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Ballads and Ohms

Vocal traditions, electronics and compositional strategies

Girilal Baars

A commentary accompanying the publication portfolio submitted to the University of Huddersfield in partial fulfilment of the requirements for the degree of Doctor of Philosophy

The University of Huddersfield

School of Music, Humanities and Media

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Abstract

This commentary presents the research and ideas underlying the submitted portfolio of compositions. The core of the portfolio is the exploration of composition and performance methods for transforming traditional vocal folk music using the tools and aesthetics of contemporary electroacoustic and experimental music. The process also led to a wider compositional enquiry into the connections between language and music, between technology and performance, and between scores, encryption and performance. Additionally, extended voice techniques, audio processing, information theory and encryption form a set of nodes that have expressed themselves in various combinations resulting in a portfolio that includes vocal and instrumental, electroacoustic and acoustic music. The submitted works have been created employing bespoke use of technology, self-imposed restriction on real-time voice performance and applying encryption methodology to music and text. This commentary examines the submitted works from three perspectives: the use of voice, of language and of technology. It also discusses the music in the context of perceptual and cognitive discourses about the nature of voice.

List of submitted works

2012

<i>Two Timing</i>	<i>voice and electronics, 11 minutes</i>
<i>The Little Mohee</i>	<i>voice, recorder, barytone sax, alto sax, theremin, 8 minutes</i>
<i>20th Century God</i>	<i>voice and electronics, 9 minutes</i>
<i>Ma ejef</i>	<i>voice, 4 minutes</i>
<i>The Rich Man's Soul</i> (Co-composed with Jan Liljekvist)	<i>voice, flute, objects and electronics, 13 minutes</i>
<i>The Kingdom of Heaven Likened Unto Ten Virgins</i>	<i>2 voices, 2 violins, soprano sax, clarinet, electronics, turntable, 8 minutes</i>
<i>Pikku pikku liten</i>	<i>8-channel installation, 40 minutes</i>
<i>The Tale of Little Wolf</i> (Co-composed with Olle Oljud, Joakim Westlund and Viktor Zeidner)	<i>4 voices, electronics, objects, turntables, 25 minutes</i>

2013

<i>Lykanthropos</i>	<i>8-channel fixed media, 15 minutes</i>
<i>Oboe Variations</i> (Co-composed with Per Åhlund and Lars Åkerlund)	<i>voice, saw, objects, electronics, 18 minutes</i>
<i>The Three Ravens</i> (Co-composed with Jamie Fawcus)	<i>voice, objects, electronics, 20 minutes</i>
<i>500 (A Texas Ballad)</i>	<i>voice and electronics, 14 minutes</i>
<i>Surium</i>	<i>4-channel installation, 14 minutes</i>
<i>The Lover's Death</i>	<i>voice, oboe, electronics, 8 minutes</i>
<i>Ragnaröken</i> (Co-composed with Sten-Olof Hellström)	<i>voice and electronics, 16 minutes</i>
<i>Apocalypse</i>	<i>voice, wind instruments, electronics, 7 minutes</i>

2014

<i>Ichion Jyōbutsu</i> (Co-composed with Ryoko Akama)	<i>shamisen, psalmodicon, 15 minutes</i>
<i>The Bonnie Banks o Fordie</i>	<i>voice and electronics, 13 minutes</i>
<i>The Deep Blue Book</i>	<i>horn in F, classical guitar, double bass, 12 minutes</i>
<i>Farait un vers de dreit nien</i>	<i>Siren Organ, 3-channel fixed media, 11 minutes</i>
<i>The Call of the Lonesome Quarkboy</i>	<i>stereo fixed media, 6 minutes</i>
<i>Poison</i>	<i>voice, 6 minutes</i>
<i>Harmonic Sequencer</i>	<i>MAX patch and paper</i>

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Introduction

Personal Musical Background

I have been actively working with vocal folk music traditions since 1999. That same year I bought my first theremin, though I did not begin to explore electroacoustic music until a few years later. The crucial step, in the context of the research presented in this portfolio came in 2008 when I began to combine the vocal traditions I was exploring with my electroacoustic music practice.

Much of my initial work in this area was based on live electronic performance. I wanted to use electronics to extend my vocal improvisational practice and avoid using pre-recorded material. Although my working methods have since expanded, the ethos of live performance is still an important part of how I plan and structure my music. The first significant work that emerged from my initial experiments in 2008 eventually became *Litanies in Zero Kelvin*, a 30-minute live piece for voice, theremin and electronics. The piece was subsequently selected for the Nordic Music Days in Oslo in 2009. This was an important stimulus for me to continue exploring the possibilities arising from the particular musical territory where folk music and experimental electronic music overlap. The integration of folk music and electronics in a bounded-improvisatory setting granted me both freedom as a vocal performer and a distinct vector as a composer and electronic musician.

Nurturing Nodes

As a musician and composer I have a wide range of cultural influences, as well as drawing on a number of differing folk music practices from around the world. Having established a successful working methodology with *Litanies in Zero Kelvin*, I gradually started to incorporate other influences into my practice. The vocal and textual inspired antics of the early dadaists, as well as the emergence of sound poets, text-sound composers and experimental vocalists in the late 1960s and 1970s play an important part in the way that I think about using my voice, as well as the structuring and presentation of the music I make. Key practitioners and works I consider reference points for my musical aesthetic include Kurt Schwitters's *Ursonate* (1922-32), the 1970s works of Henri Chopin (1922-2008), the Swedish composers Åke Hodell (1919-2000) and Sten Hanson (1936-2013), the recorded text experiments of William Burroughs (1914-1997), the early 20th century Dadaists and Russian Futurists.

Free improvisation is another area of music that I have been involved in for some time, paralleling my involvement with folk and electronic music. I have found the freedom and fluidity that the practice of free improvisation teaches and affords to be a natural extension of my work with

folk music and live electronics. An important figure informing this aspect of my work is Albert Ayler. The rough-hewn beauty and visceral strength of Ayler's music has had a strong influence on me even though my work is audibly different. Though Ayler's free improvisation is informed by jazz, in Europe a strand of this practice moved away from its jazz roots in the mid-1960s, drawing on influences from the Western art music avant-garde.¹ I first came across such work in Stockholm at Fylkingen in the late 1990s through performances by Johannes Bergmark, Raymond Stridh, Tuomo Haapala, Jörgen Adolfsson, Marie Selander and many others.²

The vocal folk traditions I draw on use a variety of vocal techniques. Often termed "extended" techniques in Western art music, the concept is vague and dependent on the tradition one is working within. For an opera singer a loud inhale could be considered an extended technique. However, for many vocal improvisors, from Jaap Blonk to Maja Ratkje, grunts, yelps and other guttural and non-articulated sounds are an integral part their sonic arsenal. Overtone singing and its sub-species Tuvan throat-singing have been a part of my repertoire for well over a decade. Yodel, or, more specifically and less comically, the emphasis of *passaggio*³, is a much maligned technique, but is actually an essential part of many traditional singing styles, up to and including contemporary pop singing. While overtone singing and yodel are nominally folk/traditional vocal techniques, for me the sonic and technical practices of figures such as Demetrio Stratos, Paul Dutton, Marie Selander, Phil Minton and Jaap Blonk are important points of reference in my work with extended vocal practices.

Although folk and other performing traditions inform the sonic characteristics of my work, some of the conceptual and procedural processes are derived from further afield. These are often shaped by information theory and by extension its relationship with noise, encoding and cryptology. In the mid-1990s I came across the book *The User Illusion: Cutting Consciousness Down to Size* by the Danish writer Tor Nørretranders (Nørretranders, 1993). Whilst defined as a book about consciousness, it is also a very thorough journey through the history of science and of Man from an

¹ A good example would be Cornelius Cardew, a central figure on the early British improvisational scene, but who had been Karlheinz Stockhausen's assistant for a few years and who's compositions of the late 1950s were strictly serial in construction.

² "Fylkingen is a venue and artists' society for new and experimental work in music, performance, video, film, dance, sound-text composition and intermedia. Since its establishment in the 1930s, Fylkingen has been committed to experimental work in the contemporary performing arts. The organisation is made up of over 250 member artists from many disciplines who use the venue to develop and present new work." From Fylkingen's website: <http://fylkingen.se> [accessed 12 January 2015]

³ In classical singing, *passaggio* is a term that describes the point where a voice changes registers, from chest voice to head voice and the ideal singer is able to traverse this point with no perceptibly effect. In yodelling and related styles, the singer instead chooses to emphasise the *passaggio* by skipping back and forth between the registers.

informational point of view.⁴ It has led me to explore algorithmic, serial and generative compositional methods that I may not have found meaningful without my encounter with Nørretrander's captivating overview of information theory. I was particularly intrigued by his writing about the process of transmission of information. In information theory, noise is to be considered the opposite of information, so any musician performing any score is by necessity introducing noise into the transmission of that score. It follows that this noise is a vital part of communicating some essence of the music. With this as a starting point, I have created a metaphorical and partly methodological link to cryptology in my work by viewing some of my music as comment on the encryption/decryption process that is involved in any transmission of information. Central to any process of encryption and decryption is the so-called encryption key. Without the right key, decryption is very hard or even impossible. Unlike language, where scrambled information tends towards the meaningless, music can create meaning even without the correct key. In some of my music, I exploit and magnify the disconnect between successful encryption and unsuccessful decryption.

Of the twenty-two works submitted in the portfolio, ten involve the use of MAX to control and generate the sounds or the score.⁵ I started experimenting with MAX in 2010 and I quickly found that it was an excellent platform on which to base my live performances and explore my ideas for sound art works. I also soon found that the laptop and MAX offer seemingly limitless potential for performing using pre-recorded sounds. Central to my practice is the fact that the available sampling time has expanded from the few seconds available in my once expensive AKAI S3000XL to the size of my hard disk. Faced with the choice of having potentially unlimited amounts of recorded material available for a live performance, I decided that I would simply have no pre-sampled material at all. Similarly, faced with the option to automate all of the parameters in a MAX patch, I decided that, for me, performing live means that I need to control my instrument in real time without recourse to presets.⁶

The reference points described above are some of the more important nodes defining the web of practical and theoretical concerns that inform the music I have been composing and performing throughout this research period. In my compositional research, my commitment has always been to

⁴ Nørretrander's book is also credited with the introduction of the concept of exformation, a concept that was a central part of my collaboration with Ryoko Akama in *Ichion jyōbutsu* (cf. Chapter 2.2)

⁵ MAX, <https://cycling74.com/> [Accessed 2 April 2015].

⁶ With the exception of certain set-and-forget type of presets, essentially my own default settings for certain processes.

achieving musically expressive ends, rather than to specific investigations into any one cultural, historical, theoretical or musicological movement. At times feeling isolated within my artistic oxbow lake, I have found it encouraging that it is not unusual for artists not to stick to a single vector, one over-arching concept or one hierarchy of ideas. Instead, I have gained insight from the idea that, “It is the outward looking practice of nodalism that facilitates a plethora of resources to be plundered. It is arguable that the more nodes one is aware of, the more original one’s work will be.” (Adkins & d’Escriván, 2013, p.54).

Rather than defining my creative practice using a static hierarchal model, I am better served by the idea of a dynamic matrix of co-existing priorities. Individual works have differently weighed priorities in terms of the nodes available within the matrix. This is what Adkins refers to as “local hierarchy”:

When a composer is working on a new composition this local hierarchy demonstrates their specific musical and cultural influences within the piece. This concept of local nodal hierarchy can be used as a unifying concept for understanding models of creativity within a specific composition, within a composer’s oeuvre, the genre in which they work and their cultural community. (Adkins, 2014, p. 52)

My diverging interests – my nodes – are my means of traversing a personal creative space. Otto Laske defines a “Compositional Habitat” in the context of computer music (Laske, 1990, p.54) and I find this a concept that aptly extends to cover the node-based ecology of ideas and techniques that I work in. My own compositional habitat is one where the nodes described above are points of reference for me to make sense of the musical impulses, desires and ideas that inform a new work. I then transform these into the methods, techniques and sounds that becomes the music of my particular compositional habitat.

Transformations

Thirteen of the pieces included in this portfolio use traditional songs as a point of departure.⁷ Central to my interest in working with these songs is the issue of how to deal with the original melody and text. How can one reinterpret traditional songs and develop them to create a piece that will stand on its own? This involves a certain knowledge and understanding of the original material – its historical and musical context and its meaning. Texts are a form of narration (sometimes more, sometimes less explicit) and the music needs to be in some sort of relationship with this narrative.

⁷ Two are poems and not songs.

There are also a number of works submitted (e.g. *Ichion Jyōbutsu* and *The Deep Blue Book*) that manipulate texts (not necessarily of musical origin) as if they are simply raw information that can be processed in any manner. For these pieces, algorithmic and generative compositional ideas, as well as information processing techniques are the main inspiration. There are works where the musical output, i.e. the audible results, were the only concern and the methodology for the compositional processes was more intuitive. Nonetheless, reflecting on these pieces after completion, it is clear to me that many of the ideas about narration, information and technical processes that I have worked on were infused into the work with these compositions as well.

Chapter 1 will provide the theoretical underpinning of my work through an examination of the nodes outlined above: folk music, the use of voice, technology and information theory. I will discuss how I have used these nodes as conceptual points of origin for elaboration in my own compositions and how the structure of these works is informed by my wider cultural and aesthetic readings.

As my research has developed, I have found that whilst live electronic performance still forms the core of my work, other practices such as installation, fixed media work and scored works (for performers other than me) have become important means to develop my ideas and concepts further. In my portfolio, eight compositions have notated scores and four are fixed media works. Rather than artificially split my portfolio into whether the pieces use live or fixed electronics, notated score or live improvisation, I will primarily discuss the portfolio in terms of its approaches to text and the voice. Chapter 2 will consider my work from the following perspectives:

- text as verbal and narrative information
- text as discrete points of information
- voice as verbal information
- voice as non-verbal information
- voice as material

My development of the Harmonic Sequencer, a tool I created in MAX, is documented in Appendix 1. The Harmonic Sequencer is a software sequencer that mimics (in reverse) the relationship between the harmonic series and equal temperament tuning transferred to the rhythmic domain. The idea stems from the desire to experiment with Stockhausen's ideas about the

continuum of duration and pitch (Stockhausen, 1957), an idea also proposed by Ezra Pound.⁸ This part of the text has also been published in the fourth edition of the Divergence Press Journal as part of the Beyond Pythagoras Symposium Proceedings (2014) at the University of Huddersfield (Baars, 2015).

Scores and other materials for reference are included in further Appendices.

⁸ In his *Antheil and the Treatise on Harmony* (1927), Ezra Pound proposes that “music is a composition of frequencies” (p. 24), a claim meant to underline his thesis that ultimately even harmony is a kind of rhythm because pitch is measured by the frequency of sound waves over time; rhythm is thus the most elemental aspect of artistic expression.” (Pound, 1927, quoted in Zamsky, 2013)

Chapter 1: Context

“There are really only four things you can do. You can repeat something. You can re-evaluate something that used to be there and you've now put a different value on it. You can leave something out, and you can put something new in. And putting something new, which is always considered to be the defining act of being an artist, is only one of four, I think. All those other four decisions are just as important.”

Brian Eno & Jennifer Jacquet, *A Rough Mix, An Edge Conversation*
(Eno & Jacquet, 2011)

1.1 Folk music

Herder's theory of the *Volksgeist*⁹ was among the key factors contributing to the song-collecting movement that became one of the narratives of 19th century Europe. Sound recording was yet to be invented, but transcriptions of songs and melodies abound from virtually all European cultures at this time. The idea of collecting “authentic” folk songs, tales, myths, etc. was very much in vogue early in the 19th century and by the end of the century had established itself as a science. It had its own pioneers and heroes, as well as grand theoretical structures and divisive polemics.

In the English speaking world, the peak of this movement can be considered to be the publication of the *Child Ballads* in five volumes between 1883 and 1898 (e.g. Child 2005).¹⁰ This work was in turn based on much earlier collections, for instance *Wit and Mirth: Or Pills to Purge Melancholy*, collected by Thomas d'Urfey (1698-1720), *A Collection of Old Ballads* edited by Ambrose Phillips (1723-25), and *Reliques of Ancient English Poetry* (1765) collected by Bishop Thomas Percy.

