

Vegetable Bass



An exploration of the partial series upon the double-bass through modes of vegetable-themed composition; a journey in soloistic development and extended technique.

by Helen Svoboda

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ABSTRACT

This research investigates the process of soloistic development on the double bass through the compositional application of the **partial series**. There are many misconceptions surrounding this area of contemporary music and the avant-garde, relating largely to the sheer complexity of its notation and the ever-expanding world of additional unconventional techniques. As a result, it can be daunting to navigate this area of learning, in which the process easily becomes predominantly scientific rather than creative. This research aims to bridge the gap between the underlying theory and successful execution of the partial series, combined with an intuitive exploration of new sounds and approaches that occur naturally on the double bass – channeled into a series of vegetable-themed compositions. The theme itself is intended to add an element of humour to an otherwise daunting area of study, through harnessing the instrument and its ‘unrestrained sound’ (Thelin, 2011, p. 1), whilst straying away from clichés of love or endless ‘untitled’ etudes.

Specific areas of focus include: an enquiry into foundational theory and literature (informed by a range of pioneering bassists from the past and present), different notation methods for the double bass with a particular focus on the partial series, enquiry into existing works and recordings, and last but not least, a full album of Vegetable Bass compositions/recordings and unreleased compositional sketches. The results achieved have surfaced organically and expressively over time, culminating together to ignite a lifetime of continuous discovery.

TABLE OF CONTENT

List of Figures	8
Introduction	11
Rationale.....	11
Artistic research aim:	12
2. Literature/Theoretical	13
2.1 - The Partial Series	13
Hakon Thelin.....	15
Knut Guettler:.....	16
Eric Daino:	19
Mark Dresser:	20
2.2 - Partial Types – A Summary	25
2.3 - Partial Notation – A Summary	27
3. Method.....	28
Sub-questions:	28
The Composer vs The Performer:	29
List of Data:.....	30
3.1 Method Sub-question 1: How can the partial series of the double bass be implemented creatively into soloistic compositional practice?	30
3.2 Method Sub-question 2: Which forms of extended technique effectively contrast the use of the partial series of the double bass in soloistic compositional practice?	31
3.3 Method Sub-question 3: How can the female voice play a complimenting role to the partial series of the double bass in soloistic compositional practice?	32
4. Results	33
4.1 - Sub-question 1: How can the partial series of the double bass be implemented creatively into soloistic compositional practice?	33

4. 1. 1 ‘Black Radish’	33
Musical Influences:	37
4.1.2 ‘Cauliflower (Part 1)’	40
Musical Influences:	41
4. 1. 3 ‘Paprika’	45
Musical Influences:	47
4. 1. 4 ‘Jerusalem Artichoke’	48
Musical Influences:	51
4.2 - Sub-question 2: Which forms of extended technique effectively contrast the use of the partial series of the double bass in soloistic compositional practice?	53
4.2.1 Scordatura.....	53
4.2.1a - ‘Raw Ginger Root’	54
Musical Influences:	58
4.2.1b - ‘Soggy Ratatouille’	60
4.2.2 Textural Ricochet	62
4.2.2a - ‘Beetroot (in blossom)’	64
Musical Influences:	67
4.2.3 Frog Strike.....	69
4.2.3a - ‘Cauliflower Part 1’	69
4.2.3b - ‘Black Radish’	71
Musical Influences:	71
4.2.4 Tapping/Glissandi	72
4.2.4a - ‘BEAN’	73
Musical Influences:	76

4.3 - Sub-question 3: How can the female voice play a complementing role to the partial series of the double bass in soloistic compositional practice?	79
Sound Characteristics of the Double Bass:	79
The Double Bass and Voice	80
4.3.1 – ‘A Tree Tells’	80
Musical Influence:.....	84
4.3.2 – ‘Beetroot (in blossom)’	86
4.3.3 – ‘Holy Basil’	88
Musical Influences:	92
Discussion & Conclusion	93
Cited Works	97
Appendix	98
APPENDIX A (Audio) & APPENDIX B (Scores).....	98
APPENDIX C & APPENDIX D.....	99

LIST OF FIGURES

Chapter Two

Fig. 2.1	Svoboda - Partial Diagram
Fig. 2.2	Guettler - Natural Harmonics p. 108
Fig. 2.3	Guettler - Artificial Harmonics p. 108
Fig. 2.4	Dresser - 'Harmonic Correspondence' - (Bar 25)
Fig. 2.5	Dresser - 'Harmonic Correspondence' (Bar 1)
Fig. 2.6	Dresser - 'K-Tude' - (Bars 1 - 3)
Fig. 2.7a	Dresser - Quartertonal Fundamentals
Fig. 2.7b	Dresser - Quartertonal Fundamentals
Fig. 2.8	Dresser - Fundamentals/Harmonics

Sub Question No. 1

Black Radish

Fig. 4.1.1a	Messian Mode No. 3
Fig. 4.1.1b	'Black Radish' - Section A part 1
Fig. 4.1.1c	'Black Radish' - Section A part 2
Fig. 4.1.1d	'Black Radish' - Section B
Fig. 4.1.1e	'Black Radish' - Section C
Fig. 4.1.1f	'Black Radish' - Section D (1 st time bar)
Fig. 4.1.1g	Elisabeth Coudoux – 'A Faint Voice' 3:22
Fig. 4.1.1h	'Black Radish' – A pedal
Fig. 4.1.1i	Elisabeth Coudoux – 'Found Not' 1:30
Fig. 4.1.1j	Dave Holland – 'Flurries' 3:03
Fig. 4.1.1k	'Black Radish' – Section D

Cauliflower Part 1

Fig 4.1.2a	'Cauliflower Part 1' – Artificial Harmonic Glissandi
Fig. 4.1.2b	Barre Phillips – 'Brewstertown' 1:41
Fig. 4.1.2c	'Cauliflower Part 1' – Bars 51 - 54
Fig. 4.1.2d	'Cauliflower Part 1' – Section F
Fig. 4.1.2e	Mark Dresser – 'Visceras' 0:12
Fig. 4.1.2f	Mark Dresser – 'Visceras' 0:33
Fig. 4.1.2g	'Cauliflower Part 1' – Bar 61
Fig. 4.1.2h	'Cauliflower Part 1' – Ending

Paprika

Fig. 4.1.3a	'Paprika' – Foundational D-Pedal
Fig. 4.1.3b	Third Messiaen mode with omitted pitches
Fig. 4.1.3c	'Paprika' – Section B

Fig. 4.1.3d	Barre Phillips – ‘Amos Crowns Barn’ 0:00
Jerusalem Artichoke	
Fig. 4.1.4a	‘Jerusalem Artichoke’ – Introduction
Fig. 4.1.4b	‘Jerusalem Artichoke’ – Section B
Fig. 4.1.4c	‘Jerusalem Artichoke’ – Section C
Fig. 4.1.4d	‘Jerusalem Artichoke’ – Section C cont.
Fig. 4.1.4e	Sebastian Gramss/Slowfox – ‘Thought’ 0:00
Fig. 4.1.4f	‘Jerusalem Artichoke’ – Section F
Sub Question No. 2	
Raw Ginger Root (Scordatura)	
Fig. 4.2.1a	Scordatura Altered Tuning – E A C# G
Fig. 4.2.1b	‘Raw Ginger Root’ Notation – Bar 1
Fig. 4.2.1c	‘Raw Ginger Root’ Notation – Section C
Fig. 4.2.1d	‘Raw Ginger Root’ – Altered Resonance Tritone Section A
Fig. 4.2.1e	‘Raw Ginger Root’ – Altered Resonance Tritone Bar 26
Fig. 4.2.1f	‘Raw Ginger Root’ – Altered Resonance Major 3 rd Section B
Fig. 4.2.1g	‘Raw Ginger Root’ – Altered Resonance Section F
Fig. 4.2.1h	Larry Grenadier – ‘Vineland’
Fig. 4.2.1i	Barre Phillips – ‘Grants Pass’
Soggy Ratatouille (Scordatura)	
Fig. 4.2.1j	Scordatura Altered Tuning – E A D F#
Fig. 4.2.1k	‘Soggy Ratatouille’ – Bar 5
Fig. 4.2.1l	‘Soggy Ratatouille’ – Bar 10
Fig. 4.2.1m	‘Soggy Ratatouille’ – Bar 12
Textural Ricochet	
Fig. 4.2.2a	Guettler – P. 28 – Bow
Fig. 4.2.2b	Guettler – P. 28 – Waveform
Fig. 4.2.2c	Guettler – P. 30 – Wedge Notation
Fig. 4.2.2d	Guettler – P. 30 – Staccato Notation
Beetroot (in blossom) (Textural Ricochet)	
Fig. 4.2.2e	‘Beetroot (in blossom)’ – Opening motif
Fig. 4.2.2f	‘Beetroot (in blossom)’ – Section A
Fig. 4.2.2g	‘Beetroot (in blossom)’ – Bar 21
Fig. 4.2.2h	Stefano Scodanibbio – ‘Granada’
Fig. 4.2.2i	‘Beetroot (in blossom)’ – Bar 30
Fig. 4.2.2j	‘Granada’
Cauliflower Part 1 – (Frog Strike)	
Fig. 4.2.3a	‘Cauliflower Part 1’ – Section A – Frog Strike

Fig. 4.2.3b	‘Cauliflower Part 1’ – Section B – Frog Strike
Fig. 4.2.3c	‘Black Radish’ – Bar 1 – Frog Strike
BEAN (Tapping/Glissandi)	
Fig. 4.2.4a	‘BEAN’ – Section A
Fig. 4.2.4b	‘BEAN’ – Bar 5
Fig. 4.2.4c	‘BEAN’ – Section B
Fig. 4.2.4d	‘BEAN’ – Bar 17
Fig. 4.2.4e	‘BEAN’ – Section D
Fig. 4.2.4f	‘BEAN’ – Bar 50
Fig. 4.2.4g	Barre Phillips – ‘Riverbend’ 0:00
Fig. 4.2.4h	BEAN – Opening motif
Fig. 4.2.4i	Barre Phillips – ‘Riverbend’ 1:49
Sub Question No. 3	
A Tree Tells	
Fig. 4.3.1a	‘A Tree Tells’ – Section A
Fig. 4.3.1b	‘A Tree Tells’ – Section A - Minor 7 th /Minor 9 th accompaniment
Fig. 4.3.1c	‘A Tree Tells’ – Section B
Fig. 4.3.1d	‘A Tree Tells’ – Section C
Fig. 4.3.1e	‘Hymn’ – Thelin/Lars Petter Hagen
Fig. 4.3.1f	‘A Tree Tells’ – Inverted major seconds
Beetroot (in blossom)	
Fig. 4.3.2a	‘Beetroot (in blossom)’ – Vocal Melody Bars 1-4
Fig. 4.3.2b	‘Beetroot (in blossom)’ – Vocal Melody Bars 5-8
Holy Basil	
Fig. 4.3.3a	‘Holy Basil’ – Accapella Vocal Line
Fig. 4.3.3b	‘Holy Basil’ – Bar 5
Fig. 4.3.3c	‘Holy Basil’ – Open Improvisation, intro
Fig. 4.3.3d	‘Holy Basil’ – Section C – timbral contrast part. 1
Fig. 4.3.3e	‘Holy Basil’ – Section C – timbral contrast part. 2
Fig. 4.3.3f	‘Holy Basil’ – Section C – timbral contrast part. 3

INTRODUCTION

‘Invention is more important than technique, which of course has to be there – it just shouldn’t be visible.’ – *Stefano Scodanibbio* (cited in Thelin, 2011, p. 4)

Barre Phillips, Mark Dresser, Hakon Thelin and Stefano Scodanibbio are amongst a collection of pioneering figures that have opened up the sound world of the double bass into something unpredictable, intricate and beautiful; particularly regarding the masterful use of the **partial series**. As soloistic double bass performance continues to develop and evolve, it is the continued exploration of the overtone series that continues to advance the instrument into virtuosic territory, thus unlocking a new realm of possibilities.

Rationale

Following my Honours studies in Australia, I developed a strong interest in experimental and improvised music. Yet, over the years I have found myself growing repeatedly frustrated due to a sense of limited knowledge regarding the instrument itself; thus I was experimenting with different so-called ‘extended’ techniques on the double bass through a process of imitation, but not really knowing what I was doing, or *how*.

As a modern day jazz musician, the copious avenues of expression can become overwhelming in a genre that encompasses so much possibility. As one absorbs a never-ending array of different influences and styles, it can be difficult to know how to focus, or rather, *what* to focus on. Many improvisers such as myself use only what they have been taught, and whilst my Bachelors studies equipped me with the foundations of stylistic knowledge, I continued to lack a sense of proper technique on the instrument itself. The world of ‘extended techniques’ was particularly overwhelming as I felt devoid of any fundamental understanding of how or why these complicated approaches could be used, and with no concrete way of practicing them or implementing them into my own performance.

The rationale of this research aims not to implement a specific practice regime, but to simply

open a dialogue of playful musical discovery that is not limited to any one genre; instead encompassing personal interest and intuitive exploration to harness the full potential of the instrument and the performer. Above all, the process of experimentation and invention should be at the forefront of learning, with room for interpretation and personal approach.

For the purpose of this project and in consideration of scope, the realm of extended technique has been reduced specifically to the **partial series**, and ways in which it can be explored both compositionally and in context of contrasting techniques. It is my hope that this research will benefit not only myself, but also a larger community of improvising musicians (particularly bass players) who are seeking to extend upon their current musical language in an instinctive way.

Artistic research aim:

The goal of the research is simple. In the words of Scodanibbio, *'I want to help the instrument to find it's own voice'* (cited in Thelin, 2011, p. 2).

To facilitate a more specific approach that embodies this notion, the founding research aim is as follows:

How can the partial series of the double bass be implemented creatively into soloistic compositional practice, alongside contrasting forms of extended technique, and how can the female voice play a complementing role?

This project will deliver a detailed analysis of my individual compositional process, with a particular focus on partials in the context of **vegetable-themed compositions** with reference to particular bassists, seminal works and theoretical underpinnings. It is my hope that this combination of personal reflection and direct reference to the source will be of creative benefit to others seeking to do the same, made evident through the discussion of the process in which each composition has been formed upon a foundational sound world.

Through summoning my own creativity, combined with the artistic application of newly-learned techniques (and a never-failing dedication to mother nature's culinary offerings), it is my hope that this project will serve as an alternate method for the development of self expression upon the double bass.

2. LITERATURE/THEORETICAL

This literature review aims to provide an overview of the partial series and contains collated data from four different sources; specifically detailing the use of **advanced partial techniques, partial notation methods, learning of various partial techniques, core definitions** and **reference to existing works** that utilise the aforementioned data.

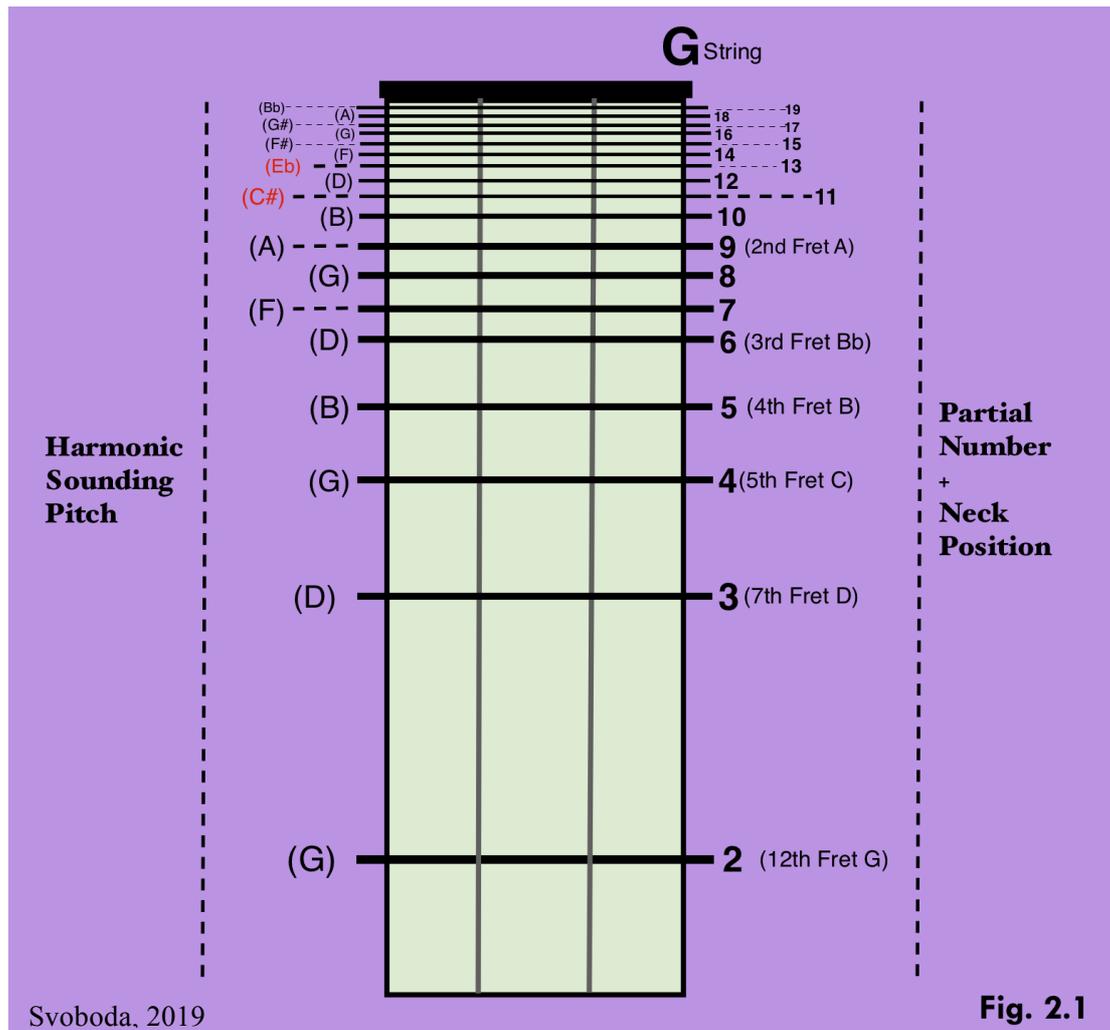
2.1 - The Partial Series

The double bass is the largest instrument in the strings family, thus its proportionate scale and overall length allows for the exploration of an extreme range of partials (also referred to as harmonics) – varying from very high within the upper register to sub-harmonic frequencies within the undertone series. Whilst harmonics have been utilised over several centuries, the use of higher partials requires further research and examination from the performer – particularly post twentieth century, as the techniques continue to evolve. This advanced use of harmonics also becomes increasingly difficult in terms of perfection and placement, many of which can be executed in multiple ways upon the instrument itself.

This chapter aims to summarize information relating to the use of advanced partials from four different texts: Hakon Thelin’s *A Folk Music for the Double Bass* (2011), Knut Guettler’s *A Guide to Advanced Modern Double Bass Technique* (1992), Eric Daino’s *The Double Bass: A Technical Study of Timbre* (2010) and Mark Dresser’s *Guts* (2010) – all of which provide valuable information in regards to the application of harmonics on the double bass, and how they may be best communicated to the performer in regards to notation. In addition to this, several other contrasting extended techniques will also be discussed due to their prominence within this project; namely Scordatura, Textural Ricochet, Tapping/Glissandi, Frog Strike.

Preliminary Explanation:

It is important first to address a particular term that is used commonly among all three texts: the ‘node’ – refers to a ‘specific harmonic’ (Dresser, 2010, p. 1); the point on a string where waveforms begin and end, and by touching, all lower partials are eliminated (Daino, 2010, p.2). On the double bass, there are 19 nodes in total, creating 19 different partials. The diagram below (Svoboda, 2019), details the partial series on the G-String – **Fig. 2.1**:



As seen in **Fig 2.1**, the nodes grow closer and closer together as their number increases, often with differences in the ‘sounding pitch’ and the stopped note (e.g. Partial 4 above the equivalent of the 5th fret ‘C’ actually sounds as a ‘G’). Much more will be discussed on this series in the following pages, with regular reference to the diagram above.

Hakon Thelin

Thelin's *A Folk Music for the Double Bass* provides valuable insight into the evolution of extended technique, with a strong focus on the development of the overtone series; a series that has the power to 'enable a new world of sounds, while at the same time strengthening the link to the fundamentals of all sound' (Thelin, 2011, p.1).

Harmonics have been a part of double bass repertoire since its evolution, and have continued to 'develop gradually ever since' (Thelin, 2011, p.1) – the history of which has been chronologically detailed by Thelin through mentions of earlier composers including Dragonetti and Bottesini in the 19th century, both of which were known to further the use of harmonics in their work through mobilizing a trend of melodies and passages utilizing higher partials. Later came figures such as Bertram Turetzky and Stefano Scodanibbio, both known for their pivotal influence on the next era of double-bass evolution during their lifetimes; Turetzky began his discovery in the 1960s, slightly before Scodanibbio's extensive work on the partial series came to the forefront in the 1980s (Thelin, 2011, p.1).

The mention of other extended techniques (i.e. multiphonics) is scarce in this particular text; Thelin considers approaches such as these to be smaller components of the larger picture – sounds that, while useful in certain contexts, 'do not form new and independent groups of playing techniques... techniques that are not as idiomatic as the flageolet [harmonic] techniques use by Scodanibbio' (Thelin, 2011, p.4).

Therefore, as younger generations continue to refine this process of the instrumental evolution (particularly relating to the area of harmonics), Thelin suggests ongoing future utilization of the double bass amongst a large range of musical styles in which it hasn't yet been heard; especially as stylistic methods of solo playing continue to cultivate and advance (Thelin, 2011, p. 4).

Learning of new techniques

Upon *learning* new virtuosic techniques, Thelin enforces a 'word-of-mouth' process; a necessity to '*listen, watch and discuss* new sounds and techniques with other players' with prior research into each '*specific sound that interests the player*' (Thelin, 2011, p.3). Furthermore, the successful application of advanced partials within performance is ultimately achieved through further knowledge of their use within music written by others and/or by the individual themselves. In direct relation to this project, the importance of inquisitive musical application of any given novel technique is reinforced - ideally within a creative, personal context. The end goal is to 'initiate the creation of new musical expression' (Thelin, 2011, p. 5).

The Composer vs The Performer:

Theelin makes a valuable observation regarding the difference between the **composer** and the **performer**. In context of virtuosic modern repertoire, he argues that ‘the composer’ usually ‘observes the [musical] transformations as a result of the compositional process’ (Theelin, 2011, p. 5) through experimenting with musical parameters (i.e. form) and also to some extent with the instrument/s and its available techniques. ‘The performer’, on the other hand, is to become well versed in the advanced physicalities of the instrument through ongoing extensive personal experimentation and also the learning of seminal works (i.e. etudes, transcriptions), thus acquiring a concrete technical foundation prior to creative implementation. In this light, Theelin argues that the transformational process of the performer ‘is not complete until he is satisfied with his ability to use those [novel] techniques in his own or other’s music’ (Theelin, 2011, p. 5).

In consideration of the above (and particular in context of advanced contemporary repertoire), Theelin notes the importance of collaboration between performers and composers as a way forward. For a composer, the input of a virtuoso soloist can offer further elaborations on the music, proposing refinements and ‘co composing practices’ (Theelin, 2011, p. 5), whilst for the performer, the introduction of new repertoire can further push the boundaries of one’s own technical growth.

Methodologically speaking, this combination becomes somewhat limited within the solo nature of the Vegetable Bass project, through which only one individual is present – thus limited only to their own performance practice and compositional ideas, with no input from a second persona. Having said this, the nature of this project still holds correlations with Theelin’s writings, through which the methodology has subsequently been adapted to encompass both sides of compositional and virtuosic input as best as possible. The notion of fusing the two worlds remains the same in regards to future experimentation and juxtaposition of novel developments, akin to breakthroughs in sonic invention.

