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BIRMINGHAM

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ENSAIOS SOBRE CANTOS  
PORTFOLIO OF MUSICAL  
COMPOSITIONS INFLUENCED BY  
TRADITIONAL MUSIC FROM THE  
AZORES

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A thesis submitted to the  
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College of Arts and Law

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## Abstract

The current thesis is a portfolio of ten musical works composed during the period of 2011 and 2015, including instrumental, mixed media and acousmatic (stereo and multichannel) compositions. These works were developed and composed at my home studio in Oporto (from 2011) and at the Electroacoustic Music Studios at the University of Birmingham (2014 – 2015).

This thesis also features observations and commentaries about technical and aesthetical issues that were objects of study during my creative process, which uses musical elements from my culture as inspiration for new musical works. Hence, it presents a reflection on and the validation of results that came from the exploration of several procedures during my development at the University of Birmingham Electroacoustic Music Studios and a chapter dedicated to the traditional instrument from the Azores – the viola da terra – and the two compositions that focus on this instrument. A USB stick is attached to this thesis, containing the audio performances of all musical works, scores and electronic version of this document.

**Keywords:** composition, the Azores, viola da terra, electroacoustic music and performance.

Dedicated to my family who unconditionally supported me in this adventure

## Acknowledgements

An enormous thank to my family who always stood beside me in every important moment of my life.

I would like to thank to my supervisors, Professor Jonty Harrison and Professor Michael Zev Gordon, for their wise guidance and immense support in times when it was difficult to believe in myself and for reminding me that music is an art for the ear. I am also grateful to my colleagues in the BEAST community for the opportunity to share and benefit from their experiences and support.

I would also like to thank *Casa da Música* for the amazing opportunity to undertake an artistic residence in 2011 – an extraordinary experience that definitely shaped my development as a composer. Finally I would like to thank to Rafael Carvalho his enormous patience and support in assisting me with the viola da terra.

## Table of Contents

Introduction .....	1
1. Culture as influence .....	3
Musical sources .....	11
2. <i>La Mer Soulevée</i> , for orchestra .....	13
Introduction .....	13
Ideas and sources .....	13
Compositional procedures .....	15
Section A .....	16
Section B .....	20
Section C .....	22
Section A' .....	22
Summary .....	23
3. <i>La Fontaine Rouge</i> , for percussion solo .....	24
Material/Ideas .....	24
4. Ensaïos Sobre Cantos (Rehearsal on Chants) .....	28
I – <i>Ad eternum</i> , for 8 channels .....	29
Introduction .....	29
Approach to the materials .....	30
Form .....	33
Spatialization .....	34
II – <i>Diáspora</i> , for 8 channels .....	36
Introduction .....	36
Context .....	36
Form .....	38
Approach to the materials .....	40
Spatialization .....	41
III – <i>(des)Integrasons</i> , for vocal quartet .....	42

Ensaaios Sobre Cantos – Conclusions .....	49
5. <i>Cinq étapes sur une ligne I</i> , for ensemble .....	50
Representing ideas in sound .....	51
6. <i>Ao Desconcerto do Mundo</i> , for narrator, ensemble and electronics .....	57
7. <i>Homenagem Subconsciente</i> .....	65
Analysis .....	66
8. The viola da terra .....	68
Introduction .....	68
Context .....	69
The instrument .....	71
9. <i>Estudos Sonoros – I Matéria Prima</i> .....	73
Introduction .....	73
<i>Fantasia</i> .....	74
<i>Percussivo</i> .....	76
Summary .....	78
10. <i>Sketches</i> , for viola da terra and ensemble .....	79
11. Conclusions .....	83
Bibliography .....	86

## List of Figures and Tables

Fig. 1. Geographical location of the Azores archipelago .....	12
Fig. 2. Score transcription of the folk song <i>A Malva</i> .....	14
Fig. 3. Process of de-construction and transformation of <i>A Malva</i> .....	16
Fig. 4. Further melodic variation based on the main motif .....	17
Fig. 5. Example of harmonic kernel for section <b>A</b> .....	18
Fig. 6. Chord sequence for section <b>A</b> .....	18
Fig. 7. Example of glissandi in the string section .....	18
Fig. 8. Example of additional chords in measures 5-6 .....	19
Fig. 9. Example of crossfade between chords .....	20
Fig. 10. Harmonic distortion for rehearsal mark <b>D</b> .....	21
Fig. 11. Example of the rhythmic pattern process .....	26
Fig. 12. Example of a graphic analysis of <i>Mortuos Plango, Vivos Voco</i> .....	30
Fig. 13. <i>Lembrança das Almas</i> spectrogram .....	45
Fig. 14. <i>(des)Integrasons</i> , measures 18-19 .....	46
Fig. 15. Example of the two principal chords used in the piece .....	46
Fig. 16. Variation around the chord 1 .....	47
Fig. 17. Variation around chords 1 and 2 .....	47
Fig. 18. Bobbin lace, most common on Faial island .....	50
Fig. 19. Needle lace, most common on S.Miguel island .....	50
Fig. 20. Lace by Filomena Cardoso, S. Miguel Island .....	51
Fig. 21. Melodic idea A .....	52
Fig. 22. Melodic idea B .....	52
Fig. 23. Rhythm A .....	53
Fig. 24. Rhythm B .....	53
Fig. 25. Clarinet rhythmic material .....	54
Fig. 26. Example of superimposition through imitation .....	54
Fig. 27. The flute ‘colouring’ the clarinet, measure 6-7 .....	54
Fig. 28. The viola ‘colouring’ the cello, measure 43 .....	54

Fig. 29. Measure 31 .....	58
Fig. 30. Measure 32, further connection with the clarinet .....	59
Fig. 31. Example of the harmonic material .....	60
Fig. 32. Example of new harmonic material based on chords 1, 2 and 3 .....	60
Fig. 33. Example of the two main chords distributed on the piano .....	62
Fig. 34. Example of further harmonic development .....	62
Fig. 35. Standard twelve-string viola da terra ordered in five courses .....	71
Fig. 36. Fretboard showing the five courses string order .....	71
Fig. 37. Tuning of the strings .....	72
Fig. 38. Measures 4 and 5 from the first movement .....	81
Fig. 39. Measures 7 and 8 from the first movement .....	81
Table 1. <i>La Mer Soulevée</i> macro form .....	15
Table 2. Creation of meter using the amount of letters .....	21
Table 3. <i>La Fontaine Rouge</i> macro form .....	25
Table 4. <i>Ad eternum</i> first timeline sketch .....	33
Table 5. <i>Diáspora</i> form .....	38
Table 6. <i>(des)Integrasons</i> form .....	48
Table 7. The Fibonacci series and the creation of measures .....	52
Table 8. <i>Cinq étapes sur une ligne I</i> macro form .....	53
Table 9. <i>Ao Desconcerto do Mundo</i> form .....	61
Table 10. <i>Fantasia</i> form .....	75
Table 11. <i>Percussivo</i> form .....	78

## List of Definitions and Abbreviations

1. *munger~*: real-time granular synthesis external object, developed for Max/MSP software, found in PeRColate library, version 0.9b6<sup>1</sup>.
2. *Narrative*: "...the representation of an event or a series of events."<sup>2</sup> The adoption of the word narrative does not imply the literal one of 'telling a story', but rather the thinking behind the creation of a discourse in a musical situation: the order of events, their relationship and consequences.
3. *Normalization*: "Bringing a collection of events into narrative coherence can be described as a way of *normalizing* those events. It renders them plausible, allowing one to see how they all *belong*."<sup>3</sup> Whenever this concept is referred, it will be appear in italics, to not be confused with the digital audio process of normalization.
4. *IPA*: International Phonetic Association.
5. *MPAGDP* (Música Portuguesa A Gostar Dela Própria<sup>4</sup>): a project founded by Tiago Pereira, with start in 2011. It comprises a series of video recordings of several musical practices throughout Portugal.
6. *CAC*: computer-assisted composition.
7. *Logic*: Logic Pro 9, audio and midi editor, now owned and developed by apple.
8. *Max/MSP*: is a visual programming language for music and multimedia, originally conceived by Miller Puckette at IRCAM, now developed by Cycling '74 company<sup>5</sup>.