The reasons for these efforts were partly to be found in ideas about national identity and I would argue that to this day, ideas related and evolved from these original intentions are partly responsible for the periodic surges in folk music revivalism. Another integral part of folk music revivals is pure sentimentality: the idea that once upon a time, people led better, simpler lives and correspondingly created and enjoyed “purer” art and entertainment.

⁹ Johann Gottfried Herder (1744-1803), German philosopher who was a key figure in the development of the idea of national identities in the 18th century.

¹⁰ Curiously, the *Child Ballads* have recently been comprehensively re-issued, suggesting some sort of contemporary peak of interest in this material. Publisher: <http://www.loomishousepress.com/child/> [accessed 12 January 2015]

For me the chief attraction of traditional material has always been the process itself of a melody or text being transmitted orally down generations of singers and musicians. Bypassing sentimental notions of an idealised past, I am fascinated rather by the evolution and survival of the songs themselves and their possible relevance in today's world. Admittedly, the process of songs slowly passing from mouth to mouth will also lead to formulaic types of texts and melodies, much like the sea will rid a stone of all its sharp edges. But amongst the abundant multitude of collected materials one can nonetheless find unique and marvelous pieces of oral tradition – with lovely sharp edges – songs that for intrinsic aesthetic and semantic reasons resonate with my own ideas and emotions.

The particular songs that capture my imagination are often songs about death, loss and mourning. The origins of the songs lie largely with the underdogs of the societies which created them and the originators' illiteracy made them orally transmitted traditions by necessity. The songs are “the music of the defeated”, borrowing the words of Henry Miller (Miller, 1945, p. 178), and this is maybe what lends them the power to acquire my sympathy. In addition, it could also be what enables the songs to resonate with the concerns of modern society – some elements of human existence have not changed at all in hundreds of years.

Working in and around the field of folk music, someone like me – who comes to traditional folk music as an outsider, belonging to no particular tradition – one soon becomes aware of certain problems surrounding the research and performance of folk music. Three notions in particular will crop up sooner or later: authenticity, nostalgia and nationalism. I have come to regard them as The Three Ogres of Folk Music.¹¹ I use those particular three words in a very broad and deliberately polemic way. While the concepts possess a certain validity (and not only in folk music), they also reflect an inherent absurdity akin to statements such as “only Southern share-croppers can play real Blues”, “Baroque music celebrates the glories of slavery and absolute monarchs” and “playing klezmer shows a support for Israel's policies in Palestine”, respectively.

I raise this topic largely because I see it is an unavoidable part of working with folk music. My compositions *The Bonnie Banks o Fordie*, *The Little Mohee*, *The Rich Man's Soul*, *The Three Ravens*, *The Kingdom of Heaven Likened Unto Ten Virgins*, *The Lover's Death*, *Farait un vers de dreit nien* and even *20th Century God* and *Poison*¹² are all open to criticism by The Three Ogres of Folk Music. Firstly, in my compositional work I have not been at all concerned with notions of

¹¹ A documentary film that clearly illustrates the eerie dangers of the Three Ogres of Folk Music is Adela Peeva's “Whose is This Song?” (2003).

¹² In as much as they are poems by important authors and come with their own cultural strings attached.

nationalism or patriotism with respect to the material I choose to work with. Secondly, while I may well embrace the sentimental aspect of a given song, it will be because it communicates something about the human condition, not because it was written in some former age of blissful simplicity or imperial greatness. Lastly, my interpretation and emphasis on authenticity differs significantly from what “traditionalists” would understand it to mean. For me it means taking care to cognitively encompass a sizeable amount of information surrounding the tradition from whence the song came. From a practical, musical point of view, it means I rehearse unaccompanied songs over and over again, so that it becomes embedded in my practice in their “original” form.

In Western art music there is a long tradition of using folk music sources as a basis for composition. This ranges from the incorporation and arrangement of folk melodies (e.g. Mozart, Brahms, Vaughan Williams and Hugo Alfvén) to more sophisticated use of the original sources (e.g. Béla Bartók and Igor Stravinsky). Without necessarily positioning myself within or without that tradition (some contemporary examples are Karin Rehnqvist, Vladimir Martynov and Kaija Saariaho) a lot of my work is focused on performing a given folk song, but within a matrix constructed out of the nodes referred to in the introduction: sound poetry, extended techniques, free improvisation, information theory and electronics. In this respect, I do not think of myself as re-interpreting just the songs, but also reinterpreting the actual traditions of performing folk songs.¹³ From an informational point of view, I am gratuitously introducing extraneous noise into the decoding of traditional songs. With respect to the Three Ogres of Folk Music, I am up to no good, but I maintain that my transformations are valid re-substantiations of our communal heritage: as a contemporary person my methods reflect contemporary concerns and are their own validation.

W. B. McCarthy’s “The Ballad Matrix” (McCarthy, 1990) discusses how orally transmitted songs are constructed around various formulas, both on the micro and macro level. The micro level is the structure of each verse, e.g. an ABAB rhyming scheme, the number of stressed syllables in each line of a verse, etc. The macro level is the overall structure of a song and it can be very complex, involving symmetrically stacked verses with corresponding narrative structures. It is very common for a song to adhere strictly to its micro structure, which is only natural, as this is a very obvious feature of any song/text. By comparison, the macro structure is a veiled feature of a song. And while this level clearly helps to support the unfolding drama of the song, it also serves as an important mnemonic tool in oral traditions by creating a structure of subsections that interlink with

¹³ For instance, a considerable deviation from traditional performance practices is to destructively manipulate the original text beyond recognition, indeed beyond coherence (e.g. *The Lover’s Death*).

varying complexity with the overall arc of a story. It is rare for the macro structure of a song to be entirely “pure” and deviations from the theoretically implied structure are the norm.

Part of my process of decoding old traditional songs is that I have sometimes had to edit the texts. With older ballads, I have found that while the narrative may have been very clear to the singer’s contemporary listeners, a few hundred years later this may no longer be the case. Part of my process of working with English language folk songs with clear narrative structures is to edit the text to ensure that this narrative is not too obscure, up to and including re-writing verses. What the text loses in authenticity, it gains in clarity to a modern listener. In this editing process much attention is paid to the above mentioned micro structures of the song. On the other hand, considerations for the macro structures have a lower priority than the clarity of the narrative.

One way to encapsulate my approach towards folk traditions is to call my process of composition a re-encoding. I seek to return to the source of the song, its imaginary proto-state, but then turn the clock forward again. Using my point of view as an experimental composer and musician, I re-encode the song into personal and contemporary modes of expression, hoping that it will carry meaning in today’s musical and historical (and cognitive) terms. Another way to state this would be that I maintain a connection with the songs, but not with the traditions. So, even though I prefer to think of myself as belonging to the historical vector of an avant-garde rather than that of the tradition bearer, I sympathise with and will emphasise the validity of my source material.¹⁴

1.2 Voice

Nineteen of the twenty-two works submitted in my portfolio feature my own voice, with a subset of nine that use nothing but my voice.

As a performer, I employ different types of vocal expressions that could be roughly divided into three areas: traditional singing (in the commonly used sense of the word), defined traditional extended techniques (e.g. Tuvan throat singing, *passaggio* yodel and pressed phonation) and non-standard extended techniques (ingressed phonation, unlunged phonation, various glottal and laryngeal manipulations, etc.¹⁵). My decision to work with traditional extended techniques is based on a desire to explore the use of my voice as a means of producing interesting – and relevant – sounds and is not primarily concerned with their traditional use or their cultural significance. But understanding the cultural and historical contexts that produced these techniques is important and more often than not also contributes to the practice itself of the technique.

¹⁴ Which could be critiqued by both traditionalists and experimentalists as trying to eat my cake and have it.

¹⁵ Michael Edgerton also refers to these techniques as extra-normal voice (Edgerton, 2004).

Occasionally, works will be based around one or a series of specific vocal techniques (e.g. *Lykanthropos*¹⁶ and *Call of the Lonesome Quarkboy*¹⁷). However, more often I strive for a fluid movement across the three areas and avoid stressing the distinctions between them. Paraphrasing from football, I strive for the concept of a “total voice”: melodic singing mixing with contra-tonal,¹⁸ transitioning freely to extended techniques and back, guided by the necessities of the score or by moment-to-moment decisions, depending on construction of the piece.

I have been singing traditional folk songs in over half a dozen different languages for a long time, including several languages I do not speak or understand. I noticed that communicating the emotional content and the abstracted narrative of a vocal work did not necessarily hinge on the comprehensibility of the text, but on many other performative factors outside of the actual text (voice timbre and body language, for instance). This is an important part of what led me to begin experimenting with the space between language and sound, between coherence and perplexity. In short, an imaginary quadrant where sounds meet words, but also where words can abandon their linguistic properties, but not their semiotic ones. The sources of inspiration for my exploration of voice as an instrument lie with the aforementioned vocalists, beginning with Dada and leading up to contemporary experimental vocal practice – the acoustic and electroacoustic voice-based music of Trevor Wishart, the virtuosity of Phil Minton, Cathy Berberian and Demetrio Stratos, the naked physicality of Diamanda Galas and Sainkho Namtchylak, the strange lyricism of Meredith Monk and Mike Patton and the energy of Jaap Blonk have all in different ways affected my own perception and practice of the instrument. But because every voice is essentially a non-standard instrument, a lot of the methodology is down to practicing, as well as writing pieces that allow one to exploit different aspects of one’s instrument.¹⁹ So, although there are many sound performers who one way or another have exerted some influence on me, there are few, if any, that have had a defining effect on my own performative practice. Marie Selander is perhaps the exception. For a short while she was my voice teacher, but more importantly, from the very beginning I shared with her an affinity for mixing vocal folk music and free improvisation voice techniques.

¹⁶ Different types of overtone and throat singing.

¹⁷ *Passagio* yodeling.

¹⁸ The term contra-tonal is borrowed from David Huron who writes that: “the term “atonal” (without tonality) is something of a misnomer since tonal schema continue to inform listener expectations – albeit in reverse. From a perceptual point of view, a more accurate term might be “contra-tonal” (against tonality).” (Huron, 1992, p. 182).

¹⁹ The seed of what became *Two Timing* was a period when I was exploring consonants as source material, which led to the idea of separating vowels and consonants, the compositional method at the heart of *Two Timing*. Similarly, *The Lover’s Death* has its origin in improvisations where I tried to use words, but in such a jumbled and non-structured way that any potentially emerging meaning is consistently obliterated by the following sounds.

One particular experience that has influenced my approach to non-standard vocal work is performing with The Great Learning Orchestra (GLO).²⁰ I have been performing with GLO since 2005 and most of the projects we have done have required that I perform as part of the instrumental ensemble, i.e. tailoring my sounds to blend with the reeds, brasses, guitars, and percussion, etc. This is an unusual practice for vocalists, who tend to be used to being soloists or at least distinctive voices within a group of musicians.²¹ Over the years I have gradually developed a way of responding to the collective timbre, adjusting my own tone, pitch, formants, etc. to blend with GLO's many diverse instruments.²²

The continuous and extended use of my voice instrumentally – as opposed to “vocally” – is, I think, why moving casually between the three areas (singing, traditional techniques and extended techniques) has become second nature to me. I have dissolved the need to distinguish conceptually between singing a melody, speaking words and using my throat as a sound generator with a flexible resonance chamber.

1.3 Electronics and voice

The use of voice in electroacoustic music goes back to the very beginning of the genre, some notable examples being Pierre Henry's *Vocalise* (in *Le Microphone Bien Tempéré* 1951), Stockhausen's *Gesänge der Jünglinge* (1955-56), Berio's *Thema: Omaggio a Joyce* (1958) and Herbert Eimert's *Epitaph für Aikichi Kuboyama* (1962). By the late 1960s performance art, live poetry, text-sound composition, free improvisation, and particularly the growing availability of sound processing technology outside of institutions had all in various ways influenced the use of voice in electroacoustic music. In the 1980s digital audio technology further expanded the tools available to composers and performers and by the late 1990s this technology and its associated processes had become commonplace and very affordable. From Pamela Z and Maja Ratkje's straightforward use of electronics to Trevor Wishart's complex work using his own programming, the looper virtuoso Reggie Watts and Jonathan Zorn's conceptually oriented vocoder experiments, voice and electronics today cover an ever expanding territory of creativity. A significant role in the

²⁰ “A network of a little more than one hundred musician from different genres, cities and countries, meeting up to explore music with *listening* in the centre. The GLO is based in Stockholm but cooperates with composers and musicians from all over the world.” From www.thegreatlearningorchestra.se [accessed 13 January 2015].

²¹ Even singing with a choir, a singer is, after all, blending one's voice with other voices, not with instruments. Naturally, there are also many exceptions, such as Steve Reich's use of the voice in *Drumming*, 1971 and similar works.

²² Admittedly, I only came to realise the extent of this “training” when it was pointed out to me not long ago. But from the very start of working with GLO, I was aware of wanting to find ways of using my voice as an instrumentalist, not only as a “singer”.

development of the aesthetics of use of voice in electroacoustic music is of course the evolution of the tools for voice and sound manipulation from refrigerator-sized to microprocessor-sized. The same process also enabled the shift from the stationary studio to the portable stage set-up and, with the exponential growth of processing power, from off-line to on-line composition.

Though there was originally a dividing line between *musique concrète* and *elektronische Musik*, the distinction quickly faded away and certainly in the realm of digital sound processing it tends towards the imperceptible. Nonetheless, I do think of my work as being part of a tradition stemming from *musique concrète* (in as much as my starting points are so often my own real-world sounds).

In her paper “Human Voice Treatment in Various Types of Electroacoustic Music” (Hettergott, 1999), Alexandra Hettergott writes:

The treatment of human voice in electroacoustic music ... can functionally be differentiated in (I) an informational (speech), (II) an instrumental (voice), and (III) a material (sound) processing mode ... with the “material” one being the most recent as well as the most peculiar [sic] to electroacoustic music.

For my own purposes, with cues from information theory, I will redefine these categories into (i) a verbal information mode, (ii) a non-verbal information/instrumental mode, and (iii) a material processing mode. These categories avoid the distinction between speech and singing, which to me is less significant than the distinction between verbal (i.e. consisting of words and relying on linguistic comprehension) and non-verbal (i.e. the voice generating meaning beyond language: gestural, emotional, onomatopoeic, etc.).

The third category is distinct from the first two, because the recorded and post-processed voice is at least one step removed from the fully embodied, real-time voice of the vocalist. Apart from being, as Hettergott points out, largely specific to electroacoustic music, the material processing mode is also the one where the voice can be treated distinctly as an object. In his book “A Voice and Nothing” (Dolar, 2006) Mladen Dolar examines the voice as an object on several different levels. He delineates three uses of the voice – as a vehicle of meaning, as a source of aesthetic admiration and as:

an object voice which does not go up in smoke in the conveyance of meaning, and does not solidify in an object of fetish reverence, but an object which functions as a blind spot in the call and as a disturbance of aesthetic appreciation. (Dolar, 2006, p. 4)

He goes on to call it “a remainder which cannot be made a signifier or disappear in meaning: the remainder that doesn’t make sense, a leftover, a cast-off – shall we say an excrement of the signifier?” (Dolar, 2006, p. 20). The voice as object is an essential part of my approach to creating music in the electroacoustic sphere. However, it is also the basis of the compositional concept of pieces where the use of voice tends towards being an acoustic instrument, bypassing its nominal role as conveyor of meaning (e.g. *Two Timing* and *Ma ejejf*).