Knut Guettler:

Norwegian bassist Knut Guettler’s *A Guide to Advanced Modern Double Bass Technique* is a valuable resource for ‘the double bass player who wants to study on his own’ (Guettler, 1992, p. 5), addressing an extensive range of specific topics upon the instrument ranging from fundamental technique to scientific explanations of the waveforms of vibrating strings.

Chapter 11 – ‘Harmonics’:

Chapter 11 – ‘Harmonics’, has been particularly useful for the purpose of this research. Guettler begins first by explaining the basic physics of the partial series and the ways in which the wavelength of the string is altered upon each of the nodal points. Thus, it is highly useful to learn more about the double bass first as a *sounding instrument*, with an enforced need to memorise the natural harmonic series upon each of the strings to gain a deeper understanding of the different nodal functions and positions on the neck (1992, Guettler, p. 110).

Guettler valuably addresses the deep confusion in regards to **notation** of harmonics on the double bass. He offers several different methods relating to both natural harmonics (to be played over open strings) and artificial harmonics (non-naturally occurring harmonics played over a stopped thumb) (Guettler, 1992, p. 107). A few different methods of notation are shown below (Fig. 2.2):

Notation of Natural Harmonics (Guettler, 1992, p. 108):

The figure illustrates four methods of notation for natural harmonics on the double bass. On the left, an 'Example of notation' shows a bass clef staff with a sharp sign (F#) and a diamond-shaped note head on the first line, with a 'D' below it. Four lines branch from this example to diagrams (a) through (d). Diagram (a) shows a bass clef staff with a sharp sign and a diamond note head on the first line, with a 'D' below it. Diagram (b) shows a grand staff (treble and bass clefs) with a sharp sign and a diamond note head on the first line of the bass staff, with a 'D' below it. Diagram (c) shows a grand staff with a sharp sign and a diamond note head on the first line of the bass staff, with a 'D' below it. Diagram (d) shows a bass clef staff with a sharp sign and a diamond note head on the first line, with a 'D' below it. Annotations on the right side of the diagrams explain the notation: 'Maj. third: interval indicated by column 1 in fig 11.4(i)' points to the diamond note head in (a); 'Interval ind. by column 2. Upper note sounding.' points to the diamond note head in (b); 'Four usable nodes ind. by column 3.' points to the diamond note head in (c); and 'Column 4 indicates 2 alternative nodes in addition to the sounding note itself.' points to the diamond note head in (d).

Fig. 2.2

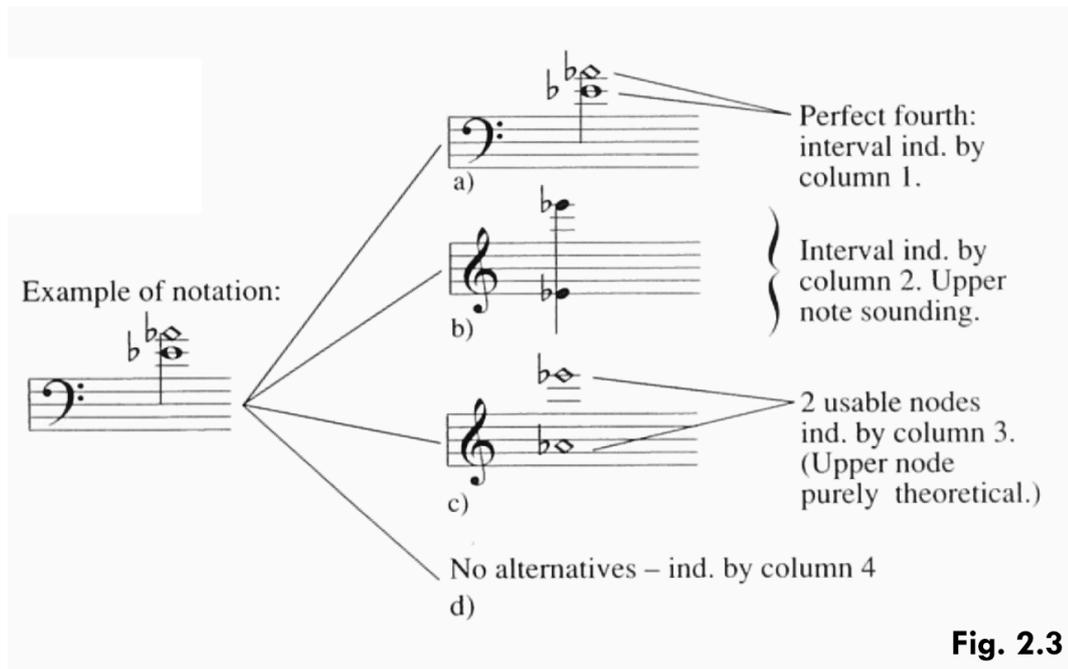
- **Fig 2.2** explains the function of a single **natural** partial - in this case indicated by the *diamond* note head (F#) on the left hand side. The D notated below it is not to be played, but simply indicates the fundamental open string upon which the natural harmonic is located.

The right hand diagrams in Fig. 2.2 outline several different areas: (a) indicates the basic major-3rd position and interval of the stopped harmonic in relation to the open string, (b) indicates the actual distance between the two sounding pitches (two octaves and a major 3rd), (c) indicates the four

different nodes in which this particular partial occurs, and (d) simply indicates two alternate nodes outside of the original notated F#, both of which produce still the same partial -- seen also in (c).

Notation of Artificial Harmonics (Guettler, 1992, p. 108):

When notating **artificial harmonics**, Guettler suggests a method for lesser confusion due to fewer options in execution – Fig. 2.3:



- As indicated by the left hand diagram in **Fig. 2.3**, the fundamental pitch of Eb is to be stopped with the left hand thumb (on the G string), and the Ab node is to be reached (mostly likely with the third finger). **Note** – this particular interval of a perfect fourth produces a sounding partial exactly two octaves above the fundamental – in this case, a high Eb.

The right hand diagrams in Fig. 2.3 again indicate the following areas: (a) shows the interval between the stopped fundamental and the note – in this case, a perfect fourth, (b) indicates an alternate way to notate and produce the same artificial harmonic (this time by stretching a perfect octave on the D string), and (c) simply indicates the same two nodes of Ab and Eb but in the treble clef register.

Whilst complex, Guettler’s explanation of both figures allows one to carefully decipher the complex coding of this form of partial notation. In his words, both methods express explicitly ‘how they are to be executed’ (Guettler, 1992, p. 109), offering an ‘unambiguous’ form of notation. When employing other common methods (i.e. the diamond note-head), Guettler advises a need for further explanation in

regards to string specificity to avoid unnecessary confusion (note: in some cases, the ‘sounding harmonic pitch’ does not correlate with the fundamental pitch of the diamond-note head).

Eric Daino:

Eric Daino’s - ‘*The Double Bass: A Technical Study of Timbre*’ (2010) explores the ever-expanding sonic scope of the instrument since the 1960s, with a focus on extended techniques and how they influence timbral output within different musical contexts. This section will discuss Chapter Three of his research, which analyses the use of harmonics as ‘technical and aural components of performance and composition’ (Daino, 2010, p. 28). In contrast to Guettler’s writings, Daino’s interest lies not in the physical execution of harmonics, but in the ways in which they may be applied in a musical manner.

Compositionally speaking, Daino makes some valuable points in regards to the aural output of different partials. Firstly, he enforces the *clarity* that harmonics achieve on the double bass. Whilst open strings and stopped notes involve a complex set of overtones, the use of different harmonics provides a ‘clear, glassy timbre’ (Daino, 2010, p. 2), which can be heard to blend more purely with other instruments.

In consideration of dynamics, it is also important to note that as the partial number increases (whilst simultaneously growing higher in pitch), the volume decreases accordingly. This limits the use of the upper partials considerably (i.e. after the tenth) to softer parts of a piece (Daino, 2010, p. 29-30), bringing with it a scratchy sound from the bow as the harmonics grow more delicate in execution. Correct bow placement is vital in activating the desired overtones, with higher partials requiring the use of *sul pont* (bowing closer to the bridge). Lastly, as partials grow higher, the pitch that is produced does not always correlate with the position used to activate the actual harmonic. This can also mean more difficulty in defining the sounding pitch, and compositionally speaking, less consistency in performance.

Daino’s research also provides a wealth of information relating to the **notation of partials** for compositional purposes – specifically that of natural harmonics, artificial harmonics, pulled harmonics, harmonic flautando, harmonic glissandi, sub-harmonics, multiphonics and double-stopped harmonics. Information on the notation of each of these techniques has been collated and combined with material from the other two sources later in this chapter in the form of two tables: *Types of Harmonics* (see p. 24) and *Methods of Harmonic Notation for the Double Bass* (see p. 26).

Mark Dresser:

Mark Dresser's DVD and accompanying text '*Guts*' is specifically dedicated to the harmonic series on the double bass – 'a natural phenomena of string vibration' (2010, Dresser, p. 1). Complimentary to Daino's research, Dresser addresses the many extended techniques and a range of useful terminology relating to the partial series but with the addition of his own compositions to assist in the direct application of newfound knowledge.

In addition to the information already collated prior, Dresser simplistically explains the meaning of the partial numbering system. Three important points have been summarised below (Dresser, 2010, p. 1):

Source: Mark Dresser – ' <i>Guts</i> '	
Important reference points relating to the partial numbering system	Example
The number of the partial indicates the number of equal sections in which the string is vibrating.	<i>For example</i> - the 2nd partial on the G string directly divides the string into two, creating two equal distances of vibration. The 5th partial (e.g. 'B' harmonic on the G string) divides the string into five equal subdivisions.
Partial Number (minus) - 1 = The number of nodes	<i>For example</i> - Partial 4 indicates that there are 3 nodes on which to play this harmonic on any given open string. Partial 7 indicates that there are 6 nodes on which to play this harmonic on any given open string. This is a particularly useful tool when choosing a given node, ideally in the most convenient location in context of the piece being played.
As a partial number doubles, the pitch moves up an octave	For example - Partial 1 = Open D String, Partial 2 = D harmonic an octave higher, Partial 4 = D harmonic an octave higher, Partial 8 = D harmonic an octave higher, Partial 16 = D harmonic an octave higher.
Certain partial numbers correlate with their sounding pitch output	For example: Partial 9 sounds as the 9 th of the fundamental open string (i.e. 'B' harmonic of the A string). Partial 7 also sounds as the 7 th of the fundamental open string (i.e. 'C' of the D string).

In terms of the relevance of this science (and however intimidating it may seem), Dresser insists that the knowledge of the nodal locations is a key factor in improving intonation, bow placement, finger placement and a broader knowledge of timbral scope. Hence, to develop a solid comprehension of the harmonic series on the double bass is an invaluable tool in strengthening the understanding of the instrument as a whole – akin to Thelin's perspective on the learning of novel techniques.

Diagrams

Guts is compiled of a series of sub-topics detailing different aspects of the partial series – namely: *Chromatic Fundamentals - Harmonics and Bitones*, *Harmonic Correspondence on the G-String*, *Multiphonics*, *Fundamental Harmonics*, *Artificial Harmonics and Compound Harmonics*, *Falsetto Flautando* and *Subharmonics*. In consideration of the scope of this project, it has been particularly useful to refer specifically to those detailing the correlation between each fundamental pitch and the corresponding overtones (see Fig. 2.4 below – excerpt from *Harmonic Correspondence – G String*):

The figure shows two staves of music. The bottom staff (bass clef) contains diamond-shaped note heads representing fundamental pitches. The top staff (treble clef) contains solid note heads representing partials. Dashed lines above the top staff indicate the 15th and 8th harmonics. The numbers 4, 17, 13, 9, 14, 19, 5, 16, 11, 17, 6 are written below the top staff, corresponding to the partials. The numbers 8^{va} and 15^{ma} are written above the top staff, indicating the octave and double-octave jumps.

Excerpt from Dresser's *Harmonic Correspondence*

Fig. 2.4

- The figure above features two separate staves: the *bottom* staff shows the fundamental pitch, notated with a diamond-shaped note-head as is consistent with much harmonic scoring. The *top* staff shows the related nodes that overlay each fundamental pitch, each of which is numbered with the particular partial. It is interesting to note both the octave and double-octave jumps, which is directly due to the transposing nature of the bass (note: notation for the contrabass is always written one octave higher than the sounding pitch).

Transpose to all four strings Excerpt from Dresser's
Harmonic Correspondence

The figure shows two staves of music. The bottom staff (bass clef) contains diamond-shaped note heads representing fundamental pitches. The top staff (treble clef) contains solid note heads representing partials. Dashed lines above the top staff indicate the 15th and 8th harmonics. The numbers 19, 18, 17, 16, 15, 14, 13, 12, 11, 10, 9, 17, 8, 15, 7, 13, 19 are written below the top staff, corresponding to the partials. The numbers 15^{ma} and 8^{va} are written above the top staff, indicating the octave and double-octave jumps. The word 'partials' is written below the top staff. The letter 'I' is written below the bottom staff.

Fig. 2.5

- Fig 2.5** demonstrates the fundamental open G string on the bottom staff, followed by a G#. Here it is particularly important to note the higher number of corresponding nodes above the *lower* fundamental pitch, in contrast to Fig 2.4 (above), where the fundamentals are *higher*, therefore with less corresponding nodes.

Study Piece - K-Tude (see Appendix D1):

In accompaniment of the appendix of theoretical charted material in *Guts*, Dresser has also included a selection of study pieces that practically apply the partial-related information outlined above. This section will focus on the first page of *K-Tude* (see Appendix D1) - a highly challenging solo work that utilises a series of advanced nodal points across each of the four strings on the bass, performed across a series of ‘adjacent natural harmonic broken chords’ (Dresser, 2010, p. 4). For the purpose of this project, two components of this piece will be discussed in the following paragraphs: namely the **effectiveness of the notational system** used and **ways of approaching/practicing** such advanced material for personal benefit.

Double-Stave Notation – ‘Sounding’ vs ‘Partials’:

The beginning of *K-tude* gravitates around the use of the **5th partials** (played on the D and G string), with a moving melodic line across **partials 6-11** which is played on the A string (see Appendix D1). Notationally speaking, Dresser successfully communicates this to the performer through the use of two separate staves: ‘Partials’ and ‘Sounding’ (Fig. 2.6):

K-tude Mark Dresser

♩ = ca 132

Fig. 2.6

- The *bottom* staff outlines the numbered partials in combination with the specific fundamentals on which they are to be played.
- The *top* staff indicates the actual *sounding* pitch of each harmonic, which differs considerably from the linear pattern of the partials written below.

Hence, the purpose of the two staves becomes crucial for this piece in communicating the location of the partials to the performer, particularly in regards to those of higher numbers (i.e. partial 9 in Fig 2.6 can be found in 8 places on the neck, therefore the desired fundamental has been defined to indicate its intended position). The use of only the ‘partials’ staff would likely result in much confusion in regards to the exact position of the harmonics, whilst the use of only the ‘sounding’ staff would

require significant time and patience in order to decipher the best way in which to achieve each pattern with the required fluency.

It is interesting also to note Dresser's notation of the **quarter-tonal fundamentals**, which directly relates to the minimal distance required to activate the given partials as they grow higher in numbers. Just a millimetre of difference can alter the sounding pitch completely, requiring a strong grasp of the stopped pitch below. Two examples are shown below in **Figures 2.7a** and **2.7b**:

The image contains two musical diagrams, Fig. 2.7a and Fig. 2.7b, illustrating quarter-tonal fundamentals. Each diagram consists of a treble clef staff and a bass clef staff. In Fig. 2.7a, the bass staff shows a sequence of notes with a red arrow pointing to the 7th partial, labeled '7 5---'. In Fig. 2.7b, the bass staff shows a sequence of notes with a red arrow pointing to the 10th partial, labeled '10 5--', and another label '11 5--' above it. The treble staff in both diagrams shows a sequence of notes.

- The 7th partial in **Fig. 2.7a** results in a sounding 'G', placed precisely a quarter-sharp above 'B' – also called a 'B half-sharp'.
- The 10th partial in **Fig. 2.7b** results in a sounding C# (key signature of B-major), placed precisely a quarter-flat below B – also called a 'B half-flat'.

Ways to approach and practice *K-Tude*:

There are several ways in which to approach a piece as challenging as this. For one aiming to *perform* the work in its entirety, many hours of patience are required in order to develop the knowledge required to accurately execute each partial on demand, and with fluency from beginning to end; notably, the composition features no rest at any point. Having said this, a performer may also approach this on a theoretical level with an intended application of learned theory. In relation to this project, the latter has been used within the method of inquiry.

A Theoretical Learning Process:

Each bar within *K-Tude* requires an advanced level of control in order to successfully execute the material (see Appendix D1). To address this issue, Dresser has included a preceding exercise – *Fundamental Harmonics*, which introduces the entire range of partials used within the piece. An excerpt is shown below (**Fig 2.8**):



Fig. 2.8

Fig 2.8 details an excerpt of Dresser’s single-staff notation method in *Fundamentals/Harmonics*, outlining three key areas for appropriate implementation:

1. The open string upon which the harmonic is to be played (indicated by I, II, III, VI)
2. The partial number (i.e. High ‘B’ and ‘F#’ = Partial 5, Low ‘B’ = Partial 9)
3. The notation uses a combination of stopped notes and diamond note heads to encourage an immediate grasp between each fundamental tone and its sounding harmonic frequency.

In preparation for *K-Tude*, this exercise is focused on first forming a strong relationship between the fundamental and its corresponding harmonic. With the omission of the secondary ‘sounding’ clef in this exercise, the performer is first encouraged to focus on the exact position of the fundamental as a strong reference point for the related partial.

The ‘sounding clef’ subsequently becomes particularly useful in *K-Tude* as a logical next-step; in which the performer becomes more conscious of the exact register of the harmonic frequencies that overlay the stopped notes in terms of register.

The brief overview above demonstrates the meticulous nature of each of the adjacent higher partials in *K-Tude*, each of which requires patience and mastery acquired by first developing a deeper understanding of the partial series and how it functions. Reiterating the exact *purpose* of learning this piece, it can be approached in a multitude of ways in direct relation to the aims of the performer.

For one wishing to simply learn more about the partial series (and specifically in context of the Vegetable Bass project), *K-Tude* serves as a beneficial starting point of enquiry. Whilst this piece addresses only *one* nodal location of each of the partials, further practice may also be attributed to locating the same partial/s across the *remaining nodes* on the neck and through doing so, constructing a deeper knowledge of the endless possibilities of the partial series and the many nodes that are abundantly available beneath any given stopped note. (i.e. Partial 9 is available in 8 places on each string, whilst Dresser’s notation suggests only one location). The easily decipherable notation successfully omits any prior confusion in terms of nodal location, allowing the performer to practically attempt the piece without first embarking on daunting hours of research.

2.2 - Partial Types – A Summary

The table below is a summarised version of the different **types** of partials mentioned in the writings of Guettler, Daino and Dresser. ‘Further explanation’ includes specific definitions of each of their functions and additional information in which they may be used within a musical context:

Types of Partial:		
Type:	What are they?	Further explanation
Natural harmonics:	Harmonics occurring naturally upon any of the open strings - referred to also as open harmonics.	The overtone series of just four fundamentals (E A D G) already allows for a large variety of pitches within the open series, however the full ‘chromatic spectrum’ may only be completed with the use of <i>artificial</i> and <i>stopped</i> harmonics. (Daino, 2010)
Artificial Harmonics:	Unlike open harmonics, art. harmonics are produced via the stopping of an open string upon which the performer reaches for a new node that is formed from the shortened fundamental.	Art. harmonics are determined by the reach of the instrumentalist, and most often used in the higher registers of the bass whereby the distance between the fundamental and partials is smaller. (Daino, 2010; Guettler, 1992)
Pulled harmonics:	The sounding pitch of the harmonic is raised by touching the node on the side of the string and pulling the string sideways towards the edge of the fingerboard (Daino, 2010)	This involves an increase in the string tension, and the sounding pitch has the ability to sound up to a semitone higher. Nodes within the mid-range are often preferential with this technique, as the elasticity and range of pulling is larger than positions located closer to the nut or the bridge. This method is particularly useful when used intentionally, but also in adjustment to other instruments, often in compensation for flatter harmonics within the series (Daino, 2010).
Harmonic Glissandi:	Glissando over the open harmonic series - involves a clean break between each partial (Daino, 2010).	The left hand touches any given node on the string and slides freely upwards or downwards. Most commonly used with the bow. Intonation remains within the open harmonic series.
	Glissandi over the artificial harmonic series - involves the even sliding of a pitch upon different stopped fundamentals, in correlation with thumb placement (Daino, 2010).	Glissandi with the use of art. harmonics allows for more possibilities chromatically as the gaps are filled between the open nodes. Involves much precision and a careful adjustment of the stopped pitch and the above fundamental, as the distance changes (decreasing as one climbs higher, and increasing as one descends lower on the neck).
Multiphonics:	The production of combined partials in the harmonic series - achieved through activating two partials	When two or more partials sound together, the ‘dead’ spot between nodes is no longer present and the string continues to vibrate. The aforementioned areas of the neck can be found by sliding the left hand across the nodal series (whilst

	together, often between two closely positioned nodes. (Daino, 2010; Guettler, 1992).	bowing) until two partials are heard simultaneously. The more partials that are heard together, the less defined the chordal nature of the multi phonic will be.
Harmonic Flautando:	Flautando bowing: sul tasto, drawn lightly - imitates the timbre of a flute (Daino, 2010; Dresser 2010).	Harmonic flautando activates a partial above the fundamental (through use of highly specific bow placement), allowing for an imitation of the flute. This technique is particularly useful when accentuating harmonics out of a textural sound series (without altering the left hand). I.e. Mark Dresser is known to do this, with much vibrato to emphasise the flautistic qualities.
Sub-harmonics	<p>Sub-harmonics exist in the undertone series, allowing for a sounding note that is lower in pitch than the fundamental.</p> <p>*Due to the unspecificity of the pitch that is produced, these sub-harmonics have also been referred as Anomalous Low Frequencies (ALFs) (<i>Strings</i> magazine - June 2009).</p>	<p>The undertone series is the inverse of the overtone series - a series produced by locating the existing harmonic nodes on the string and applying increased pressure with the bow. The resulting 'groan/scratch' of the bow stroke can be further controlled and manipulated to voice a lower pitch - this depends directly on the exact bow pressure and the position of the bow. ALFs require a specialised technique for accurate execution. It is possible to extend the range beyond the lower limit of the piano and even beyond the lower limit of human hearing. The overpressure from the bow creates beating/clicking from the vibration of the strings (Daino, 2010).</p> <p>How?: Mark Dresser refined a method for the use of the subharmonic octave (1988) - when producing a pitch an octave lower than the stopped tone, the bow should be placed on the node of the 6th partial. A clear, even bow stroke can be applied to 'catch' the lower octave with added bow pressure and also added 'stopped' pressure from the left hand. (Dresser, 2010).</p>
Double stopped harmonics:	Two harmonics are played simultaneously on different strings	This can be difficult to execute due to the specific nature of harmonic resonance - thus, the control and bow placement needed for a single harmonic on a single string may not correlate with the other. Certain combinations are much more possible than others.