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<sup>1</sup> Trueman, D. and R. L. Dubois (2006).

<sup>2</sup> Abbot (2008).

<sup>3</sup> Abbot (2008).

<sup>4</sup> Portuguese Music Liking Itself. Translated by Ângela da Ponte.

<sup>5</sup> Cycling '74 (2016).

9. *AudioSculpt*: software developed by IRCAM, providing a visual and sculptural approach to sound manipulation<sup>6</sup>.
10. *GRM Tools*: sound transformation software conceived and realized by the Groupe de Recherches Musicales, Paris.
11. *BEASTtools*: a multichannel playground for the development of materials, created and developed at the University of Birmingham, UK<sup>7</sup>.
12. *Sound Anthology*: I will often use this term as a reduction of the full title of the CD compilation *The Folk Music of the Azores: Sound Anthology*.

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<sup>6</sup> AudioSculpt (2016).

<sup>7</sup> Barreiro, Batchelor, Bumstead, Carpenter, Harker, Harrison, Oña, Tarren (2011).

## List of Disks

The USB STICK attached to this portfolio contains four folders:

1. Documents: pdf version of:
  - a. DaPonte16PhD.
  - b. DaPonte16PhD\_Appendices.
2. Scores: pdf version of the portfolio pieces:
  - a. La Mer Soulevée (A3 size).
  - b. La Fontaine Rouge (A3 size).
  - c. (des)Integrasons (A4 size).
  - d. Cinq étapes sur une ligne I (A4 size).
  - e. Ao Desconcerto do Mundo,(A4 size).
  - f. Estudos Sonoros (A4 size).
  - g. Sketches, for viola da terra and ensemble (A3 size).
3. Media files: audio and video files of the pieces:
  - a. La Mer Soulevée.wav 44100Hz, 16bit, stereo, 12'41''.
  - b. La Fontaine Rouge.mp4, video, stereo, 13'19''.
  - c. Ad eternum.wav 48000Hz, 24bit, 8 channels, ca. 17'02''.
  - d. Diaspora.wav 48000Hz, 24bit, 8 channel, ca. 9'03''.
  - e. (des)Integrasons.wav, 44100Hz, 24bit, stereo, ca. 8'05''.
  - f. Cinq\_etapes\_sur\_une\_ligne\_I.wav, 44100Hz, 24bit, stereo, 9'54''.
  - g. Ao Desconcerto\_do\_Mundo.aif, 44100Hz, 16 bit, stereo, 10'40''.
  - h. Homenagem\_subconsciente.wav, 48000Hz, 24bit, stereo, 7'28''.
  - i. Fantasia.wav, 48000Hz, 24bit, stereo, 2'11''.
  - j. Percussivo.wav, 48000Hz, 24bit, stereo, 2'02''.
  - k. Sketches.wav, 48000Hz, 24bit, stereo, 7'32''.
4. Patches: Max/MSP patches and applications:
  - a. Ao\_Desconcerto\_do\_Mundo\_App.
  - b. Ao\_Desconcerto\_do\_Mundo\_App.maxpat.

- c. Fantasia\_App.
- d. Fantasia\_App.maxpat.
- e. Percussive\_App.
- f. Percussive\_App.maxpat.
- g. FREQUENCIES.maxpat.
- h. AMPLITUDE\_CONTROL.maxpat.
- i. Audio\_files folder:
  - i. Ao\_Desconcerto\_do\_Mundo\_FixedPart.wav, 48KHz, 24bit, stereo, 10'36''.
  - ii. Ao\_Desconcerto\_do\_Mundo\_ClickTrack.wav, 48KHz, 24bit, stereo, 10'41''.
  - iii. Fantasia\_FixedPart.wav, 48KHz, 24bit, stereo, 2'07''.
  - iv. Percussivo\_FixedPart.wav, 48KHz, 24bit, stereo, 2'08''.
  - v. Percussivo\_ClickTrack.wav, 48KHz, 24bit, stereo, 2'12''.

## List of Pieces

- *La Mer Soulevée*, for orchestra (2011).
- *La Fontaine Rouge*, for percussion solo (2011).
- *Ad eternum*, for 8 channels (2014).
- *Diáspora*, for 8 channels (2014).
- *(des)Integrasons*, for vocal quartet (2014).
- *Cinq étapes sur une ligne*, for ensemble (2014).
- *Ao Desconcerto do Mundo*, for narrator, ensemble and electronics (2014).
- *Homenagem subconsciente*, stereo (2015).
- *Estudos Sonoros*, for viola da terra and electronics (2015).
- *Sketches*, for viola da terra and ensemble (2015).

Total duration: 98'37''

# Introduction

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This portfolio comprises ten musical works that were composed between 2011 and 2015 at The University of Birmingham under the supervision of Professor Jonty Harrison and co-supervision of Professor Michael Zev Gordon. The initial focus of this research was my personal interpretation of traditional music from the Azores and its use to create new musical works for instrumental and electroacoustic media. These compositions are practice-based, using studio techniques (recording, manipulation/ improvisation and diffusion) as well as the more traditional approaches of notated composition and instrumental improvisation, culminating in collaboration with professional performers.

Through this dissertation I intend to present personal solutions to the challenge of using popular music from the Azores as an inspiration to new compositions in a range of different mediums, including instrumental and vocal ensembles, solo, orchestra, multi-channel and mixed media. I also attempt to reveal wider possibilities for the viola da terra (a traditional plucked string instrument from the Azores) by moving beyond traditional practice through the use of extended techniques, by integrating it into contemporary ensembles and by combining it with electronic media. I hope to demonstrate the huge potential of this instrument to increase its popularity within contemporary art music and to help future musicians to perform and compose for this instrument.

I would like to offer an overview of my time and development at the University of Birmingham during which my perspective on composition and music was transformed

significantly. Before pursuing the MPhil I focused mainly on acoustic composition and had written for several instrumental groups and performers. I had a strong classical background and the work developed during the first years of research is a reflection of that. When I had the opportunity to swap to full-time registration for the PhD programme, and move to Birmingham in 2013, I felt that I was able to take full advantage of the Electroacoustic Music Studios. This move had a major impact on my life as I was able to be more engaged with the University, the Music Department, the BEAST community and my supervisors. I felt extremely motivated and this naturally led me to experiment and develop different ways of creating music. The daily work in the Studios brought new viewpoints to my research.

The pieces making up of this portfolio were composed between 2011 and 2015. Between 2012 and 2013, there were some experiments with which I was not fully satisfied and therefore decided not to include them in this portfolio. Each work is accompanied by a commentary discussing compositional processes, technical elements and final conclusions.