1.4 Technology

The technology used in the production of music will influence, even determine, many aspects of that music. Mike Vaughan writes:

The manner in which the available technical resources interact with the composer’s view of a specific musical work, and its internal processes of construction, is of paramount importance. This is because the tools of realisation tend to elicit forms of normative behaviour determined in part by tradition but also, and more significantly, by the architecture of and design of the various components present in the production chain. (Vaughan, 1994, p. 111)

He also refers to Adorno’s phrase “the interposition of the equipment” (Adorno, 1954, in Vaughan, 1994, p. 112). Sixty and twenty years later, respectively, the situation is, in essence, unchanged. As electronic musicians today, we have access to a vast multitude of options in terms of the equipment that will interpose on our music. The breadth of equipment choices combined with the depth of control over the behaviour of the equipment means that we are all potentially able to construct our own individually tailored ecology of sound processing. In *A Cyborg Manifesto*, Donna Haraway uses the image of the cyborg – part human, part machine – to argue that each of us is a unique individual because our personal, life-long set of tools has each of us is ceaselessly evolving in our complex relationships with our chosen tools: the tools influence us as much as we influence the tools (Haraway, 1991).²³

The use of technology is an integral, if not always a central, part of most of the work included in my portfolio. My approach to using technology for the creation of music strives for what I call a “transparent use of technology”. By this I mean that the emotional, semantic and intellectual content of the music should be communicated without the listener having to focus on

²³ Haraway uses the cyborg metaphor to make a more far-reaching argument, refuting all the dualism we have come to take for granted: “self/other, mind/body, culture/nature, male/female, civilized/primitive, reality/appearance, whole/part, agent/resource, maker/ made, active/passive, right/wrong, truth/illusion, total/partial, God/man.” (Haraway, 1991, p. 178). But for the purpose of this paper, the man/machine dualism is my main focus.

any of the underlying technology and the validity of the music should not be based on the employed technology. I feel that technology has to remain a tool facilitating the creation and communication of my musical intent as a composer/performer, not to be something that over-shadows the music or becomes an end in itself. I wish to avoid a situation where “a confusion arises between the output of artistic intention and the results of assimilating new technology” (Vaughan, 1994, p. 113).

As mentioned in the Introduction, a defining parameter of my working method is that I avoid using pre-recorded material in my live performances. Though originally a purely intuitive decision, it is one that has had to be re-affirmed on a regular basis as my technical equipment and my music has evolved. I remain unwilling to embrace the paradigm of performance playback because of a feeling that eschewing the use of prerecorded material in a laptop is for me a crucial and necessary self-imposed limit. It forces me to reach for compositional solutions that rely primarily on my ability as a performer, not as an off-line engineer. It is a result of my wariness of “the interposition of the equipment”, with pre-recorded material representing in some ways an easy way out for a solo performer. Additionally, as the voice is a particularly mutable instrument, I find it aesthetically more consistent as a vocalist to build up a performance from scratch.

According to Cornelius Borck, the visionary artist Raoul Hausmann²⁴ felt that “the future belonged to ‘a mechanical intensification of our natural faculties.’” (Borck, 2005, p. 18). For this “intensification” to remain connected with my “natural faculties”, it is vital for me to be able to manipulate my technological extensions intuitively. As my work with MAX reached a certain level of complexity, I faced another fork in the road: how to deal with presets. I came to the conclusion that the immediacy of a real-time performance requires hands-on control of my sound production tools. Hence it became increasingly important to create interfaces in MAX that give me in-depth and intuitive control of my soft- and hardware tools, whilst allowing me to focus properly on the most important instrument of my performances, my singing voice. In many ways, the issue of technological transparency for the listener is this way mirrored onto the performer: the interface needs to be transparent to the performer – intuitive, in spite of the complexity of programming behind the user interface – so as to allow the performer to concentrate on expression, rather than detailed analysis and planning during the performance.

In the words of Haraway, “Why should our bodies end at the skin...?” (Haraway, 1991, p. 179). A performance that becomes a “conversation with machines” is at the heart of my personal idea about live electroacoustic performance and for me this requires more than preset-selection

²⁴ Raoul Hausmann (1886-1971), Austrian artist and writer and a leading figures of Berlin Dada in the late 1910s and early 1920s.

control of the software and hardware and more than a collection of pre-recorded audio files. My approach also requires copious amounts of rehearsal time to achieve a proper level of intimacy with the tools I use. However, the rewards that result from this time spent with the software and hardware tools are a sense of immersion and flow that allow me as a vocalist to improvise with both great freedom and precision.

In my live performances, the tools I have worked with are MAX on a MacBook Pro and the Lemur software on my iPad to control my patches in MAX. In addition, I tend to use at least one, sometimes several, hardware delay pedals²⁵ looped in and out of my sound card (an RME Fireface 400) and integrated into my MAX patches as if internal effects. Using an iPad to control events and processes in MAX has enabled me to use physical gestures – as opposed to keyboard commands and the laptop's trackpad – in performance. I consider this approach an important part of the overall impact of a performance, especially when using a laptop. Cascone writes that,

This very lack of gesture or spectacle calls into question the exchange value of a laptop performance. Are the artists really performing on a laptop or are they merely playing a sound file while secretly checking their email? (Cascone, 2003a, p. 2)

Additionally MAX also offers the possibility of (circumscribed) randomness. Even if the material at the input stage remains the same, the output would always be different. In reality, because improvisation plays a large part in my live performances the input is never exactly the same and so the output is even more varied. This second generation indeterminacy is part of a feedback cycle where the performer must in turn incorporate those results in the ongoing performance.

For my studio work I tend to use a completely different setup. The studio allows a far greater choice of tools and thereby the workflows can be tailored more specifically to what it is I want to achieve musically. The studio is an off-line environment, where one can fine tune parameters, re-record and generally achieve a detailed level of control that is very different to live work. I very seldom use MAX in the studio, preferring to work in my DAW (Logic, Ableton Live, Pro Tools) in combination with external hardware (audio effects, Eurorack modular processors, etc). Because

²⁵ I tend to use a lot of different delays, but almost never use reverb, as I find that it blunts the impact of the sound. This is particularly the case when layering many parallel sound events onto each other, creating a cloud of sound that could easily lose its sharp contours. The repeats of a delay are events with clear envelopes, whereas reverb results in a diffusion of events and I much prefer the former.

portability is not an issue, in the studio I can use bulky tape delays and other physically large outboard effects, including a rather oversized Telefunken reel to reel stereo tape recorder.²⁶

1.5 Information

As mentioned in the Introduction, a starting point for many of my composition methods are various ideas about processing text and music as data. Arguably any process of transformation or interpretation does just this. But I have become interested in creating methods where the original text or melody is treated purely as data, with little or no regard for the intrinsic syntactic structure of the original. In other words, methods that ignore the structural integrity of the data, which is what actually lends it meaning. For instance, processing letters individually will completely destroy the semantic meaning of the original,²⁷ as will processing a melody with no regards for the tonal logic that lends melodies coherence.²⁸

Many times I refer to these procedures as methods of encryption, my idea being that the data is encrypted into a score and later decrypted in a performance. I often prefer to use the terminology of cryptology rather than other types of data processing (encoding, transforming, etc.), because it emphasises my systematic and wilful distortion and enshrouding of the original data.²⁹ While encryption is in many ways a metaphor for the various processes of transformation I employ, it has also supplied me with many ideas about specific methods of data manipulation. Encryption as a metaphor has also supplied me with important insights into the role of the performer/performance as a tool/process of decryption.

The Dadaists were perhaps the first to use a seemingly stochastic approach to language and William Burroughs accordingly traces Brion Gysin's literary cut-up techniques back to the first Dadaists and their collages in the early 1920s (Burroughs, 1962). A cryptological approach is a variation on those themes because the underlying idea is not chaotic in intent (i.e. randomness, be it Gaussian or pseudo), but order (i.e. a system of encryption). The results are a score that is the basis of a performer's attempted decryption of the information. The fact that a proper decryption is impossible – the score becoming an obstacle course for the performer – and that only a flawed attempt at decryption is possible is central to the whole concept. For me, this is where the music

²⁶ Telefunken M10A, probably from the early 1970s.

²⁷ *Two Timing* and *The Deep Blue Book* employ this method, though in very different ways.

²⁸ *Ma ejef* and *The Deep Blue Book* use different methods of processing the original melodies.

²⁹ OED defines encryption as “conceal data in (something) by converting it into code.”

comes to life, in the phantom decryption that lies between the composer's encryption and the performer's idealised, but unrealisable decryption.³⁰

Another particular aspect of information theory that I have dealt with in my composition work is the concept of exformation (Nørretranders, 1993). The word has not found its way into regular dictionaries, but Wikipedia defines it as “explicitly discarded information.”³¹ For instance, performing a simple melody written in standard notation requires a substantial amount of information that is absent from any score – essentially all the knowledge that allows one to understand standard notation. Notation reading skills consist of exformation and scores are information; without the exformation, scores are unreadable. Exformation was the defining concept of *Ichion Jyōbutsu*, composed and performed with Ryoko Akama.

Letter frequency indicates the frequency with which any letter of a given alphabet occurs in a given language. The study of letter frequency is central to the study of cryptology, but has also played an important part in other language related fields, for instance in the early history of the process that eventually led to ASCII. Letter frequency can never be an exact measure, since writing styles and topical necessities vary, but it does allow one to establish a fairly accurate hierarchy of letters. For instance, in English e, t, a and o are the four most frequently occurring letters.³² In Carol L. Krumhansl's theory of tonal hierarchies in music (Krumhansl and Cuddy, 2010), I found a musical correlation to the letter frequency of languages. I analysed the letter frequency and the pitch frequency of a transcribed Russian *bylina*³³ and then correlated the rankings in the two resulting tables. I then used the tables to generate melodic material, by going through the original text letter by letter. This particular method led to the instrumental piece *The Deep Blue Book* for horn, guitar and double bass.

Approaching textual and musical source material using informational sensibilities has lead me down a creative path where the interaction between my source material and myself is on a granular level, to paraphrase sound processing terminology.³⁴ It has led me to create pieces which invite me as a vocalist to explore the region between language and non-language. This approach

³⁰ Expressing this in terms of information theory would be that the level of noise introduced by the performer during interpretation becomes very high when compared to for instance a traditionally scored vocal piece.

³¹ <http://en.wikipedia.org/wiki/Exformation> [accessed 20 january 2015]

³² <http://en.algorithm.net/article/40379/Letter-frequency-English> [accessed 21 January 2015]

³³ *Bylina* is a collective name for Russian and Ukrainian oral sung epic narrative poems.

³⁴ The other levels could then be thought of as the linear level (as in *The Little Mohee*, where the piece is an interpretation of the original) and super or meta level (as in *Lykanthropos*, a piece that is an abstracted form of the original).

weakens the voice's links to Dolar's first two functions of the voice – as a vehicle of meaning and as source of aesthetic admiration. Also, seemingly paradoxically, dissolving the connection to meaning and beauty is exactly what allows the exposure of Dolar's third function, that of voice as an object, “the remainder that doesn't make sense,” (Dolar, 2006, p. 20).

Roland Barthes' much-quoted essay *The Grain of Voice* (Barthes, 1978) discusses ideas somewhat related to Dolar's. Borrowing from Julia Kristeva (e.g. Kristeva, 1974), Barthes proposes the distinction between *pheno-song* and *geno-song*:

The *pheno-song* (if the transposition be allowed) covers all the phenomena, all the features which belong to the structure of the language being sung, the rules of the genre, the coded form of the melisma, the composer's idiolect, the style of the interpretation ... The *geno-song* is the volume of the singing and speaking voice, the space where significations germinate 'from within language and in its very materiality'; it forms a signifying play having nothing to do with communication, representation (of feelings), expression; ... Where melody explores how the language works and identifies with that work. (Barthes, 1978, p. 182)

Kristeva's original description of *geno-text* is: “Even though it can be seen in language, the genotext is not linguistic ... it is, rather, a *process*, which tends to articulate structures that are ephemeral ... and nonsignifying” (quoted in Szekely, 2006). Barthes in turn writes:

The 'grain' of the voice is not - or is not merely - its timbre; the *signifiance* it opens cannot better be defined, indeed, than by the very friction between the music and something else, which something else is the particular language (and nowise the message). (Barthes, 1978, p. 185)

The 'grain' is the body in the voice as it sings, the hand as it writes, the limb as it performs. (Ibid, p. 188)

By treating my chosen source materials as points of data to be encrypted and for the performer to decrypt in compositions such as *Two Timing* and *The Lover's Death*, I am attempting an exploration of the materiality of the voice – “the materiality of the body speaking its mother tongue” (Ibid, p. 182).

Chapter 2: Works

This chapter will devote itself to the discussion of text as verbal and narrative information, of text as discrete points of information, of voice as verbal information, voice as non-verbal information and the voice as material. However, because of the range of types of work submitted in this portfolio, I think it is of interest briefly to describe the distribution of my works along the axis of acoustic vs. electroacoustic and the axis of fixed media vs. live, as shown in Figure 2.1.



Figure 2.1: The distribution of works along the acoustic vs. electroacoustic and fixed media vs. live axes.

Figure 2.1 shows that while the majority of my compositions are defined by electroacoustic processes and are made for one (or more) live performer(s), there are several completely acoustic pieces, a few fixed media electroacoustic pieces and one piece, *Surium*, that I would describe as acoustic fixed media.³⁵ However, this spread is not primarily the result of my desire to explore various avenues of expression. It is a result of my focus on compositional and aesthetic processes, rather than the final medium itself. Depending on which nodes were being expressed (or explored) more strongly, different solutions and hence different mediums presented themselves. Nonetheless,

³⁵ *Surium* is placed in the acoustic/fixed media quadrant because it consists of unprocessed voices, as opposed to my other fixed media pieces, which all rely on the processing of the recorded voices.

vocal folk music and electronics could be said to be two core ideas that have accreted other things around them, such as for instance improvisation, extended vocal techniques, encryption and other informational processes.

It is these different approaches to materials that inform how I will discuss my portfolio. In terms of the audible end-results most of the compositions in my portfolio would not be easily identifiable as folk music, but I still regard my personal artistic agenda as being in line with the historical processes of transmission and adaptation of folk music. The notion of folk music as a static genre is only valid when limited to a brief snapshot of a specific time and place. Pinning down *the* way to perform, say, a fiddle tune is impossible: instruments, usage and playing techniques are always changing and bringing about changes in how that tune is performed.

2.1 Text as Verbal and Narrative Information

The works discussed in this section are: *The Little Mohee*, *20th Century God*, *The Bonnie Banks o Fordie*, *The Three Ravens*, *Farait un vers de dreit nien*, *Lykanthropos*, *The Rich Man's Soul*, *The Tale of Little Wolf*, *500 (A Texas Ballad)*, *The Kingdom of Heaven Likened Unto Ten Virgins*, *Poison*, *Surium* and *Pikku pikku liten*.

Text tends to be central to most types of vocal music, no less so in Western European folk traditions. This section discusses how I have used source texts in my compositions.

The compositions *The Little Mohee*, *20th Century God*, *The Bonnie Banks o Fordie*, *The Three Ravens*, *Farai un vers de dreit nien* and *Poison* are all based on existing texts/songs. The texts remain syntactically intact and the listener is able to perceive the verbal and narrative information of the texts clearly. The textual narratives are the *raison d'être* of these compositions and so it is the musical structures that go beyond the original context of the texts (whether songs or verse). However, because of the linear delivery of the original texts, and in some cases the retention of a strong relation to the original melodies,³⁶ the nature of these works can be considered to be a distant cousin of typical European 19th century classical arrangement of a folk tune.

The 8-channel fixed media composition *Lykanthropos* is also based on an old folk song (Jonson, 1983). This piece, too, is highly concerned with the narrative of the song, but nonetheless completely discards the original text – there is no verbal information at all.³⁷ Instead of using the text, it presents a series of tableaux that communicate the narrative and the drama of the original

³⁶ Primarily *The Little Mohee* and *The Bonnie Banks o Fordie*.

³⁷ Three key words are actually used in the piece, but they are extremely drawn out in time and only a very careful listening would reveal the words.

song using associative vocal timbres (natural and processed), dynamics and spatial movement. However, asserting its relationship with folk music and oral story-telling, *Lykanthropos* employs a clear “lead voice” structure (not a typical feature of fixed media pieces) and has rhythmic sections as references to the use of repetition in traditional ballads of Europe.

The Tale of Little Wolf and *The Rich Man’s Soul* occupy a middle ground between the previous two categories. Segments of text are presented clearly, but they are offered up as points of departure for the listener, not as fully fleshed-out narratives. *The Tale of Little Wolf* is an original composition, structured as an urban fairy tale and consists of seven acts. Textual snippets are used for creating loose, impressionistic, narrative vectors at the beginning of each section. (With the exception of *Act 6 – The Truth, Part 2*, which is built around the recitation of a short set of lyrics – though no less impressionistic.)