2.3 - Partial Notation – A Summary

Guettler, Daino and Dresser have all discussed varying systems for the **notation** of partials, with the aim of combatting confusion concerning a specific ‘partial’ and its ‘sounding’ pitch. The table below contains the collated information from all three sources in order to inform the most effective ways in which to communicate each type to the performer:

Methods of Harmonic Notation for the Double Bass		
Type:	How does it appear?	Further explanation
The ‘o’ symbol	Indicated above a fundamental pitch, indicating that the particular note should be played as a harmonic (Daino, 2010).	In terms of which node to use, this is left ‘unspecified’ (Daino, 2010) and determined by the bassist in terms of correct positioning. In lower passages (i.e. with the use of lower partial numbers), this method of notation is often rather foolproof as the position becomes apparent in context of the piece, and involves less locational options. However, as the numbered partial increases, a larger amount of possible options become available on the instrument, causing greater uncertainty in positioning.
	Indicated above a certain pitch, in which case there is a direct correlation with a harmonic node in the same position.	Often used often by composers such as Bottesini, in which the stopped/notated pitch indicates the direct position of the harmonic itself (e.g. 2 nd partial on the G string). (Daino, 2010).
The diamond note-head	Tablature style notation that is placed upon the direct position of the harmonic – however, it doesn’t always relate to the designation of the sounding pitch itself (Daino, 2010).	I.e. Stravinsky and Ravel used this system within passages of many harmonics, particularly ‘in conjunction with higher partials’. This system is workable in many cases, but can often cause confusion in terms of the desired sounding pitch in omission of further specifications (i.e. string numbering, indicated original tones).
Two separate staves	Involves two staves: the <i>primary</i> staff indicates the position of the harmonic in tablature style notation, and a smaller <i>ossia staff</i> indicates the sounding pitch.	When communicating the use of more advanced upper partials, the use of two staves can prove to be helpful (Dresser, 2010 -uses this method in <i>K-Tude</i>).
A combination of different methods	For the purpose of further clarity, composers may combine elements of different harmonic notations.	I.e. Schoenberg was known to notate some harmonics with the ‘o’, diamond note-heads, smaller indications for the ‘flageolet tone’ and also gave the sounding pitch in brackets (Daino, 2010)
Artificial Harmonics	Notated in tablature form: the stopped note is notated normally, with the position of the harmonic notated above with a diamond note-head.	This method is considered common amongst most scores (Guettler, 1992)

In the following chapters, the exact use of the above will be referred to in context of each specific vegetable-bass composition. The use of the partial series is a centre-point of experimentation and output for this project.

3. METHOD

As to be expected within this sector of artistic research, the data used in this methodology is highly personal and qualitative, using a combination of action based and descriptive-design methods. The tables below outlines **three key areas of inquiry** (in the form of three sub-questions) and their related **lists of data**; all of which have informed the compositional process, with reference to existing literature and theoretical underpinnings that have guided the journey.

Sub-questions:

Three sub-questions were formed in order to categorise the data relating to the main research question:

How can the partial series of the double bass be implemented creatively into soloistic compositional practice, alongside contrasting forms of extended technique, and how can the female voice play a complementing role?

Sub-question 1	How can the partial series of the double bass be implemented creatively into soloistic compositional practice?
Sub-question 2	Which forms of extended technique effectively contrast the use of the partial series of the double bass in soloistic compositional practice?
Sub-question 3	How can the female voice play a complementing role to the partial series of the double bass in soloistic compositional practice?

For analysis of the above, each of the related Vegetable Bass compositions was discussed in conjunction with their existing musical influences through modes of transcription. Theoretical reference was consistently applied towards the notational method for each original score, and in regards to fundamental knowledge regarding the application of each of the components of the partial series. In summary of the aforementioned, the following section references the writings of Hakon Thelin in regards to the **categorization of data and the resulting analysis of each of the sub-questions**:

The Composer vs The Performer:

Hakon Thelin's writings in *A Folk Music for the Double Bass* (specifically on the topic of 'The Composer' and 'The Performer') have significantly influenced the methodological data for each of the three sub-questions. As discussed earlier in Chapter Two, Thelin's observations offer valuable insight into the process of virtuosic composition, enforcing the importance of collaboration between the composer and performer as a way of initiating ongoing musical evolution and innovation (Thelin, 2011).

The Vegetable Bass project, however, has **merged the composer with the performer into a united line of enquiry**; a process upon which the music was created *and* performed by myself as a single individual, solely combined for the purpose of creative implementation of newfound techniques upon the double bass. Having said this, the data was nonetheless derived and organised in a way that encompassed aspects of both the 'composers' developmental influence and also the 'performers' influence (Thelin, 2011) - specifically in regards to the development of soloistic modern virtuosic repertoire. The aspects of both sides of input have been summarised below, in correlation with the data used for this particular research report:

Role	Description - Hakon Thelin (2011)	Application of role in context of 'Vegetable Bass'
The Composer	'Observes the [musical] transformations as a result of the compositional process' (Thelin, 2011, p. 5) through also experimenting with musical parameters (i.e. form, tonality, rhythm etc). They must also 'to some extent' acquaint themselves with the instrument and its available techniques for awareness of possibilities and limitations, and technical notations .	<ul style="list-style-type: none"> - Discussion and application of newfound techniques within the Vegetable Bass compositions, with experimentation concerning different compositional parameters (i.e. harmony). - Enquiry into notation methods specific to the scoring of modern techniques (chapter two)
The Performer	Must become well versed in the advanced physicalities of the instrument through ongoing extensive personal experimentation and also the learning of seminal works (i.e. etudes, transcriptions), thus acquiring a concrete technical foundation prior to creative implementation and performance.	<ul style="list-style-type: none"> - Theoretical enquiry i.e. (learning of new techniques and repertoire, research into the physical nature of the partial series, practiced use of different techniques) – Chapter Two - Transcriptions of existing influences thus absorbing musical knowledge from other performers - Intuitive experimentation during practice

As Thelin states, the transformational process of the performer is incomplete until they feel able to properly utilise ‘novel’ techniques within original compositions and also those of others. In light of the categorisations above, the specific components of data relating to each of the sub-questions have been listed in further detail in the following section.

List of Data:

The following section details the specific sets of data used for each sub-question, all of which was collected over the study period of eighteen months.

3.1 METHOD | SUB-QUESTION 1: How can the partial series of the double bass be implemented creatively into soloistic compositional practice?

The data used for the analysis of the first sub-question is related largely to the implementation of the partial series in context of four particular Vegetable Bass pieces:

Data – Sub Question 1	Description
Vegetable Bass Compositions	<p>Discussion of relevant vegetable-bass compositions, detailing <i>how</i> the partial series has been used for the purpose of creativity:</p> <ul style="list-style-type: none"> - ‘Black Radish’ - ‘Cauliflower Part 1’ - ‘Jerusalem Artichoke’ - ‘Paprika’
Literature/Theoretical (Chapter Two)	Collated information from four different sources (Thelin, Guettler, Daino, Dresser) detailing the use of relevant techniques, partial notation methods, learning of new techniques, physics of the instrument, core definitions, existing works
Musical Influences	<p>Transcriptions of existing works that have influenced the relevant compositions:</p> <ul style="list-style-type: none"> ▪ Elisabeth Coudoux – ‘Found Not’ & ‘A Faint Voice’ ▪ Dave Holland – ‘Flurries’ ▪ Barre Phillips – ‘Brewstertown 2’ ▪ Mark Dresser – ‘Visceras’ ▪ Barre Phillips – ‘Amos Crowns Barn’ ▪ Sebastian Gramss/Slowfox – ‘Thought’
Appendix	Reference to full scores and recordings

3.2 METHOD | SUB-QUESTION 2: Which forms of extended technique effectively contrast the use of the partial series of the double bass in soloistic compositional practice?

The process of soloistic development within this project is centered predominantly on the exploration of the partial series, however it has also been important to provide balance with use of contrasting extended techniques; namely **Scordatura**, **Frog Strike**, **Textural Ricochet**, **Tapping/Glissandi**.

Data – Sub Question 2	Description
Vegetable Bass Compositions	<p>Discussion of relevant vegetable-bass compositions, detailing <i>how</i> the partial series has been contrasted using additional extended techniques:</p> <ul style="list-style-type: none"> - Scordatura: ‘Soggy Ratatouille’ & ‘Raw Ginger Root’ - Textural Ricochet: ‘Beetroot (in blossom)’ - Frog Strike: ‘Cauliflower Part 1’ & ‘Black Radish’ - Tapping/Glissandi: ‘Bean’
Literature/Theoretical (Chapter Two)	Collated information from four different sources (Thelin, Guettler, Daino, Dresser) detailing the use of relevant techniques, notation methods, learning of new techniques, physics of the instrument, core definitions, existing works
Musical Influences	<p>Transcriptions of existing works that have influenced the relevant compositions:</p> <ul style="list-style-type: none"> ▪ Larry Grenadier – ‘Vineland’ ▪ Barre Phillips – ‘Grants Pass’ ▪ Stefano Scodanibbio and Hakon Thelin - ‘Geografia Amorosa’ ▪ Stefano Scodanibbio ‘Granada’ (Incontri and Reuniones) ▪ Robert Landfermann – ‘Rot’ & ‘Robert Landfermann Solo’ ▪ Barre Phillips - ‘Riverbend’
Appendix	Reference to full scores and recordings

3.3 METHOD | SUB-QUESTION 3: How can the female voice play a complimenting role to the partial series of the double bass in soloistic compositional practice?

The use of the female voice has formed an integral part of the Vegetable Bass project as an additional second sonic layer. This component was subsequently analysed in terms of its effect and intention through use of the following data:

Data – Sub Question 3	Description
Vegetable Bass Compositions	<p>Discussion of relevant vegetable-bass compositions, detailing <i>how</i> the partial series has been combined with the voice:</p> <ul style="list-style-type: none"> - ‘A Tree Tells’ - ‘Beetroot (in blossom)’ - ‘Holy Basil’
Literature/Theoretical (Chapter Two)	Collated information from four different sources (Thelin, Guettler, Daino, Dresser, Vienna Symphonic Library) detailing the use of relevant techniques, notation methods, learning of new techniques, physics of the instrument, core definitions, existing works
Musical Influences	<p>Transcriptions of existing works that have influenced the relevant compositions:</p> <ul style="list-style-type: none"> ▪ Hakon Thelin – ‘Hymn’ ▪ Daniele Roccatto – ‘Minima Colloquia - #1 and #4’
Appendix	Reference to full scores and recordings

In reference to the three sets of data seen above, the Results section is to follow on the next page.

4. RESULTS

4.1 - SUB-QUESTION 1: How can the partial series of the double bass be implemented creatively into soloistic compositional practice?

The following paragraphs relating to this sub-question will discuss the application of particular partials amongst a selection of pieces that demonstrate the creative compositional soloistic process outlined in the preceding methodology – namely **Black Radish, Cauliflower (Part 1), Paprika** and **Jerusalem Artichoke**, in conjunction with corresponding noteworthy musical influences and underlying theory/application of notational systems. For the purpose of this sub-question, this section focuses solely on the implementation of **partials** within each of the compositions whilst excluding a larger discussion of all other additional techniques.

4.1.1 ‘Black Radish’

‘Black Radish’ (see Appendix A5, B5) has surfaced as one of the most advanced instrumental works of the vegetable bass series. Harmonically speaking, it is based around the third Messiaen Mode – one of Messiaen’s seven symmetrical scales of limited transposition (**Fig. 4.1.1a**):



Fig. 4.1.1a

The deliberate use of the scale above has prompted a **pre-determined set of parameters** for the compositional process within an arguably ambiguous harmonic framework. Creatively speaking, the purposeful omission of particular pitches has allowed for a range of unusual

musical choices to arise as a result – particularly in regards to the partials used in combination with ordinary tones.

The tonal centre of ‘Black Radish’ can be loosely interpreted around an A Lydian sound at the beginning of the piece (Fig. 4.1.1b):

A Moderato
 Strike into the frog! // **Rubato, freely**
p *f*
Partial No. 3 (D-String)
Fig. 4.1.1b

- As seen in **Fig. 4.1.1b**, the use of the **third partial** on the D string (sounding note: A) provides a strong pedal point for the upper melodic line in Section A.

As the piece moves further along, reference to a grounding A is maintained but with gradual growth in harmonic material (Fig. 4.1.1c):

9 *f* **accel.** *ff*
Partial No. 3 (D-string) **Partial No. 2 (D-string)**
Loosely in time, with freedom... (♩ = 150)
 arco *sul pont.*
 10 *l.h. pizz.*
mp
Fig. 4.1.1c

- The figure above demonstrates ascending scalic use of the third Messiaen mode, leading to use of the **second partial** on the D string (sounding note: D), which consequently takes over another temporary pedal point for the following melody.

The use of partials in ‘Black Radish’ has remained fundamentally clear to this point due to their limited locations upon the instrument neck (i.e. the lower the partial number, the easier it is to execute and find) (Dresser, 2010). However, this clarity is somewhat short-lived as a series of higher-numbered partials continue to be added further along at **Section B**; all of which also consistently belong to the Third Messiaen Mode (Fig. 4.1.1d):

2

B *accel.*

mf *ff* *accel.*

sul pont. *rit.* *mf* *f*

Partial No. 6 (D-string)

Partial No. 7 (G-string)

Partial No. 3 (D-string)

Fig. 4.1.1d

- The first bar of Section ‘B’ uses the **sixth partial** on the D-string (sounding note: ‘A’)
- The last bar of Section B uses the **third partial** on the D string (sounding note: ‘A’) and the **seventh partial** directly above the C# on the G-string (sounding note: ‘F’)

Notationally speaking, the use of an additional ‘sounding clef’ has been employed for this section, as seen earlier in Mark Dresser’s *K-Tude* (Chapter Two, see Appendix D1). The top staff indicates the actual *sounding* pitch of each harmonic, which differs greatly from the linear pattern of the partials written below. The use of 8va and 8vb is also present in the sounding clef to indicate the true intervallic range between the stopped notes and partials used, avoiding confusion in regards to real-time transposition and lesser ambiguity in regards to the notational interpretation (Guettler, 1992, p. 109).

The **C section** of ‘Black Radish’ features the use of left-hand tapping in combination with bowed partials. It is mostly atonal, moving through different motivic structures within the third Messiaen mode (Fig. 4.1.1e):

26

Partial No. 5 (G-string)

p < *f*

l.h tap

mp

sim.

sul pont.

Fig. 4.1.1e

- As seen above, the **fifth partial** is utilised on the G-string (sounding note: 'B'). The use of a partial in this instance realises a large intervallic leap from the preceding stopped tone of 'Bb' to the sounding B partial, heard just over two octaves higher; indicated further by the use of 8va.

This fifth partial has been notated using a *combination* of the diamond-note head for the fundamental, with the sounding pitch indicated directly above in brackets, combatting any prior confusion concerning the specific partial and its corresponding sounding pitch (Daino, 2010). In cases such as this (with focus on just one particular pitch), the use of an additional ossia sounding clef - such as that of section B - is unnecessary.

Another example of bracketed notation is seen also in the first and second time bars of **Section D**, with use of bracketed sounding pitches *only* above the nodes for which the *sounding* partial is different to that of the fundamental (Fig. 4.1.1f):

51

1.

Sounding Pitch

mf

rit.

Partial No. 5 (D-string)

Partial No. 5 (A-string)

Fig. 4.1.1f

- For example: Fig. 4.1.1f indicates the bracketed sounding pitch (F#) of the **fifth partial** on the D string, for which the fundamental is the 'B'; and also the bracketed sounding pitch (C#) of the **fifth partial** on the A string, for which the fundamental tone is F#. The remainder of partials have been left as normal due to a correspondence in nodal location and sounding pitch.

Musical Influences:

Elisabeth Coudoux – ‘A Faint Voice’, ‘Found Not’:

Elisabeth Coudoux’s solo album ‘Some Poems; Cello Solo’ is a major musical influence for ‘Black Radish’; in particular two of the tracks - ‘A Faint Voice’ and ‘Found Not’, both of which harness a vast range of contrasting sound-worlds upon the instrument.

‘A Faint Voice’ (see Appendix C1) is comprised of a rapid mix of melodic lines, intervallic formations and double stops, amidst an arguably atonal harmonic foundation. The transcribed excerpt below (Fig. 4.1.1g) details a short moment in the middle of the piece, where Coudoux briefly anchors a melody over a fleeting graspable tonal centre:

Elisabeth Coudeaux - 'A Faint Voice'

Recording reference 3:22

Grounding 'A'

Fig. 4.1.1g

- Fig. 4.1.1g - in comparison to the rapidity of the majority of the track, this passage becomes highly prominent as the ear latches onto a sustained foundational pedal point for a short while – namely a recurring ‘A’ on the top line.

This excerpt has strongly inspired the opening motif of ‘Black Radish’, upon which an identical pedal point is established prior to the preceding sections ‘B’ and ‘C’ where the motifs are heard to cycle through different tonal structures. In order to execute a higher pitch on the bass (i.e. an ‘A’ within the range of the cello), the use of the third partial has been chosen as the anchoring pitch, as seen below in Fig. 4.1.1h:

mp Anchoring A

Black Radish – Section A

Fig. 4.1.1h

In contrast to ‘A Faint Voice’ however, ‘Black Radish’ features a reprise of the opening motif to conclude the piece in the same way in which it began.

‘Found Not’ (see Appendix C2) features a combination of bowed fundamentals, bowed partials, plucked notes and tapping. Across the entire track, Coudoux builds motivic structures using a combination of specific sounds that have first been heard in isolation. For example, Fig 4.1.1i displays a repeated eight-note motif heard at 1:30 (Appendix C2). Prior to the rhythmic version seen below, Coudoux is heard to gradually introduce each sound at a slower rubato tempo, drawing attention to the sound quality of each pitch. For the purpose of clarity in the transcription below, the smaller note-heads indicate normal plucking, the fingernail symbol indicates a more metallic pluck, and the down and up bows indicate arco¹:

Elisabeth Coudeaux - 'Found Not'

Recording reference 1:30

The musical notation is written on a single staff in bass clef with a key signature of one sharp (F#). It consists of four measures of music. The first measure contains a half note G2 with an up-bow symbol (^) above it. The second measure contains a quarter note F#2 with a fingernail symbol (∨) above it, followed by a quarter note E2 with an up-bow symbol (^) above it. The third measure contains a quarter note D2 with a fingernail symbol (∨) above it, followed by a quarter note C2 with an up-bow symbol (^) above it. The fourth measure contains a quarter note B1 with a fingernail symbol (∨) above it, followed by a quarter note A1 with an up-bow symbol (^) above it. The notes are connected by a horizontal line underneath, indicating they are part of a single melodic line.

Fig. 4.1.1i

The excerpt above has been highly influential on Section C of ‘Black Radish’ (Fig 4.1.1e seen earlier on Page 36), in which the piece also features a similar mixture of different sounds. Whilst different in pace and overall style, Coudoux’s ever-changing palette of techniques inspires an element of surprise and uncertainty as to what will follow next.

Dave Holland – ‘Flurries’:

‘Flurries’ (see Appendix C3) appears as the seventh track on Dave Holland’s solo album ‘Emerald Tears’, and has been chosen as a secondary musical influence for ‘Black Radish’ due to the blend of arco and pizzicato sounds. Whilst ‘Black Radish’ involves a clearer structural form with concrete cyclic motifs, Holland has a tendency to move quickly between

¹ (note: the exact direction of the bow has been assumed on this score, but may have been executed differently in performance).

ideas at a constant pace in the aforementioned recording. However, despite a profound difference in motivic material, the essence of Holland’s playing holds distinct similarities to that of ‘Black Radish’; precisely in terms of energetic flow and technique.

The transcription below (Fig. 4.1.1j) demonstrates Holland’s distinct, deliberate interchange of sounds between bowed phrases and plucking (indicated by smaller bracketed pitches):

Dave Holland- 'Flurries'
Recording reference 3:03

*Bracketed pitches indicate pizzicato

Fig. 4.1.1j

The image shows a musical score for 'Flurries' in 3/4 time. It features a mix of bowed notes (some with diamond-shaped note heads) and plucked notes (indicated by smaller bracketed notes). The score includes dynamic markings like *mf* and *8va* (octave up), and a 'Text' label. A double bar line is present in the middle of the excerpt.

In consideration of the excerpt above, ‘Flurries’ contains **mostly stopped notes** with little use of harmonics. ‘Black Radish’ follows a similar path at Section D, but with the addition of bowed partials to add further contrast (indicate by diamond note-heads):

D Play with radishy punch!
(♩ = 140)

mf *sul pont.*

Black Radish – Section D **Fig. 4.1.1k**

The image shows a musical score for 'Black Radish - Section D' in 3/4 time. It features a mix of bowed notes (some with diamond-shaped note heads) and plucked notes (indicated by smaller bracketed notes). The score includes dynamic markings like *mf* and *sul pont.* (sul ponticello), and a tempo marking of 140 bpm. The score is divided into two parts by a double bar line, with a change in time signature from 3/4 to 5/4. Fingerings (1, 2, 3) and breath marks are also present.

When considering **range**, the use of partials as opposed to stopped notes allows for a lesser amount of uncomfortable leaps upon the instrument itself. Whilst Holland rapidly jumps between ordinary tones, using the entire fretboard (many of which are played pizzicato), the function of high leaps in ‘Black Radish’ holds a different effect due largely to the timbral differences of bowed partials as opposed to only fundamentals (Daino, 2010). Stopped notes have a deeper tone and a ‘closer presence’, whilst the partials are more ‘gentle, distant,

vibrant...’ (Enzo Restagno – cited in Thelin’s ‘A Folk Music for the Double Bass’, 2011). Henceforth, Holland’s combination of pizzicato and arco has acted as a grounding influence for a further enabling of new sounds, achieved through the addition of the sonic offerings of the partial series (Thelin, 2011, p. 1).

The creative application of partials within the context of ‘Black Radish’ is largely influenced by the limited use of note choices; a parameter which has opened up atypical creative decisions different to those seen amongst the other compositions. The use of a foundational harmonic palette in the form of the third Messiaen mode, combined with influence from other artists (i.e. Coudoux, Holland) has played a large factor in the partials used, and their function in offering a contrasting timbre, accessible leaps in range, and a more varied sound world when merged with percussive techniques (i.e. tapping)

4.1.2 ‘Cauliflower (Part 1)’

‘Cauliflower (Part 1)’ (see Appendix A9, B9) is highly specific in regards to rhythm, dynamics and form, and has been recorded without improvisation. Several contrasting implementations of the partial series are present within this work, with a particular focus on **artificial harmonics**: a partial produced via the stopping of an open string upon which the performer reaches for a new node that is formed from the shortened fundamental (Chapter Two; Guettler, 1992).

The excerpt below (Fig. 4.1.2a) details the use of artificial harmonics at Section E in the form of **artificial harmonic glissandi** – i.e. the even sliding of a pitch upon different stopped fundamentals, involving much precision and a careful adjustment of the stopped pitch and the above fundamental (Daino, 2010):

The image shows a musical score for a double bass. It features a bass clef and a 2/4 time signature. The notation consists of a series of notes, each with a diamond-shaped note head, indicating artificial harmonics. Red annotations highlight specific techniques: 'art. harmonics' points to the diamond note heads; 'Nodal Placement + Sounding Pitch' points to the top of the diamond heads; 'Stopped Thumb Position' points to the bottom of the diamond heads; and 'accel.' is written below the first few notes. A box labeled 'E' is in the top left, and a box labeled 'Cauliflower Part. 1' is in the top right. The number '25' is on the left, and '4 l.h.' is on the right.

Fig. 4.1.2a

Fig. 4.1.2a - This technique has been scored using Guettler’s (1992) method of notation; the bottom note indicates the stopped placement of the thumb, and the top pitch is notated with a diamond note-head to specify the nodal placement for the third finger, also correlating directly with the sounding pitch.

The use of artificial harmonic glissandi in the above section has subsequently been learned and implemented compositionally for the purpose of inquisitive musical application (Thelin, 2011). In contrast to the use of ‘open harmonic glissandi’, this employment of artificial harmonics in a sliding manner opens up more chromatic possibilities, without the limitation of the natural overtones.

In context of the entire piece, the sporadic occurrence of artificial harmonic passages within ‘Cauliflower Part 1’ offers unexpected leaps in range, offering subtleties in terms of softer dynamics and a finer texture. Additionally, the varied use of **natural harmonics** is also a consistent factor throughout ‘Cauliflower Part 1’, appearing often between moments of pizzicato and bowed melodies. Particular examples of this are to be discussed in context of the following section, in adjunct reference to specific influences.