# 1. Culture as influence

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*“It is the ideal starting point for a musical renaissance, and a composer in search of new ways cannot be led by a better master.”<sup>8</sup>*

This quote by Bartók illustrates the conviction of many composers of his generation that Romantic music was becoming entrenched and not offering composers any new solutions. Throughout the history of music we can observe other composers who explored their own – or foreign – indigenous culture as a stimulus for finding new ways to create music. This topic is also central to me. I have become increasingly fascinated with folk songs from my own culture, and started considering the possibility of finding in folk music a personal framework through which I could develop my own voice as a composer. As a result, this portfolio concentrates on the use of popular songs, poems and traditional instruments from my cultural background – the Azores archipelago – as an inspiration for new musical compositions. The following discussion is an attempt to highlight this topic and its repercussions in the field of composition during the 20<sup>th</sup> century, reflecting the impact that some of these composers have had on my own development.

Composers like Debussy, Berio, Takemitsu, Stravinsky and Reich found the basis for their work in traditional music. Bartók, although not always supported by other composers and musicians of his time, led us nevertheless to a new perspective on music and an alternative path to the conventions of his period. If he had never experimented with folk song and its integration in art music, it is likely that the piano collection *Mikrokosmos* would have never been written, and an important educational tool would perhaps not exist

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<sup>8</sup> Bartók (1949-1950).

today. It would also be possible that his legacy would not have affected other composers that are important to me, such as György Ligeti. In turn, Bartók himself felt inspired by Debussy's freedom, "[saving] him from remaining under the spells of Richard Strauss"<sup>9</sup>.

Another composer whose music still has repercussions for current composers is Igor Stravinsky. The so-called Russian period was, in my opinion, one of the most groundbreaking periods of Stravinsky's life, challenging not only the conceptions of music of the time, but also the instrumental resources<sup>10</sup> attached to it. His interest in using folk songs made significant contributions to the development of new methods in music making:

*"...one gains many new perceptions both on the thematic interconnections that unify it, and on the progressive evolution of Stravinsky's rhythmic techniques. But no less interesting are the insights the sketchbook imparts into the relations between the ballet and the world of Russian folk music on which it draws."*<sup>11</sup>

In *The Rite of Spring*, a comparison of his sketches with the edited final score shows the "abstraction of stylistic elements from folk music that marked such a watershed in [his] development as a composer"<sup>12</sup>.

Luciano Berio gives another view demonstrating his own passion for folk music. From the *Folk Songs* arrangements to original pieces, he references Italian traditional tunes as one of his main inspirational sources (e.g. *Voci*, for viola solo and two instrumental groups). His programme notes about this specific piece explain:

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<sup>9</sup> Larner (2012).

<sup>10</sup> For example, the opening of *The Rite of Spring* and its famous bassoon solo. Nowadays professional performers play this passage with great facility but at the time it seemed impossible and grotesque. Stravinsky could have given the solo to the oboe, but it might be that the composer was trying to represent the sounds of a Dudka. This approach developed the bassoon, bringing the instrument to a completely different world of sonorities and an "awareness of the potential of [its] upper range" (Grymes 1990).

<sup>11</sup> Taruskin (1980).

<sup>12</sup> *ibid.*

*“...With Voci I hope to contribute to the enhancement of a more profound interest in the Sicilian folklore which, along with that of Sardinia, is certainly the richest, most complex and incandescent of our Mediterranean culture.”*<sup>13</sup>

Takemitsu’s involvement with traditional Japanese music started as being “...only a pure musical interest and some curiosity (...) [of] sounds in this music [that] offered fresh compositional material...”<sup>14</sup>. We can trace the difference between his previous works, highly influenced by western music (particularly by French composers like Debussy and Messiaen) in pieces such as *Litany* or *Distance de Fée* and the period where traditional music from Japan became more evident. A perfect example of this second period of his life is *Dorian Horizon* for 17 strings in which the composer experiments with several extended techniques to simulate the timbre of the Japanese instruments *shō* and *kakko*<sup>15</sup>.

In Steve Reich’s music we can observe the importance that Balinese and African music had in his search for an alternative practice away from the one offered by the Viennese tradition and the serial thinking:

*“ I studied [that] music because I love them, and also because I believe that non-Western music is presently the single most important source of new ideas for Western composers and musicians.”*<sup>16</sup>

In an interview with Michael Nyman, Reich states:

*“ In fact what I think is going to happen more and more is that composers will study non-Western music seriously so that it will have a natural and organic influence on their music.”*<sup>17</sup>

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<sup>13</sup> Berio (1984).

<sup>14</sup> Takemitsu (1995).

<sup>15</sup> Burt (2001).

<sup>16</sup> Reich (2002).

<sup>17</sup> *ibid.*

This leads me to Liza Lim's work, whose background force comes from the Aboriginal culture of Australia. By analysing its intrinsic structures and deconstructing its elements, Lim redefined the perception of "...tension, pressure, movement and resistance..." imbuing a new value to the state of art<sup>18</sup>.

There is no doubt that, to some degree, traditional or folk musics came to be of great value to these composers. But how much and in which ways have these cultures influenced them? What exact compositional parameters were developed and how were they articulated? Were folk songs a source for technical innovation or a matter of style? Or, in the worst scenario, was it a lack of original ideas? But then I must put the question: what exactly is originality? Are Schumann's *Studies in the form of free variations on a theme by Beethoven* less original because their main material is not composed from scratch? What about Lachenmann's *Five variations on a theme by Franz Schubert*? Bartók addressed this issue by affirming that:

*"This way of thought is completely erroneous. To handle folk-tunes is one of the most difficult tasks."*<sup>19</sup>

The book *History of Art*<sup>20</sup> describes originality as something hard to define. If it is necessary to rate a work on an "originality scale" one should not judge it on whether it is original or not, but on *how* original the work is. Bartók's view, with which I completely agree, is very clear on how originality can be approached:

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<sup>18</sup> Rutherford (2011).

<sup>19</sup> Bartók (1949-1950).

<sup>20</sup> Janson (1986).

*“It is the form into which we mould it that makes the essence of our work. This form reveals the knowledge, the creative power, the individuality of the artist.”*<sup>21</sup>

Furthermore, we should not think that these composers took the easiest path. They truly struggled and were very careful in exploring such material. Takemitsu’s testimonial writings show his uncertainty concerning whether he could bring two distinct worlds together at all. The complex sounds coming from the *biwa* or the *shakuhachi* could not be inserted into any theoretical thinking, because “...there is a metaphysical continuity that defies analysis”<sup>22</sup>. Other concerns were pointed out by Bartók in how to incorporate folk material into art music. He does not believe that the combination of folk material with the twelve-tone system developed by Schoenberg could be an answer, simply because total chromaticism would go against the very nature of folk music, whose melodies are based in modal/ tonal structures<sup>23</sup>. Reich did not want knowledge of his study of other music to mislead people into thinking he was making “exotic” music. His interests concerns the *thinking* and not the *sound*, as he considers this to be a more genuine and interesting form of influence:

*“Instead of imitation, the influence of non-Western musical structures on the thinking of a Western composer is likely to produce something genuinely new.”*<sup>24</sup>

This idea of abstraction of a pre-existing model, a stylization, is also what Lim searches for, when using other cultural influences:

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<sup>21</sup> Bartók (1949-1950).

<sup>22</sup> Takemitsu (1995).

<sup>23</sup> *ibid.*

<sup>24</sup> Reich (2002).

