hurt, I started delving deep into composing - for electric guitar, or rather guitars, say a bunch of guitars - and into microtonal music, practicing and recording the stuff once I felt better. The analysis of and the engagement with theory and aesthetics in combination with art studying was a major experience and inspiration for me at that time, and still is.

Actually another wounding (I had to stop playing again because of a tendinitis from a heavy exercise on classical guitar for an orchestra piece) got me to focus on electronic music and the laptop which I discovered just before. From then on my goal was to play the laptop like an instrument, potentially with all the sounds I was hearing but also with a fast reaction to communicate, as I was used to on my instrument.

Several years later I got back to the electric guitar, but now I was able to control the laptop with my guitar, using it like a computer keyboard with a special software which converts the audio signal into MIDI messages.
Things had come full circle, or rather unclosed circle of fifths [ld(3/2)^12≠ld2^7] (thinking about the open Zen circle), there's still an exit for the unknown.

I don't know, it probably doesn't literally answer your question about my view on improvisation, does it?

Here are some thoughts.
We only live in this instant of a moment (the current theory says it's actually discrete, it only feels continuously): NOW, NOW, NOW. Everything we are doing NOW, but intellectual we can think about the past or the future (NOW) and can build structures etc. because of it (by the way, also "diseases" grow out of it: depression concerns the past and fear the future).

My fascination concerns transformational processes having to do with sound and structure, an aesthetic of changes conditioned by time. Quite simply, it encompasses the domain of music and the conditions

of our human existence.

Life is complex, in fact very complex, it’s not just black-or-white, it's coloured, beautiful and ugly and everything in between and something beyond. Colours we don't understand, colours we agree to and colours we deny exist. Because art may reflect and express that complexity of our human existence and condition, art is ambiguous by its nature, as is life.

“Let us say in life: No earthquakes are permissible. What happens then?” (John Cage, *Silence*)

For further information and an overview about my past life or say my past past life I recommend reading the Wikipedia article, if you haven’t done it already.
https://en.wikipedia.org/wiki/Gunnar_Geisse

Among the problems of electronics, besides the obvious benefits, are the potential slow reactivity, the cumbersome playability, and the complicated way of bringing it to life.
On the other hand it may deal with a lot of present-day issues (because the computer is obviously omnipresent in everyday life), consequentially also in aesthetics, the way we think and feel today. Herein it may heavily be connected with art of our time.

Thank you Seth, and don't hesitate to ask ...
Best, Gunnar

C.7 Transcript from parts of a conversation with Anthony (2017)

ME:
i've realized after the fact that i could actually perform with another bassist...but the key ingredient...what's required, in my mind...to do this piece again, to reproduce it, is to work with a bassist that doesn't have any real specific, say, way of improvsiing , or way of playing, because that wasn't how the piece was built.

...Based on the fact that another laptop player is not going to get ahold of this, it's basically saying that this score functions a little bit differently...it's a form of documentation then, to maybe again situate me when I am working with somebody else..

this method given to you was possibly an oversimplification or a response to this piece for electric guitar, where actually in hindsight, myself and Olivier probably should've maybe formed our collaboration on really simple things, or aims, which would be like 'end soft' , how we get there who cares, just end!! this was a response to an overly complicated, overly critical sort of process.

Anthony:
well i feel the last line of that...the matching of perceived inflections, that's probably the most, the one that i would grab onto more than anything, is...because that leaves you quite open to interpreting the timbre of the sound as well as the pitch.

ME: THATS WHAT YOU DID!!

Is it too simple??(the instructions)

Anthony:
it puts you in this really strange state of mind..... it's like a word association game; someone says cat, you say dog, it's the same kind of thing just with a sound, and your mind is like, trying to come up with anything as quickly as possible, so in that way It's quite hard, it's like be-bop improv.

ME: How so?

Anthony:
the sounds keep coming at you, and you are not really sure when to predict a change in mood , you always need to be prepared to stop yourself, you need to makes sure whatever the figure is that you are interpreting come to a conclusion before you step in, or to accompany underneath, you need to make that decision on the fly – as

the sound is happening. But, in another way it does make it easy because.. you know you are within the borders of the piece, the restraints of the piece, and you are quite happy that you are achieving that...

in some ways that takes a lot of effort. in some ways you know there is not too much pressure on you.

ME:
there was never a right or wrong for me.. this piece is not interested in a particular approach to the bass, or virtuosity ,or a certain level, only the willingness and the enthusiasm to meet in the middle.

Anthony:
(one)has preconceived notions of beauty and music, or nice intervals, and so on, and you want to go to these when you are trying to create a piece in improvisation, you want to make sure that you show something nice or pleasing or texturally accurate, or that adds to the sonic world.

ME:
regardless of what I was asking you to do, did you feel that you could create a personal role?