Musical Influences:

Barre Phillips – ‘Brewstertown 2’:

‘Brewstertown 2’ (see Appendix C4) - the final track from Phillips’ solo album ‘Call me when you get there’, has been a seminal influence upon the compositional process of ‘Cauliflower Part 1’; particularly in regards to its middle section. The transcription below (Fig. 4.1.2b) demonstrates Phillips’ use of a recurring four-note motif at 1:41 (Appendix C4), which utilises the slurring of open strings and their corresponding partials:

- The top two open strings (‘D’ and ‘G’) are combined with their related **third partials** (‘A’ and ‘D’).

However simple, this small excerpt has directly inspired the middle section of ‘Cauliflower Part 1’, as seen in Fig. 4.1.2c (Appendix B9 – Bar 51):

'Cauliflower Part 1'

Fig. 4.1.2c

- The excerpt above (Fig. 4.1.2c) features a melodic line across **partials three and four** and **four and five**, played in the same rhythm as seen in Fig. 4.1.2b.
- The use of a **sounding staff** (Dresser, 2010) has been employed in this section in order to clarify the resulting melodic line more efficiently to the performer, adding context to the melody amidst a set of non-correlative nodes. Both staves hold an important function in communicating the desired musical outcome as proficiently as possible.

Section 'F' of 'Cauliflower Part 1' (below) is also akin to Phillips' influence through the combination of open strings and their **third partials** (Fig. 4.1.2d):

*robust, folkly
(a little faster)*

'Cauliflower Part 1'

Fig. 4.1.2d

- **Fig 4.1.2d** - Whilst Phillips was heard to execute fifths upon the same string (i.e. a single open string and its corresponding third partial – Fig. 4.1.2b), 'Cauliflower Part 1' uses octaves across two neighbouring strings; the lower one being an open string, and the third partial played upon the next higher string.

Musically speaking, the combination of open strings and higher partials in both 'Brewstertown 2' (Fig. 4.1.2b) and 'Cauliflower Part 1' (Fig. 4.1.2d) employs a heavier, driving rhythm reminiscent of folk music due to the emphasis on the underpinning lower pitch. However, in 'Cauliflower Part 1', this musical effect is contrasted directly with a limitation of *only* partials to achieve a melodic line within a compact range, as seen earlier in Fig. 4.1.2c. The omission of large leaps in the latter has resulted in a more ethereal sound, due to their 'clear, glassy timbre' (Daino, 2010, p. 2).

Mark Dresser – ‘Visceras’:

‘Visceras’ (see Appendix C5) – the title track from Dresser’s accompanying CD to ‘Guts’, has acted as a secondary influence on ‘Cauliflower Part 1’, largely due to the advanced amalgamation of pizzicato, tapping and artificial harmonics. Two examples of combined techniques are shown below:

Mark Dresser - 'Visceras'

Recording reference 0:12

The notation for Fig. 4.1.2e is in bass clef with a 3/4 time signature. It shows two measures. The first measure contains two double stops, each marked with a bracket and the word 'pizz'. The second measure contains a descending melodic line of six notes, marked with a bracket and 'A.H.--' (artificial harmonic). Above the notes in the second measure, there are dashed lines and the notation '8va' indicating an octave transposition. Below the staff, a bracket labeled 'arco' spans the duration of the second measure.

Fig. 4.1.2e

Fig. 4.1.2e – This short excerpt has been transcribed from the very beginning of the piece (recording reference 0:12 – see Appendix C5), in which Dresser is heard to strum two double stops followed by a delicate melodic line¹, executed by using **artificial harmonics** (detailed below by ‘A.H.--’):

Additionally, Fig 4.1.2f (below) demonstrates a similar motivic structure, through which Dresser continues to develop the piece by utilising a large intervallic range:

Mark Dresser - 'Visceras'

Recording reference 0:33

The notation for Fig. 4.1.2f is in treble clef. It shows two measures. The first measure starts with 'l.h. tap' and '8va' above a note, followed by two double stops marked with brackets and 'pizz'. The second measure starts with 'A.H.+' and '15ma' above a note, followed by two double stops marked with brackets and 'pizz'. Above the notes in the second measure, there are dashed lines and the notation 'A.H.-' and '15ma' indicating an octave transposition. Below the staff, two brackets labeled 'arco' are positioned under the first and second measures respectively.

Fig. 4.1.2f

- **Fig. 4.1.2f** - The first two notes stretch across an intervallic leap of exactly an octave and a fifth from ‘A’, to ‘E’, followed by a slightly flattened ‘C’; all played with alternating sounds (i.e. l.h. tap, arco, pizz).
- In the end of the second bar Dresser continues to climb further in range, playing an ‘A’ in the form of an artificial harmonic, which subsequently reaches a much higher pitch output towards the extremities of the partial series. Interestingly, this peak is immediately followed by a descending pattern to the lowest A fundamental, ending with a high ‘C#’ which has again been played as an artificial harmonic.

As seen in both figures above, Dresser’s advanced use of linear structures and extensive range has been realised directly through the employment of ordinary tones and artificial harmonics.

The timbral scope of ‘Visceras’ is strongly heightened by the contrasting sonic output of percussive pizzicato techniques and the purer clarity of the partials (Daino, 2010).

In a similar vein, ‘Cauliflower Part 1’ has been influenced significantly by Dresser’s contrast in timbre and range. The excerpts below (Figures 4.1.2g and 4.1.2h) show examples of passages with varied pizzicato techniques (i.e. utilising hammer-ons, pull-offs), which have been juxtaposed with bowed partials:

I **rubato**

61

Pizz. Hammer On

Pull-Off

Bowed Higher Partial

arco.

Fig. 4.1.2g

Cauliflower Part. 1

Pull-off

pizz.

Pizz Hammer-on

A.H.---

8va arco gliss.

Bowed Art. Harmonics

f

p

Fig. 4.1.2h

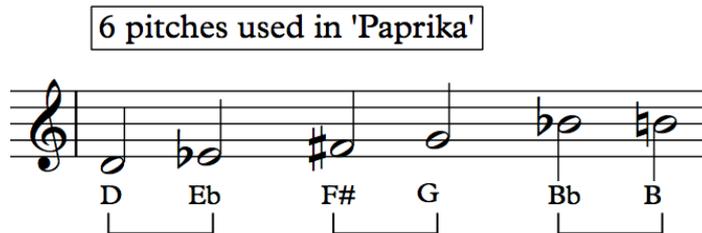
Influenced considerably by both Dresser and Phillips, the creative application of partials within the context of ‘Cauliflower Part 1’ involves several areas of focus. The swift transitions between the bowed harmonics and pizzicato techniques demand a fast interchange of sound and texture on the instrument, compositionally strengthened again by the differences in timbral output. The extension of range has surfaced as a catalyst for the use of artificial harmonics, proving particularly useful when integrated sparingly amongst lower pitches; thus adding an element of surprise, and further attracting the human ear towards unexpected sounds. Whilst difficult to execute, ‘Cauliflower Part 1’ has served as an introductory etude through which new information has been employed into a musical context in order to initiate ‘new musical expression’; particularly through the utilization of different partials (Thelin, 2011, p. 5).

4. 1. 3 ‘Paprika’

‘Paprika’ (see Appendix A8, B8) is one of the shorter pieces within the Vegetable Bass portfolio. Whilst it is somewhat simpler than the preceding compositions, the creative application of partials has arisen in context of the harmonic and physical structure of this work and will be discussed in the paragraphs below.

- - -

The tonal centre of ‘Paprika’ is based around a foundational D pedal, using only **six notes** (see below) belonging to the third Messiaen mode (used also as a modal influence of ‘Black Radish’):



Upon first impressions, this selection of notes comprises three sets of half-step intervals – namely D→Eb, F#→ G, Bb→B, in this case starting on ‘D’ in context of the recurring pedal point within the compositional material² (Fig. 4.1.3a):

mp 1 x **Foundational D Pedal**

mf < 2 x **G Pedal (used only in this section)**

Fig. 4.1.3a

However, when considering the prevalence of minor third intervallic formations within the third Messiaen mode, the pitches seen above also hold a strong correlation with the aforementioned mode; *specifically when reordered*.

² The use of a ‘G’ Pedal is only present within the two bars, before gravitating back to ‘D’ as the foundational tone.

For example: Fig 4.1.3b below displays the third Messiaen mode, rooted on 'G':

Third Messiaen Mode (root note 'G')

Fig. 4.1.3b

Fig. 4.1.3b - The bracketed pitches to the left also belong to the scale, but have been omitted within 'Paprika'.

The remainder of notes (i.e. the labeled pitches), correlate directly with the six notes used in the 'A' section (i.e. D→Eb, F#→ G, Bb→B); in this case, their intervallic formations have been reorganized in context of the Messiaen mode in focus.

Why has the 'D' been chosen as the pedal point?

One may consider a strong pedal point to fall upon the 'G', the 'B', or the 'Eb' when using the mode above. Nonetheless, the purposeful use of a 'D' pedal point within 'Paprika' has been chosen mainly due to the larger availability of attainable notes across the partial series.

For example: the use of the open 'G' (and its corresponding **second partial** 'G') as a grounding pedal point offers reduced musical options due to the limitation of using the highest open string as the underlying tone; thus it becomes physically more difficult to execute a higher melodic line above the grounding G harmonic for long phrases of higher pitches. However, the use of a central 'D' pedal point offers more room for melodic exploration *on the next string*, allowing for both D and G strings to be played simultaneously. In this regard, the application of partials has still been used creatively, but also methodically.

Thus, this can be seen in **Section B** of 'Paprika', which exercises alternating shifts from a 'D' pedal point to an 'Eb' pedal point beneath a higher melody on the G-string (Fig. 4.1.3c):

B Vocals

Sing bottom note as alternative on rpt

f

Eb Pedal

D-Pedal (Partial No. 2 - D-String)

Partial No. 3 (G-string)

Fig. 4.1.3c

- The **second partial** on the D-string (Fig. 4.1.3c) provides a foundational D pedal, also moving occasionally to Eb.
- The **third partial** (G-string – sounding pitch: ‘D’) has also been implemented in the melody of the second bar, allowing for an easier reach between the two pitches and a clearer melodic tone.

Therefore, the use of partials within both lines assists in easier execution of the music, whilst also adding more resonance and sustain for the pedal point. Interestingly, the vocal melody (rooted upon ‘G’) has been derived directly from the top line of the bass, creating a juxtaposition of two different tonal centres within the same mode, resulting in a canonic effect (Appendix B8).

Musical Influences:

Barre Phillips – ‘Amos Crowns Barn’:

‘Paprika’ has been specifically inspired by ‘Amos Crowns Barn’ (see Appendix C6) – another masterful solo piece from Phillips’ solo album, ‘Call me when you get there’. Harmonically speaking, the two works are different; ‘Paprika’ utilises an ambiguous form of the third Messiaen mode, resulting in an implied harmonic minor sound, whilst ‘Amos Crowns Barn’ is rooted between A minor and C major tonalities.

Fig. 4.3.1d details an excerpt from the beginning of ‘Amos Crowns Barn’:

Barre Phillips - Amos Crowns Barn
Recording Reference - 0:00

The image shows two staves of musical notation in bass clef. The top staff has a circled note on the high C string, with an arrow pointing to it from the label 'High C String'. Below the first few notes of the top staff, an arrow points to a note with the label 'Partial No. 2 (D-String)'. Similarly, below the first few notes of the bottom staff, an arrow points to a note with the label 'Partial No. 2 (G-String)'. The notation includes various note values and rests, with some notes beamed together.

Fig. 4.1.3d

- Phillips' use of the **second partials** on the D and G-strings (Fig. 4.1.3d) provides a solid underpinning for the main melodic material.
- It must be noted that on this particular recording (Appendix C6), Phillips utilises a fifth string on his double bass – namely a **higher 'C' string** (detailed above). As an additional anchoring pedal tone (Fig. 4.1.3d), the harmonic possibilities become even wider than those of a four string bass.

Akin to Phillips' folk-oriented soloistic style, the use of double stops has successfully opened up two voices upon the instrument, very often moving in motion with one another. Whilst 'Paprika' is rooted around a foundational 'D' pedal point for its entirety, 'Amos Crowns Barn' is seen to shift between different anchoring notes; specifically the high C string and the second partial on the G string (see Fig. 4.1.3d above).

The notation above (Fig. 4.1.3d) also demonstrates regular use of partials. Similar to that of 'Paprika', Phillips has utilised a combination of stopped notes, open strings and partials in context of musical sense. Physically speaking, the use of the **second partial** on the G-string allows for more relaxation in the left hand and more freedom of movement on the upper C string, avoiding the need to press down each and every note. In a similar vein, the **second partial** on the D string is commonly seen to be used in the same manner. Extra resonance is also achieved by the longer sustain of lower numbered partials, and their ability to sound with little effort. Hence, the implementation of the partial series across 'Paprika' has been applied for similar reasons; not necessarily for only creative purposes, but also for the sake of playability and added sustain. In this vein, the use of lower-numbered partials has indeed become part of the common language between both pieces, and also across extensive double-bass repertoire.

4. 1. 4 'Jerusalem Artichoke'

'Jerusalem Artichoke' (see Appendix A2, B2) comprises a rather minimalistic application of the partial series, employed largely for the purposes of extra tonal colouration. Based around the tonality of A minor, this piece is dark and intense, featuring a consistent driving pulse as the integral component of the music with subtle moments of partial implementation.

In terms of structure, ‘Jerusalem Artichoke’ initiates a freer interpretation of the form through the use of open-ended cells and sections, enforcing a platform for spontaneity and flexibility. In light of this, the opening cell in **Section A** (Fig. 4.1.4a) is intended to allow the performer to settle into a solid momentum, through experimenting with different accents on a single note.

♩ = 140 Helen Svoboda's Vegetable Bass

A **Ominous, undercooked** **OPEN**

- - - *A thunder storm approaches...* **Fig. 4.1.4a**

When moving on to **Section B**, more motivic musical information is gradually added in the form of stopped notes and the first visible partial (Fig. 4.1.4b):

B **Suggested Partial No. 3**

Suggestion
Feel free to vary

1. **Fig. 4.1.4b**

This bar can be extended in form

- As seen above, the use of the **third partial** on the A-string has been suggested for purposes of tonal variation amidst a repetitive melody; specifically when combined with the lower E-string, the addition of this partial subsequently allows the main melody to stand above the lower frequencies with more presence and clarity (Daino, 2010).

As the piece progresses, a rather unexpected appearance of the **fifth partial** arises in **Section C** as a pivotal moment of the piece (Fig. 4.1.4c):

C Allow variations on figures below, experiment with accents

8 *f* **Partial No. 5 (G-string)**
Sounding pitch 'B'

Building... **RPT 3 x**

Fig. 4.1.4c

- The **fifth partial** – (situated directly above the nodal location of the ‘E’ on the G-string), results in a sounding pitch of ‘B’. This partial sounds a full two octaves higher than its preceding stopped note of Bb, allowing for a large intervallic leap between alternating pitches.

Creatively speaking, the aforementioned application of the **fifth partial** has been implemented in order to develop a feeling of dissonance and unrest between the pitches ‘Bb’ and the ‘B’, whilst also adding contrast in both timbre and range amidst the continuous sound of lower pitches.

Another example of further partial implementation is seen in the excerpt below (derived from **Section G** – see Appendix B2), which demonstrates more consonant use of the **third partials** amidst the continued melodic development:

Allow variations on figures below, using suggested partials and experiment with accents

21 *mf* **Partial No. 3 (D-string)** **Partial No. 3 (A-string)**

23 *f* *This bar can be extended in form*

Fig. 4.1.4d

- As seen above, the **third partial** on the D-string (sounding pitch: ‘A’) has been employed above the already established note of ‘F’, offering a brief chordal addition to the continuous melodic movement. In terms of range, this particular partial also sounds an octave higher, resulting in a double-stop of a major tenth.
- The **third partial** on the A-string (sounding note: ‘E’) has also been used in continuation to add variance to the melody and to contrast the lowest E-string, as mentioned earlier in Fig. 4.1.4b.

Due to the small amount of partials used within the entire piece (most of which are correlative with their resulting sounding pitch), the notation for ‘Jerusalem Artichoke’ remains straightforward. Thus, it has been assumed of the performer that the location of the partials used may be realised without a need for further clarification.

Musical Influences:

Sebastian Gramss (Slowfox) – ‘Thought’:

Sebastian Gramss is the bassist in the Cologne-based trio ‘Slowfox’. Featuring instrumentation of saxophone, piano and double bass, their record ‘Gentle Giants’ features a vast range of intriguing compositions, exploring an array of interesting textures and moments of intricate melodic and rhythmic interplay.

‘Thought’ (see Appendix C7) – one of the tracks from the album, has acted as a particular influence for ‘Jerusalem Artichoke’. The excerpt below (Fig. 4.1.4e) details the beginning of ‘Thought’, which features a bass introduction by Gramss (also centered on A minor):

Sebastian Gramss (Slowfox) - 'Thought'
 Recording Reference - 0:00

Fig. 4.1.4e

- **Fig. 4.1.4e** - The *bottom* line indicates a continuous bowed pulse centered upon the A-string, upon which Gramss prioritises a textural effect resulting in less distinguishable pitch output. For this reason, the ‘x’ notehead has been applied.
- The *top* line indicates the partials used for the main melody, in exact order.

The transcription above is a loose portrayal of the musical material upon the recording (Appendix C7). The continuous sixteenth-notes act as the driving pulse, whilst the top melodic line is played rather freely, in omission of exact timing, inspiring both the open-ended structure of ‘Jerusalem Artichoke’, and also its driving rhythmic pulse. In contrast to ‘Thought’, however, the tempo of ‘Jerusalem Artichoke’ is marginally slower due its longer duration.

Compositionally speaking, Gramss’ bass introduction to ‘Thought’ leads into a ballad-like piano melody, in a much slower tempo. In contrast to this, ‘Jerusalem Artichoke’ features an alternate melody at Section F, but instead maintaining the sixteenth-note pulse to maintain momentum (Fig. 4.1.4f):

The image shows a musical score for 'Jerusalem Artichoke'. It consists of two staves of music. The first staff begins at measure 14 in 5/8 time, marked 'sul pont.' and 'subito p'. The second staff begins at measure 16 in 4/4 time, marked 'p'. The title 'Jerusalem Artichoke' is enclosed in a box at the top right. The music features a continuous pulse of sixteenth notes with a melodic line on top.

Fig. 4.1.4f

Whilst the excerpt above shows no visible application of the partial series, the use of *sul pont* (i.e. bowing closer to the bridge) has been suggested in the score of ‘Jerusalem Artichoke’ to further activate the overtone series; hence increasing tension in regards to the dark musical atmosphere. Gramss is regularly heard to utilise the difference in *sul tasto* (bowing on top of the fingerboard) and *sul pont* across much of his work, as a way of varying the textural output and experimenting with softer and harsher sounds. In this regard, the importance of bow placement is highly relevant in activating the overtones via the use of ponticello, despite a lack of notated partials.

Therefore, whilst both ‘Thought’ and ‘Jerusalem Artichoke’ involve a simplistic, minimalistic application of the partial series, it is the distinct tonal variation of each that allows the music to come to life. The juxtaposition of an underlying continuous pulse and a series of sustained

harmonic pitches in ‘Thought’ is correlative with the use of partials in ‘Jerusalem Artichoke’; however, in the latter, the use of partials is intertwined amongst the consistent pulse in contrast to the two-part orchestration of Gramss’ solo in the former. The creative implementation of the partial series in both works has added considerable melodic presence in combination with a repetitive foundational structure of a lower frequency.

4.2 - SUB-QUESTION 2: Which forms of extended technique effectively contrast the use of the partial series of the double bass in soloistic compositional practice?

A selection of additional extended techniques has accumulated through their combined use with the partial series, all of which have surfaced naturally and intuitively throughout the process of discovery and learning; namely **Scordatura**, **Textural Ricochet**, **Frog Strike**, and **Tapping/Glissandi**.

4.2.1 Scordatura

Scordatura – a technique dating back to the 1600s, involves an alternate tuning of one or more of the fundamental open strings. By doing so, the familiar pitch set becomes unstandardised, often used for the purpose of higher resonance, unusual harmonies, or to allow for more ease when playing certain passages.

Ashley John Long – author of *The Modern Double Bass Blog*, suggests the following range for Scordatura tuning on the double bass (Long, 2019):

- **For tuning upwards:** no higher than a semitone
- **For tuning downwards:** no lower than a fifth

A historically traditional form of scordatura relates to the solo tuning of the double bass within an orchestral setting, in which certain pieces call for a complete transposition in which each open string is tuned up a tone: i.e. **F#, B, E, A**. The effect of this higher tuning allows for more ‘brightness’ in the tone, which can be particularly useful for purposes of extra sonic presence (Connolly Music, 2016). In context of this project however, only the re-tuning of

individual strings has been employed, thus strongly altering the sound of the instrument and the resonance of the entire partial series.

When **notating** scordatura, it is common to indicate the altered tuning at the top of the page and proceed to notate **as normal**. This is due to an imbedded association developed by string players upon which a given note acts as an immediate reference point upon the instrument neck. In this regard, the performer may play the piece ‘as written’ and without any prior re-learning required, however the sounding pitches will be altered accordingly. For musicians with absolute pitch, this technique is highly difficult, requiring an active disregard for the difference in pitch and a stronger focus on fingerboard positioning. (Sibelius Academy, <http://sites.siba.fi/web/harpnotation/scordatura>).

4.2.1a - ‘Raw Ginger Root’

‘Raw Ginger Root’ (see Appendix A10, B10) is the first of two pieces in the Vegetable-Bass series to utilise Scordatura. Compositionally it has been built upon cyclic rhythmical patterns, investigating the different resonances that occur as a result of double-stopped partials in an altered tuning. As seen in Fig. 4.2.1a below, the specific tuning for ‘Raw Ginger Root’ has been indicated at the top of the score, indicating the following: **E A C# G** → i.e, the performer is instructed to tune the D-string down a half-step to ‘C#’:

- Raw Ginger Root -
- Scordatura - E A C# G : Tune down 'D' string to a 'C#' -

Helen Svoboda's Vegetable Bass

A $\text{♩} = 120$
Energetic, driving
 Sounding Clef

Fig. 4.2.1a

As per Long’s recommendations regarding the scope of string re-tuning, the loosening of a string offers up to a full fifth of flattened range extension, in contrast to the tightening range of only a whole tone; thus, the downwards alteration of a half-step is a safe option for functional use within this piece (Long, 2019).

The **notation** of ‘Raw Ginger Root’ utilises a two-stave system; the top stave indicates the sounding pitches (Dresser, 2010) whilst the bottom stave indicates the exact positioning of the notes and partials. Akin to the recommended notation of Scordatura, the pitches on the bottom stave of the entire score have been notated as normal, indicating only the **positioning** of the notes. The sounding stave in this instance is crucial in clarifying the intended pitch output of the tuning alteration.

Fig. 4.2.1b – from the first bar of the piece (see Appendix B10) demonstrates this notation:

Fig. 4.2.1b

- **Fig. 4.2.1b** – details the use of the **third partials** upon the G and D strings – notated as normal in the **bottom stave**. The **sounding stave** indicates the true sounding pitch as a result of the altered tuning; i.e. the normal pitch output of the third partial on the D-string is subsequently altered from an ‘A’ to a ‘G#’.

A second example of the scordatura notation is seen below in Fig. 4.2.1c:

Fig. 4.2.1c

- **Fig. 4.2.1c** - the first bar uses an unaltered **second partial** on the G-string, in combination with a stopped ‘F’ on the D-string, as indicated on the **bottom stave**. As a result of the retuning, the ‘F’ realistically sounds as an ‘E’, a half-step lower; as seen on the **top stave**. Hence, whilst the bottom stave indicates a double-stopped interval of a major second (F → G), the use of scordatura results in a sounding minor third of E → G.

- The second bar above maintains the use of the stopped 'F' (sounding pitch: 'E') in combination with the unaltered **fifth** partial on the G-string (Sounding Note: 'B'), again complimentary to the E minor tonality in this section.