*“I’m thinking in a more abstracted way...So, regarding Japanese music I’m interested in proportions of asymmetry and asymmetrical temporal models rather than how its sounds Japanese.”<sup>25</sup>*

In the first half of the 20<sup>th</sup> century, several Portuguese composers took a similar attitude towards the adoption of traditional music into their personal language as a way of contradicting the German Romantic influences that had been cultivated in the country during the 19<sup>th</sup> century. Francisco Lacerda (1869-1934), a composer from the Azores, had a close contact with French culture as a student and his friendship with Debussy in particular motivated his pursuit of collecting popular music. His musical legacy includes references to Portuguese traditional melodies driving a nationalist attitude for the following generations<sup>26</sup>. In the mainland, Bartók became a reference, especially for composer Fernando Lopes-Graça (1904-1994) around 1930, and who in the 1960s, along with musicologist Michel Giacometti, started recording popular music from several regions of the country for his own research. Lopes-Graça did not content himself with simple appropriation for national propaganda or merely superficial use that was not true to its origins. For him traditional music was part of something with much more depth, related to the social context<sup>27</sup>.

My concern for my cultural origins is not a nationalistic stance as it might have been in late 19<sup>th</sup> or early 20<sup>th</sup> century, nor a wish to fabricate folk music, but rather seeks to explore its potentials in the context of art music. When I started this research early in 2010, I found very few examples of creation/experimentation based on traditional songs from the

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<sup>25</sup> Rutherford (2011).

<sup>26</sup> Câmara (1987).

<sup>27</sup> Carvalho (2006).

Azores. The most common practice is the making of arrangements. With almost a century of distance since Lacerda experimented with this kind of sources, I asked myself why composers were not exploring this type of music. Were they still haunted by the nationalistic *clichés*? Or did they not find the music/material attractive enough to work with? Probably neither. I believe that because of its geographical location, the culture of the Azores was, historically, relatively unknown. It was not until recently that documentation has been circulating the globe. The Internet phenomenon has greatly facilitated the access to videos and documentaries of cultural activities from the islands. Other events, such as *Walk&Talk Festival*<sup>28</sup> or *MPAGDP*<sup>29</sup>, are establishing the Azores as one of the most interesting places for artistic creation. Since 2010, many artists have been working with and for the community generating great interest in its cultural heritage. Here are just some of the projects featuring popular musical material since that time:

1. The project *O experimentar na m'incomoda* (experimenting doesn't bother me) by Pedro Lucas, whose title implies "a contemporary recreation of traditional music from the Azores through ancient songs and religious chants, that re-contextualizes the sounds into a more urban and contemporary feel" in a genre that calls itself "folktrónica"<sup>30</sup>;

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<sup>28</sup> Walk&Talk Festival, created in 2011, has had great critical reviews from national newspapers (e.g. Público, dedicated to contemporary artistic expression) and international ones like the Archdaily, Designboom and The New York Times. Belanciano (2015).

<sup>29</sup> Started 2011.

<sup>30</sup> Lucas (2010).

2. In 2011, composer Rafael Fraga wrote *Eira*<sup>31</sup> for voice, Portuguese guitar and ensemble using his own poems: the work blends Portuguese folk tradition with the classical world;
3. I met composer Steve Peters (USA) through Rafael Carvalho. He is also interested in the viola da terra and its integration into electroacoustic music. He has been working on a project called “Canções Profundas”<sup>32</sup> (Deep Songs, 2015) which uses environmental sounds, popular songs (sacred and profane), emblematic folk repertoire for the viola da terra (heavily processed) and instrumental improvisation on top of the electronic part, with an array of instrumentation inspired by the marching bands.

So, as we can see, very few composers were engaging with this kind of material. In my view, there is still a wide range of possibilities to explore, particularly its potential into the contemporary context. My initial PhD proposal outlined the hypothesis of building a framework based on the popular music from the Azores, where I could develop my work as a composer. In the initial phase, I allowed myself to experiment and take several directions, permitting me to be free in my creative processes and receptive to any outcomes that may arise. Each piece thus explores different angles in a search for an appropriate interpretation/validation of what could be perceived as a strong connection with the modern context. The following chapters will unveil my compositional concerns about the processes of personal interpretation, deconstruction of elements and their use in different instrumental groupings. Also documented is a personal development concerning the combining of the

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<sup>31</sup> Fraga (2011).

<sup>32</sup> Peters (2015).

electroacoustic medium with instruments, resulting from a need to expand my sonic resources.

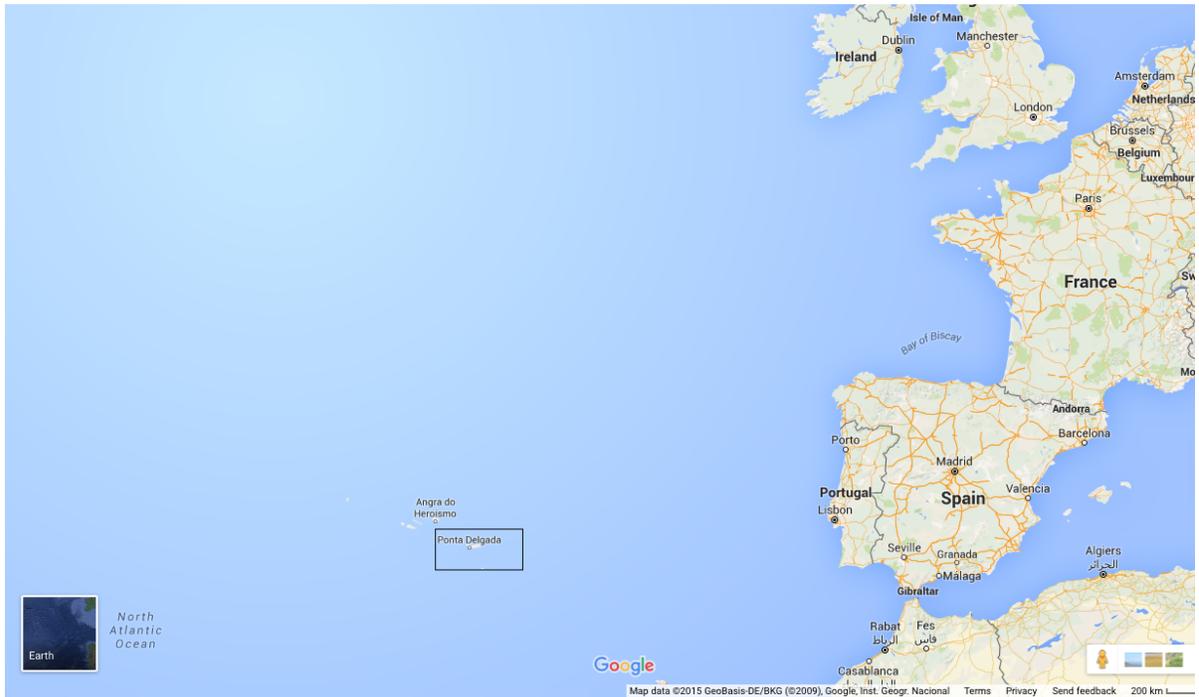
## **Musical sources**

The main musical sources used, both in the electroacoustic and instrumental works in the portfolio, came from a collection of tunes and soundscape recordings made from around 1952 until 1960. These recordings are part of a recent CD compilation labelled *The Folk Music of the Azores: Sound Anthology* recorded *in loco* in three Islands: Terceira, São Miguel and Santa Maria by Professor Artur Santos and edited by Emiliano Toste<sup>33</sup>. Four CDs exemplify sacred/profane songs and ceremonial rituals which are part of the Christian calendar, events from daily life and lullabies or songs to accompany dance. My main reason for selecting these specific sound sources was a personal wish to use the most ancient documentation available with minimal exposure to external influences.