The Rich Man’s Soul is based on a Swedish ballad with a lengthy text (Jonsson, 1986). The original text was slowly edited down as the composition took shape. Rather than retain the full narrative, only a few illustrative verses or lines were kept and were used as stepping stones to introduce or illustrate ongoing musical sections. The original 38 lines were whittled down to 23 lines because my collaborator³⁸ and I were interested in creating a piece where the words of the song did not determine the vector of the entire composition, but where instrumental sections were able to develop on their own accord. For instance, the section in the recording of the composition (cf. Audio Appendix 3) from about 4’40” until 6’25” develops as a backdrop and eventually envelops just two lines repeated over and over:

Och själen satte sig på den döde mannens bröst, [And the soul sat astride the rich man’s chest]
Och själen satte sig på den döde mannens mun, [And the soul sat astride the rich man’s mouth,]
(Jonsson, 1986, p. 235)

The two lines above are a reduction of eight lines in the original song that describe the soul perching on the rich man’s chest, mouth and finally Heaven’s gates, all the while recanting the deeds of the rich man while alive and describing the soul’s torment. We felt that the two lines above adequately represented that section of the song and instead we built a musical climax around those words that we felt amounted to the same sentiment.

The Bonnie Banks o Fordie, mentioned earlier in this section, is a singular case because the text required a different kind of editing. Old, orally transmitted ballads existed in a context and the audiences at the time would have been familiar with the background stories and other contextual

³⁸ Jan Liljekvist, objects, flute and electronics.

information that need not be included in the songs (i.e. exformation). My intention is that when transplanting this kind of song to a contemporary audience I want to ensure that the narrative is coherent and complete. For my version of *The Bonnie Banks o Fordie* I rewrote a few lines and added some new lines that would fill certain gaps in the narrative. I also transplanted the ending from one version (version A of Child's *Ballad 14* (Child, 2005)) to the version I had chosen to work with (version E of Child's *Ballad 14* (ibid)), because I much preferred the dramatic finale of the second version. As the different versions were sung with different melodies and overall structures, it was also necessary to rewrite these lines to fit the musical structure of my chosen version.

First a selection of original lines (from version A):

‘For I hae a brother in this wood,
And gin ye kill me, it’s he’ll kill thee.’

‘What’s thy brother’s name? come tell to me.’
‘My brother’s name is Baby Lon.’

I had to add two lines, from different versions, to clarify what is happening. In addition some of the lines were altered so that they were a better fit with the melody I use³⁹:

She cried ‘I hae a brother in the woods,
And gin ye kill me, it’s he’ll kill thee.’

‘What be thy brother’s name, do tell.
What put him in these woods to dwell?’
‘My brother’s name is Baby Lon.
Outlyer bold is he since young’

The text for the ballad *The Three Ravens* (known as Child 26) was edited in a different, more straightforward manner. There are four versions of the text listed in volume 1 of *The English and Scottish Popular Ballads* (Child, 2005). Two of the versions have a similar structure, every verse consisting of two lines and a third line that is repeated throughout the ballad (“A down a derry down”). By grafting four verses from one version onto the other I expanded the story, making it longer. In part, I wanted to include more details about the death of the second protagonist. I also found the additional verses poignant and beautiful:

³⁹ The melody I used was not the one that belonged to either of the main texts I have selected. It belongs to yet another version of the ballad and was found in *The Singing Tradition of Child's Popular Ballads* (Bronson, 2005).

But comes a lady, full of woe,
As big wi bairn as she can go.
A down a derry down

She lifted up his bloody head,
And kissed his lips that were so red.
A down a derry down

She got him up upon her back,
And carried him to earthen lake.
A down a derry down

She laid her down all by his side,
And for the love of him she died.
A down a derry down

Poison [in Russian *Otrava*] is a poem by the Soviet-Russian Futurist Aleksei Kruchyonych (1886-1968).⁴⁰ This piece was performed as an improvisation. The ‘compositional’ effort manifests itself in the choices I made during the process of rehearsing the piece over a period of several weeks. I include the piece in my portfolio of work because it represents important aspects underlying much of my other work (improvisation with text), but it can also serve as a calibration point for the rest of my works: there are no electronics, no attempts to distort the text, it is almost entirely spoken (rather than sung) and it uses just a few, very basic extended vocal techniques.

My portfolio includes four compositions that use the full source texts, but employ different methods to partially or wholly obscure the verbal and narrative content of the texts: *The Kingdom of Heaven Likened Unto Ten Virgins*, *500 (A Texas Ballad)*, *Surium* and *Pikku pikku liten*. (Because they use the texts in full, these compositions belong in this section. However, because their informational content is being deliberately distorted, they will also be discussed in the next section, Text as Discrete Points of Information.)

In *The Kingdom of Heaven Likened Unto Ten Virgins* the words are carefully preserved, but subsumed by multiple, uncoordinated, very slow iterations of the melody and two singers either struggling to synchronize or completely ignoring each other (see Appendix 4 for the score). But even in the original song, the story/narrative is not important: the biblical reference in the title is either information enough or – if one is not familiar with the Bible – there is in any case little sense to be made of the three allegorical verses. Amplifying this further, my version obscures the voices

⁴⁰ Originally published in the collection "Famine" in 1922, just after the long and bloody civil war (1917-1922) (Kruchyonych, 1922).

and does not convey any verbal information at all, in spite of the presence of words. The idea of the composition is that the music is an allegory of itself: a rendition of a folk chorale where the message is lost because it is present in too many versions.⁴¹

500 (A Texas Ballad), which owes little to folk music except its title, was conceived very quickly and intuitively, driven by a desire to address the issue of the death penalty inspired by the absurdity of an official Texas website with the last words of over 500 executed prisoners in Texas, USA.⁴² This live piece has the performer plainly reading a long series of selected last words. As the performance progresses, every separate statement is recorded into MAX and then continually panned around the required 4-8 speakers. Every new statement is sent on an independent trajectory and the speed of the trajectory increases with every new statement. As the performer's recorded and spinning words accumulate and the total perception of speed increases, the performer struggles to be heard, resulting in an even louder total recorded output. And so the piece gradually moves towards unintelligibility. The words become noise, losing their meaning. I wanted this piece to express the overwhelming desolation that overcame me as I started reading the ghostly words of executed people. The piece is also as a metaphor for the subtle kind of bureaucratic madness that led to the publishing on the web of these intensely personal thoughts written just before death.

Pikku pikku liten and *Surium* are both fixed media installations. *Pikku pikku liten* is based on the intersection of languages in Finnish Ostrobothnia, where Finnish and Swedish have coexisted for centuries, but separately, in their respective communities. Nevertheless, both languages have influenced each other over the centuries and it is not uncommon for a word or a phrase to have migrated from one language to another more than once, even to the point of superseding its own older version. I collected over fifty such words in each language (i.e. words with a clear etymological link to the "other" language). The words and phrases were recorded using local speakers. In my studio I treated the recorded material by morphing related words and phrases into each other and through a series of modulating delays. This resulted in an 8-channel sound installation. The informational content of the installation is only accessible to local speakers, who recognise the words and can place them within the matrix of their Finnish and Swedish dialects. So, *Pikku pikku liten* occupies yet another kind of middle ground, where the source text (the 100 or so collected words) is central, yet the words have been plucked out of their normally immersive

⁴¹ The printed collection where I found this song (Dicander, 1975), lists 15 different versions. Presumably, there are many more that have not been printed. A composition discussed in the next section, *The Lover's Death*, is a different kind of comment on the abundance of closely related versions of some collected folk songs.

⁴² http://www.tdcj.state.tx.us/death_row/dr_executed_offenders.html [Last accessed 23 January 2015]

relationships within a spoken language. Instead, the distinctly Ostrabothnian vocabulary creates a new hybrid and off-kilter language.

Surium was composed and recorded for an installation by the Finnish artist Jimmy Pulli. He had heard a traditional Albanian polyphonic song performed by the male vocal quartet Äijä, of which I am a member. He wanted a polyphonic vocal piece that could be reassembled in endless permutations, much like Heraclitus' ever-changing-ever-flowing river. At the installation, this would be facilitated by proximity triggers for each of the four loudspeakers, each playing only one of the four voices. As a result the composition would never be heard in its original form at the exhibition, because it would be impossible to trigger the loudspeakers in coordination. I wanted to convey the idea of these endless permutations in the actual composition, so that the composition proper and the permutations of it would co-exist within the same aesthetics.

The technique I used for the underlying composition is related to the *missa brevis* technique. The name literally translates as “short mass” and the technique was developed as early as the 16th century to reduce the time needed to perform the full text of the Roman *Ordo Missae*. Essentially, the idea is for a number of voices to sing simultaneously overlapping parts of the mass text. This treatment of text is sometimes referred to as “telescoping.” (Alwes, 2015, p. 336). As the fundamental concept for the installation was four overlapping voices, it made sense to use this technique for *Surium*. My adaptation of this technique was also inspired by certain Tibetan Buddhist rituals wherein the listeners need to hear certain sacred texts, but must not understand them, as the texts are secret – a form of aural encryption.⁴³ *Surium* was composed using a verse from John Milton's *Paradise Lost*. As with the sacred Tibetan chants, the text remains intact in *Surium*, but is masked by itself and the complex polyphony of the four voices. But, as the separate voices are triggered at the installation, individual words will become clear, obscuring instead the complex interaction of the four voices in the composition.

This section has outlined the different approaches I have used when working with my chosen source texts. What they all have in common is that the final work has a linear connection to the source text, whether the actual text is audible and/or intelligible or not. The text remains intimately related to the performance or recording, conveying information such as verbal meaning, a narrative or at the very least a map of linguistic reference points. In many ways, the methods described above were the original points of departure for my work with folk songs. I intended to explore the textual and

⁴³ Supposedly, this is what led to the development of the famous sub-tone chanting in specific cloisters in Tibet (van Tongeren, 2002).

narrative contents of old folk songs using electroacoustic and experimental music approaches. This work then led to other lines of inquiry relating to my other nodes of interest. For instance, I have explored non-linear narrative (e.g. *500 (A Texas Ballad)*, *Pikku pikku liten* and *The Rich Man's Soul*) and *Lykanthropos* could be said to represent a transposition of narrative (from the verbal to the aural). This section has also outlined examples of submerged narratives using aural encryption – compositions where the text is present, but obscured by itself (*Surium* and *500 (A Texas Ballad)*) or by other musical means (e.g. *The Kingdom of Heaven Likened Unto Ten Virgins*).

2.2. Text as Discrete Points of Information

The works discussed in this section are: *Two Timing*, *The Lover's Death*, *Ma ejeif*, *Ragnaröken*, *Apocalypse*, *Surium*, *Ichion Jyōbutsu* and *The Deep Blue Book*.

This section discusses compositions that use source texts to create music where the voice is not a bearer of coherent verbal or narrative information. Ideas related to encryption play an important role in the methodological and conceptual work of many of these pieces. Treating the components of language (letters and syllables) as points of information is a form of linguistic granulation. Linguistic granulation is a theoretical term used in discourses about high level decision making in computer engineering. In this case, I am using the expression instead as a direct paraphrase of the audio process known as granulation: audio, or in my case text, material is divided into its component parts at a specific resolution of milliseconds (audio) or letters/syllables/words (text) and then reassembled at a different time rate. As in audio granulation, in linguistic granulation we can perceive traces of the original material, but only if we know what we are looking for. The process of granulating text can lead the performer to unfamiliar and interesting territory, because the relationship between written language to spoken language is far from linear.⁴⁴

Two Timing and *The Lover's Death* are compositions where the source texts have been disassembled into sub-lingual components – the alphabet (*Two Timing*) and syllables (*The Lover's Death*). *Two Timing* separates the vowels and consonants of the first few pages of Joyce's *Finnegans Wake* (Joyce, 1939). Using a simple looper to superimpose phrases of consonants and vowels in real-time, a performance is purported to reassemble the text, though, of course, this cannot but fail completely. The connection between letters and meaning is far too tenuous to survive this level of encryption and the ensuing failed decryption. A performance becomes a failed attempt

⁴⁴ “It is ... important not to confuse the economy of print with the reality of ... speech stream.” (Wishart, 1996, p. 288). As a simple example, consider how differently way the first four letters in “create” and “creature” are pronounced.

to resurrect meaning, much like a disassembled motor of a car will not run if you merely place the pieces in a heap in the engine compartment.

The choice of material for *Two Timing* was not incidental. I had previously used various extracts from *Finnegans Wake* in a few compositions and performances. Upon hearing the recording of John Cage's unaccompanied rendition of his mesostics from *Finnegans Wake*,⁴⁵ I had the idea to disassemble the text even further, which led to the idea of separating the vowels and consonants. By way of paying my respects to Cage, I also used the *I Ching* (1950) (to determine the length of the respective vowel and consonant phrases (cf. the score of *Two Timing* in Appendix 2).

In terms of conveying meaning, increasing the size of the grains (the points of information) to syllables works better. For *The Lover's Death* I selected five very similar versions of a Swedish ballad and disassembled them into twelve syllables per line, for every version. During a live performance the MAX patch generates the vocal score by randomising each of the twelve positions in each line (Figure 2.2). As the texts of the five collected versions are so similar, the generated vocal score skirts the threshold of meaning, generating some proper words and occasionally phrases, but mostly only hinting at them. *The Lover's Death* is a comment on the process of folk song collection, but also the process of oral transmission – singers memorise songs, yet end up with slightly different versions. Over time these differences accrue and sometimes result in vastly different versions. However, in a given time and place the differences will be small (as is the case with the five versions of *The Lover's Death* that I selected).

⁴⁵ *Writing for the Second Time Through Finnegans Wake* forms the basis of Cage's *Roaratorio, an Irish circus on Finnegans Wake* from 1979 (both on *Roaratorio* (Cage, 1979).



Figure 2.2: The user interface from the MAX patch for *The Lover's Death*.

Only one of the versions had a documented melody and I used this to create the score for the oboe (cf. the score in Appendix 6). I divided the transcribed melody into eight phrases, using the inherent structure of this vocal melody. Each phrase was then further disassembled into smaller musical units and with some embellishment distributed across three staves, including also the following instructions for the oboe player:

The instrumentalist should play as if the three staves are really just one staff: a horizontal vector, accepting/rejecting and intertwining material in three staves at will and with musical coherence.

In following these instructions, the oboe player is performing a manual process somewhat analogous to what the MAX patch is doing for the vocalist. As the oboe part consists of many short phrases, one can predict a certain amount of repetitiveness in the playing. The oboe is also creating a tonal cloud that serves as a reference point: a tonal and a phraseological library that the vocalist can use at will, relating harmonically, rhythmically and tonally to it, or ignoring it. The tonal cloud and the repetitions are both ways of maintaining a tenuous connection to the original folk song(s), and are particularly important because of the way the voice decidedly tears apart any such structures.

In a desire to reduce source texts even further to discrete points of information, I co-wrote a piece with Ryoko Akama. We started writing *Ichion Jyōbutsu* when we discovered that Ryoko's Japanese shamisen⁴⁶ and my Swedish psalmodicon⁴⁷ both traditionally used number-based tablature as scores. Our inquiries led us via information theory to the examination of Nørretrander's concept of exformation from a musical point of view (Nørretranders, 1993). Exformation could be described as the dark matter of information. It is all the implicit knowledge that allows one to make sense of any piece of information.⁴⁸ Clearly, there are many parallels to musical scores and we came up with a way to create a score which eliminated as much exformation as possible, as well as relating to the number-based tablature. Using the Japanese expression *ichion jyōbutsu*⁴⁹ as our starting point, we stripped away exformation by transcribing the word into binary code, where "1" means play and "0" means do not play (cf. Appendix 8 for an image of the score). There is no information about pitches, lengths, timing or dynamics, etc. However, when we started rehearsing the piece (using shamisen and psalmodicon) we quickly discovered that we had to create our own exformation in order to produce a piece of sounding music. In the process of rehearsal we had tried out many different playing approaches, but in the final piece we of course used only the ones we felt were successful in our ears. For instance, we ended up dividing the material into four sections and determining relative dynamics, as well as playing style (bowed, plucked, etc.).

Whereas both *Two Timing* and *The Lover's Death* rely heavily on ideas derived from encryption, *Ma ejeff* is a direct result of encryption. Using an online simulation of the German World War II Enigma encryption machine,⁵⁰ I encrypted what is nominally regarded as the Swedish national anthem.⁵¹ Encrypting the words was straightforward, but I had to create my own system for the encryption of the melody. The resulting score is, as would be expected, a highly deconstructed version of the original in which both the verbal information and any musical sense is lost (even though the encryption retains the original diatonic scale, as well as the original time values) (cf the score in Appendix 4).