The purposeful modification of the conventional double-bass tuning system offers many unexpected harmonic possibilities in the realm of combined partials. Thus, the use of a C# string in 'Raw Ginger Root' has initiated a series of unusual double-stopped partials, atypical of those heard amidst the regular fourths tuning system affiliated with the bass.

More instances of **altered resonance** are shown below, firstly in regards to a series of tri-tonal double stops (see Figures 4.2.1d and 4.2.1e):

Figure 4.2.1d is a musical score for a double bass in 4/4 time, marked with a tempo of 120. It features two systems of double stops. The first system is labeled 'Scordatura tuning = Tritone' and includes a 'Sounding Clef' box. The second system is labeled 'Regular tuning = 4ths'. The score is marked 'Energetic, driving' and 'f'.

- **Fig. 4.2.1d** - The **regular tuning** indicates the expected pitch output of the third partials on the D and G-strings (i.e. 'A' and 'D'), equalling a perfect fourth.
- The **scordatura** tuning results in a tritone due to the flattened pitch of the lower tone (i.e. 'A' becomes 'G#')

Figure 4.2.1e is a musical score for a double bass in 7/8 time. It features two systems of double stops. The first system is labeled 'Scordatura Tuning = Tritone' and the second is labeled 'Regular Tuning = 4ths'.

- **Fig. 4.2.1e** (Bar 26) - The **regular tuning** indicates the common use of the **second partials** on the D and G-strings i.e. a perfect fourth.
- The **scordatura** tuning realises a sounding tritone (i.e. 'D' becomes 'C#')

Section B utilises a different intervallic combination to that of the underpinning tritone (**Fig. 4.2.1f**):

14 **B**

Scordatura tuning
= Major 3rd

Regular tuning
= Perfect 5th

Fig. 4.2.1f

- **Fig. 4.2.1f** - the **bottom** staff indicates the use of the **third partial** on the D-string (‘A’) and a stopped ‘E’ on the G-string, equalling a perfect 4th.
- The **scordatura** tuning results in a sounding major third due to the flattened partial (i.e. ‘A’ becomes ‘G#’)

As the piece progresses, Section F also continues to build upon different intervallic combinations and chordal progressions in response to the altered partials (Fig. 4.2.1g):

37 **F**

F Minor

Scordatura Tuning
= Minor 3rd/10th (F → G#(Ab))

Regular Tuning
= Major 3rd (F → A)

G# (Ab) Major

= Minor 6th/Inverted Major 3rd
(C → G#(Ab) or G# (Ab) → C)

Regular Tuning
= Minor 3rd (A → C)

C#(Db) Major

= Major 3rd/10th
(C#(Db) → F)

Regular Tuning
= Minor 3rd/10th (D → F)

Fig. 4.2.1g

- The **regular tuning** in the first bar (above) indicates a major third in the key of F major; *however*, the **scordatura** alters the tonality to F minor through the sounding pitch of F → Ab. In this case, the **third partial** adds a different colour to its otherwise conventional tuning.
- The **regular tuning** in the second bar (above) indicates a double-stopped interval of a minor third in the key of A-minor; *however*, the **scordatura** shifts the tonality towards G#/Ab major through the sounding pitch of an inverted major third (i.e. C → G#, aka G# → C)
- The third bar utilises the lowest C# string as a point of intensity, resulting in a sounding interval of a major tenth in the tonality of C# major – a rather uncommon tonality on the double-bass when tuned conventionally.

The examples above demonstrate just several of the harmonic possibilities that have arisen within ‘Raw Ginger Root’. With reference to the entire score (Appendix B10), more atypical tonal combinations can be found as a direct result of the alternate tuning. In particular

reference to the partial series, the retuning of the D-string has consequently opened up unusual chordal movements, veering away from more common tonalities so often affiliated with the regular open strings; particularly in regards to the different intervallic relationships between the double-stopped partials, heightened by the occasional use of a ‘C#’ pedal instead of a ‘D’ pedal.

Musical Influences:

Larry Grenadier – ‘Vineland’:

Larry Grenadier’s composition ‘Vineland’ (see Appendix C8) from his solo album ‘The Gleaners’, has significantly influenced the rhythmic structure of ‘Raw Ginger Root’. The short excerpt below details a recurring motif, based around cyclic use of major thirds and minor thirds (Fig. 4.2.1h):

Larry Grenadier - 'Vineland'
Recording Reference - 0:29

Partial No. 3
(D-string)

Fig. 4.2.1h

- As seen in the second bar of the figure above, the **third partial** (D-string) has been used to add extra colour and tonal variation.

In contrast to that of ‘Raw Ginger Root’, Grenadier utilises the traditional tuning system, thus the tonality remains as it appears on the score. Harmonically speaking, the effect of scordatura has arguably created more tension in ‘Raw Ginger Root’ through the prevalence of tri-tonal intervals, whilst ‘Vineland’ remains largely rooted in familiar structures due to the influence of the partials in regular tuning.

The rhythmic cells in ‘Vineland’ are repeated and developed throughout the entire piece, allowing the listener to grasp onto familiar musical material. The groove is constant, and like that of ‘Raw Ginger Root’, Grenadier builds upon the rhythmic material by adding extra

chordal variations in the form of double stops – gradually moving upwards in pitch as the piece gains momentum and intensity. Grenadier’s use of accents has also influenced those in ‘Raw Ginger Root’, adding a sense of driving momentum to otherwise repetitive structures.

Barre Phillips – ‘Grants Pass’:

Yet again, the influence of Barre Phillips cannot be discounted when analysing the compositional process of ‘Raw Ginger Root’, with particular reference to ‘Grants Pass’ (Appendix C9) – the title track from his solo album ‘Call me when you get there’. Similar to Grenadier’s ‘Vineland’, Phillips crafts the entire piece using double stops; many of which also utilise the partial series to add more resonance and colourations.

Fig. 4.2.1i details the first two double stops played by Phillips – namely a Bb major third, and a perfect fifth rooted on A:

Barre Phillips - 'Grants Pass'
Recording Reference - 0:05

The figure displays two staves of musical notation in bass clef, 4/4 time, with a key signature of one flat. The first staff is labeled 'Partial No. 3 (G-String)' and the second staff is labeled 'Partial No. 3 (D-String)'. Both staves show a sequence of double stops, with the first two notes of each double stop being marked with a 'V' above them, indicating a vibrato or accent. The notation includes various rhythmic values such as eighth and sixteenth notes, and rests.

Fig. 4.2.1i

- Again, the use of the **third partial** (on the D and G strings) is highly prominent as a solid foundation for the harmony.

In correlation with ‘Vineland’, ‘Grants Pass’ is also performed in traditional tuning, also using a resonating major third as the opening interval. Yet, despite the differences in harmonic output of both pieces in contrast to that of ‘Raw Ginger Root’, it is important to notice similar or identical chordal shapes amidst the foundational material of all three pieces.

The rhythmic structure of ‘Grants Pass’ remains in a consistent tempo, with constant use of changing accents upon the eight notes. Interestingly, Phillips has double-tracked this particular piece, creating a sense of warping time amidst a never-failing pulse (Appendix C9). When compared with the rhythmic specificity of ‘Raw Ginger Root’, ‘Grants Pass’ is arguably more open in structure and form, - aided further by the use of overlapping textures to add intensity and richness to the harmonic material.

4.2.1b - ‘Soggy Ratatouille’

‘Soggy Ratatouille’ (see Appendix A7, B7) is the second composition from the Vegetable-Bass series to utilise Scordatura. The application of the partial series within this composition has remained playful and simplistic, featuring a repetitive bass groove which underpins a comedic spoken word story depicting a failed vegetable-box delivery.

The **notational** system adopted for ‘Raw Ginger Root’ (i.e. two-stave system – ‘sounding clef’ and ‘normal notation’) has also been applied to ‘Soggy Ratatouille’; thus, the intended pitch output is communicated upon the **top stave**, whilst the exact nodal positions indicated upon the **bottom stave** allow the performer to play the piece ‘as written’, but with an extra awareness of the altered pitch output through an unambiguous form of notation (full score in Appendix B7).

The scordatura tuning for this piece involves the following open string tuning: **E A D F#** → i.e. the performer is required to tune down the G-string a half-step (Fig. 4.2.1j)

Soggy Ratatouille
 - Scordatura - E A D F# : Tune down 'G' String to an F# -
 Helen Svoboda's Vegetable Bass

Fig. 4.2.1j - The opening motif of this piece features the use of the **third partials** upon the D and G-strings. The altered tuning results in a pitch output of C# → A i.e. a descending major third.

Fig. 4.2.1j

The use of the opening motif (see Fig. 4.2.1j above) immediately resounds with the chime of a doorbell (as indicated in the score). The use of plucked partials in this register allows the particular harmonics to resonate simultaneously, creating more sustain than that of regular stopped pizzicato pitches. In this light, the sound of a doorbell has been created purely due to the use of partials in the specific scordatura tuning, hence creating the introduction to the story that underpins the entire piece.

An integral bass riff enters at Bar 5 (Fig. 4.2.1k):

- Again, the use of the **third partials** are seen across each of the A, D, and G-strings, establishing an A-major tonality for the first bar, contrasted directly in the second bar by an ascending F# major triad in second inversion.
- As indicated in the sounding clef, the pitch output differs to that of the bottom staff, which indicates the standard placement of the notes.

This motif remains throughout the piece as the story builds in intensity, with regular reference to the initial ‘doorbell’ motif from the introduction. The following excerpts demonstrate further application of scordatura from the second half of the motivic material:

Fig. 4.2.1l - The **second partial** on the G-string (Bar 10) becomes an F# due to the retuning of the fundamental.

12

Sounding Pitch = A Major Triad, 2nd Inv

Partials No. 3 - (A, D, G-strings)

Fig. 4.2.1m

Fig. 4.2.1m - The **third partials** are used again, creating an A-major triad (third inversion) across the A, D and G strings with reference to the original ‘doorbell’ motif

The figures above provide further examples of the use of partials in scordatura, through which the use of both staves has proven to be necessary in order to add context specifically to the harmonic structure of the motivic movement. The grounding tonality of A-major contrasts playfully with the nature of the piece itself, juxtaposed by the spoken word element which continues to intensify with agitation and impatience (Appendix A7). The presence of partials within the context of ‘Soggy Ratatouille’ is vital in adding humour and weightlessness to the accompaniment, whilst also maintaining a regular reference to the chime of the doorbell. Although the partials notated above are possible to execute also in regular tuning, the scordatura has subsequently allowed for an easier execution of the music; specifically through the purposeful retuning of the G-string in order to ‘place’ or locate the relevant partials upon nodes of lower partial numbers (i.e. the lower the partial number, the easy it becomes to execute) (Dresser, 2010). In regular tuning, for instance, the C# partial seen earlier in **Fig 4.2.1j** would be located as the **fifth partial** on the A-string; thus adding extra difficulty in allowing it to resonate due to its higher numbering.

4.2.2 Textural Ricochet

The next section of this chapter concerns the use of the *Ricochet* bow technique (also referred to as ‘the bouncing bow’) - an approach heard extensively across the vegetable-bass portfolio with particular reference to ‘Beetroot (in blossom)’. Prior to the discussion of the compositional application of the ricochet, it is first necessary to discuss this motion and how it works.

Knut Guettler defines the ricochet technique as the following: ‘achieved with just impulse movement of the arm, the ricochet effect is subsequently realized through the bouncing of the bow on the strings’ (Guettler, 1992, p. 28) - see Figures 4.2.2a and 4.2.2b below:

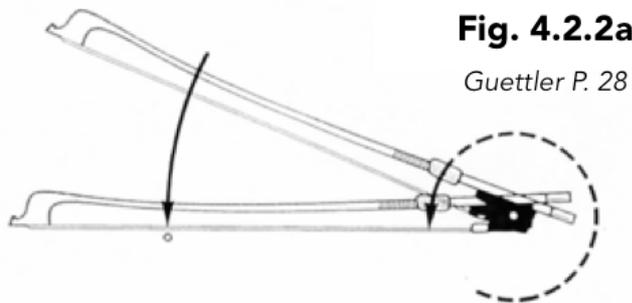


Fig. 4.2.2a

Guettler P. 28

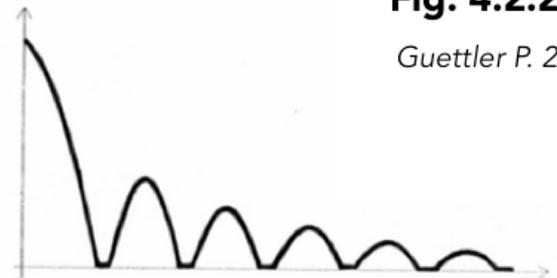


Fig. 4.2.2b

Guettler P. 28

How does it work?

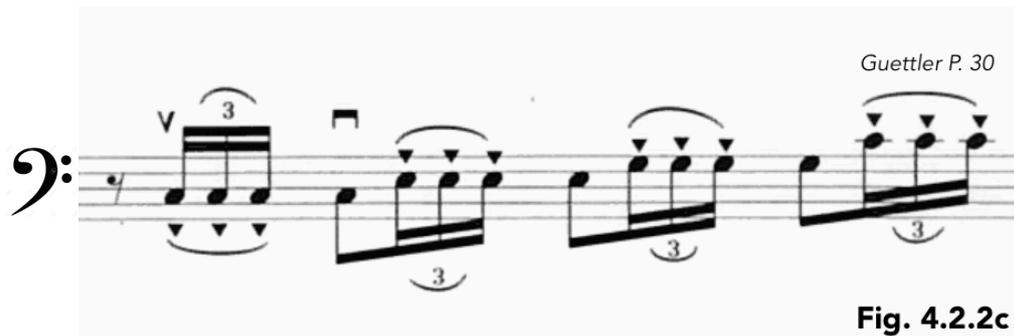
Guettler has documented the ways in which the ricochet technique is directly affected by a number of factors – i.e. the bow placement, the specificity of the execution, the grip of the hand, and the position of the arm (summarised in the table below):

Bow Grip	Ricochet Speed
Loose bow grip	Slower bounce
Tight bow grip	Faster bounce
Bow Placement	Ricochet Speed
Near to the tip	More rapidity in bounce
Nearer to the middle/frog	Less rapidity in bounce

A visual reference of the textural ricochet can also be observed in the video: ‘Robert Landfermann Solo’ (see Appendix C12) from 1:19, in which Landfermann plays a series of ricochets upon the tip of the bow.

Ricochet Notation:

The excerpts on the following page indicate two particular forms of notation for the ricochet technique (1992, p. 29). The method in Fig 4.2.2c uses wedges to indicate a number of bow bounces within each triplet series, with a clear accent on the first note, whilst Fig. 4.2.2d indicates an alternate form of ricochet notation, shown by the staccatos within the slurs.



Whilst both of these methods are widely used with much effectiveness, it is important to note that this is in reference only to a **specific number of bounces** to be executed by the performer.

Despite this, the use of ricochet within the Vegetable-Bass repertoire is largely **textural**, without a pre-determined number of bounces. In consideration of this, across the Vegetable-Bass scores, the wedge symbol has been used on a singular basis in combination with a dotted arrow to leave the number of bounces open to the performer for the purpose of this project. Textual instruction may also assist in this process i.e. *ricochet on the tip of the bow with rapidity* - a topic to be discussed in context of the specific scores further on.

4.2.2a - ‘Beetroot (in blossom)’

‘Beetroot (in blossom)’ harnesses the essence of simplicity and repetition (see Appendix A6, B6). Built upon a pulsating drone on the open G-string, with varying melodic motifs scattered throughout, the central component of this composition lies upon the use of the **textural**

ricochet; a sound which has surfaced predominantly through intuitive discovery and continuity of development upon a single idea³.

Fig. 4.2.2e below details the opening motif of the entire piece:

▼ = Textural ricochet (on the tip of the bow)

() = Left Hand pizzicato ← Explanation of notational symbols

Helen Svoboda's Vegetable Bass

♩ = 180 *Light, Folky*

Fig. 4.2.2e

- The key in the top left corner of the score communicates particular components of the music to the performer; i.e. the **wedge** symbol (or inverted triangle) indicates textural ricochet on the **tip of the bow**. In reference to Guettler’s writings, the tip of the bow achieves more ‘rapidity’ in bounce (1992).
- The bracketed pitches are to be plucked with the left hand⁴.

Following on from the introduction, **Section A** introduces the melodic use of partials in order to contrast the repetitive motif:

Fig. 4.2.2f

- The use of the **third partials** (D and G-strings) are present in the first two bars (above). It is important in this instance to realise that both partials are available in *two* different areas of the neck (Dresser, 2010), thus dividing the string into three sections. Whilst it is common to play

³ This particular discussion will focus solely on the use of this technique, in omission of the vocal melody which is analysed as part of Sub-question 3.

⁴ The performer is to determine which finger is most comfortable for use

the third partials in the lower half of the bass neck, below thumb position (as seen in Fig. 4.2.2g below), in this instance the use of the **8va** symbol is necessary in communicating the use of those placed upon the higher half of the neck (thumb position); i.e directly above the ‘A’ and ‘D’ in 8va form.

- The same notation system has been applied to the **fifth partials** in the bottom staff; whilst both of these are infact available in *four* different areas upon the bass neck, it makes musical sense to play them in close proximity to their surrounding nodes. Therefore, the placement of the fifth partials in this example is to be executed directly about the ‘F#’ and ‘B’ in 8va form.
- The string numbers in the score also add more clarity in communicating the desired placement of each of the partial pairs.

Fig. 4.2.2g below (derived from Section B), is an example of the aforementioned *alternative* placement of the **third partials** on the D and G-strings; i.e. the omission of the 8va symbol indicates their placement to be lower upon the bass neck, below thumb position:

21

Partials 3
(D and G-strings)

Fig. 4.2.2g

Whilst the partials in both figures above can arguably be played in several different nodal locations, the notation of ‘Beetroot (in blossom)’ directly indicates those that make the most physical sense. Thus, in correlation to the misconceptions of partial notation and the many inconsistencies in regards to pre-determined locational specificity, the scoring for this piece aims to minimise confusion and to suggest the best possible nodal applications available to the performer.

On a creative note, the use of the **third** and **fifth** partials in the excerpts above have been employed distinctly for added resonance and timbral presence (Daino, 2010). Amidst the transient, grounding nature of the G-drone textural ricochet, their subtle melodic emergence is strengthened further by the presence of their resulting 8va pitch outputs, whilst also affirming the tonality of G-major.

Musical Influences:

Stefano Scodanibbio – ‘Granada’:

Stefano Scodanibbio is well known as a pioneer in the realm of soloistic double bass technique. Whilst his legacy spans a large majority of modern double-bass repertoire today, ‘Beetroot (in blossom)’ has been influenced particularly by ‘Granada’ (Appendix C10) – a track from the album ‘Incontri and Reuniones’.

The excerpt below demonstrates fragments of a continuous bass groove upon the G-string, derived from moments within the first three minutes of the recording (Fig. 4.2.2h):

Stefano Scodanibbio - 'Granada' 5

The figure shows three staves of musical notation for the double bass. The first staff begins with the instruction 'col legno battuto' and shows a sequence of notes on the G-string. A red arrow points to a specific note with the label 'Ricochet'. Below this note is the instruction 'arco'. The second staff starts with 'arco' and shows a sequence of notes, including some with accents and slurs. The third staff continues the sequence with various note values and rests, ending with a double bar line. The caption 'Fig. 4.2.2h' is located at the bottom right of the notation.

- Much of the groove is played *Col legno battuto*⁵, providing an angular percussive effect underneath a floating harmonic-minor synthesizer melody (Appendix C10).
- The notation above outlines the use of a **ricochet** upon the open G-string in several instances, providing contrast to the palette of additional sounds; namely col legno battuto, accented arco double-stops, and subtle left hand hammer-ons.

Whilst Scodanibbio is scarcely heard to play partials within this recording, their occasional use adds extra resonance to the otherwise sustained lower register.

⁵ Striking the strings with the wood on the back of the bow, giving a percussive effect

‘Beetroot (in blossom)’ has indirectly taken influence by particular motifs within ‘Granada’, drawing several interesting parallels in compositional output.

An example is shown below, comparing the motivic material of two excerpts (one from each piece) – Figures 4.2.2i and 4.2.2j:

Partials No. 3 (D and G-strings)

‘Beetroot (in blossom)’ - Bar 30

F# - G
maj7 - I

Ricochet

Fig. 4.2.2i

Partial 3 (D-string)

F - G
(b7 - I)

F - G
(b7 - I)

Ricochet

Fig. 4.2.2j

‘Granada’

- Both pieces utilise a double-stop upon the third partial/s (outlined in purple); the only difference being between the use of *both* partials in ‘Beetroot (in blossom)’ and the combination of an ordinary tone (‘D’) and a single third partial (‘A’) in ‘Granada’.
- Harmonically, both pieces differ in terms of tonality (outlined in green) i.e. whilst the melody in ‘Granada’ is based around G-harmonic minor (indicating use of an F#) (Appendix C10), the bass groove remains indicative of a minor tonality with use of the flattened seventh (F) – as seen above in Fig. 4.2.2j. In contrast, the tonality of ‘Beetroot (in blossom)’ uses a similar motivic structure but in the key of G-major, utilising the major seventh as it leads to the tonic.
- The use of the ricochet is seen in both excerpts (outlined in red) as a way of adding sonic contrast to the surrounding material.

To this point it becomes clear that the use of the textural ricochet has been employed across both compositions to add extra character to an otherwise unceasing drone. It is interesting to note the variety of sounds that Scodanibbio articulates through his use of additional techniques such as *col legno battuto*, all of which compliment each other in terms of textural and timbral juxtaposition. However, the use of subsidiary extended techniques within ‘Beetroot (in blossom)’ has been replaced with a more sustained melodic function in context of its soloistic nature, with the main difference being the musical setting of each of the pieces; namely duo verses solo. In this light, Scodanibbio takes on a more ‘traditional’ role of a bass

player in ‘Granada’ as a result of the duo instrumentation, whilst ‘Beetroot (in blossom)’ aims to translate both a groove and a melodic counterpart in omission of a second instrument.

4.2.3 Frog Strike

The **frog strike** involves an accelerated upwards motion of the bow, following all the way through to the metal part of the ‘frog’⁶, thus creating an intensified, percussive effect upon delivery. In contrast to the remainder of additional extended techniques discussed in this chapter, this particular technique is less commonly mentioned within extended double bass repertoire. For this reason, the ‘frog strike’ has been given its own name in context of this research. Particular examples of its implementation will be discussed below in context of two compositions: ‘Cauliflower Part 1’ and ‘Black Radish’.

The **notation** of the ‘Frog Strike’ within the Vegetable-Bass portfolio has been approached in a purely personal way, due to the lack of uniform methods available. A notational key has been used to communicate the use of this technique in both ‘Black Radish’ and ‘Cauliflower Part. 1’, as seen below:

× * = Up-bow, strike into the frog

The ‘x’ symbol has been utilised to communicate the percussive effect that results from contact with the string and the metal part of the frog, whilst the mandala symbol has been utilised in order to stand out from the rest of the notation to ease the reading process. An upwards arrow is also added to enforce the upwards force (see figures below).

4.2.3a - ‘Cauliflower Part 1’

Fig. 4.2.3a on the next page demonstrates an excerpt from the beginning section of ‘Cauliflower Part 1.’ (Appendix B9), in which the frog strike is applied to the first note - ‘C’:

⁶ The piece of wood on the bow which the player holds, situated between the grip and the screw.

A

Fig. 4.2.3a

Annotations in Fig. 4.2.3a include: *sf* arco, Frog Strike, *mp* pizz., Partials No. 2 (D and G-strings), arco ①, Partials No. 3 & 4 (G-string), *g^{va}*, l.h. pizz., arco, and Upwards bow motion into frog strike.

- The use of the frog strike in the first bar (above) has been used in conjunction with the pizzicato **second partials** on the D and G-strings.
- The second bar demonstrates further application of bowed **partials three and four** on the G-string, immediately contrasted with an upwards bow motion into a repeated frog stroke – again on ‘C’.