I concentrated my investigation on the island where I was born (São Miguel, Fig. 1) and started to divide sources into two major categories: vocal (sacred and profane) and instrumental music for the *viola da terra*. Although these materials were musically satisfactory, the recordings show poor audio quality. Background noise is highly noticeable and some tracks are distorted. Consequently, this limited the amount of materials I could use, reducing it to the ones I considered reasonable to work with in each composition.

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<sup>33</sup> Santos (2001).



**Figure 1.** Geographical location of the Azores archipelago. In the box is São Miguel Island where Ponta Delgada is the capital city. The nine islands have a population of around 250000 people (census 2011).

## 2. *La Mer Soulevée*, for orchestra

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### Introduction

During my first year of research I was invited by Casa da Música (Oporto, Portugal) to be the Young Composer in Residence in 2011. Two of the three works that were composed during that year are presented in this portfolio as the first attempts to explore the ideas discussed in Chapter 1. Casa da Música commissioned *La Mer Soulevée* for the *Orquestra Sinfónica do Porto Casa da Música*. So far it has had two performances: the premiere in July of 2011, conducted by Michael Sanderling and in May 2015 performed by the same orchestra and conducted by Takuo Yuasa.

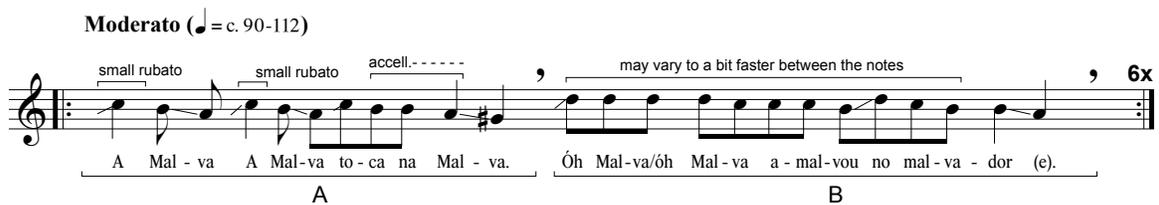
### Ideas and sources

*La Mer Soulevée* was performed at the final round of the 2<sup>nd</sup> International Prize Casa da Música/Suggia, a competition for cellists. One of my initial ideas was to give prominence to the cello section at some point in the piece. During the composition of the piece, I was fascinated by Takemitsu's *A flock descends into the pentagonal garden* (1987) and by the vast range of colours possible through combining different timbres within the orchestra. Also, I found the smooth harmonic transitions that occur in Takemitsu's piece very appealing and explored something similar in *La Mer Soulevée*. I selected a folk song, which has a symbolic value to me, to start organizing my sound world. The song, entitled *A Malva*<sup>34</sup>, was often sung by my grandmother:

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<sup>34</sup> Sound Anthology – CD 4, track 25.

**Moderato** (♩ = c. 90-112)



A Mal - va A Mal - va to - ca na Mal - va. Óh Mal - va / óh Mal - va a - mal - vou no mal - va - dor (e).

**Figure 2.** Score transcription of the folk song *A Malva*<sup>35</sup>.

The recording is of a female voice in which the sound production seems to come mainly from the throat, causing the sensation of pushing/giving weight to each note. Also, glissandi and pitch bending occurs throughout the melodic line – a very common feature in most songs of the Sound Anthology. I therefore explored this kind of articulation in numerous passages in the piece in an attempt to represent this kind of singing – especially in the string section before attacking a higher note. Other passages can be observed in measure 115 in the violoncello solo, measure 127 in the flutes and measure 148 in the flute.

The ambience and meter of the work are based on the poem *Idilio (Idyll)* by the Azorean nineteenth-century poet Antero d’Quental<sup>36</sup>. Although I had already found interesting musical material to work with (the folk tune), I was still feeling a little lost and in need of a guideline for the musical discourse. My habitual compositional practice makes use of extra-musical elements as a starting point. For me it helps to construct a *narrative*,

<sup>35</sup> Transcribed by Ângela da Ponte. This reveals the problem of accuracy of transcription. Nettl (1983) quotes several authors to point out this issue, e.g. McCollister saying that: “The ideal goal of a music transcription then cannot be realized because it seeks to find a visual equivalent to an oral phenomenon”. When working with this kind of source, I had some difficulty in transcribing a phenomenon that is complex. The use of the Western notational system to fix sound is a compromise and it may force sound phenomena to a rigid meter/rhythm. Any significant details that are intrinsic to the practice of the culture in question may be lost. Nevertheless, a visual element is necessary to decode the relationship between the original source and the ideas implemented in my own composition. I tried to be as close as possible to the original source, focusing on the details that I found interesting to work with.

<sup>36</sup> The poem is presented in appendix 1, where an English translation is also provided. Additionally, further details about its structure are provided.

which can unblock compositional ideas. This poem uses a bucolic scene<sup>37</sup> to represent an amorous moment. The environment created in this piece seeks to re-interpret the actions described in the text. Its use helped to create the overall form and to shape new contexts, resulting in four distinct moments. The following table shows these individual moments, whose correspondence to the poem's structure can be verified in Appendix 1.

**Table 1.** *La Mer Soulevée* macro form

sections	<b>A</b>	<b>B</b>	<b>C</b>	<b>A'</b>
measures	1 – 62	63 – 111	112 - 136	136 – 157

## Compositional procedures

The approach to elaborating additional musical material followed several steps and is a kind of a patchwork method. Part of the musical material was shaped by the text in two ways – its meaning and its quantity. The meaning inspired the different paces developed through the piece and the text quantity offered the possibility of creating meter structures (for example in section **B**). Melodic and harmonic content was created in order to evoke the atmosphere described by the poem using the folk song *A Malva* as a kernel.

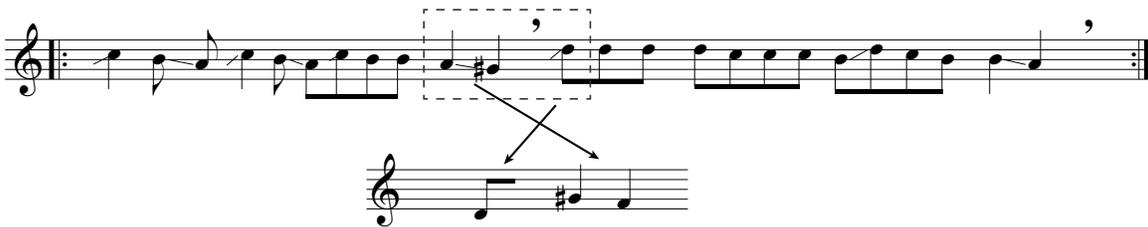
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<sup>37</sup> The scene description depicts in detail the most iconic features of the island. I realized that the poem was appealing to me because it evokes memories of personal experiences over the years I lived there.

## Section A

Two phrases of the first verse were the most important to me: “*When we two walk together, hand in hand*”, which suggested a calm on-going action, with a slow pace; the other, “*And clamber, never stopping, up the hill*”, more energetic and spontaneous (for example measures 15-16, 43-44). Through section **A** the representation of these two phrases is achieved through the alternation of heterophonic and homophonic textures, creating a sensation of circularity and constant novelty.