⁴⁶ Shamisen is a Japanese three-stringed instrument, played with a large plectrum, called a *bachi*.

⁴⁷ Psalmodicon (or psalmodikon) is a single gut-stringed instrument developed in Scandinavia in the early 19th century to enable the standardisation of church hymns. It could be bowed or plucked.

⁴⁸ For instance, using a telephone book is impossible unless one already knows the alphabet, knows that people are listed alphabetically by their surnames, that the numbers are to be dialed on a phone, etc.

⁴⁹ *Ichion jyōbutsu*: a Japanese expression that means roughly "one sound attainment" or "it takes only one sound to reach the attainment."

⁵⁰ <http://startpad.googlecode.com/hg/labs/js/enigma/enigma-sim.html> [Accessed 29 March 2015]

⁵¹ Sweden has no official national anthem. However, the song *Du gamla, du fria* is recognised and used as such.

As a comment on nationalism,⁵² *Ma ejejf* is related to the poem *Ragnaröken*. The text used in *Ragnaröken* is taken from a collection of poems by the Swedish text-sound composer Åke Hodell (1919-2000). *Verner von Heidenstam. Nya Dikter* (Verner von Heidenstam, New Poems) (Hodell, 1967) is actually the title collection of poems published in 1915 by the fervent Swedish patriot and nationalist Verner von Heidenstam (1859-1940). In Hodell's version, he has reprinted von Heidenstam's poems but they look as if someone accidentally spilled ink across the original pages of the poems. Apart from demonstrating Hodell's keen sense of humour in this obvious political satire,⁵³ Hodell's poems can also be seen as a brute encryption, obliterating the reader's chances of successful decryption – one is left with fragments of words and sentences, no narrative and only an inferred sense of meaning. The composition *Ragnaröken* is based on one of the poems from the book. The piece was performed with Sten-Olof Hellström as an improvisation for voice and electronics. I used a simple set of effect pedals – mainly delays – rather than my usual MAX setup to compliment Hellström's already elaborate electronics.

Apocalypse was conceived as a sister-piece to *Ragnaröken*.⁵⁴ For this piece I collaborated with Paul Pignon. For our performance of *Apocalypse* Paul Pignon played bass clarinet and flute, and a laptop to process them; I used a setup identical to the one in *Ragnaröken*. This time, instead of a text I created a graphic score for both of us to follow (cf. the score in Appendix 7). The score is a set of verbal puns on the word “apocalypse” and a few simple instructions for navigating the score. I wanted to invert the relationship of the score to the words. As such, the score for *Ragnaröken* provides words to be used, but they provide no information about the performance; the score for *Apocalypse* has words that are not to be used, but are instructions for the performance. *Apocalypse* was also later recorded by the Stockholm-based musical collective The Great Learning Orchestra.⁵⁵

Surium uses words and reproduces them perfectly (which is why it was included in the previous section). However, because of the way the words are encoded into sound they are in fact largely veiled and for the listener the music contains little verbal information (which is why I include *Surium* in this section as well). In the work, Milton's verse in *Surium* is reduced to phonetic points of information, the linguistic information discarded and (largely) ignored in the process of composition. As mentioned in the previous section, the composition *Surium* attempts stylistically to

⁵² *Ma ejejf* was written for a performance at a voice festival in Fylkingen, Stockholm, on Sweden's National Day.

⁵³ Hodell's political sensibilities are documented by Magnus Haglund in his biography *Åke Hodell* (Haglund, 2009).

⁵⁴ In Norse mythology “Ragnarök” is the equivalent of the Biblical apocalypse.

⁵⁵ <http://www.thegreatlearningorchestra.se/> and <http://a4-room.com/apocalypse/> [Accessed 29 March 2015]

resemble the scrambling of voices/parts that occurs during the installation. At the installation, the scrambling will reveal some of the words, obscuring instead the composition itself.

The Deep Blue Book is written for horn in F, (classical) guitar and double bass. For this piece I started thinking about transforming text into instrumental music. I made the connection between Carol L. Krumhansl's theory of tonal hierarchies in music (e.g. Krumhansl and Cuddy, 2010) and letter frequency in language (incidentally, a field of research with clear links to cryptology). The text and music I chose is a transcription of a Russian *bylina*, Голубиная книга – The Deep Blue Book (Danilov & Gorelov, 2000). This particular transcription is a short version of this *bylina*, only 59 lines, and it tells the story of a magic book that contains all sorts of worldly and magic secrets.⁵⁶ I constructed a table linking each letter (ranked by occurrence in the text), to a correspondingly ranked note (ranked by occurrence in the transcribed melody). I used values from Krumhansl's theory of tonal hierarchies to extend the list of notes to include other chromatic tones,⁵⁷ while also taking into account the frequency of occurrence of note lengths (crotchets, quavers and semi-quavers) in the transcribed melody. Using this table, I went through the text and for each letter in the song I entered the corresponding note value into the score. This way I generated a "source melody" as the basis for the composition. The final and lengthiest part of the process was arranging the resulting 276 bars-long monodic melody for the three instruments using only the generated sequence of notes, while maintaining also a conceptual relationship to folk music, as well as the actual narrative of the song. (The last two conditions are, naturally, unquantifiable, but I would describe it as having in mind elements of repetitiveness, tonality and harmony, and as trying to approximate over time the dramatical developments of the original text.)

The Deep Blue Book is an attempt to link language and music directly.⁵⁸ The most common letters become the most common note values (pitch and length), which results in a unique and characteristic musical language. There is a lot of repetition in the text, as the forty lesser kings ask the King questions about the book and he in turn recounts what the Blue Book has to say on the subject. Formulaic repetition of lines and phrases is common in oral poetry, not least because the repetitions serve as mnemonic aids (along with rhyming, syllabic structures and metrical

⁵⁶ *Bylinas* can frequently run to several hundreds of lines (Sokolov, 1966). Two other versions of this *bylina* are 196 and 472 lines long respectively. <https://ru.wikisource.org/wiki> [Accessed 29 March 2015].

⁵⁷ Since the ranking of diatonic notes from the transcribed (more than a century old) melody is in complete agreement with Krumhansl's experimentally and theoretically posited tonal hierarchy for the equivalent key (G major), it seemed reasonable to be able to expand the table using the same data, i.e. Krumhansl's.

⁵⁸ Another interesting approach to "transposing" language into music has been made by the people behind the P22 Music Text Composition Generator. However, the P22 system is "based on the frequency of phonetic sounds and letters in the English language corresponding to the most common ranges in the human voice and note durations" (<https://p22.com/musicfont>) [Accessed 28 July 2015].

entanglement).⁵⁹ The many linguistic repetitions create corresponding reoccurring musical gestures (cf. the score in Appendix 9). The most satisfying aesthetic aspect of the resulting music is that it lies somewhere between the tonal and the chromatic – precisely the quadrant I like to occupy as a vocalist: fluctuating between language and nonsense, between tonality and contra-tonality.

This section has described the various a-linguistic methods I have employed to treat my text sources. These range from using text as discrete points of information generating instrumental and vocal music (*Ichion Jyōbutsu* and *The Deep Blue Book* and *Ma ejeff*, respectively), as semantically veiled vocabularies (*Surium* and *Ragnaröken*), as granular language material (*Two Timing* and *The Lover's Death*) and as semantic, but non-deterministic instructions (e.g. *Apocalypse*).

The granular approach to language that I use in *Two Timing* and *The Lover's Death* has its precursors in for instance Luigi Nono's *Il canto sospeso* (1955-56).⁶⁰ A well-documented intellectual spat broke out when Stockhausen suggested in his lecture 'Sprache und Musik' at Darmstadt in 1958 that:

... the fragmentation of the text into individual phonemes in the choral movements of *Il canto sospeso* extended serial practice into the setting of texts by separating the sonic components of speech from their function as the carriers of semantic meaning. He also questioned the nature of a listener's understanding of these movements: if they could not hear the words how significant was the choice of text? (Fox, 1999, p. 123)

Fox goes on to write that:

'Sprache und Musik', which also emphasised technique at the expense of meaning, must have appeared to Nono as another symptom of the same reluctance to shift debate from the 'how' to the 'why' of the new music. (Ibid. p. 124)

The overarching issue at stake in the second quotation – the “how” contra “why” – remains relevant to my own compositional work. What is interesting is how time has brought about a substantial shift in the perception of the issue of treating text as points of information. Today Nono's composition and many of my own described above would be said to use what Cathy Lane calls a technique for the “Accumulation of meaning through performance” (Lane, 2006, p. 5) or what Dick Higgins called “phatic poems”:

⁵⁹ “Metrical entanglement describes elements of language becoming bound up with certain metrical positions or parameters.” (Frog, 2013, p. 104).

⁶⁰ Further examples would be Brian Ferneyhough's *Missa Brevis* (1969) and *Etudes Transcendantales* (1985) and Vladimir Martynov's *Night in Galicia* (1996). As well as, using word-sized grains, John Cage's *Roaratorio, an Irish circus on Finnegans Wake* (1979), based on his mesostics from Joyce's *Finnegans Wake* (1939).

A third class might be called “phatic poems”, poems in which semantic meaning, if any, is subordinate to expression of intonation, thus yielding a new emotional meaning which is relatively remote from any semiotic significance on the part of words which happen to be included. If, for example, one were to wail the words “blue” and “night” repeatedly over a period of time, the initial function of those words to establish a frame for the wail would soon become unimportant by comparison with the musicality of the wail itself and the residual meaning of the two words would come to seem more like an allusion than a conveyor of meaning. One would have, in effect, an invocation without anything specific being invoked. (Higgins, 1980)

Nonetheless, the question of source-relevance remains valid. For example, how does the fact that *Two Timing* is based on *Finnegans Wake* affect the listener’s emotional and intellectual perception of the piece? I can only respond by stating that the link to the original text does create in me as a performer an ephemeral sense of the origin and purpose. By charging the performer and hence the performance in this manner, there is a difference in communicative intent to the listener on some level that I am using Joyce’s text rather than a bank brochure.

Linguistic granulation at the compositional stage offer a tool for the systematic exploration of sublingual and paralingual dimensions of using voice (as opposed to say, random non-linguistic explorations in free improvisations). Because the source text determines the subsequent grains of the restructured text, one can speculate that something of Kristeva’s *geno-text* is left, even though the *pheno-text* has been eliminated (Kristeva, 1974).

Sections (i) and (ii) are concerned with the use of linguistic and musical source material in my work. The following sections (iii) – (v) examine my portfolio of work from the perspective of voice in my music. Voice could be described as the third and final element of my source materials (songs and texts being the first two).

As mentioned above, Hettergott’s article “Human Voice Treatment in Various Types of Electroacoustic Music” (Hettergott, 1999) divides the use of voice in electronics into three different categories: “(I) an informational (speech), (II) an instrumental (voice), and (III) a material (sound) processing mode ...” In the case of my own portfolio however, I would like to modify the first category so as to disregard the qualification “speech”, as I find the distinction between speaking and singing unhelpful in the case of my music. The three categories useful for the understanding of my music would instead be (I) Verbal mode, (II) Non-verbal/instrumental mode and (III) Material mode. It should be noted that I am also extending Hettergott’s arguments to include non-electronic music, as almost a third of my pieces are not based around electronics. Furthermore, the majority of

my works easily fall into two or three of the categories, so I propose to use them as three overlapping lenses through which I will discuss my work.

The three modes can seemingly be mapped onto Mladen Dolar's three uses of voice: (I) "vehicle of meaning", (II) "source of aesthetic admiration" and (III) "a remainder which cannot be made a signifier or disappear in meaning" (Dolar 2006). However, Hettergott's modes (and by extension my own versions) can be used to distinguish and categorise vocal events (a piece, a phrase or a sonic layer of a piece). Dolar's three uses of voice are instead intended to distinguish between the different aspects of use and meaning of the same vocal event. The next three sections will be presented from the point of view of Hettergott's modified modes, but I will also discuss each section from the point of view of Dolar's three uses of voice.

2.3 Voice as Verbal Information

The works discussed in this section are: *The Little Mohee*, *20th Century God*, *The Bonnie Banks o Fordie*, *The Rich Man's Soul*, *The Three Ravens*, *Poison*, *Farait un vers de dreit nien*, *Pikku pikku liten*, *The Tale of Little Wolf* and *500 (A Texas Ballad)*.

The voice as "verbal information" and "a vehicle of meaning" tends to be the default mode of vocal practice, especially solo voice.⁶¹ In the works discussed in this section I have used the voice (mostly, but not exclusively, my own voice) to convey the semantic meaning of the texts and words without obfuscation. The majority of these works deliver the entire source text and my concern as a composer was to create settings that support and enhance the dramaturgy of the texts.

For the composition *The Little Mohee*, the words, melody and structure of the original song were left virtually intact.⁶² Instead I deflected much of my compositional effort onto the roles of the accompanying instruments (recorder, alto and baritone saxophones). I then created a series of scored tableaux – a method not dissimilar to the one I used in the fixed media piece *Lykanthropos*. The score itself is a set of instructions synchronized to a set of verses (cf. the score in Appendix 3). As the singer progresses to the next set of verses, there is a new set of instructions for the musicians, etc. This approach worked well by enabling the ensemble and the soloist (i.e. the lead voice) to follow each other intuitively, mining the seam between freedom and constriction. This was

⁶¹ While it is hard to back up this statement with published statistics, it is hard to see how it could be otherwise. For instance, if one considers all the recordings of the human voice over the last century and a half – all the popular music, so-called classical music, all the ethnic music, etc – I have no doubt that just a fraction of those recordings could be said to be not primarily concerned with the transmission of "meaning" and/or "information" of some sort.

⁶² *The Little Mohee* is taken from Alan Lomax' classic collection *American Ballads and Folk Songs* (Lomax, 1934), where it was in turn collected from Wyman and Brockway's *Lonesome Tunes: Folk Songs from the Kentucky Mountains* (Wyman and Brockway, 1916).

as much a practical as an aesthetic decision: rehearsal time would be non-existent and I wanted a piece that nonetheless would appear to be composed, not improvised. The nature of the score allows the vocalist to explore the (by contemporary standards) absurdly 19th century, colonial narrative.

20th Century God and *The Bonnie Banks o Fordie* are both solo pieces for voice and electronics. In these pieces I explore the use of interactive electronics and voice performance. The starting point for both these works was the vocal performance of the full texts – the way one would expect a folk singer to perform them. My MAX patch and hardware setup enables me to record on-the-fly extracts of the vocal performance and having undergone DSP manipulations, to re-inject this into the musical flow. The digitally processed audio creates a voice-derived soundscape, a mouthscape, which I control during the performance and use to augment and intensify the drama presented by the lead voice.

The Rich Man's Soul uses the same tools and the same basic idea as *20th Century God* and *The Bonnie Banks o Fordie*. However, because it was a collaboration with an instrumentalist, there are longer instrumental sections and the voice is used to characterise the different sections, rather than provide a full narrative (as discussed in section (i) of this chapter).

The Three Ravens is a collaboration with another instrumentalist.⁶³ This ballad text (also known as Child 26 (Child, 2005) has a refrain of nonsense words at the end of each stanza: “A down a derry down.” The practice of ending every stanza with a repeating line is common in older European ballad traditions. In some traditions this refrain was meant to be sung by the audience (though this has little resonance in contemporary music performance practice, perhaps the tradition has been continued in a modified form at stadium pop concerts). As a way of paraphrasing that tradition, I recorded several variations of the phrase and played them back through miniature speakers held at the opening of my mouth, using the mouth cavity as a resonance chamber. The low quality and narrow frequency band of the speakers severely reduced the phrases’ resemblance to voice and instead they became recognisable musical gestures at the end of each stanza.⁶⁴

In these five compositions (*The Little Mohee*, *20th Century God*, *The Bonnie Banks o Fordie*, *The Rich Man's Soul* and *The Three Ravens*) the singing remains related to what would be a straight-forward recital of the songs (or in the case of *20th Century God*, as it is a poem and not a song, an improvised, sermon-like incantation). Instead I use various means to dissolve the moulds of traditional folk singing, such as using contra-tonal melodic modulations and a large range of

⁶³ Jamie Fawcus, performing on objects and electronics.