The combination of contrasting sounds within the opening motif of the piece sets up an unusual groove in the tonality of C-major, intensified by the upwards momentum of the first note. As this motif continues to repeat across the entire first section (Appendix A9, B9) the tonality shifts briefly to F-major in Section B, also intensified by the continued use of a frog-strike (Fig. 4.2.3b):

B

Fig. 4.2.3b

Annotations in Fig. 4.2.3b include: 7, *sf* Frog Strike, *mf* pizz., and Partials No. 2 (D and G-strings).

Fig. 4.2.3b

In reference to the above, the use of the frog strike has been implemented to enforce a powerful start to the music. Compositionally speaking, the velocity of the accelerated up-bow upon the first beat of each bar allows the remainder of the space to be filled with playful colours of a polarising nature – in particular, the smooth, glossy character of the partials used.

4.2.3b - 'Black Radish'

In a similar vein, the opening section of 'Black Radish' features a frog-strike, this time on a low 'F' (Fig. 4.2.3c):

Rubato, freely Helen Svoboda

A Strike into the frog! * //

p *f* *mf*

Frog Strike

A Lydian motif:
Partial No. 3 (D-string)

Fig. 4.2.3c

- The first note (open string E) leads forcefully into the 'F', as indicated by the 'x' notehead.
- A contrasting melody in A-lydian follows directly afterwards, utilising the **third partial** upon the D-string as the tonic.

Unlike that of 'Cauliflower Part 1', the implementation of the frog-strike remains scarce within 'Black Radish'. However, its application has been used for similar purposes in terms of adding contrast to the remainder of the piece; specifically the variance of the upwards strike prior to a legato, romantic melody.

Musical Influences:

Robert Landfermann:

German bassist Robert Landfermann remains the sole influence of the frog-strike technique. This technique has both been adopted from him in several lessons, and also observed/heard in both live performance and recordings.

Amidst his vast range of sonic effects, Landfermann is heard to use this technique quite commonly amidst different musical settings, often during moments of intensity. 'Rot' (Appendix C11) – a track from his album 'Night Will Fall' features the use of the frog-strike in the very beginning. For purposes of transcription, the exact pitches have been near impossible to notate as Landfermann utilises a range of combined partials simultaneously

whilst striking upwards. Thus, the recording acts as a better reference for this particular part of the analysis: (Appendix C11). Upon listening, the musical effect of the upwards acceleration can be heard to clearly influence the frantic, intense vibe of the entire piece.

A visual representation of Landfermann's application of the frog-strike can also be observed in 'Robert Landfermann Solo' (Appendix C12). Several different versions of this technique are seen within the video. The first two examples occur at 0:35 or 1:38, in which Landfermann performs frog strikes of medium intensity – similar to that of 'Cauliflower Part 1' and 'Black Radish'. A second example of this technique is seen at 2:06, but with much more force and aggressive repetition. Unlike the former, this aggressive strike is clearly played upon an audible pitch (F#). The difference between the two approaches directly depends on the amount of force subjected upon the metal tip of the frog. Whilst both examples of the frog-strike are used sparingly, they blend incredibly well with the remainder of the piece, which mostly features a series of intense accents by use of a down bow.

The use of the frog strike within both 'Cauliflower Part 1' and 'Black Radish' arguably combines sonic effects of both strikes heard in Landfermann's video; whilst the intensity is more akin to the examples of medium force, the use of a singular exact pitch is utilised in reference to the more aggressive version, in contrast to the heavy use of overtones earlier in Landfermann's performance. In this vein, it becomes clear that there are many ways in which to approach this particular technique, depending on the musical context and overall desired effect.

4.2.4 Tapping/Glissandi

The **tapping/glissandi** technique within the context of the Vegetable-Bass portfolio involves a precisely accented 'tap' upon the fingerboard (played with both the right and left hand), followed by a pizzicato sliding motion towards a particular pitch. This pizzicato technique is regularly heard in varied renditions within modern string repertoire, however for the purpose of compositional application in this project, the use of tapping/glissandi has been implemented in regards to particular shapes and motifs within 'BEAN' – a piece inspired by a chaotic coffee shop.

4.2.4a - 'BEAN'

Composed to emulate the vibe of a bustling coffee shop, 'BEAN' (Appendix A3, B3) is dense and chaotic. The use of tapping and glissandi within this particular work has been inspired by 'coffee shop sounds'; namely the percussive 'pings' of coffee beans as they bounce around in the grinder, or the clanging of spoons on saucers, whilst also requiring a strong level of technical intent in order to precisely reach a set of pre-determined intervals and pitches.

The score features a notational key, provided on the top left-hand corner of the score (Appendix B3) - specifically relating to the notation employed for use of tapping (see below):

() = l.h. pizz
 ◆ = tap on the fingerboard

Like that of 'Black Radish', a black diamond note-head has been employed to communicate the tapping motion upon the fingerboard. Fig. 4.2.4a (below) demonstrates the use of this key, combined with further instructions regarding the use of glissandi in **Section A**:

"A Caffeinated Buzz"
A (♩ = 120) **Diamond Note-Heads to indicate 'Tapping'**
Left Hand/Right Hand Indications for specific taps
 Helen Svoboda's Vegetable Bass

The image shows a musical score for a bass instrument. It is in 4/4 time with a tempo of 120 beats per minute. The score is marked 'pizz.' and 'f'. It features several annotations: a red diamond note-head indicating a tap, green arrows pointing to left and right hand tapping instructions, and slurred lines indicating glissandi. The score is titled 'A Caffeinated Buzz' and is part of 'Helen Svoboda's Vegetable Bass'.

Fig. 4.2.4a

- The opening four bars of 'BEAN' are seen above; the black diamond note-head is shown in red, indicating the beginnings of two 'tapped' intervals upon the fingerboard, namely forming that of an Ab major chord. The slurred lines indicate the use of a sliding motion to reach the second note of each grouping.
- Further use of tapping is also indicated by the allocation of left hand (l.h.) and right hand (r.h.) brackets (green). An example is seen in the second bar, upon which the left hand is instructed to tap⁷ the 'C#' on the first string, directly above the 'D' (plucked by the right hand).

⁷ The use of a black diamond note-head is absent for longer tones, through which the tapping is still indicated by the use of bracketed finger allocation.

Further use of this notation is continued in bar 5 of the opening section (Fig. 4.2.4b):

Fig. 4.2.4b

Detailed description: This musical notation is in bass clef. It consists of three measures. The first measure is in 3/4 time and contains a 'Tapping' instruction with a forte (*f*) dynamic. A bracket labeled '② l.h.' spans the first two notes, which are circled in red. A bracket labeled '① r.h.' spans the first two notes. The second measure is in 3/4 time and contains a 'Normal Pizzicato (due to omission of brackets)' instruction. A bracket labeled '① l.h.' spans the first two notes, which are circled in red. A green arrow points to the second note. The third measure is in 5/4 time and contains a bracket labeled '② l.h.' spanning the first two notes, which are circled in red. A bracket labeled '① r.h.' spans the first two notes. A green arrow points to the second note.

- Again, the tapped pitches are circled in red, this time forming the following arpeggios through their related slides: A major (bar 5), D major (bar 6), and Ab major (bar 7).
- The green arrows point to two pitches 'D' and the **second partial** 'G' – in omission of the bracketed hand allocations, it is assumed that both pitches are played 'as normal' i.e. regular right hand pizzicato technique.
- The use of the **second partial** 'G' (second bar) offers a brief moment of sustain, both adding sonic contrast to its shortened surrounding pitches, and also allowing a moment of physical ease prior to reaching the following 'Ab' in due time.

Section B introduces a new motif, which utilises mainly singular left-hand taps amongst a chaotic groove:

Fig. 4.2.4c

Detailed description: This musical notation is in bass clef. It starts with a double bar line and a 2/4 time signature. The first measure is marked 'pizz scrape with r.h.' and contains a series of notes with 'x' marks above them. The second measure is in 4/4 time and contains a 'mf' dynamic. A bracket labeled '③ l.h.' spans the first two notes, which are circled in red. A green arrow points to the second note. A bracket labeled '① l.h.' spans the first two notes, which are circled in red. A green arrow points to the second note. The notation ends with a double bar line and a 2/4 time signature.

- Fig. 4.2.4c - the brackets are combined with the black diamond note-heads to indicate singular taps amongst the surrounding 'normal' pizzicato passages.

Whilst the use of partials remains scarce within ‘BEAN’, a brief moment of their application is seen in bar 17 (Appendix B3) – Fig. 4.2.4d:

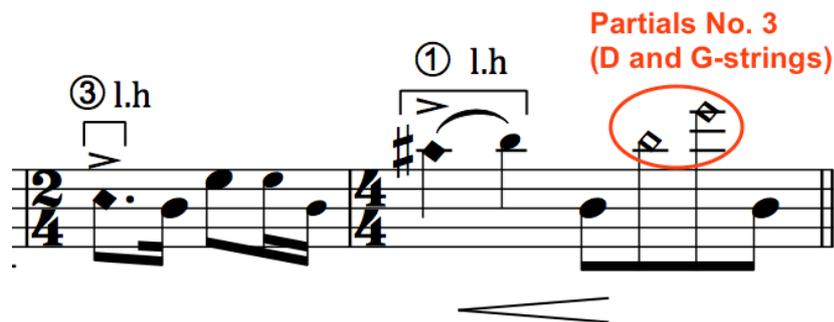


Fig. 4.2.4d

- The use of the **second partials** on the D and G-string has been employed in a similar fashion to that of bar 6 (Fig. 4.2.4d), mainly in regards to physical ease; thus, their ability to sustain sound after their initial employment allows the left hand to take a short breather amidst the density of musical material, especially when combined with the open D-string.

Section D continues to develop motivically, adding a variety of sounds to create more musical mayhem – namely double stopped arco ‘stabs’, a range of left-hand pizzicato plucks, left hand taps, and ‘pull-offs’⁸ (Fig. 4.2.4e):

"Oops.. this is already my fourth cup today"

D ♩ = 110

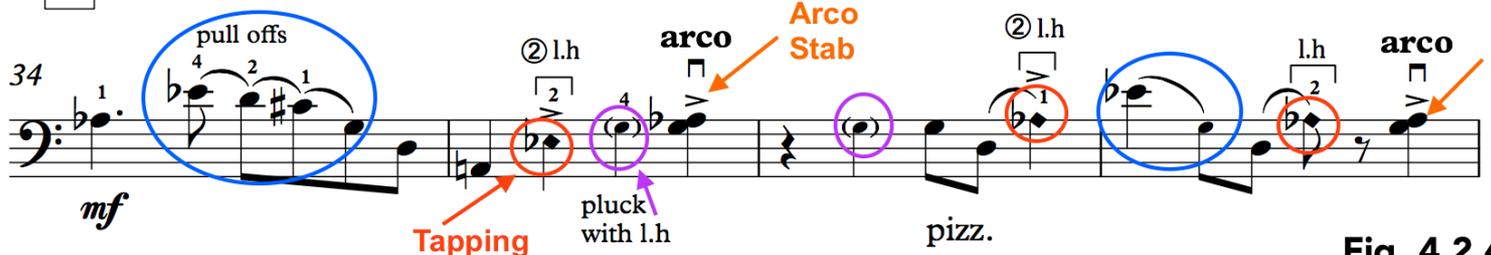


Fig. 4.2.4e

- Continued use of the black diamond note-head is seen in **red**, indicated the use of singular left hand tapping via the bracketed allocations.
- The arco ‘stabs’ can be seen twice in the figure above, indicated in **orange**, thus adding unexpected colour through intermittent use of the bow
- Pizzicato pull-offs are circled in **blue**, clarified further by textual instruction and fingerings.
- Subtle use of left-hand plucks are seen in **purple**, employed mainly to enable a fast interchange between right hand pizzicato and arco.

⁸ Achieved by pulling off the fretted/stopped finger – either exposing the corresponding open string, or a preceding stopped note of a lower pitch.

Following further along, the **third partial** upon the G-string arises amidst a contrasting **arco** motif in bar 50 (Appendix B3), centered in a brief tonality of G-minor (Fig. 4.2.4f):

Fig. 4.2.4f

- The use of the bowed **third partial** ('D') upon the G string (as seen above) has been employed in this instance for contrast in range (note: the sounding pitch is heard an octave higher than written) whilst also in line with Daino's suggestion of timbral purity in contrast to its surrounding stopped pitches (Daino, 2010).

In context of the remainder of 'BEAN' which is almost entirely pizzicato, the subtle, brief appearance of both bowed and pizzicato partials adds a sense of dissimilarity to the otherwise frantic nature of the music.

Musical Influences:

Barre Phillips – 'Riverbend':

'Riverbend' (Appendix C13) - yet another of Phillips' influential pieces from his album 'Call me when you get there', utilises a vast range of sounds and techniques; from pizzicato double stops, tapping, bowed textures, percussive use of the bow (i.e. col legno), and legato passages. However, the opening statement of this piece is comprised largely of a series of elongated glissando passages, alternated with rapidly plucked notes and tapped intervallic formations.

The excerpt on the next page details the aforementioned – Fig. 4.2.4g:

Barre Phillips - 'Riverbend'

Recording Reference - 0:00

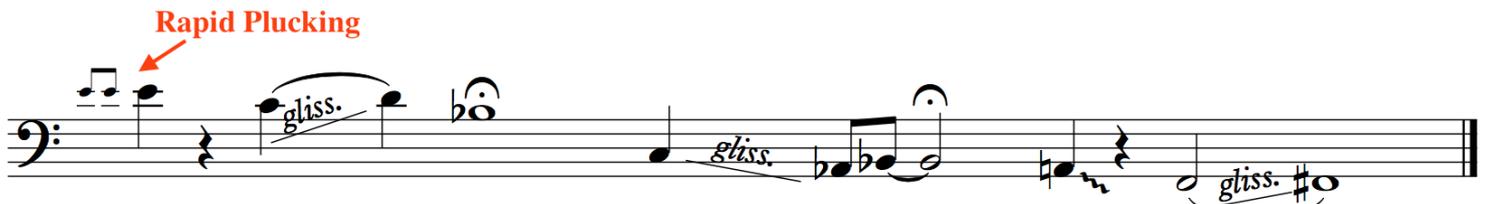
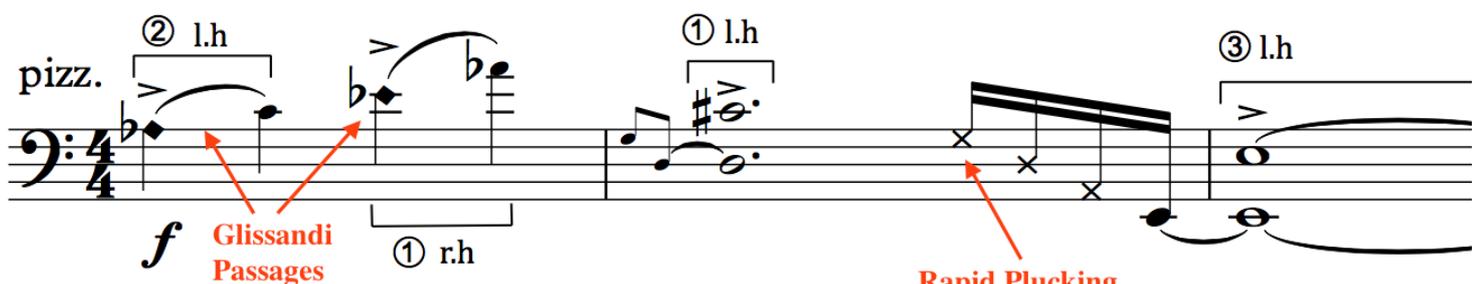


Fig. 4.2.4g

- Fig. 4.2.4g - the glissando phrases above illustrate a particularly malleable sonic effect due to their low pitches and the thickness of the lowest E-string.
- Brief use of rapid plucking has been labelled in red, which is indicative of the ongoing motivic nature of the first minute of the composition (Appendix C13).

Phillips's gradual motivic development (i.e. alternation between rapid passages and glissando) has somewhat inspired a similar compositional direction in the beginning of 'BEAN', as seen below:



BEAN Fig. 4.2.4h

- Whilst different in range and register to that of Phillips' musical direction in 'Riverbend', the figure above clearly demonstrates the influence of varied motivic sounds in BEAN.

As 'Riverbend' develops further, the piece moves swiftly through a range of additional contrasting motifs and techniques; however a brief moment of return to the original idea is heard at 1:49 in the recording (see Fig. 4.2.4i below):

Barre Phillips - 'Riverbend'
Recording Reference - 1:49

The image shows a single staff of music in bass clef with a key signature of one flat (B-flat). The notation includes several notes and rests. Three red arrows point to specific features: 'Rapid Plucking' points to a group of notes at the beginning; 'Fast Glissando' points to a sharp upward slide; 'Elongated Glissando' points to a long, sweeping downward slide that ends with a note marked 'gliss.'. There are also some notes with fermatas above them.

Fig. 4.2.4i

- **Fig. 4.2.4i** - the rapid plucking in 'Riverbend' initiates the passage above, followed directly by fast and slow glissandi. The lower register of the elongated glissando indicates a specific reference to the motivic material from the beginning of the piece.

In a similar vein to Phillips' motivic development, sections A and B in 'BEAN' alternate hastily through a multitude of melodic variations, with regular reference to specific motivic fragments heard at the very beginning – i.e. tapped/glissandi passages and rapid plucking/pizzicato scrapes. Section C offers a brief contrast in material through the introduction of arco elements, eventually returning back to the opening motif from the very beginning.

Compositionally speaking, it could be concluded that the overall spontaneity of Phillips' motivic rotation in 'Riverbend' has been founded by a selection of pre-existing musical material, through which he seemingly chooses an order in which to execute and articulate different fragments. Having said this, the structure of 'Riverbend' has likely been built upon several sections, made obvious by the compositional nature of the arco melody in the second half of the performance at 2:45 (Appendix C13).

Overall, 'BEAN' is still slightly more specific in terms of a concrete structure, particularly in regards to the album version (Appendix A3, B3), however the exploration of unprompted compositional form must not be overlooked when considering the longevity of solo material. It is the use of rotating motifs and different sectional developments that inherently allows one to explore and develop the material further across different performances.

4.3 - SUB-QUESTION 3: How can the female voice play a complementing role to the partial series of the double bass in soloistic compositional practice?

The female voice plays a prevalent role in the Vegetable-Bass compositions, particularly in complimentation of the partial series. The works to be discussed in this area of inquiry – namely ‘A Tree Tells’, ‘Beetroot (in blossom)’ and ‘Holy Basil’ - have involved extensive exploration in the areas of balance, timbre and harmony. The aforementioned three musical elements have played a key role in the creative choices that have arisen from the addition of a ‘second voice’; *timbre* concerns the blend and resonance between the partials and the female voice, *balance* relates to the differing roles of the voice amongst varied compositions (i.e. accompanying vs soloistic/lyrics), and *harmony* explores areas of dissonance, unison and two/three part orchestrations. All three have developed over time with different results.

Sound Characteristics of the Double Bass:

The Vienna Symphonic Library describes the specific sound characteristics of the double bass with the following words:

‘Heavy, weighty, dark, weightless, wafting, somber, earthy, resonant, rasping, broad, hollow, dull, mighty, menacing, violent, mellow, sustaining and aspirate.’ (Vienna Symphonic Library, 2020).

In context of combined partials and vocals within the Vegetable Bass project, several of these adjectival terms are more prominent than others. Due to the higher register of the female voice, its combination with overtones becomes more reminiscent of words such as ‘weightless’, ‘sustaining’ and ‘resonant’ due largely to the use of a shared register. However, the music to be discussed further on also features moments of heaviness and darkness due to the addition of lower fundamentals heard in the bass.

The Double Bass and Voice

‘The greatest problem faced by the double-bass is its distance from the middle and upper voices.’ (Vienna Symphonic Library, 2020).

When the double bass is combined with another instrument, the often substantial leap in register is to be observed in terms of intonation, fullness and clarity. When using partials upon the double bass (particular the first six), the sheer size of the instrument alone holds the ability to ‘mask’ instruments of a similar register when in an orchestral setting (Vienna Symphonic Library, 2020), especially in terms of volume and resulting sustain. Within a solo setting, however, the use of the female voice has revealed an array of interesting combinations amidst the relevant compositions, aided by the individual control of dynamics and balance. The combination of both has created a rather unified sound through which the resonance of the partials and voice hold the ability to blend as one.

4.3.1 – ‘A Tree Tells’

‘A Tree Tells’ (Appendix A1, B1) was written directly after an immersive nature walk in Belgium’s Smeermaas Forest, and demonstrates the intricate relationship of partials and the female voice. The lyrics depict a conversation with human and tree, in bewilderment of the changing earth and climate around us. The thematic material is to be discussed below in several sections, with a particular focus on the three areas of balance, harmony and timbre.

The **melody** of ‘A Tree Tells’ was formed directly by intuitive experimentation with the partial series. Based loosely around the tonalities of D-major and A-mixolydian, the figure below demonstrates the correlation between the vocal melody and the bass (Fig. 4.3.1a):

A **Vocal Melody**

mp **Unison Melody** **Melody**
(with harmonic accompaniment from partials in similar range)

Sounding Clef, cont.

Partial No. 5 (D-string) Partial No. 3 (G-string) Partial No. 5 (G-string) Partial No. 4 (G-string) Partial No. 4 (D-string)

Partial No. 3 (D-string) Partial No. 3 (A-string)

Fig. 4.3.1a

- **Fig. 4.3.1a** - The green outline indicates the beginning of the main melody, at which the bass plays in unison with the vocals. As indicated by the ‘sounding clef’, the correlation between the vocal line and the partial line is identical, with the exception of the ‘B’ in the second phrase, which sounds an octave higher on the bass due to the sonic output of the **fifth partial** on the G-string.
- The purple outline indicates the continuation of the main melody in the vocal part, with added harmonic accompaniment from the bass through the use of double stopped partials in a similar range – cadencing into the fermata on an A-major third.

The matching of pitch and range within the opening melody creates an ethereal effect between the vocals and the bass, producing a ‘weightless’ (Vienna Symphonic Library, 2020) and ‘glassy’ timbre (Daino, 2010); enhanced further by the purposeful lack of vibrato. The balance between the vocal melody and the bass blends rather seamlessly, as the partials somewhat envelope the vocal melody and its lyrics into a single vessel of sound.

As the melody continues, more harmonic accompaniment is added in the bass to further support the vocals (Fig. 4.3.1b):

The image shows a musical score for the phrase "The world is not what it once was The". It consists of three staves. The top staff is the vocal melody in treble clef, with lyrics underneath. The middle staff is the bass line in treble clef, and the bottom staff is the bass line in bass clef. Annotations include:

- Green arrows pointing to the bass line with labels: "E minor 7", "E minor 9", and "A major (implied)".
- Red arrows pointing to the bass line with labels: "Partial No. 3 (A-string) and No. 4 (D-string)" and "Partial No. 5 (D-string)".
- Circle numbers 1, 2, and 3 below the bass line indicating fingerings.
- A "8va" marking above the final note of the bass line.

Fig. 4.3.1b

- The first double-stop in the bass (above) utilises the **third partial** (A-String) and the **fourth partial** on the D-string (sounding note: ‘D’), sounding as a minor 7th on E (see sounding clef). In context of the melody, the vocal line implies the minor tonality with the ‘G’ which leads up to the suspended ‘A’ i.e. ‘the world...’
- The second double-stop in the bass part utilises the **fifth partial** on the D-string (sounding note: F#), forming an E minor 9th. Again, whilst the third is omitted in this instance, the minor tonality can be assumed in context of the melody above, which continuously utilises the minor third (‘G’) above the harmonic backing.
- Prior to a sustained unison ‘A’ at the end of the phrase, the seventh of E minor is again heard in the bass, leaded strongly into the last note through use of a perfect cadence.