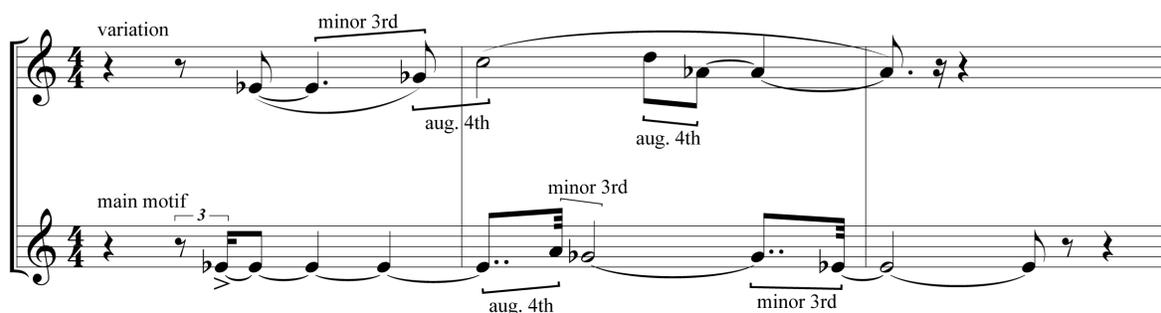
To shape the sensation of tranquillity related to the first phrase, I created most of the melodic lines based on a main motif that was deconstructed and diluted from *A Malva* (Fig. 3). This provided familiar links between each melody and the possibility for smooth transitions. I used several processes to generate these variations, includes retrograde motion, interval inversion and transposition, and augmentation/diminution of rhythmic values.



**final result:**



**Figure 3.** Process of deconstruction and transformation of *A Malva* for the creation of the main motif.



**Figure 4.** Further melodic variation based on the main motif.

Fig. 4 shows an example of a melodic variation based on the main motif (which is played by the English horn in measure 2 of the piece); the variation is played by the oboe in measure 4. I used the same collection of intervals present in the main motif (augmented 4<sup>th</sup> and minor 3<sup>rd</sup>s) and a similar kind of arc-shape in both motif and variations helps build connections. Other procedures include the displacement of rhythm values for a delayed effect. These melodies were mainly distributed between the woodwind section and the violins.

The harmonic material for the beginning of the piece had also its kernel in the interval collection provided by the folk song. I grouped all the notes of the melody, resulting in a cluster of five notes (Fig. 5), containing the intervals of minor and major seconds, minor and major thirds, perfect fourth and a tritone. The idea was to create a sequence of chords (Fig. 6), starting with those intervallic relationships, then widen the tessitura through stepwise expansion (rising or descending), but maintaining pivot notes to create links between the chords. I started by distributing the first chord, in the string section, and experimented articulating the notes of this chord through glissandi (Fig. 7). This created a very interesting kind of wave-like motion so I continued this idea in other

parts, for example, measures 10-11 and 27. Percussion, other woodwinds and brass are treated as additional decoration/colour, highlighting certain notes of the chords.

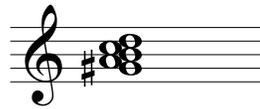


Figure 5. Example of harmonic kernel for section A.

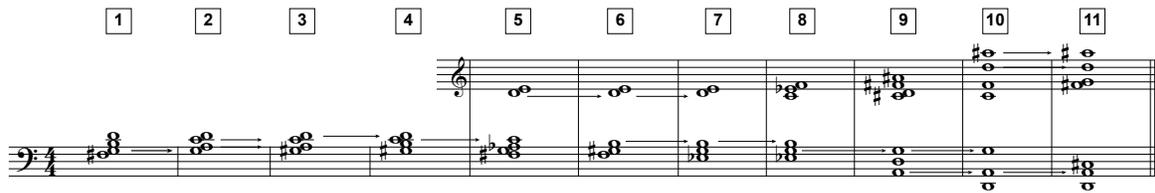


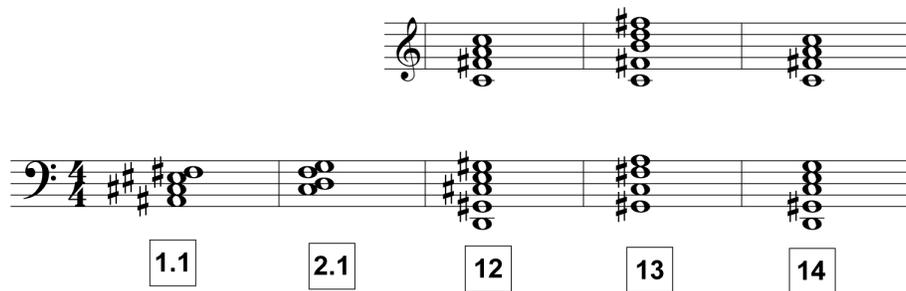
Figure 6. Chord sequence for section A.

**4/4 Nostalgic** (♩ = 56)  
*very delicate and soft*



Figure 7. Example of glissandi in the string section, resulting in a wave-like motion.

Superimposed on this layer were melodies, thereby creating further intervallic relationships. Other notes in the strings (e.g. D# in the 2<sup>nd</sup> violins in measure 2-3) double some notes of the melodic lines. I created this sequence as a starting point, but then began experimenting on top of it – rearranging its order, generating other chords based on 4<sup>th</sup> and 3<sup>rd</sup> (Fig. 8), applying crossfades between chords or fragments of chords (Fig. 9). This resulted in multiple harmonies, which helped with my ideas of constant change, creating the sensation of novelty mentioned earlier. Also, it generated new melodic motifs very divergent from my initial drafts (measure 15-16 in the strings, further variation in measures 48-50).



**Figure 8.** Example of additional chords. 1.1 and 2.1 are intervallic inversions of chords 1 and 2. The latter are based on intervals of 4<sup>th</sup> and 3<sup>rd</sup>, which resulted from an aural predilection for these sonorities – probably an influence from Takemitsu’s sound world.

**Figure 9.** Example of crossfade between chords in measures 5-6. Some of the notes of the chords are transposed one octave higher.

## Section B

The transition to section **B** (measures 52-62), is defined by a gradual change in tempo, as the second verse suggested to me a more energetic motion:

*“Or, from the treeless summit, view the strand  
 And watch the evening clouds that slowly fill  
 The far horizon, forming at their will  
 Fantastic ruins of a sunken land.”*

I experimented using the number of letters in each word of the third and fourth sentences of the second verse to generate meter:

**Table 2.** Creation of meter using the amount of letters.

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Que parecem fantásticas ruínas = 3 | 7 | 11 | 6

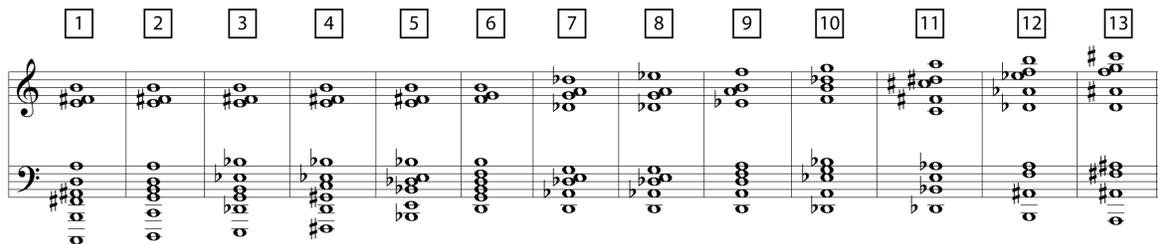
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Ao longe, no horizonte, amontoadas = 2 | 5 | 2 | 9 | 10

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These numbers/time signatures are rearranged throughout the section. Number 11 is cut to  $\frac{5}{8} + \frac{6}{16}$  (measures 78-79); number 10 is divided by 2 and number 9 is divided by 3 (relocated between other time signatures). I felt that the smaller, shorter segments were more helpful to me in evoking the image of *fantastic ruins*, described in the poem.