⁶⁴ *The Three Ravens* also represents the only deviation from my commitment to avoid pre-recorded material in live performances.

rhythmic freedom. The singing voice uses expressions ranging from breathy voice to loud growling, via spoken and pressed voice, the use of glottal stops and other non-standard vocal techniques.

In spite of the intrusive use of technology and the non-traditional singing, these five compositions represent the part of my portfolio that remain closest to the idea of “singing a folk song.” The tonalities of vocal folk music are fairly straightforward constructs (if restricting this statement to European traditions): there may be some modulation out of and back to the main key, but never in a way akin the atonal modalities of contemporary music. In these four pieces the “original tonality” is a cloud of tonal and phraseological information, upon which I draw at will, without having it restricting my options. (There are also pieces, e.g. *The Lover’s Death*, where I have been able to rely on other instruments to carry this information, allowing me, as the vocal performer, to develop my part far beyond the implied tonal cloud.)

An important element of traditional folk songs is formal repetition. In my works this element is easily recognised musically due to the repeating forms of the texts themselves. For instance, in *The Little Mohee* and *The Bonnie Banks o’ Fordie* each stanza consists of four lines. The four lines are connected to one another with syllabic structures and rhyming schemes. So even though both of my compositions use progressively evolving structures, the act of rendering the texts continuously reasserts the repetitive form of the folk songs. In compositions discussed elsewhere, where the text is not the backbone of the composition, I have occasionally used other devices to maintain a connection with the repetitive form of folk songs (cf. discussions about *Lykanthropos* in section 2.1 and *The Lover’s Death* in section 2.2.)

Poison is a poem in Russian.⁶⁵ The author Aleksei Kruchyonych was a Futurist who, together with Velimir Khlebnikov, founded Zaum poetry or what Cathy Lane calls transrational speech (Lane, 2006, p. 3). As a performance my rendition is entirely focused on the words of the poem and their meaning. There are sections where I riff on the sounds of certain letters or syllables, expanding the poem into the territory of sound poetry. However, these small improvisatory moments are never permitted to interfere with the communication of the content of the poem. In many ways this piece is the clearest exponent of Hettergott’s first mode as well as placing the most emphasis in Dolar’s first use of voice. The significance of this piece as part of my submitted portfolio is that it is a determined effort to remove technology and also (most of) my own creative intervention from the performance of an original text, or, to mix Kristeva’s (1974) and Barthes’ (1978) ideas, it is the performance that more than any other in my portfolio integrates the *phenotext* with the *phenosong* and the *genotext* with the *genosong*.

⁶⁵ *Otrava* (1922) by Aleksei Kruchyonych (1886-1968).

Farait un vers de dreit nien is a composition for electronics and siren organ. The text is a poem in Occitan by William IX, Duke of Aquitaine (1071-1126), who is often referred to as William of Aquitaine, the earliest troubadour (with surviving material).⁶⁶ The commission was to write a piece for Jean-François Laporte's siren organ, an instrument of his own invention that is dominated by five large, pitched, truck sirens (of the type often seen on long-haulage trucks in North America). I selected this text based on the tenuous connection between Laporte's straight truck sirens and straight medieval trumpets.⁶⁷ There is no surviving documented melody for the text, so I improvised melodies for the different verses over a series of sessions in my studio. I intended to maintain the intelligibility of the text and during my improvisations part of the challenge was to reproduce the proper pronunciation of the Occitan text carefully, having previously consulted with a specialist in early Romance languages.⁶⁸ I used voice timbres related to folk music singing to emphasise the connection with folk music (e.g. a deliberate nasal quality and pressed phonation). These recordings became the material for the central channel of the three channels of fixed media that accompanied the graphic score for Laporte and his instrument (cf. the score in Appendix 10).

500 (A Texas Ballad) is an exception in my portfolio because I use a plain speaking voice. As I deemed it unpalatable to attempt to dramatise the last words of the executed prisoners, I really do my best to read the texts in a straightforward, unaffected manner. However, the central concept of the piece is that over the 15 minute duration the ever-increasing whirling, recorded words would gradually create their own drama and no such effort is required from the performer.

Pikku pikku liten is also unique in my portfolio because it features the recorded voices of other people (twenty-five, to be exact). Just like *Surium*, this is an installation, though in this case the eight channels of audio played continuously for 45 minutes with no interactivity.⁶⁹ The installation is site-specific to Ostrobothnia, a part of Finland where people traditionally speak either Finnish or Swedish.⁷⁰ The ability to speak both languages, preferably the local dialects, is a pre-requisite for understanding this installation at all. The recorded words and phrases in both languages

⁶⁶ E.g. <http://global.britannica.com/biography/William-IX> and https://en.wikipedia.org/wiki/William_IX,_Duke_of_Aquitaine [Accessed 25 July 2015].

⁶⁷ It is also a text that I have been wanting to use ever since I came across it in *The Chatto Book of Nonsense Poetry* (Houghton, 1988) many years ago.

⁶⁸ Outi Merisalo at the Department of Languages, University of Jyväskylä, Finland.

⁶⁹ The audio included in the portfolio is a shorter stereo excerpt from the full-length 8-channel version.

⁷⁰ Today, the majority of the population speaks both languages, though only one fluently. Also, it should be noted that Swedish and Finnish are completely unrelated languages, the equivalent of comparing say, English and Persian.

are presented together to manifest the space of co-existence of the two languages, something that is largely ignored, particularly by the Swedish speaking population. This was done by presenting side by side words that made obvious how they had travelled between the languages. Also by morphing phrases and compound words to begin in Finnish and end in Swedish (and vice versa), using compound loan words and, even more clearly, calques (loan translations). These words and phrases had been collected during a period of two months in Ostrobothnia, teasing out the connection between the languages from somewhat unwilling locals.⁷¹

Pikku pikku liten fits into the context of using voice as verbal information by mixing two languages. The lexical definitions are left intact, but the words themselves are transformed into loan words, calques and other types of vocabulary clearly influenced by both languages.

At the beginning of the different parts of *The Tale of Little Wolf* my voice is used to present short, abstract sentences such as “Little Wolf lives in the woods” and “Little Wolf is converted by a Lifestyle Coach.” The voice is placed somewhere between spoken and sung, avoiding any indication of tonality and focusing instead on the different textures of the vowels and consonants. The words are drawn out, but stay within the limits of comprehensibility. In *Act 6 – The Truth, part 2* a mildly absurdist text about control is read/sung by all four musicians. The rendering of the text is done as four-part improvised, polyphonic *sprechstimme*. The main restriction in performance is to maintain syllabic unity, which is why the text is still easily understood, in spite of the four-part improvisation.

In this section I have concentrated on describing the different ways that I have used voice to deliver text. This would be represented by Hettergott’s first category (I) informational (speech) mode. The words are used to convey their informational content, be it as sung folksongs, recorded installations or spoken texts.

Dolar’s three uses of voice are not meant to be separated – every vocal utterance is to be examined from the point of view of any of the three uses he describes. So, in the composition of the works described in this section a definite emphasis has been placed on the “vehicle of meaning” use of voice. At the same time, the pieces are performances (with the exception of *Pikku pikku liten*) and they are also implicitly relying on using the voice as a “source of aesthetic admiration” (Dolar, 2006).

⁷¹ The unwillingness mostly stemmed from the fact that a lot of the people I spoke to had never given a thought to how the two languages relate to each other. Swedish-speakers particularly tended to be more concerned with setting apart their Swedish from Finnish.

2.4 Voice as Non-Verbal Information

The works discussed in this section are: *Lykanthropos*, *Surium*, *The Call of the Lonesome Quarkboy*, *Farait un vers de dreit nien*, *Two Timing*, *Ma ejejf*, *The Kingdom of Heaven Likened Unto Ten Virgins*, *The Lover's Death*, *Oboe Variations*, *Ragnaröken* and *Apocalypse*.

This section discusses the use of voice as described by Hettergott's second category, "the instrumental mode", or what I have redefined more specifically for my purposes as the "non-verbal information mode." These works have also deliberately short-circuited the use of voice as a "vehicle of meaning", leaving the listener with recourse only to Dolar's second and third uses of voice: "aesthetic admiration" and "a remainder which cannot be made a signifier or disappear in meaning" (Dolar 2006).

The works in this section can be roughly divided into three distinct but overlapping types: (a) studio performances, (b) scored performances and (c) improvisations with electronics.

Type (a), studio performances, include *Lykanthropos*, *Surium* and *The Call of the Lonesome Quarkboy*. These are works that have been created in the studio, with the important distinction (whether or not improvisation was involved) that the process involves being able to re-record endlessly, until one is satisfied with the results. Since the audio processing is done post-performance these pieces are much more in the tradition of the early electroacoustic composers' work with voice. The "lead" vocal parts on these pieces also employ precise analog and digital processing to achieve exactly the desired sound quality.⁷² *Lykanthropos* and *The Call of the Lonesome Quarkboy* are both based around specific traditional extended vocal techniques.

Another piece that was partly created in the studio is *Farait un vers de dreit nien*. As described in the earlier section, the centre channel of the fixed media part of the piece was used for the delivery of the William of Aquitaine's text. My desire for intelligibility restricted the use of extended vocal techniques in the centre channel. However, for the left and right channels I recorded parts using extended techniques, specifically some very harsh falsetto parts (mimicking high pitched whines from the siren organ) and some *kargyraa*, Tuvan so-called undertone singing. I also recorded my exhaling and inhaling to mimic and relate to the sound of escaping air as the siren organ is turned on in the beginning of the piece.

Extended vocal techniques are in many ways tailor-made to greatly emphasise the use of voice as source of "aesthetic admiration": they are not concerned with meaning, but with the

⁷² I am only referring to the directly reproduced voice and the use of editing, precise EQ and high-end compression as part of the typical studio recording process. The more destructive type of voice processing will be discussed in section (v) Voice as Material.

prowess of the voice and its physicality. They express the body of the instrument itself and so inadvertently move the listener towards Barthes' "grain' of the voice" (Barthes, 1974, p.185).

Type (b), the scored performances, are *Two Timing*, *Ma ejejf*, *The Kingdom of Heaven Likened Unto Ten Virgins* and *The Lover's Death*. For the creation of the scores for these pieces I was concerned with the encryption/decryption node of my work. The pieces use various means of distorting linguistic and semantic communication. They manifest a voice that communicates a bare phantom of meaning and so the voice becomes purely a sound source. Furthermore, these pieces also all engage with extended vocal techniques (deriving from the experimental vocal scene, rather than folk music traditions, as in the pieces above) and so are in both their conception and expression weighed towards Dolar's second use of voice, being light on "meaning" and heavier on "aesthetic admiration".

Type (c), improvisations, are *Oboe Variations*, *Ragnaröken* and *Apocalypse*. These works are characterised by being not only improvisations,⁷³ but also collaborations. My use of voice in these pieces is non-semantic. Though based on a text extract, the words in *Ragnaröken* are used abstractly and are only occasionally allowed to come to the fore. The use of electronics with my voice and my focus on merging sonically with those produced by the other musician(s) further accent the instrumental aspect of voice in these three pieces.

Taken together these ten compositions are a collection of works that explore the instrumental use of voice in both the acoustic (e.g. *The Lover's Death*) and electronic domains (e.g. *The Call of the Lonesome Quarkboy*), ranging from deterministic scores (e.g. *Ma ejejf*) to open-ended improvisations (e.g. *Oboe Variations*), relying heavily on extended techniques (e.g. *Lykanthropos*) and on standard singing (e.g. *Surium*). In the process of eliminating the verbal information aspect of voice, Hettergott's instrumental mode is prioritised and Dolar's second use of voice is enhanced. Extended techniques seemingly further emphasise these aspects, drawing attention to their own significance and away from any verbal meaning that may or may not be encoded in the sound. The obfuscation of semantic content in singing is not something new even in mainstream classical music, as suggested by Robert Zamsky in his article *Opera, Poetics, and the Fate of Humanism*:

... it is utterly conventional in operatic practice to transform the source text of the libretto so much as to render its semantic content unavailable in performance. (Zamsky, 2013)

⁷³ Technically, *Ragnaröken* and *Apocalypse* are based around a text extract and a text score respectively, (cf. section (ii) Text as Discrete Points of Information).

The pieces I have outlined above as types (a) and (c) contribute to a long history of using voice in various non-semantic manners. However, perhaps a slightly different approach is found in some of the scored pieces that I have called type (b). Here the information in the texts is not withheld, but the process of encryption and subsequent decryption renders it unintelligible or just below the threshold of proper language in its comprehensibility.

2.5 Voice as Material

The works discussed in this section are: *Lykanthropos*, *The Call of the Lonesome Quarkboy*, *Farait un vers de dreit nien*, *20th Century God*, *The Rich Man's Soul*, *The Tale of Little Wolf*, *The Bonnie Banks o Fordie*, *Oboe Variations*, *The Three Ravens* and *500 (A Texas Ballad)*.

Hettergott's third mode is what she calls the "material (sound) processing mode" (Hettergott, 1999). This section includes only pieces where the voice is not being processed as it is produced. In other words, works where electronics are not used in-line with the live voice (as they are in for instance *Ragnaröken* and *Apocalypse*). The works in this section are either studio compositions (i.e. created in the studio) or live pieces, processing real-time recordings of the voice that are played back during performance.

The studio compositions include two fixed media pieces, *Lykanthropos* (8-channel) and *The Call of the Lonesome Quarkboy* (stereo). Both works transform recorded vocal material into sounds that eventually cease to resemble voice at all. This sound processing is achieved using combinations of analogue processing (e.g. typical outboard effects and Eurorack modular units) and in-the-box digital processing (DAW editing – including pitch and time-domain manipulations – and numerous plug-ins). For my own aesthetic reasons, I have never been fond of audio granulation, but otherwise I have used both traditional processes (e.g. micro editing, delays, modulation, etc.) and modern digitally-enabled effects (e.g. decoupling the frequency and time domains, stuttering, bit-reduction, etc.).

Farait un vers de dreit nien is a fixed media 3-channel piece (Left – Centre – Right) with a graphic score for the live instrument (Jean-François Laporte's siren organ).⁷⁴ As in the previous two fixed media pieces, I wanted to create sounds for this piece that would bear little resemblance to the original recorded voice. The sounds sent to the left and right channels were created by processing excerpts from my voice improvisations through Eurorack modulars synths, a Telefunken reel to reel stereo tape recorder, as well as digital tools. During the process of recording on to the Telefunken, I

⁷⁴ Only the left and right channels are relevant to the discussion in this section, as the centre channel contains the relatively unprocessed lead voice. (cf. the discussion in section (iii) Voice as Verbal Information.)

manually interfered with the reels during playback, so dramatically affecting the pitch of the recording as to generate pitch-related gestural material. I also manually applied small magnets to distort and destroy the information on the tape as it was recording and/or playing. These results were recorded back into the DAW and edited for the piece.

The remaining seven live compositions (*20th Century God*, *The Rich Man's Soul*, *The Tale of Little Wolf*, *The Bonnie Banks o Fordie*, *Oboe Variations*, *The Three Ravens* and *500 (A Texas Ballad)*) all used MAX to process material live. As discussed in Chapter 1, I almost never use MAX in the studio for processing, preferring other solutions. However, for live performances MAX is my main tool because it offers advantages such as portability, tailored control, scripted randomness and, of course, the ability to use processing exactly suited to the needs of the piece.⁷⁵

When constructing my software in MAX, I am primarily concerned with decoupling the voice that emanates from the patch from my live voice. I am not interested in assembling loop patterns or other systematic montages of my own voice. Instead, my aim is to create complex, evolving “mouthscapes” where the voice is transformed into other sounds, including sounds that would not be associated with voice. A lot of my work in MAX involved exploring various types of dynamic pitch transformations (often downwards), delay, distortion and wavetables manipulations (using snippets of the live voice). It is important for me to retain the physicality of the voice, the body itself, and I have come to minimise my use of audio convolution and granulation and their characteristic shimmering and fluttering sounds, which I feel often detract from the bodily experience of processed voice. Without resorting to extreme volumes or degrees of chaos associated with the noise genre, in my live pieces I strive to maximise the physical impact of the processed voice.