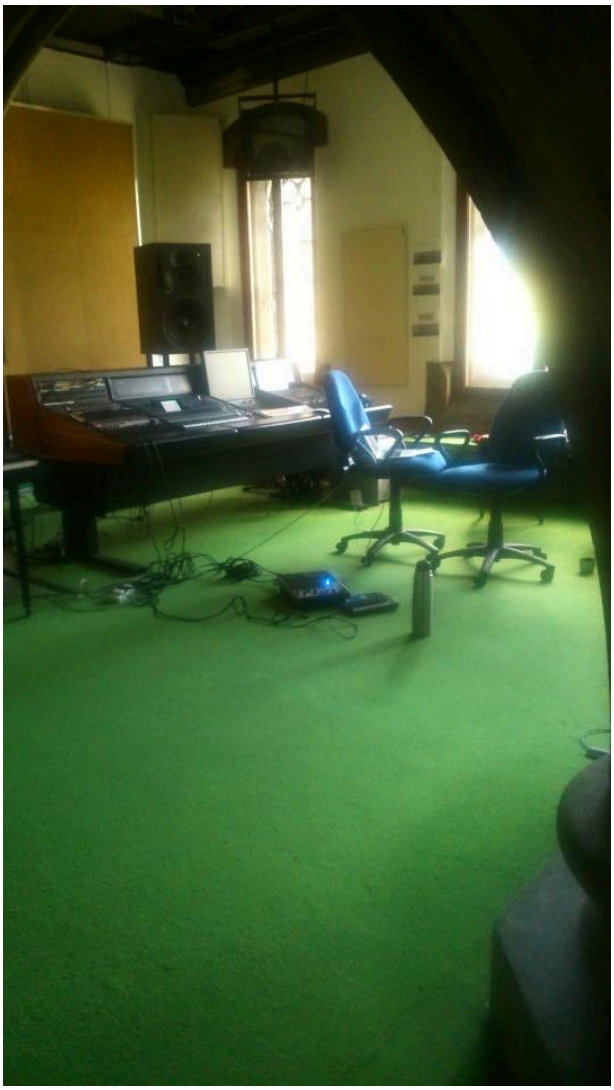
Anthony:
it(the instructions) gives you the building blocks of the sonic world

ME:
even though there is this issue of indeterminacy in the performance between you and myself...what shapes the mood or character or the narrative of each part(of Extended play) is the fixed nature of the audio, of the samples

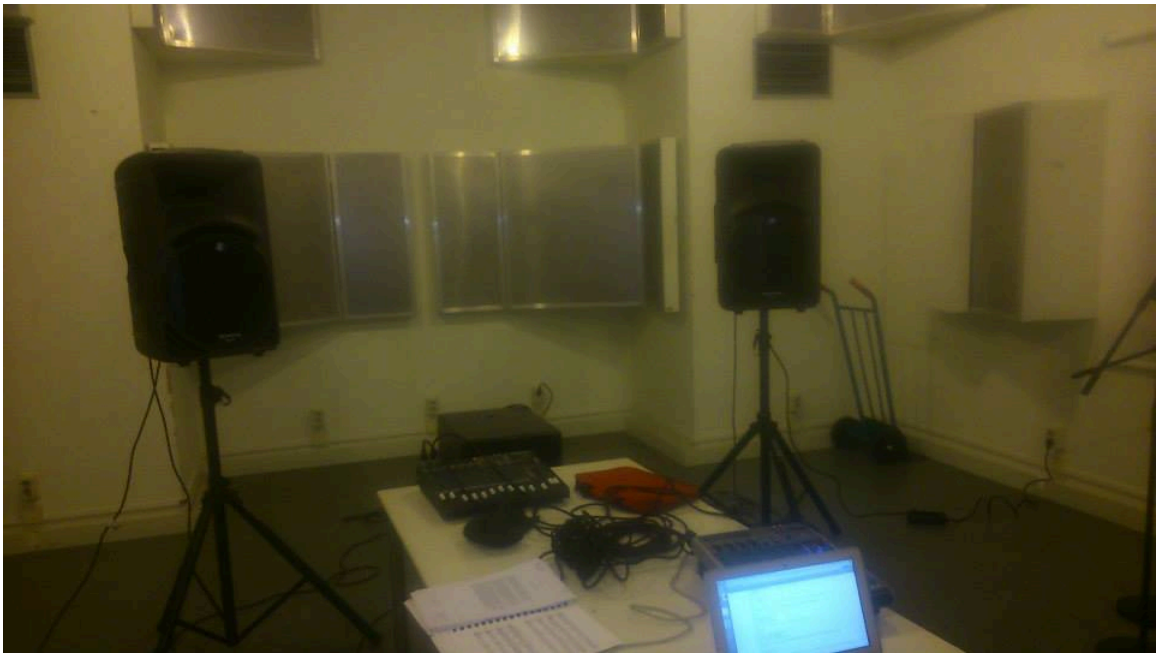
Anthony:
(the sounds are quite subtle in these pieces), they don't tend to just jump in....they don't really mean anything when they suddenly appear to the performer, the performer just keeps doing what they are doing.

Appendix D

D.1 A typical day in Studio I (University of Glasgow)



D.2 Editing samples in a STEIM studio (2015)



D.3 During rehearsal with Olivier (2015)

D.4 Outside of EMS-Stockholm (2014)

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