From a microform point of view, the entire section contains two major moments: from measure 63 to 84 the depiction of irregular motion is defined by the percussion and brass sections linked by a frantic melodic line in the strings that will culminate in measure 85, seen as the first climax. Rehearsal letter D, with a more lyrical character, is the second development of this irregular part. The harmonic material here was created by experimenting with spectral techniques, such as frequency distortion<sup>38</sup>, to generate a sequence of chords.



**Figure 10.** Harmonic distortion for rehearsal letter D, where the first chord was the basis for spectral transformation.

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<sup>38</sup> I used the PWGL software to develop this sequence of chords. I used the Esquisse library which is “a historical library developed for Tristan Murail originally for the PatchWork environment”. The ‘frequency distortion’ object “distorts the frequencies of the given chord so that the lowest note is changed to minimum output and the highest note to maximum output. Interior notes are rescaled so as to preserve the relative positions of their frequencies” (Kuuskankare, Laurson, Norilo, Sprotte, 2002-2016). After having the final material, I changed some of the notes to meet my aural preferences. The patch can be consulted in Appendix 3.

In measures 106-110 we witness the second climax of the piece. The intention here was to create tension by concentrating the whole orchestra on one note (C) before slowly opening the spectrum through glissandi.

## **Section C**

The violoncello solo (measures 112-115) makes the transition to section C as an evocation of the third verse of the poem. To represent the phrase “How suddenly, at times, you cease to speak”, I tried to reduce the texture to its minimum and delivered a fragmented melodic line that gradually expands. In the background, the cymbal plays a tremolo, maintaining some tension and evoking the phrase “Your fingers quiver, colour leaves your cheek”. Also, through this section, recapitulations of elements of section A materialize in a new fashion: the phrases are shortened and the transitions between them hurried, creating a sensation of instability and anxiety. For example, measure 116 re-introduces the material used in measure 48, applied in the woodwind section as an orchestration variation. Similar procedures concerning the melodic approach made in section A were repeated here, such as superimposition of harmonies and a more heterophonic texture.

## **Section A’**

The reference to the last verse starts in measures 137-139, where a new and distinctive sonority occurs. I experimented with combining different techniques such as harmonics and tremolo in the strings and stepwise glissandi in the clarinets and flutes<sup>39</sup>, to

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<sup>39</sup> I chose these instruments because they can smoothly articulate the glissandi, in order better to represent this delicate idea of wind sounds.

evoke the sea and the wind. The woodwind section seemed to me to be the most obvious physical approximation to wind sounds. Further measures continue to develop the material used in the beginning of this section, until the re-introduction of the main motif played by the English horn as an announcement of the end.

## Summary

*La Mer Soulevée* is my first attempt at the deconstruction and recontextualization of a folk song from the Azores into another sound world. Several methods were applied in order to dissolve the source to recreate a different narrative, including the use of a poem to shape musical events. I was pleased with the technical level of its orchestration, its richness of timbre and its idiomatic use of instruments. However, I was not fully satisfied with the aesthetic side of the piece. The harmonic character and the orchestration show perhaps too obvious an influence of the music of Debussy and Takemitsu, two pillars of my musical education, and I wished to pursue other options. This may be related to the direct use or appropriation of a sonority that corresponds to another aesthetic and cultural background. In later works like *(des)Integrasons* and *Cinq étapes sur une ligne I* I make a determined effort to overcome this temptation. Nevertheless, I took several positive things from this work. I experimented with several different techniques and used a broader range of tools, such as the use of CAC to aid in the generation of additional harmonic material and the use of intrinsic elements of text as a means of generating meter. I was also happy about the development of orchestration I achieved in measures 137-139 that resulted from a mimetic approach to the text. This kind of sonority is something worth exploring in future works.

### **3. *La Fontaine Rouge*, for percussion solo**

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The next commission from Casa da Música was a multi-percussion piece for Nuno Simões, winner of the Young Musicians Prize 2010. *La Fontaine Rouge* was premiered in October 2011. The title is based on the water springs of volcanic origin found in a village in the Furnas valley. My main concerns in this piece were the exploration of various sounds to evoke the water springs, and further exploration of CAC and pre-determined schemes to generate material.

My first task was to decide the instrumentation to be used to suggest the water-like sonority. I used bamboo-chimes, cowbells, crotales and a xyloblock<sup>40</sup>. Other instruments used in this piece – bongos, congas, bass drum and a foot pedal bass drum (for practical reasons) – were added to contrast the sonorities provided by the former instruments and to help in creating a rhythmical energetic mood. After deciding the percussion set, I started by generating musical material comprising three main ideas.

#### **Material/ Ideas**

A recording of several fountains, made in December 2010, generated most of the material used in this piece. I used Logic to analyse the intensity peaks of the recordings and then converted the audio into MIDI notes<sup>41</sup>. Data (mostly rhythmic) was collected and then

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<sup>40</sup> The Xyloblock is an instrument made by Missom Lda company (Portugal). The pitch disposition is organized like a xylophone but the bars are made of tuned woodblocks. The range is F2 – F5. [Accessed online from <https://www.facebook.com/missom.instrumentosmusicais/posts/203720313098915> 22 March 2016].

<sup>41</sup> Using the “Audio to MIDI Groove Template” that quantizes grids based on the rhythms of audio or MIDI regions.

re-organized<sup>42</sup> according to my aural appreciation. Pitch was generated partly manually and partly using Max/MSP to automate a gradual expansion of range from four notes to ten<sup>43</sup>.

**Table 3.** *La Fontaine Rouge* macro form.

sections	A			B			A'		
measures	1 – 83			84 – 128			129 – 136		
microform (measures)	1 – 30	31 – 45	46 – 83	84 – 97	98 – 110	111 – 128	129 – 145	146 – 159	160 – 167

Until measure 30, the musical discourse is intended to be smooth, through an attempt to connect the timbre of the cowbells, xyloblock and drums. The melodies unfold in wave-like gestures which build towards measure 31, where new musical idea is presented: more energetic, rhythmically strict and timbrally focused on the skins. Initially I created patterns of thirteen demisemiquavers to carry the musical argument throughout thirteen<sup>44</sup> measures. I realized that I needed more variation in order to avoid monotony. I therefore started adding different accentuations and prolongations of two or three semiquavers to emphasize instability (Fig. 11). The rhythmic pattern was orchestrated afterwards, with bongos dominating the texture and linking the congas and the bass drum. The third part of section A uses some of the procedures developed in the first part – the use of fragments of material generated by Logic analysis, alongside manual rearrangements of this material.

<sup>42</sup> Exported as a MIDI file then imported it in finale.

<sup>43</sup> B natural, C natural, D flat and E natural. An example of the procedure is shown in Appendix 4.

<sup>44</sup> I used the number thirteen, which was the number of fountains counted in 2011, as an idea to build this pattern.

Stage 1

Stage 2

Final result

**Figure 11.** Example of the rhythmic pattern process (from measure 31).

Section **B** is more temporally free in character, but at the same time remains dramatic. I imagined a passage in which one note (C, played on the cowbells) links other distinct gestures. The gesture made in the cowbells (from measure 85) evokes water drops; other representations of water include the use of bamboo chimes and the arpeggios on the crotales. This first introduction of the bamboo chimes, combined with forceful strokes in the bass drum, creates drama and freshness. This section was entirely composed through

improvisation. I tried to create temporal space between the elements in order to make a sense of unpredictability, and to enable resonances to be more effective.