All the pieces discussed in this section involve creating sounds where the voice has been decoupled from the body (i.e. recorded, processed and played back through loudspeakers). This work has revealed a minor, but unexpected paradox – detaching the voice from the body can in some situations bring us closer to the body. For instance, the amplified sound of well-recorded breathing creates an intimacy that very effectively summons the presence of a phantom body. In a slightly different manner, shifting the voice down in pitch can amplify our perception of the body behind the voice. Low pitched vocal gestures become an imaginary voice from a person with an obviously impossible vocal range, but with an undeniable physical presence.

⁷⁵ As discussed in the introduction, because of processing power (and portability), the ability to apply complex DSP during a real-time performance is perhaps the largest conceptual difference between contemporary and early examples of the use of voice in electroacoustic music (e.g. Henry's *Vocalise*, Stockhausen's *Gesänge der Jünglinge*, etc.).

Chapter 3: Conclusion

The creative output submitted for this portfolio spans the years 2012-2014. In these three years I have taken care to explore in a particularly individual way the field of voice and text. The original concept of working with vocal folk traditions has expanded to encompass other types of written verse and prose, as well as creating instrumental music from text. It ranges from 8-channel fixed media works to solo live pieces and includes scored music for ensembles of up to 7 musicians.

3.1 Input – Output

"Art is an imitation of the nature of things, not of their appearances."

A. K. Coomaraswamy, *Christian and Oriental Philosophy of Art*
(Coomaraswamy, 1943, p. 19)

In the Introduction and in Chapter 1, I delineate what could be regarded as the input side of my portfolio. I describe my compositional habitat as a matrix of nodes where each node has variously expressed itself depending on the piece (to borrow an expression describing the behaviour of genes). The five most important nodes are folk music, voice techniques, electronics, improvisation and information theory.

Chapter 2 contains an analysis of the output side of my portfolio. The central tool for the dissection of my work is a (slightly modified) set of modes borrowed from *Human Voice Treatment in Various Types of Electroacoustic Music* by Alexandra Hettergott (1999). Chapter 2 also takes a “detour through philosophy”.⁷⁶ My composition methods are almost never based on theoretically conceptualised goals, but rather on methodological procedures that investigate the different elements of my evolving compositional habitat; inventing and refining methods that will allow me to extrapolate the nature and essence of my source material creatively (Coomaraswamy, 1943, p. 19). Because of this, I found that examining the output side of my portfolio also requires a set of cognitive tools, not just the perceptual tools that Hettergott’s modes (1999) provide. In Barthes’ (1978) and Dolar’s (2006) philosophical discourses about voice I found the tools that help me describe the intangible implications of my work as a composer. Barthes’ “‘grain’ of the voice” (Barthes, 1978) and Dolar’s “remainder which cannot be made a signifier or disappear in

⁷⁶ A paraphrase of Jonathan Sterne’s “detour through technology”, who in turn paraphrases Stuart Hall’s “detour through theory” (Sterne, 2006, p. 828).

meaning” (Dolar, 2006) are both valuable concepts particularly when trying to understand the implications of the discorporeal voice.⁷⁷

The disembodied voice is an important part of my portfolio because of my use of recording technology (both live and in the studio) and in Chapter 2, I suggest that, paradoxically, the “material mode” of voice (Hettergott, 1999) can sometimes enhance the perception of the physical body of the voice. I continue to speculate whether the material mode is where one can best attempt to isolate the “remainder” from Dolar’s first two uses of voice (Dolar, 2006).

Dolar’s perspective is not categorical, since every manifestation of voice contains each of his three types of usage.⁷⁸ Indeed, isolating the “remainder” would be akin to a naked singularity in physics – we know that singularities are at the heart of black holes, but general relativity precludes them from ever being visible to us.⁷⁹ In the same way, manifesting the “remainder” of voice with no trace of the verbal and aesthetic meanings is impossible. Yet, I think that by dismantling linguistic communication and of veering away from an “aesthetically satisfying” usage of voice it is possible to expose something of the naked singularity that is the “excrement of the signifier” (Dolar, 2006). It is as close as one can get to isolating these obscured, shadowy characteristics of voice.

Similarly, I suggest that some of my live pieces exemplify Barthes’ elusive “‘grain’ of the voice” (Barthes, 1974) and its relationship to the concepts of *pheno-song* and *geno-song*. I am thinking particularly of the compositions in which the processed sounds are exclusively products of the lead voice performance. When re-injected into the performance, the processed sounds seemingly expose filaments of the *geno-song*, without having to include the *pheno-song*. On a textual level, I have related other live pieces to Julia Kristeva’s original concept of *pheno-text* and *geno-text* (Kristeva, 1974). Particularly in the cases of *Two Timing* and *The Lover’s Death* I would argue that the performance of those scrambled texts could be a way of revealing something of the *geno-text*, while to an extent bypassing the *pheno-text*.

⁷⁷ It must be noted that Dolar himself writes that Barthes’ “formula ... will never do” (Dolar, 2006, p. 197). I use these two incompatible lines of enquiry because they illuminate separate facets of my work.

⁷⁸ As opposed to Hettergott’s modes which are intended to identify and categorise different instances of use of voice.

⁷⁹ There are theories which suggest otherwise, but general relativity categorically precludes this possibility.

3.2 Tradition (?)

“What a strange pleasure there is sometimes in seeing what we expected, or hearing what we knew was a fact!”

G. Santayana, *Soliloquies in England*
(Santayana, 1922, p. 99)

The Rich Man's Soul was composed and performed by me and Jan Liljeqvist in October 2012 when we organised a small festival at Fylkingen in Stockholm. We called the event “Elektronmusik på svenska” (“Electronic Music in Swedish”).⁸⁰ Jan and I later learned that organising a concert where experimental and electroacoustic music meets folk music led to criticism from certain people at Fylkingen. They felt that bringing something as old fashioned and reactionary as folk music to that place of free and open-minded experimentation was inappropriate.

I bring this up because it is illustrative of the strange notions surrounding folk music. In this case it was a reverse projection of the Three Ogres of Folk Music onto the folk music genre by people from outside the genre. The thin line that separates tradition from dogma is by no means restricted to “older” music and can be a powerful delineator also in contemporary experimental music. Working as I do with both the experimental and the folk music toolboxes, I find myself inadvertently crossing hidden lines and stepping on invisible toes.

It is interesting to note that the rise of sound poetry (in which I include early Dada, i.e. the rise of Modernism) coincides with the heavy urbanisation of turn-of-the-century Europe. Historically then, there is a connection between the decline of rural culture and the kind of vocal folk music I am interested in and the rise of experimental vocal practice and performance. *The Lover's Death* would be an example of expanding sound poetry to include folk songs. Conversely, *The Kingdom of Heaven Likened Unto Ten Virgins* is an example of expanding a folk song to include experimental vocal and musical practice.

As I have stated elsewhere, I do not see myself as a bearer of folk music tradition in the commonly understood meaning of the term. Nonetheless, I have always intuitively sensed and acted on the connection between older vocal folk music practice (songs, techniques, timbres, etc.) and experimental vocal practice (improvisation, electronics, extended techniques, etc.) and so would include my music in the historical narrative of traditional vocal music. My portfolio, while not

⁸⁰ The title is a direct, and in Sweden unquestionable, reference to Jan Johansson's seminal and highly influential recordings from the early 1960s called *Jazz på svenska* (*Jazz in Swedish*) (Johansson, 1964).

made up exclusively of folk music material, reflects this desire to apply my composition and performance crafts – and my imagination – to re-encoding traditional vocal music.

This naturally means that I react negatively to attempts to categorise and regulate what a folk song can be and, as I suggest at the beginning of Chapter 1, The Three Ogres of Folk Music are the inescapable consequences of such tendencies. I cannot but echo the ironic sentiment of Santayana's words quoted above and in my music I have striven to eschew byproducts of nostalgia, especially when working with traditional sources.

3.3 Future Paths

At the beginning of my research period I had already begun to define my personal vision for a relationship between traditional and contemporary music. My work in the last three years has allowed me to uncover and define the hitherto intuitive connections I had made between language and music as well as technology and performance.

Many of the works in my portfolio are derived from folk songs and I would argue that Hettergott's "material" mode is what I bring to these traditional songs, developing them so that they sit outside the traditional remit of folk singers and tradition bearers. I intend to refine and expand this area of my work further – an area where technology is a central part of the equation, but never for its own sake. My work with the Harmonic Sequencer in MAX (cf. Appendix 1 for the published paper on the Harmonic Sequencer) is an example of technology that I intend to develop further, incorporating related concepts and creating a unique live instrument for my own use.

Under the banner of encryption, I have explored various methods of creating scores and music inspired by my interest in information theory. The work I did for *The Deep Blue Book* revealed a particularly interesting relationship between language and music and I am already expanding on this methodology for a future work for choir.

Analysing my own work from a philosophical point of view has also opened me up to pursuing musical goals more clearly shaped by the conceptual realm. Barthes' (1974) "grain of voice" and *pheno-song/geno-song* dichotomy, together with Dolar's (2006) dissection of voice as a phenomenon are intriguing in themselves. Especially to an electronic composer and musician, because technology and processing can perhaps be used to expose attributes that otherwise remain hidden or are masked by the more obvious properties of the human voice.

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Appendix 1

In the commentary I have alluded to the use of relatively simple bespoke MAX patches I have created to perform with, control data or manipulate information in some way during live performance. Whilst many of these tools are interesting, though in the end incidental to the final composition, the Harmonic Sequencer is worthy of a closer examination because it is also conceptually based.

1.1. The Harmonic Sequencer: Mapping the Harmonic Series to a Sequencer⁸¹

The Harmonic Sequencer is a tool I created in MAX. The tool is a software sequencer that mimics (in reverse) the relationship between the harmonic series and the equal temperament tuning in terms of temporal timing. In this section I discuss the theory underpinning the software, as well as its implementation.

1.1.1 Introduction

The concept of the Harmonic Sequencer has its origins in my thoughts about the relationship between equal temperament tuning and the harmonic series. It is common in certain fields of contemporary music practice to experiment with tunings that deviate from equal temperament. Although Harry Partch, LaMonte Young and Pauline Oliveros are some of the most recognised, the list of composers using just intonation or other tuning systems in the last 100 years is as long as it is illustrious and varied. However, over the past three centuries equal temperament has become dominant and all different temperaments and tunings tend to be regarded as deviations from this norm.

The harmonic series – also sometimes referred to as the natural overtone series, (giving rise to just intonation or “Helmholtz's scale”) – is a simple formula yielding the frequency of the overtones of any given fundamental note.⁸² The harmonic series is a naturally occurring phenomena and not a subjectively determined idea.⁸³ It is generally agreed that equal temperament was

⁸¹ This section is was also published in a slightly revised form by Divergence Press (Baars, 2015). Doi: <http://dx.doi.org/10.5920/divp.2015.43> [Accessed 15 March 2015].

⁸² Overtones can also variously be referred to as partials and formants. The latter is particularly common in vocal practice.

⁸³ An overtone is a straightforward doubling of the previous overtone's frequency: 400 Hz, 800, Hz, 1600 Hz, 3200 Hz and so on.

developed independently in both China and Holland in the 16th century.⁸⁴ Arguably this was done in order to accommodate evolving instrumental and compositional practice. The new tuning system sacrificed the perfect consonance of certain intervals for an acceptable compromise consonance across a wider range, thereby extending the use of all intervals across all keys.⁸⁵

Working in 2013-2014 on a project with the Berlin-based composer Arnold Dreyblatt⁸⁶ who works with a tuning system based on the harmonic series, catalysed my own speculations about why the harmonic series has come to intrigue contemporary composers. The consideration that kept coming to the fore was the impurity of equal temperament tuning, with its carefully calculated compromises. Instead, I speculated, it is the mathematical simplicity and elegance of Pythagoras' original concept of a tuning based solely on the 3:2 ratio that is so appealing – a tuning where an exact doubling of the frequency gives the next pitch in the series. There is something pure and uncompromising about this tuning and its apparent simplicity yields an increasingly complex harmonic system.

As a composer who uses his own voice as the primary source for almost all of his work and has studied singing techniques from many cultures, I have become accustomed to different means of vocal production and intonations, having no preference for any one system. The music that interests me demonstrates that the world is nothing if not abundant with local, historical and personal systems of intonation. Furthermore, as every performing musician knows, compromise is very much part of our everyday practice. Our intonation changes, depending on which other instrumentalists we are playing with. Certainly as singer, I find micro-intonation to be one of my most sophisticated tools of expression (even disregarding my extensive work with overtone and throat singing, which relies on very specific use of the overtone series and all the issues of intonation associated with that).

The work underlying the Harmonic Sequencer is a conceptual development of accepting equal temperament as a standard unit and other temperaments as deviations from this – but expressed now in the domain of time and rhythm. Such thinking has its origins in Stockhausen's

⁸⁴ By Zhu Zaiyu (1536-1611) in 1584 and Simon Stevin (1548-1620) in 1585.

⁸⁵ This is a simplistic description of equal temperament tuning. However, for the purposes of this text, I am not interested in exactly defining the equal temperament tuning conceptually – I am content to simply use its mathematical properties.

⁸⁶ Arnold Dreyblatt, b. 1953, New York, USA.

well-developed ideas about the continuum of duration and pitch (Stockhausen, 1957).⁸⁷ A personal motivation for exploring the fluidity and continuum of rhythm that the Harmonic Sequencer facilitates stems from my own distinct annoyance at metronomically regular beats or pulses. I have always found the clockwork regular beats of, say, dance music to be musically claustrophobic. I am not trying to imply some sort of hierarchy of rhythmic feel, where say a “natural” drummer is ‘better’ than a drum machine (after all, drum machines can be programmed in very sophisticated ways, as well). This is merely an aesthetic preference, the way I might tend to prefer certain music to other music, or wool to nylon. As composers we all make subjective decisions, and for me this is one of them. Besides, conceit is at the root of the whole idea of the Harmonic Sequencer and the idea itself is partly inspired by my desire to humour my own conceits about metronomic pulse.

1.1.2 Conceptualisation

In conceptualising the Harmonic Sequencer my idea was that if four-to-the-floor metronomic regularity is the ‘norm’ akin to equal temperament then perhaps there is also an arch-pulse, a pure pulse, a ‘...and God created Pulse’. What if the relationship between the harmonic series and the equal temperament holds true also for pulse/rhythm, but in reverse?

Each note in equal temperament tuning deviates by a particular amount of cents from its equivalent in the harmonics series. If we use a’ (440 Hz) as an example, then the next harmonic is a’’ (880 Hz) and the third harmonic will be the fifth, e’’’ (1320 Hz). However, in the equally temperament system the same e’’’ is tuned to 1318.51 Hz, a difference of 1.49 Hz. This difference can be expressed as the ratio: $1320 / 1318.51 = 1.001130$. (In cents, the harmonic e’’’ is 1.9 cents higher than the equal tempered e’’’.) By calculating this ratio for a series of notes and then “transposing” them into “phase-durations” as Stockhausen terms them, we can reconstruct a proto-pulse or proto-rhythm. Using this conceit of proto-timing, I have constructed a sequencer that will govern the timing of events according to the ratios of deviation of the harmonic series partials from the equal temperament equivalent notes.⁸⁸

⁸⁷ To rephrase and recapitulate Stockhausen’s concept: frequencies are numbers. These numbers will obey the same rules regardless of their magnitude. 100:50 is mathematically the equivalent of 2:1. So if the pitch relationship/ratio of two pitches is X, it follows that when you change the frequencies proportionally, the ratio will remain the same. E.g. the ratio of 523.251 Hz and 1046.502 Hz (1:2) is the same as that of 2 Hz and 4 Hz. Crucially though, the first pair we would hear as two notes (c’’ and c’’’, one octave higher). The second pair would be heard as two steady pulses, the second twice as fast as the first (120 BPM and 240 BPM, respectively).

⁸⁸ This measure, the ratio of deviation, is sometimes known as inharmonicity and actually I first intended to call the sequencer the Inharmonic Sequencer. But since the timing is based on the harmonic series (in a convoluted way) and also has pretensions or using an UR-rhythm, it seemed more appropriate to call it the Harmonic Sequencer.