The harmony in the above excerpts is rather ambiguous due to the rare occurrence of specific chord tones (for example, major or minor thirds). However, in context of the partials used, the harmony and melody has been pre-determined due to the availability of sounding pitches – i.e. those heard above directly fit into the key signature of D major, which has consequently transformed into a central tonality of A major with a flattened seventh.

The main chorus i.e. Section B, for the first time, features ordinary tones (i.e. lower pitches) in the bass (Fig. 4.3.1c):

3

The musical score for Section B, titled "Passionate", consists of three staves. The top staff is the vocal line in treble clef, with lyrics: "world - is not what it once was The". The middle staff is the bass line in bass clef, and the bottom staff is the double bass line in bass clef. The key signature has two sharps (F# and C#). The score is marked with dynamics: *f* (forte) at the beginning and end, and *mp* (mezzo-piano) in the middle. Harmonic annotations in green include "G major" with arrows pointing to the vocal notes 'D' and 'is', "D Major (implied)" pointing to the bass notes 'is' and 'not', "E Minor 7" pointing to the bass notes 'what' and 'it', and "A major (implied)" pointing to the vocal notes 'was' and 'The'. A red annotation "Partials No. 3 (A-string) and No. 4 (D-string)" with arrows points to the double bass line. Fingerings are indicated by numbers 1, 2, and 3. A triplet of eighth notes is marked with a '3' over the notes. The score is labeled "Fig. 4.3.1c" in the bottom right corner.

- The G major chord at the start of Fig. 4.3.1c (formed between the ‘D’ in the vocals and the major third in the bass), offers a strong contrast to the prior melody, with the dynamic marking of ‘forte’ to accentuate the change in timbre and balance. Correlative with the noted difference in range between the bass notes and a higher instrument (Vienna Symphonic Library, 2020), the large leap between the vocals and bass accompaniment produces a heavier timbre, enhancing the meaning of the lyrics as bewilderment and despair continues to grow.
- The second half of this phrase returns to the original, delicate timbre heard in the opening melody, as vocals and bass return to the similar register, utilising familiar harmonic backings from Section A (namely the E minor 7th).

In contrast to prior compositions in the Vegetable-Bass portfolio, the influence of the partial series has thus far simplified the choice of notes in context of ‘A Tree Tells’, guiding the ear to a somewhat ‘imagined’ cadential point in sections that may sometimes feature only a two-part interval or a unison note.

A full example of this is seen in the original soloistic bass melody below (Section C), which demonstrates the full range of partials used and imitated earlier in the vocal melody (Fig. 4.3.1d):

Fig. 4.3.1d

- As seen above in **Fig. 4.3.1d**, the use of the **third, fourth and fifth** partials across the A, D and G-strings have entirely formed the foundational melodic material for ‘A Tree Tells’.
- Indications of the harmonic implications are noted above the ‘sounding clef’, correlative with the available pitches and related tonalities of D major and A mixolydian.

Musical Influence:

Hakon Thelin – ‘Hymn’ (composed by Lars Petter Hagen):

‘Hymn’ (Appendix C14), a piece written by Norwegian composer Lars Petter Hagen and performed in a solo double bass version by Hakon Thelin on his album ‘Folk’, features intricate double-stopped partials throughout its entirety. The ethereal effect of the dual-voiced higher partials within this piece has played a significant influence on the compositional direction of ‘A Tree Tells’, in which the music was written to evoke a similar mood. Fig. 4.3.1e below is a good example of the different double stopped relationships that Hagen has employed in his writing (Appendix C14: recording reference 3:55):

Hakon Thelin - 'Hymn', composed by Lars Petter Hagen

Recording reference 3:55

Fig. 4.3.1e shows musical notation for the D-string. It includes fingerings (1, 2, 3) and interval labels: Major 3rd, Major 2nd, and Major 9th. A red arrow points to a note labeled 'Partial No. 4 (D-String)' with an 8va marking above it. The notation is on a bass clef staff.

Fig. 4.3.1e

- The **fourth** partial on the D-string has been labelled as a reference point, particularly in terms of the location of the nodes in question; i.e. the 8va indicates that this section is to be played high up in thumb position.
- Various intervals are seen within the sequence, revolving around the tonalities of G major and D major (as a result of the C#). However, the **major second** is arguably the most common of the above.

Thus, Hagen's employment of the major second has indirectly influenced part of the chordal accompaniment in 'A Tree Tells'. Whilst the latter doesn't feature this particular interval, it makes regular use of its *inversion*; i.e. when a major second is inverted, it becomes a minor seventh (e.g. D → E, becomes E → D). An example is seen below in Fig. 4.3.1f:

Vocal Melody Fig. 4.3.1f

Vocal melody notation for the lyrics "the world, is not, what". The melody is on a treble clef staff in 7/8 time.

'A Tree Tells' - Section A

(Sounding)

Musical notation for 'A Tree Tells' - Section A. It shows the vocal melody on a treble clef staff and the bass accompaniment on a bass clef staff. The bass accompaniment features chords labeled 'A Minor 7th' and 'E Minor 7th'. Fingerings (1, 2, 3) are indicated for the bass line.

Two minor sevenths are seen in the bass accompaniment of 'A Tree Tells' in Fig. 4.3.1f on the left, derived from Section A.

- The first is rooted on A (i.e. A → G), and the second on E (i.e. E → D). If inverted, both intervals would form major seconds (akin to Hagen's intervallic writing). However, for compositional purposes, the use of minor sevenths in context of 'A Tree Tells' provides a stronger foundation for the vocal melody which already utilises major seconds in a similar register.

In consideration of the above, some interesting correlations can be drawn between some of the intervallic relationships and tonal centres of both ‘Hymn’ and ‘A Tree Tells’. When utilising the partial series across double-stopped intervals, the resulting intervallic relationships are bound to draw recurring similarities across different musical realms due to the pre-determined set of pitches available within a single reach. In contrast to the instrumental nature of Thelin’s solo version of ‘Hymn’, the use of the vocals in ‘A Tree Tells’ has somewhat guided the intervallic structure of the chordal accompaniment in the bass, with the aim of orchestrating particular sections across three parts instead of two. The timbral quality of both pieces remains highly similar, invoking the ‘glassy’ and ‘weightless’ sound achieved through the resonance of two simultaneous partials.

4.3.2 – ‘Beetroot (in blossom)’

‘Beetroot (in blossom)’ (Appendix A6, B6) formed one of the first experimentations of the partial/voice combination. However simple, it utilises the balance of artificial and natural harmonics and a complimentary vocal melody to add variation in timbre.

Fig. 4.3.2a below details the first half of the vocal/bass motif in the piece (Bar 1 – Appendix B6):

The figure shows a musical score for the first half of a vocal/bass motif. It consists of three staves: a vocal line, a treble clef staff, and a bass clef staff. The key signature is one sharp (F#) and the time signature is 4/4. The vocal line starts with a long note on D4, followed by a half note on F#4, and then a half note on G4. The lyrics are 'Ooooooh' under the first two notes and 'Aah' under the third. The treble clef staff contains a vocal melody with notes G4 and B4, which are highlighted in purple. The bass clef staff contains a bass line with notes G2 and B2, which are also highlighted in purple. Annotations include 'Vocal Melody doubles D' pointing to the first note, 'Vocal Melody doubles F#' pointing to the second note, and 'Vocal Melody (G-B) imitated by bass' pointing to the purple notes in the treble staff. A 'Sounding Clef' box is also present. The bass line is marked 'rubato, delicate' and 'mp'. The score is divided into measures with circled numbers 1 and 2. The final measure is marked 'A.H.' and '8va'.

Fig. 4.3.2a

- As seen in the first and second bars (Fig. 4.3.2a), the vocal melody directly doubles the first note of the bass. In terms of transposition, it must be noted that the double bass sounds an exact octave **lower** written, meaning both parts are in fact in registral **unison**.
- In the last bar, the vocal melody of ‘G’ to ‘B’ is imitated by the bass in a canonic style.

The second half of the vocal/bass section continues in a similar vein, whereby the vocals directly double the notes in the bass (Fig. 4.3.2b):

5 **Vocal Melody doubles ‘F#’, ‘C’ and ‘B’:** **Fig. 4.3.2b**

The musical score consists of two systems. The top system is the vocal line in treble clef with a key signature of one sharp (F#). The lyrics are "Oooh wa - ahh" and "Oooh wa - ahh". Red arcs connect the vocal notes to the bass notes in the system below. The bottom system shows the bass line in bass clef with a key signature of one sharp. It includes a "8va" marking and a "C" note in the final bar. Performance markings include circled numbers 2 and 1, and "A.H.----|" markings.

In regards to balance, the unique blend of the female voice is heightened through use of particular vowels and consonants in conjunction with different partials. For instance, the use of ‘Oooooh’ has proven to blend particularly well with the opening ‘D’ artificial harmonic (Fig 4.3.2a) due to its thinner timbre, whilst the use of ‘Wa-aahhh’ across the ‘C’ and ‘B’ (Fig 4.3.2b) opens up to enhance a slightly duller timbre that is particularly coherent with the ‘C’ (**seventh partial, D-string**) It has been through a process of intuition through which the different vowels were chosen. Overall, however, the vocal role within this piece is largely complimentary; intended for purposes of enhancement and timbral contrast.

4.3.3 – ‘Holy Basil’

The most extensive use of vocals within the Vegetable Bass portfolio has culminated in ‘Holy Basil’ (Appendix A4, B4)– one of the later compositions of the series. The use of artificial harmonics, natural harmonics and stopped notes all combine to create a vast sonic backdrop to a motivic vocal line with varying degrees of intensity.

The beginning of the piece features an anthemic acapella vocal melody rooted in E Lydian with a dominant seventh (fig. 4.3.3a):

Fig. 4.3.3a

- In omission of the bass, the introduction is intended to remain simplistic prior to the many colours that are introduced through the following sections.
- In reference to the recording (Appendix A4), this vocal melody is sung rather strongly and loudly; almost anthem-like.

However, as the bass enters, it directly interrupts the diatonic vocal melody through a jarring harmonic clash (Fig. 4.3.3b):

Fig. 4.3.3b

- The use of the **fifth partial** on the G-string (sounding note: ‘B’) is an unexpected addition to the otherwise diatonic melody, clashing sharply with the #11 in the vocal melody; particularly as the register of the partial used sounds only a semitone away from the voice.
- The ‘C’ in the bass then proceeds to introduce a new harmonic context, namely akin to a C Lydian augmented sound. The large leap from its preceding partial to a low stopped note adds an abrupt contrast underneath the continued vocal melody.

An open improvisation follows the introduction, juxtaposing a continuation of the vocal E Lydian melody above a new selection of bass notes (Fig. 4.3.3c):

Fig. 4.3.3c

Vocal line continues with similar melodic motifs - improvise with bass notes

Embrace the richness as the holy basil reaches your tastebuds...

Partial No. 5 (E-string)

Partial No. 6 (A-string)

Partial No. 4 (D-string)

Partial No. 4 (G-string)

Partial No. 2 (G-string)

- **Fig. 4.3.3c:** A range of partials are indicated in the figure on the left, spanning the harmonic context of the C Lydian augmented harmony, with an added E string for complimentation of the vocals (when desired).
- Sounding pitches are indicated above partials that don't sonically correlate with their fundamental nodes (i.e. Partial No. 6 on the A-string = 'E', and the fourth partials on the D and G strings sound as 'D' and 'G' respectively).

The vast intervallic range between each of the suggested notes provides a broad sonic palette beneath the motivic vocal improvisation. Whilst the score leaves this section open to the performer, the recording (Appendix A4) features the use of *Barrio Lage*⁹ during the improvisation as a way of sweeping across the different pitches in the form of broken chords; just one approach towards experimentation with combined stopped notes and partials.

⁹ A technique through which the performer alternates rapidly between notes on adjacent strings

The following figures demonstrate moments of **Section C**, in which the harmony continues to develop between both parts with more added timbral contrast:

Fig. 4.3.3d

- The first part of **Fig. 4.3.3d** involves an F# minor 9th clash between the bass and vocals, delivering contrast in terms timbre, due to the introduction of pizzicato – i.e. the vocals become more exposed than before due to less sustain or audible overtones in the bass.
- This motif is followed with a soloistic artificial harmonic line in the the bass, forming an arco descending B minor/major 7th arpeggio (as indicated in the ‘sounding pitch’ on the top stave).

Fig. 4.3.3e

Moving forward, **Fig. 4.3.3e** shows a second interval of voice and pizzicato, heard in the form of a G major ninth, contrasted directly by an ascending arco soloistic partial melody of A major in the bass (see right). Again, the timbral differences become apparent between the plucked bass and vocals, as part of the motivic development.

The final climax of **Section C** is detailed below, broadening the variety of combined tones (Fig. 4.3.3f):

The figure shows a musical score for measures 19-24. The top staff is for the voice (treble clef) and the bottom staff is for the bass (bass clef). The score is divided into two sections: 'pizz.' (pizzicato) from measure 19 to 22, and 'arco' (arco) from measure 23 to 24. Annotations include:

- Measure 19: A red bracket labeled 'Minor 2nd → unison between Vocals and Bass' spans the vocal note C# and the bass note D.
- Measure 20: A red bracket labeled 'Major 2nd → unison between Vocals and Bass' spans the vocal note B and the bass note C#.
- Measure 21: A red bracket labeled 'Major 3rd (intervallic 10th) A.H.' spans the vocal note G# and the bass note F#.
- Measure 22: A red bracket labeled 'Major 3rd (intervallic 10th) A.H.' spans the vocal note E and the bass note C#.
- Measure 23: A green bracket labeled 'F# Major' spans the vocal notes F#, A, and C#.
- Measure 24: A green bracket labeled 'F# Major' spans the vocal notes F#, A, and C#.
- The dynamic 'pp' is marked above the vocal line in measure 21.
- The instruction 'Sounding pitch (bass)' is written above the bass line in measure 23.

Fig. 4.3.3f

- **Fig. 4.3.3f** demonstrates the return of bowed partials in the bass (as indicated in the full score – Appendix B4) briefly bringing the sounding pitch back to the same register as the voice, creating two intervallic motifs (red)– first a minor second (C# in the voice & D in the bass) followed by a unison ‘D’, and then a major second (‘B’ in the bass & ‘C#’ in the vocals), followed by a unison ‘B’. In both instances, the voice either moves up or down to match the bass, creating an ethereal unison timbre with more sustain.
- A brief reference to the pizzicato/voice motif returns again in the second half of Fig. 4.3.3f, in which the section concludes upon an F# major triad (green).

In terms of tonality, ‘Holy Basil’ clearly moves through a range of key centres, utilising a vast range of sounds to colour the music; thus opening up a multitude of possibilities for both bass and voice to blend in contrasting ways. The remainder of the score continues to feature an open improvisation upon a recurring bass motif, however for relevance regarding the intricate, orchestrated combination of both parts, this section has been omitted from the analysis.

As discussed above, the harmonic foundations of E mixolydian #11, C lydian dominant, A major and F# major remain particularly prominent between Sections A-C. And whilst each of the sections remains more or less grounded in a specific tonality, it is the utilisation of shifting key centres and chordal shapes that allows for more fluidity in improvisation between the voice and the bass; an exploration of additional sounds that has subsequently opened up through extensive experimentation.

Musical Influences:

Daniele Roccato – ‘Minima Colloquia’ - #1 ‘Vilma’s Memories’ and #4 ‘Sleeping Beauty’:

Virtuoso double bassist Daniele Roccato composed ‘Minima Colloquia’, a suite for double bass in accompaniment of the choreography of *Le Sacre – Preludio* by Virgilio Sieni. Movements #1 (Appendix C15) and #4 (Appendix C16) are particularly sonorous with that of ‘Holy Basil’, both of which showcase Roccato’s mastery of the partial series. In particular, the use of *Bario Lage* in both movements has proven largely influential as a way of broadening the harmonic scope within the opening improvisation of ‘Holy Basil’.

Bario Lage is a technique through which the performer alternates between notes on adjacent strings. The French term translates directly to English as ‘the mixture of colours’ (Dalton, 1989, p. 114), and is particularly common when ‘exploiting the individual timbre of the various strings’ (Allen, 2003).

‘#1 - Vilma’s Memories’ (Appendix C15) sees Roccato perform a continuous sequence of *bario lage* broken chords, utilising partials across the top three strings. The piece spans the full range of the instrument – moving from the highest extremities of the fingerboard in the beginning to the lowest. Upon listening, the resonance between each of the overtones creates a magical carpet of sound as each is played in rapid succession of the other; the effect heightened by Roccato’s unwavering and measured application of *bario lage*. In a similar vein, an almost identical sound world is heard in ‘#4 – Sleeping Beauty’ from 2:50 onwards (Appendix C16), again making use of broken chords across partials and ordinary tones.

Whilst ‘Holy Basil’ features a substantially looser application of *bario lage*, the improvised section at 1:30 (Appendix A4) features a brief moment in which this technique is applied in order to create a carpet of harmony underneath the vocal melody – showcasing partials and stopped notes unanimously. Timbrally speaking, the capacity to sweep across a vast range of different notes and registers in a single motion has been influenced by the likes of Roccato who continue to extend upon the soloistic possibilities of the double bass with precision and dedicated mastery.

DISCUSSION & CONCLUSION

The exploration of the partial series upon the double bass has established a number of key findings, relating directly to their different functions within the context of each of the sub-questions (i.e. soloistic composition, their use alongside contrasting techniques, inclusion of voice). The results indicate their creative implementation in a variety of different ways, whilst demonstrating a strong correlation between pre-determined compositional parameters and seminal musical influences.

The relationship between ‘the composer’ and ‘the performer’ (Chapter Three; Thelin, 2011) has offered methodological insight into the entire artistic process, through which both ‘roles’ have merged together amidst the process of individual musical transformation; namely spanning the areas of concrete technical foundation/theoretical knowledge, enquiry into existing musical material, experimentation with compositional parameters and intuitive exploration. Whilst differing from Thelin’s enforcement of collaboration between *more than one* individual in terms of combined expertise (i.e. the composer *and* the performer), this notion has also guided the individual nature of the Vegetable Bass project in a relatable manner; namely through applying newly learned techniques into a creative context/etude format, all the while remaining synonymous with the importance of ongoing musical innovation and artistic surrender.

Specific compositional patterns have emerged across the data, in relation to the function of the partial series:

Firstly, the data indicates **large extensions of range** as a consistent soloistic tool. The combination of partials and ordinary tones has consequently opened a series of large intervallic leaps with physical ease due to convenient nodal placement/s (i.e. specific examples of this relate to the various instrumental leaps in register in both ‘Black Radish’ and ‘Jerusalem Artichoke’ as discussed in sub-question 1). Additionally, the use of artificial harmonics has opened access into the extremities of the higher instrumental range; i.e. ‘Cauliflower Part 1’ (sub question 1) and also in the introductory motif of ‘Beetroot (in blossom)’ (sub question 2). The higher harmonics in the latter were particularly embellished when played in unison with vocals, further accentuating the higher melody. In omission of

partials, the aforementioned intervals would otherwise be somewhat unrealistic (at their desired tempos) in terms of execution due to the sheer length of the fingerboard and the resulting distance between the tones.

The second area of major significance relates to the application of partials for extra **tonal colouration and timbral contrast**, in their varying compositional roles. Firstly, the juxtaposition of partials and additional extended techniques (as discussed in sub question 2) has substantially broadened the sonic scope of the double bass in terms of *contrast* and opposing sounds. An example of this relates to the timbral variance between the harsh attack of the frog strike and the delicacy of bowed harmonics in both ‘Black Radish’ and ‘Cauliflower Part 1’, and also in comparison of the percussive textural ricochet and melodic partials in ‘Beetroot (in blossom)’. Additionally, the use of partials adds valuable presence to the music amidst the lower frequencies. In a different light, the data of sub question 3 indicates results of *united* tonal colourations, with the purity and clarity of various partials playing a largely *complimentary* role in combination with the female voice; for example, the cohesive virtue of bass and voice in ‘A Tree Tells’. Contrary to this however (and within the same sub question), partials have also been used to *contrast* the voice; namely in ‘Holy Basil’, in which they are heard amidst a broader carpet of sound, whilst adding strong dissonances against the vocal melody. Nonetheless, in line with Daino’s research, the ‘glassiness’ of the partial series has remained an aural constant across all sub questions, but with contrary approaches towards their implementation in context of the different compositions.

Pre-determined harmonic limitation is another pattern that has significantly influenced the use of particular partials in different ways, allowing for atypical compositional choices. The first example relates to the use of the third Messiaen mode in both ‘Black Radish’ and ‘Paprika’ (sub question 1), acting as an effective parameter in terms of available overtones; i.e. the exploration of the aforementioned mode thus ignited a deeper exploration of the instrument through searching for harmonically related partials across their corresponding nodes. Furthermore, the use of Scordatura in ‘Raw Ginger Root’ and ‘Soggy Ratatouille’ (sub question 2) has strongly influenced the compositional process in terms of altered availability of pitches, allowing for rarer harmonic structures to that of regular tuning, and a certain surrender to unexpected pitch outputs. Lastly, in relation to sub question three, the opening of ‘A Tree Tells’ provides a good example of melodic limitation in regards to the selective use of partials, through which the key centre was established entirely due to the intentional

omission of all stopped pitches.

A fourth consistency across the findings relates to the regular use of **lower numbered partials** – namely across numbers 2-7, with an unexpected absence of those ranging higher. In line with the foundational underpinnings of the partial series, the execution of lower numbered partials is not only easier, but also produces a higher volume than those of higher numbers (Daino, 2010, p. 29-30). Having said this, examples of higher numbered partials (and artificial harmonics) do appear in more intricate sections amongst pieces such as ‘Holy Basil’ and ‘Beetroot (in blossom)’, specifically in combination with either dissonant or unison vocals in an identical register. For compositions involving more advanced use of harmonics, the importance of prior knowledge and precise nodal placement has been crucial in enabling their accurate execution (Thelin 2011; Dresser, 2010).

In relation to the overarching **ambiguities of partial notation**, the learning of the partial series within this project has been strongly guided through lessons, listening and transcription. The data within the ‘musical influences’ section of each sub question has not only provided inspiration for the compositions themselves, but further solidifies the importance of visual observation and/or aural reference to explore different applications of harmonics. In addition to this, the learning of others works such as ‘K-Tude’ (Dresser) has guided the process of explicit notation in the absence of person-to-person learning. In this regard, the format of the finalised Vegetable Bass scores (Appendix B) has subsequently been steered by the research of Dresser, Daino and Guettler, with a sole emphasis on notational clarity and consistency (complete with reference tracks from the album itself).

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The results have provided **new insight/s** into the differing roles of partials in context of their varied compositional functions. Akin to Thelin’s writings, their use amongst the Vegetable Bass compositions has both opened up an entirely new palette of sonic possibilities whilst ‘at the same time strengthening the link to all fundamentals of sound’ (Thelin, 2011, p. 1). In context of the three sub questions, the results build upon the existing evidence relating to the clear sound quality of partials through their employment across three areas of composition and experimentation; thus determining their purpose amidst contrasting sonic environments. In this regard, the data contributes a clearer understanding of the versatility of the overtone series through the many ways in which it has been juxtaposed with both complimentary and

opposing sounds – particularly interesting in regards to the addition of vocals as a tool for further enhancement or contrast.

As with any study, the research involves certain **limitations** due to the scope and eighteen-month timeframe. The sheer complexity of the overtone series demands a high level of mastery upon the instrument - a process that takes considerable time and patience when fully acquainting oneself with the theoretical underpinnings and precise execution of the higher nodes. As noted by Thelin and Dresser, the performer should first ground oneself within the roots of the instrument prior to the use of new techniques in both music of their own and that of others. Thus in context of the research, the emphasis on partials of lower numbers is related directly to an evolving process of *my* own individual musical transformation, through which my present abilities as the sole performer have been reflected personally in the compositional process. Furthermore, the combined roles of composer *and* performer within the Vegetable Bass project has brought with it certain compromises in both realms due to input from just *one* individual. However, in line with Thelin's notion (as noted in the Methodology) further research may commission other composers to collaborate on future projects, thereby leaving the areas of physical mastery to the performer, through which virtuosic technical foundation can be prioritised even further through learning unfamiliar music of others. In this regard, the generalizability of the results may be expanded in the future through employing a larger network of contributors, perhaps comprising a second portfolio of completely different results not limited by just one individual source.

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This research aimed to ignite an enquiry into the partial series upon the double bass, investigated through its purposeful application within three contrasting compositional contexts. Based on the data and its results, it can be concluded that an advanced understanding of the partial series indeed enables 'a new world of sounds' (Thelin, 2011, p. 1) upon the instrument, made apparent through the vast musical differences amongst the three areas of focus. The combination of a foundational theoretical understanding, active inspiration from existing sources, the addition of vocals and most importantly, surrender to intuition, have all contributed to ongoing musical growth within the Vegetable Bass project. The sole aim remains clear; to allow the instrument to 'find its voice' (Scodanibbio; Thelin, 2011, p. 1), in addition to the ever-expanding offerings of my own female voice.

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APPENDIX

APPENDIX A (Audio) & APPENDIX B (Scores)

Appendix A – Vegetable Bass Audio	File Name (online links below)	Appendix B – Vegetable Bass Scores	File Name (attached in doc)
App A1	‘A Tree Tells’	App B1	‘A Tree Tells’
App A2	‘Jerusalem Artichoke’	App B2	‘Jerusalem Artichoke’
App A3	‘BEAN’	App B3	‘BEAN’
App A4	‘Holy Basil’	App B4	‘Holy Basil’
App A5	‘Black Radish’	App B5	‘Black Radish’
App A6	‘Beetroot (in blossom)’	App B6	‘Beetroot (in blossom)’
App A7	‘Soggy Ratatouille’	App B7	‘Soggy Ratatouille’
App A8	‘Paprika’	App B8	‘Paprika’
App A9	‘Cauliflower Part 1’	App B9	‘Cauliflower Part 1’
App A10	‘Raw Ginger Root’	App B10	‘Raw Ginger Root’

Links to **APPENDIX A:**

Vegetable Bass Album (tracks A1-A8):

<https://helensvoboda.bandcamp.com/>

OR

<https://open.spotify.com/album/6hhFFQOP43jtbdjgcqEXkn?si=bvJnoZ58R72t-neQuUz0VA>

Cauliflower Part 1 (track A9):

<https://soundcloud.com/user-820129138/cauliflower-part-1>

Raw Ginger Root (track A10)

<https://soundcloud.com/user-820129138/raw-ginger-root>

APPENDIX C & APPENDIX D

Appendix C – Musical Influences (Audio)	
App C1	Elisabeth Coudoux - 'A Faint Voice'
	https://open.spotify.com/track/7vjKj12LIUGFGpTL3eqf8a?si=PDCcrOKvRSuQy1neXa2dfw
App C2	Elisabeth Coudoux - 'Found Not'
	https://open.spotify.com/track/0ydDjhaZnM3F5Do5Wkzelz?si=z9Ps8GpLRhOi9tS5uw_uyQ
App C3	Dave Holland - 'Flurries'
	https://open.spotify.com/track/1OJyKhckNGmE6UeNJ7ysNz?si=OF6HNKjRTVW4ufrAaDSk_Q
App C4	Barre Phillips - 'Brewstertown'
	https://open.spotify.com/track/0ByiI9HxV612qM2aZ5Fqbc?si=TjqdbTgNTxuBwBnTp6lYrQ
App C5	Mark Dresser – 'Visceras'
	https://open.spotify.com/track/3zm7TNTJclzKd2ESkeBc3W?si=auYh4TdeSCSrI1emPhYVug
App C6	Barre Phillips – 'Amos Crowns Barn'
	https://open.spotify.com/track/2KQ0k9eaoPTmpiw3pZvdE7?si=LFmRaSe5Qo-9VgNkfsJWLA
App C7	Sebastian Gramss (Slowfox) – 'Thought'
	https://open.spotify.com/track/6nYm9T1XRqzjO8Nk8caVXT?si=ihuaNi92RvyMXURutm-5Ww
App C8	Larry Grenadier – 'Vineland'
	https://open.spotify.com/track/6gScNJ2kwYiCMdeWswSmZo?si=cVi0KHIPQEm7kWqMfECnxg
App C9	Barre Phillips – 'Grants Pass'
	https://open.spotify.com/track/7n5llx0ntqCbTbHVNNJAxM?si=tW1YRgVxQSib2_DogUxt2Q
App C10	Stefano Scodanibbio – 'Granada'
	https://open.spotify.com/track/6qOxIeu0fvkOsu7p39RdFy?si=p9Z64jKVS8asEqXprTEpCw
App C11	Robert Landfermann – 'Rot'
	https://open.spotify.com/track/2XAMMrTXzUXcsFTgB723aM?si=i8uQtHK1QAusfDeRuNGpFg
App C12	'Robert Landfermann Solo' - Youtube
	https://www.youtube.com/watch?v=Z3Sb0QyP0uk&fbclid=IwAR1koGnQgKHAEW-IPfuor57KrVW38q9YagKDyZgMfqq99_IiRbR9kYxEPIQ
App C13	Barre Phillips – 'Riverbend'
	https://open.spotify.com/track/6l0hXUwDJxv6DYJJkmQaIs?si=7WpQ3yvhQsiZ7m51Xe2s_w
App C14	Hakon Thelin/Lars Petter Hagen – 'Hymn'
	https://open.spotify.com/track/5gBLiQ6KBw3gVEaLguqNHF?si=C28iimG7TJKsCk0laHJLDQ
App C15	Daniele Roccato – Minima Colloquia - '#1 Vilma's Memories'
	https://www.youtube.com/watch?v=4fylAE_OuxQ
App C16	Daniele Roccato – Minima Colloquia - '#4 Sleeping Beauty'
	https://www.youtube.com/watch?v=s2XwmBMRD1U

Appendix D – Musical Influences (Scores)	File Name	Location
App D1	Mark Dresser - 'K-Tude' (score)	Score attached below

- A Tree Tells -

Helen Svoboda's Vegetable Bass

Sounding Clef

Rubato *Rustling wind in the trees...*

mf

② ① ② ③ ②

③ ② ② ③ ②

① ② ① ②

③ ② ② ③ ③ ②

A **Vocal Melody**

I spoke with you to-day Stan-ding in dis-may, the world, is not, what it once was You've

mp

Sounding Clef, cont.

Fingerings: ② ① ② ① ① ② ① ① ① ① ② ② ① ② ②

seen it all un-fold The sto-ries that you told, the wis dom that you hold, the

mf

Fingerings: ① ② ① ① ② ③ ② ② ③ ② ① ② ② ① ①

world is not what it once was The world is not what it once was The

mp

Fingerings: ① ② ③ ② ① ② ② ③ ② ③ ② ① ② ③

B Passionate

world - is not what it once was The

f *mp* *f*

world is not ! what it once was

f *mp*

C

Sounding Clef, cont.

mf

mf

Appendix B2

- Jerusalem Artichoke -

Helen Svoboda's Vegetable Bass

♩ = 140

A Ominous, undercooked

OPEN

p *simile.*

- - - A thunder storm approaches...

mp **Suggestion**
Feel free to vary

1. *This bar can be extended in form*

2.

C Allow variations on figures below, experiment with accents

RPT 3 x

f *Building....*

D *sul pont.*

subito p

E With continued variation... **RPT 3 x**

12 *mf*

F *sul pont.*

14 *subito p*

16 *p*

17 *Building...*

G

19 *f*

Allow variations on figures below, using suggested partials and experiment with accents

21 *mf*

23 *f* *This bar can be extended in form*

H

24 *sul pont.* **OPEN**

subito p

ENDING

26 *p*

p

Appendix B3

() = l.h. pizz

◆ = tap on the fingerboard

BEAN

An ode to the chaotic coffee shop

Helen Svoboda's Vegetable Bass

"A Caffeinated Buzz"

A (♩ = 120)

Section A consists of two staves of music in 4/4 time. The first staff (measures 1-4) starts with a *pizz.* instruction and a dynamic of *f*. It features a sequence of notes with various articulations: a first finger (1) tap on the right hand (r.h.) under a slur, a second finger (2) left hand (l.h.) tap, and a first finger (1) left hand (l.h.) tap. The second staff (measures 5-10) continues the sequence with similar articulations and includes a 3/4 time signature change. The piece concludes with a double bar line in 2/4 time.

"I feel invincible!"

Section B consists of three staves of music in 2/4 time. The first staff (measures 11-13) begins with a *pizz scrape with r.h.* instruction and a dynamic of *mf*. It features a sequence of notes with various articulations: a third finger (3) left hand (l.h.) tap, a first finger (1) left hand (l.h.) tap, and a third finger (3) left hand (l.h.) tap. The second staff (measures 14-17) continues the sequence with similar articulations and includes a 3/4 time signature change. The third staff (measures 18-23) concludes the section with a dynamic of *f* and includes a 7/8 time signature change. The piece concludes with a double bar line in 4/4 time.

C

Section C consists of one staff of music in 4/4 time. It begins with a dynamic of *mf* and includes a *pull offs* instruction. The staff features a sequence of notes with various articulations: a first finger (1) left hand (l.h.) tap, a third finger (3) left hand (l.h.) tap, a first finger (1) left hand (l.h.) tap, a *pull off* instruction, and a second finger (2) left hand (l.h.) tap. The piece concludes with a double bar line in 4/4 time.

28

pull off

1.l.h.

2.l.h.

1.l.h.

1.l.h.

3.l.h.

Fine

mf

"Oops.. this is already my fourth cup today"

D ♩ = 110

34

pull offs

2.l.h.

arco

pluck with l.h.

pizz.

mf

38

pull offs

2.l.h.

arco

pizz.

pluck with l.h.

pizz.

42

pull offs

3.l.h.

arco

pizz.

2.l.h.

f

pizz.

46

2.l.h.

l.h.

arco

pull offs

3.l.h.

arco

pizz. *p*

pizz. *f*

50

2.l.h.

1.l.h.

mp

sf

52

2.l.h.

l.h.

arco

pizz.

2.l.h.

l.h.

arco

pizz.

- Holy Basil -

Helen Svoboda's Vegetable Bass

Accapella Vocal Line

Vocal line continues with similar melodic motifs - improvise with bass notes

Embrace the richness as the holy basil reaches your tastebuds...

arco

Textural Ricochet

Meditative, lost in thought

A ♩ = 80

Sounding pitch (bass)

p
A.H.-----|

① l.h. pizz

Stop the bottom note (black), and utilise the top node (diamond) to create the artificial harmonic

Sounding pitch (bass)

p
A.H.-----|

① l.h. pizz

p

B Abrupt, aggressive

A.H.-----|

ff

p

C

16 *mp* Sounding pitch (bass)
 pizz. arco A.H. (1) arco pizz. (1) arco V (3) (2) (3) (2)

19 Sounding pitch (bass) *pp*
 pizz. arco A.H. (1) (2) **6/4**

D Accapella Vocal Line

24 Confident, robust --- loose - not strictly in time

24 *ff*

26 cont. in similar style

Aggressive! The taste is growing spicier and punchier by the minute!

28 Improvise over Bass Motifs

Open Rpt

To Coda

Coda

30

p

①

①

A.H.

Sounding pitch (bass)

pizz.

arco

Appendix B5

- Black Radish -

× * = Up-bow, strike into the frog

Helen Svoboda's Vegetable Bass

A Moderato

Rubato, freely

Musical score for measures 1-9. Measure 1 includes the instruction "Strike into the frog!" with a bow hair symbol and an asterisk. Dynamics range from *p* to *f*. Measure 5 includes *mp*. Measure 9 includes *f* and *ff*. An *accel.* marking is present between measures 9 and 10. The score features various note values, rests, and bowing techniques like up-bow and strike into the frog.

Loosely in time, with freedom... (♩ = 150)

Musical score for measures 10-17. Measure 10 includes *arco* and *sul pont.* markings. Measure 14 includes *sul pont.*. Measure 17 ends with *mf*. The score consists of a steady bass line with long, sustained notes in the upper register, some marked with *sul pont.* and *arco*.

2

B **accel.**

mf *ff* **accel.**

rit. *sul pont.* *mf* *f*

C Take your time moving between motifs.
Indicate an underlying pulse of approx 140bpm

◆ □ = l.h. tap/hammer-on
----> = Textural arco ricochet - bounce towards the tip

26

p < f l.h. tap *mp* sim. *sul pont.* *sul pont.*

31

mp *sul pont.* *sul pont.* *sul pont.*

Rubato, romantically

In time
(♩ = 140)

35

f

Play with radishy punch!

D (♩ = 140)

mf

sul pont.

46

sul pont.

48

cresc.... *l.h. slide* *f* *p* *sul pont.*

1.

51

mf *rit.* *In time* *f* Energetically - add some radish tang!

D.C. al Coda

2.

55

rit. *f*

Coda

58

mp *f* *mp* *f*

62

mp *f*

rit.

Detailed description: The image shows a musical score for a Coda section, measures 58 to 62. The music is written in bass clef with a common time signature. Measure 58 starts with a *mp* dynamic and contains a triplet of eighth notes (G2, A2, B2) with fingerings 2, 1, 3. Measure 59 features a *f* dynamic and a dotted quarter note (G2) with a circled 2 above it. A double bar line follows. Measure 60 begins with a *mp* dynamic and a triplet of eighth notes (G2, A2, B2) with fingerings 2, 1, 3. Measure 61 has a *f* dynamic and a dotted quarter note (G2) with a circled 2 above it. Measure 62 starts with a *mp* dynamic and a triplet of eighth notes (G2, A2, B2) with fingerings 2, 1, 3. A *rit.* marking is placed above the staff between measures 60 and 61. A hairpin symbol is located below the staff between measures 60 and 61. The score ends with a double bar line and a circled 2 above the final note.

Appendix B6

- Beetroot (in blossom) -

Artificial Harmonics:

A.H.-----| Stop the bottom note (with thumb) and activate the top partial

Helen Svoboda's Vegetable Bass

Sounding Clef

rubato, delicate
mp

A.H.-----| A.H.-----| A.H.-----| A.H.-----|

A.H.-----| A.H.-----| A.H.-----| A.H.-----|

A ♩ = 180
Light, Folky

▼ = Textural ricochet (on the tip of the bow)
() = l.h. pizzicato

l.h. pizz *mp* simile

mf

C Robust and Rich --- like an overripe beetroot

21

f

25

29

mf *f*

33

mf *f* Back to A

34

f pizz

D Sounding Clef

rubato
mp

A.H. + ① ② ① ② ① ② A.H. --- + ①

② ① A.H. --- + ② ① A.H. --- +

E In Time

The first staff of music is in bass clef with a key signature of one sharp (F#). It begins with a dynamic marking of *mf*. The notation consists of a sequence of eighth notes, some with accents and some with *8va-1* markings. There are also some notes with a 'V' above them, possibly indicating vibrato or a specific articulation.

Open Repeat,
experiment with texture,
dying down slowly...

The second staff of music continues the piece. It features a series of eighth notes with *8va-1* markings and accents. The piece concludes with a double bar line, a repeat sign, and a final note with a fermata and a *pizz* (pizzicato) marking. A long, thin horizontal line is drawn below the staff, extending from the beginning of the second staff to the end of the first staff, indicating a connection or a specific performance instruction.

Soggy Ratatouille

- Scordatura - E A D F# : Tune down 'G' String to an F# -

Helen Svoboda's Vegetable Bass

Sounding Clef

mf
Pizz

Doorbell **Knocking sounds**

♩ = 120

In Time

5 *8va*

mf

9

mf

12

f *mf*

2 Chorus/Ending

16 *More energy, Growing agitated*

Musical score for measures 16-19. The system includes a vocal line, a bass line, and a piano accompaniment. The vocal line has lyrics: "I hope you like sog - gy ra-ta tou-ille". The piano accompaniment features a bass line with dynamics *mf* and *f*. The vocal line has a fermata over the final note.

Musical score for measures 20-23. The system includes a vocal line, a bass line, and a piano accompaniment. The vocal line has lyrics: "I hope you like sog - gy ra-ta-tou-ille". The piano accompaniment features a bass line with dynamics *mf* and *f*. The vocal line has a fermata over the final note.

Musical score for measures 24-27. The system includes a vocal line, a bass line, and a piano accompaniment. The vocal line has lyrics: "I hope you like ___ Po-ta - toes in your trees ___". The piano accompaniment features a bass line with dynamics *mf* and *f*. The vocal line has a fermata over the final note.

Musical score for measures 28-31. The system includes a vocal line, a bass line, and a piano accompaniment. The vocal line has lyrics: "I hope you like sog - gy ra-ta-tou-ille". The piano accompaniment features a bass line with dynamics *mf* and *f*. The vocal line has a fermata over the final note.

17 **C** **Vocals**

f

continue building

Repeat 4x



Fading away into the distance

21

sul pont.

mp

Open

Appendix B9

- Cauliflower Part. 1 -

Helen Svoboda's Vegetable Bass

× * = Up-bow, strike into the frog
() = Left Hand pizzicato

A ♩ = 150

Measures 1-2 of section A. Measure 1 starts with a *sf* dynamic and an up-bow strike into the frog (×*) on the first beat. The rest of the measure is arco. Measure 2 features a *mp* dynamic, starting with a pizzicato (pizz.) note on the first beat, followed by a second pizzicato on the second beat, and then arco for the remainder of the measure. A first ending bracket (①) spans the final two notes of the measure.

Measures 3-4 of section A. Measure 3 begins with a *sf* dynamic and an up-bow strike into the frog (×*) on the first beat, followed by arco. Measure 4 starts with a *mp* dynamic and a pizzicato (pizz.) note on the first beat, followed by arco. A first ending bracket (①) covers the final two notes of the measure.

Measures 5-6 of section A. Measure 5 starts with a *sf* dynamic and an up-bow strike into the frog (×*) on the first beat, followed by arco. Measure 6 begins with a *mp* dynamic and a pizzicato (pizz.) note on the first beat, followed by arco. A first ending bracket (①) spans the final two notes of the measure.

B

Measures 7-8 of section B. Measure 7 starts with a *sf* dynamic and an up-bow strike into the frog (×*) on the first beat, followed by arco. Measure 8 begins with a *mf* dynamic and a pizzicato (pizz.) note on the first beat, followed by arco. A first ending bracket (①) spans the final two notes of the measure.

Measures 9-10 of section B. Measure 9 starts with a *sf* dynamic and an up-bow strike into the frog (×*) on the first beat, followed by arco. Measure 10 begins with a *mf* dynamic and a pizzicato (pizz.) note on the first beat, followed by arco. A first ending bracket (①) spans the final two notes of the measure.

Measures 11-12 of section B. Measure 11 starts with a *sf* dynamic and an up-bow strike into the frog (×*) on the first beat, followed by arco. Measure 12 begins with a *mf* dynamic and a pizzicato (pizz.) note on the first beat, followed by arco. A first ending bracket (①) spans the final two notes of the measure.

C

13 *sf* pizz. *mf* arco *8va* l.h. pizz arco

15 *sf* pizz. *mf* arco *8va* l.h. pizz arco

D

17 *8va* *8va* *8va* *8va* l.h. pizz pizz. *accel.*

20 *arco.* *f* *3* *3* *3* *art. harmonics* *8va*

E

25 *art. harmonics* (8) *l.h. pizz* *pizz.* *l.h. arco pizz* *l.h. hammer-on* *mp*

29 *mf* *mp* *3* *l.h. pizz arco* *pizz.*

33 *f* *accel.* *cresc.* *arco*

36 *f* *p* *arco* *8va*

40 **F** *robust, folky*
(a little faster) *f* *sf*

45 *sf* *accel.* *8va*

48 *8va*

ff *p* *f*

Sounding Clef

g^{na}

51

p *mp*

55

f

57

H

59

open repeat until loose - fade away

I rubato

61

mf *pizz.* *l.h. pizz* *arco.* *pizz.* *l.h. pizz* *arco.* *pizz.*

robust, folky

65 *accel.* *mf* *arco*

68 *pizz.* *f* *arco* *8va* *p*

72 *pizz.* *f* *ff* *p* *arco* *8va* *gliss.*

Appendix B10

- Raw Ginger Root -

- Scordatura - E A C# G : Tune down 'D' string to a 'C#' -

$\text{♩} = 120$
A Energetic, driving
Sounding Clef

Helen Svoboda's Vegetable Bass

Musical notation for measures 1-2. The score is in 4/4 time with a key signature of one sharp (F#). The treble clef part features a series of chords and eighth notes, while the bass clef part has a steady eighth-note accompaniment. A dynamic marking of *f* is present. A scordatura instruction 8^{th} is shown at the end of the first measure.

Musical notation for measures 3-5. Measure 3 starts with a triplet of eighth notes in the treble. The bass line continues with eighth notes. Measure 4 features a 7/8 time signature change. Measure 5 ends with a scordatura instruction 8^{th} .

Musical notation for measures 6-7. Measure 6 continues the eighth-note accompaniment. Measure 7 features a 7/8 time signature change. The scordatura instruction 8^{th} is repeated at the end of the measure.

Musical notation for measures 8-10. Measure 8 is in 2/4 time. Measure 9 features a 16/16 time signature change. Measure 10 ends with a scordatura instruction 8^{th} .

11

Musical score for measures 11-16. The piece is in G major (one sharp) and 4/4 time. Measures 11-12 feature a rhythmic pattern of eighth notes in the right hand and quarter notes in the left hand. At measure 13, the time signature changes to 2/4. At measure 14, it changes to 7/4. At measure 15, it changes to 7/8. At measure 16, it returns to 4/4. The score includes dynamic markings such as \square and \vee .

14 **B**

Musical score for measures 14-16, labeled 'B'. The piece is in G major and 4/4 time. Measures 14-15 feature a rhythmic pattern of eighth notes in the right hand and quarter notes in the left hand. At measure 16, the time signature changes to 3/4. The score includes dynamic markings such as \square and \vee , and a fingering instruction 8^{ub} .

16

Musical score for measures 16-18. The piece is in G major and 4/4 time. Measures 16-17 feature a rhythmic pattern of eighth notes in the right hand and quarter notes in the left hand. At measure 18, the time signature changes to 4/4. The score includes dynamic markings such as \square and \vee .

18

1.

Musical score for measures 18-19, first ending. The piece is in G major and 4/4 time. Measures 18-19 feature a rhythmic pattern of eighth notes in the right hand and quarter notes in the left hand. At measure 19, the time signature changes to 4/4. The score includes dynamic markings such as \square and \vee , and a fingering instruction 8^{ub} .

19

2.

Musical score for measures 19-20, second ending. The piece is in G major and 4/4 time. Measures 19-20 feature a rhythmic pattern of eighth notes in the right hand and quarter notes in the left hand. At measure 20, the time signature changes to 7/8. The score includes dynamic markings such as \square and \vee .

21 **C**

REFER TO OTHER SCORE

Em

(E 15) (E 15)

23

C(maj1) (C 11) (C 11)

25 **D**

D D

28

D D

31 **E**

E E

34 **F**

F F

36

38 **G**

41 **H**

(F 15)

43

(F 15)

Appendix D1

for Irina-Kalina Goudeva

K-tude

Mark Dresser

♩ = ca 132

sounding

partials

A D G

4

9 5--- 9 5--- 8 5--- 7 5--- 6 5---

7

1. 2.

5----- 9 5----- 8^{vb}

E A D A D G

10

8^{vb} 8^{vb} 3 3 3 3 3 9 3--- 3 3

E A D G

13

8^{vb} 3 3 3 8^{vb} 3 3 3 8^{vb}

10 3 3 9 3 8-3 3 3 8---

ADG

16

9-- 10--- 9-- 8---

19

8--- 9--- 8---

22

6 8 6 b 5 6

25

6 b 6 b 5--

28

5--

5----

5----

EAD

31

5--

5--

5----

34

5----

5----

5----

37

5----

5----

5----

40

5----

rit.

rit.