In the design process for the Harmonic Sequencer I had to make decisions about how to construct the sequencer itself so that it would be a tool useful in my compositional process. One of the problems with mapping tuning-based systems onto rhythm is that they do not work in the same way from a perceptual perspective. Two notes with specific intonations create a harmony or a beating between frequencies. Although two rhythms create a polyrhythm, due to the small ratios involved, perceiving a regular pulse and subtle shifts either side of this is much harder. Despite this, I found that the most pertinent way to construct a proto-sequencer was along the lines of traditional sequencers, especially since my intended application of the Harmonic Sequencer is to use it for on-the-fly live situations where a visually straightforward interface is a distinct advantage. So, the fact that it is intended to be used as a live tool was a strong influence on the design of the Harmonic Sequencer. I intended to construct a tool that had a strong conceptual underpinning, but also one that I could use musically and intuitively.

1.1.3 Ratios

I calculated the first 64 harmonics starting at a' (440 Hz).⁸⁹ Table 1 shows all the ratios calculated from the two sets of pitches.

⁸⁹ Using any reference frequency would produce exactly the same results, since my concern is with relative values, not absolute values. However, using 440 Hz was very convenient – as it is a standard point of reference in tuning, there are many readily available tables of frequencies using 440 Hz as their starting point.

Harmonic #	1	2	3	4	5	6	7	8
Note name	A4	A5	E5	A6	C#6	E6	G6	A7
Harm. series Hz	440	880	1320	1760	2200	2640	3080	3520
Equal temp. Hz	440	880	1318.51	1760	2217.46	2637.02	3135.96	3520
Ratio	1	1	1.001130	1	0.992126	1.001130	0.982155	1
<hr/>								
2	9	10	11	12	13	14	15	16
	B7	C#7	D#7	E7	F7	G7	G#7	A8
	3960	4400	4840	5280	5720	6160	6600	7040
	3951.07	4434.92	4978.04	5274.04	5587.66	6271.92	6644.88	7040
	1.002260	0.992126	0.972270	1.059461	1.023684	0.982155	0.993246	1
<hr/>								
3	17	18	19	20	21	22	23	24
	A#8	B8	C8	C#8	D8	Eb8	Eb8	E8
	7480	7920	8360	8800	9240	9680	10120	10560
	7458.72	7902.14	8372.02	8869.84	9397.28	9956.08	9956.08	10548.08
	1.002853	1.002260	0.998564	0.992126	0.983263	0.972270	1.016464	1.001130
<hr/>								
4	25	26	27	28	29	30	31	32
	F8	F8	F#8	G8	G8	G#8	G#8	A9
	11000	11440	11880	12320	12760	13200	13640	14080
	11175.32	11175.32	11839.84	12543.84	12543.84	13289.76	13289.76	14080
	0.984312	1.023684	1.003392	0.982155	1.017232	0.993246	1.026354	1
<hr/>								
5	33	34	35	36	37	38	39	40
	Bb9	Bb9	B9	B9	C9	C9	C9	C#9
	14520	14960	15400	15840	16280	16720	17160	17600
	14917.24	14917.24	15804.28	15804.28	16744.04	16744.04	16744.04	17739.68
	0.973370	1.002866	0.974420	1.002260	0.972286	0.998564	1.024842	0.992126
<hr/>								
6	41	42	43	44	45	46	47	48
	C#9	D9	D9	Eb9	Eb9	Eb9	E9	E9
	18040	18480	18920	19360	19800	20240	20680	21120
	17739.68	18794.56	18794.56	19912.16	19912.16	19912.16	21096.16	21096.16
	1.016929	0.983263	1.006674	0.972270	0.994367	1.016464	0.980273	1.001130
<hr/>								
7	49	50	51	52	53	54	55	56
	E9	F9	F99	F9	F#9	F#9	F#9	G9
	21560	22000	22440	22880	23320	23760	24200	24640
	21096.16	22350.64	22350.64	22350.64	23679.68	23679.68	23679.68	25087.68
	1.021987	0.984312	1.003998	1.023684	0.984811	1.003392	1.021973	0.982155
<hr/>								
8	57	58	59	60	61	62	63	64
	G9	G9	G#9	G#9	G#9	G#9	A9	A10
	25080	25520	25960	26400	26840	27280	27720	28160
	25087.68	25087.68	26579.52	26579.52	26579.52	26579.52	28160.00	28160.00
	0.999694	1.017232	0.976692	0.993246	1.009800	1.026354	0.984375	1

Table 1: The harmonic series and the equal tempered tuning in Hz and as ratios.

Table 2 shows the ratios as they could be laid out in a traditional 16 x 4 sequencer. This version wraps the 64 harmonics into four parallel timing sequences, so that there is an “overlapping” of the different ratios. I readily acknowledge that this arrangement is a subjective decision derived from my initial concept, but it is one that I find compositionally stimulating.

1	2	3	4	1	2	3	4								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	1.001130	1	0.992126	1.001130	0.982155	1	1.002260	0.992126	0.972270	1.059461	1.023684	0.982155	0.993246	1
															Σ 15.001743
															r 1.06654273
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1.002853	1.002260	0.998564	0.992126	0.983263	0.972270	1.016464	1.001130	0.984312	1.023684	1.003392	0.982155	1.017232	0.993246	1.026354	1
															Σ 15.000741
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
0.973370	1.002866	0.974420	1.002260	0.972286	0.998564	1.024842	0.992126	1.016929	0.983263	1.006674	0.972270	0.994367	1.016464	0.980273	1.001130
															Σ 15.912104
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
1.021987	0.984312	1.003998	1.023684	0.984811	1.003392	1.021973	0.982155	0.999694	1.017232	0.976692	0.993246	1.009800	1.026354	0.984375	1
															Σ 16.033705

Table 2: Visualisation of one possible setup as imagined in a 16-step 4-channel sequencer.

Looking at Table 2, it quickly became obvious to me that actually there are two ways to construct and run this sequencer. The first is to let the ratios of deviation determine the length of each step, the second and slightly more complicated way is to let each ratio determine the offset of that particular note from an underlying “ideal” regular step. The value at the end of each row shows the total length of each row when implementing the first option.⁹⁰

I decided that both versions have their uses and I implemented them both. With the first option, the rows lose synchronisation after one cycle and then continue to drift further and further apart with every cycle. This can be used to create slowly evolving non-repeating rhythmic patterns. In the Harmonic Sequencer I have called this mode ‘WILD’. Invoking the second option, where the ratios determine the deviation instead of the length of each step, the four tracks of the sequencer are always in synchrony, so to speak, and each cycle will always yield the same rhythmic patterns. This is done by having an underlying “ideal” step ticking away inaudibly in the background and we only hear the individual offsets. I have called this mode ‘CYCLIC’.

1.2 Examples

The following are three examples using simple clicks to illustrate the output of the Harmonic Sequencer (see Audio Appendix 18 for all the sound examples in this section) :

Sound Example 1: metronomic clicks (60 BPM)

Sound Example 2: harmonic clicks (row 1, 60 BPM)

Sound Example 3: metronomic and harmonic clicks superimposed (row 1, 60 BPM)

⁹⁰ In a normal sequencer, each row would add up to exactly 16.00, each step having the length of exactly 1.00.

As is evident in these examples, the difference between the metronomic and harmonic sequences is very small. In fact, one would have to listen very closely to hear the deviations when the metronomic clicks are not superimposed. This is because the ratios calculated from the differences between the harmonic series and equal temperament are actually very small (see Table 2). Sound Example 4 is the same as Sound Example 3, but played at a slower tempo. This makes it a little easier to hear the differences in the various steps.

Sound Example 4: metronomic and harmonic clicks superimposed (row 1, 30 BPM)

Since the Harmonic Sequencer runs the 64 ratios in four parallel streams, it is possible to pick the specific steps from the four rows that best emphasise the offsets.

Sound Example 1: metronomic clicks (60 BPM)

Sound Example 5: harmonic clicks (selection of rows 1-4, 60 BPM, see Figure A.1)

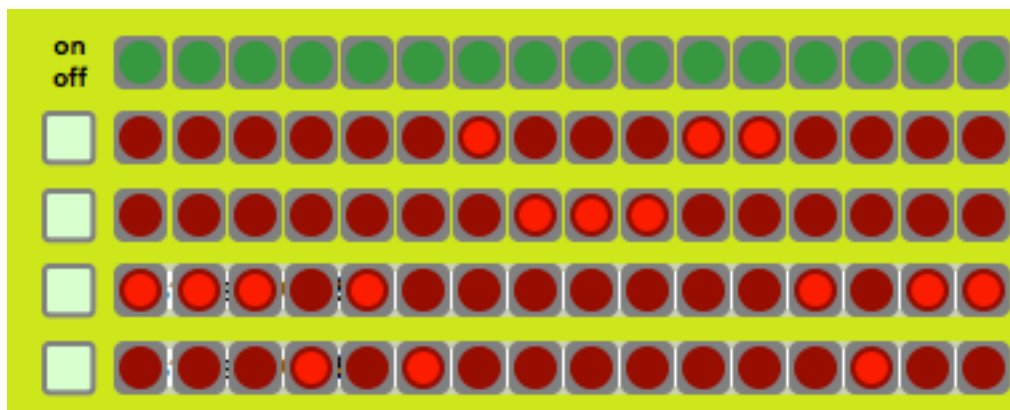


Figure A.1: Sequencer Settings for Sound Example 5.

While this is one possible way to use the Harmonic Sequencer, this would be quite limiting compositionally, as only certain combinations of the 64 steps would be useable. Besides, even in Sound Example 5 the timing deviations are still subtle. This implementation adheres strictly to my initial concept, but is still bound by the traditional sequencer model. Although conceptually correct, the results were not as rhythmically interesting from a compositional perspective as I had envisaged.

One solution to the subtlety problem is the idea of proportionately increasing the ratios that determine the timing deviations. To this end, I implemented a ZOOM slider whereby every ratio in the sequencer increases exponentially by decimal values ranging from 1 to 61.

Sound Example 6: harmonic clicks, zoom 1 (row 3, 60 BPM)
Sound Example 7: harmonic clicks, zoom 2 (row 3, 60 BPM)
Sound Example 8: harmonic clicks, zoom 3 (row 3, 60 BPM)
Sound Example 9: harmonic clicks, zoom 5 (row 3, 60 BPM)
Sound Example 10: harmonic clicks, zoom 13 (row 3, 60 BPM)

Admittedly this exponential scaling is a move away from the “pure” harmonic series-based rhythmic implementation I originally conceived. However, it turns my conceit of a proto-timing into a tool for the creation of non-linear patterns, ranging from subtle to perceptually random, but repeating.⁹¹

Sound Example 11: harmonic clicks, settings a (rows 1-4, 60 BPM)
Sound Example 12: harmonic clicks, settings b (rows 1-4, 60 BPM)
Sound Example 13: harmonic clicks, settings c (rows 1-4, 60 BPM)
Sound Example 14: harmonic clicks, settings d (rows 1-4, 60 BPM)

1.3 The Patch

Figure A.2 shows the Harmonic Sequencer as a MAX patch in presentation mode. In the artistic practice for which this tool is intended, I work with live voice performance. In the current implementation of the Harmonic Sequencer I have included a live sampler that collects the time instance of each loudness peak as it records to the audio buffer. At the top of the patch there is a gain bar for the input signal and a peak indicator so that one can set the sensitivity appropriately to catch the necessary amount of peaks. If the input signal level is too low and the peak indicator is not reacting, there will be no timing values for the sequencer to use. The audio is recorded to two buffer files called ONE and TWO and the two waveform~ graphs show the recorded buffers. Rows 1 and 2 take peak values from buffer ONE and rows 3 and 4 from buffer TWO. Hence one would need at least 32 peak values in each recorded buffer in order to fully populate all the steps of the sequencer.

⁹¹ The fact that the patterns are non-linear, yet repeating is essential and was the chief reason to use a sequencer as a model for this project.

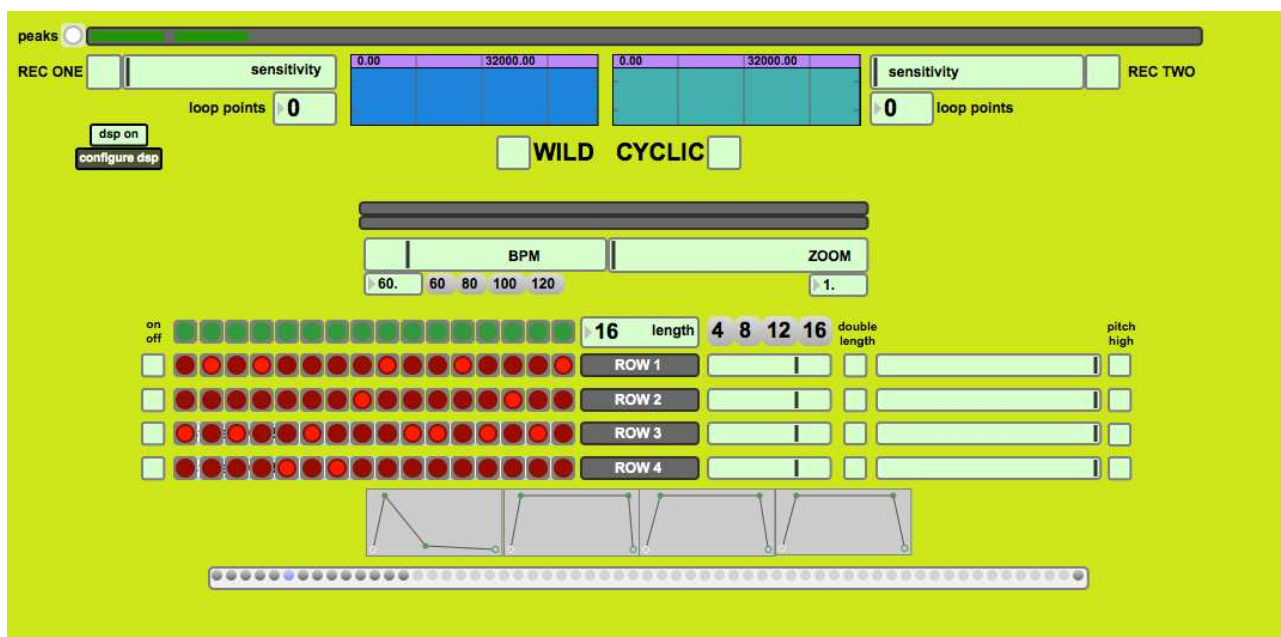


Figure A.2: Harmonic Sequencer as a MAX patch in presentation mode.

WILD and CYCLIC are the two available modes as described above. Below the output indicators there are two sliders that set the sequencer's BPM and ZOOM (exponential factor of the ratios).

The row of green LEDs shows the current step in the sequence and the four rows of red LEDs below are where the steps of each row of the sequencer are activated.⁹² The sequencer's number of steps is also adjustable.⁹³ (The values 4, 8, 12 and 16 are just quick choices. The Harmonic Sequencer allows steps from any number between 2 and 16.) After each row of sequencer steps there are some sliders and toggles that allow the length and pitch of the respective row's buffer playback to be adjusted. The length is dynamically related to the four envelope function graphs (one for each row). Finally, at the bottom of the patch there is a collection of sequencer presets.

1.4 Some Final Thoughts on the Harmonic Sequencer

The Harmonic Sequencer is a rhythmic sequencing tool for those who – like me – find regular pulse-based rhythm patterns constricting and wish to explore other, non-linear repeating rhythmic patterns. Using the Harmonic Sequencer to time material that is more complex than the clicks of my sound examples as well as judicious application of the ZOOM slider can yield some very interesting non-linear, repeating rhythmic patterns. The timing of these patterns will not be based on arithmetic

⁹² There is no visual step counter when running in WILD. It would rapidly become irrelevant, as the four rows run on different time cycles.

⁹³ E.g. if you set the number of steps to 4, you will be playing the first 4 steps in each row and you will therefore be using ratios 1-4, 17-20, 33-36 and 49-52 of the overtone series.

manipulations of a common time denominator (no matter how complex), but will be directly related to the non-linear relationship of the harmonic series to the equal temperament system.

The Harmonic Sequencer can easily be expanded beyond the harmonic series/equal temperament ratio relationship by implementing other sets of ratios based on other tuning systems. In fact, any set of ratios centred around 1.0 could be used. Future planned development of this work is to use real-time data from Adrian Gierakowski and Paulina Sundin's MAX implementation (Sundin, Adkins and Gierakowski, 2013) of William Sethares' dissonance curves (Sethares, 2005). This way, one could time events based on the frequency content of the incoming material, exploring in the rhythmic domain the relationship between tonal consonance and dissonance according to Sethares' ideas.