The final section recapitulates the ideas developed in section **A**. It starts by re-introducing the thirteen-note pattern (Fig. 11), plus variations made by different kinds of rearrangements – now the lowest conga dominates the texture, the highest bongo behaves like the bass drum (in comparison to measures 31-43) and the addition of other instruments such as the xyloblock and cowbells complement the texture. The quintuplets from measure 72 are also developed further in this passage. The idea was progressively to fill this gesture with arpeggios/chords on the cowbells and crotales, a kind of accumulative process to create tension towards the end, culminating in a loop-like figure played on the cowbells.

#### ***4. Ensaios Sobre Cantos (Rehearsals on Chants)***

After moving to Birmingham, I became increasingly interested in working with the electronic medium. Regular work in the Electroacoustic Music Studios enabled further development in my studio composition skills, especially concerning the exploration of space in my first multi-channel pieces. This practice deeply influenced my compositional procedures in later instrumental pieces, where I believe one can perceive a liberation of expression and a progressive need for an expansion of sonic resources, in addition to pitch and rhythm. Also, we see a shift of focus towards the end of the PhD, as I became more fascinated with the viola da terra – I wanted to develop aspects of its playing techniques and integrate it into the contemporary music scene (further discussion of this topic is contained in Chapter 8). The three following pieces are grouped under the name *Ensaios Sobre Cantos* because they were composed almost simultaneously and share common materials between them.

## I – Ad eternum, for 8 channels

*The history of men is the history of their disagreements with god, he does not understand us, nor do we understand him.*

*José Saramago*<sup>45</sup>

### Introduction

Based on three ceremonial chants from the *Sound Anthology*, these ritual songs are part of the day of the dead within the Christian calendar. This is celebrated on the 1<sup>st</sup> of November, when people pray for the souls of the dead, especially family members. These chants are titled *Lembrança das Almas*<sup>47</sup> (chant 1), *Final do Terço*<sup>48</sup> (chant 2) and *Paixão*<sup>49</sup> (chant 3). *Ad eternum* is the longest piece in this portfolio and was perhaps the most difficult to compose. Its duration (17') and limited material were the compositional challenges I faced through its development. First sketches of the work were made in 2012 but it was only completed in December 2014. It was premiered on January 2015 on the BEAST dome in a *BEAST Pantry Sessions* event. I decided to discuss this piece first, although its completion makes it, chronologically the last one of the group, because many of the technical approaches explored over the two years were also used in *Diáspora*. Also, the regular work with the three chants influenced the elaboration of *(des)Integrasons*.

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<sup>45</sup> Saramago (2009), translated by Ângela da Ponte

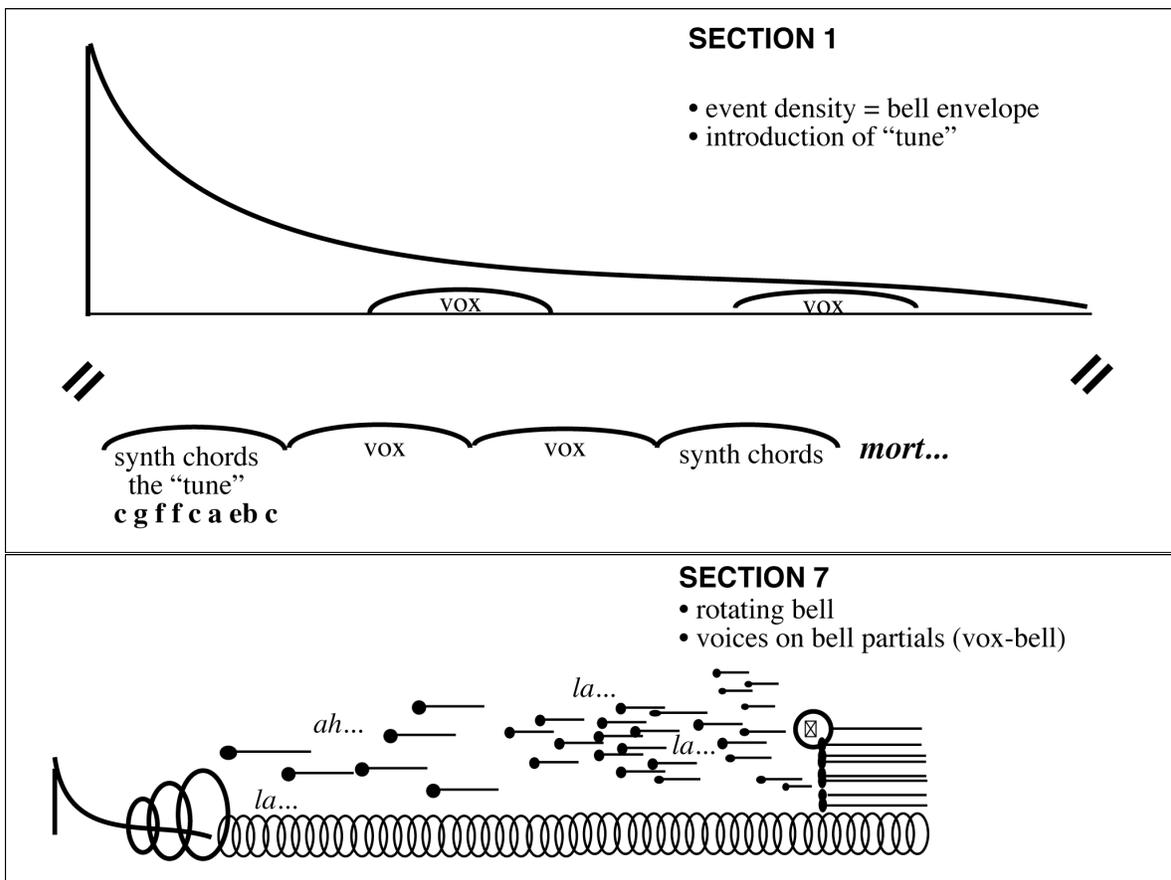
<sup>47</sup> Sound Anthology – CD 4, track 18, under the name *Bendito*. The real name of the song is *Lembrança das Almas* (In Memory of Souls). It seems the publisher named the track *Bendito*, after the first words of the text.

<sup>48</sup> Translated as *Final Chaplet*. Sound Anthology – CD 3, track 19.

<sup>49</sup> Translated as *Passion*. Sound Anthology – CD 4, track 19.

## Approach to the materials

At the time of composition I was inspired by Jonathan Harvey's piece *Mortuos Plango, Vivos Voco* (1981), and how the relationship between the voice and the bell sound was created. I am fascinated by this kind of smooth transitions between sounds and it has become one of the main aesthetic concerns in most of my pieces. Harvey used many technological resources to analyse and shape the bell sound. Additionally, its spectral analysis provided the composer with the structural basis of the piece, where form is based around envelope and the source's partials (Fig. 12).



**Figure 12.** Example of a graphic analysis of *Mortuos Plango, Vivos Voco*. Image extracted from Evans (2005).

Some of Harvey's compositional procedures took the intrinsic properties of sound to convey the musical discourse. For example, passages of the boy's voice are shaped in a bell-like envelope and vowels' spectra transformed to be near to the bell spectrum<sup>50</sup>. What I came to understand about these procedures is that Harvey may have created a way of linking distinct sonic events as a way of *normalizing*<sup>51</sup> them in a musical discourse. Some of these techniques were partly developed in *Ad eternum*, as an attempt to discover how to bring my own sound material into the acousmatic context. Other procedures differ from Harvey's methods, especially regarding form and harmonic organization, which did not follow a spectral relationship.

I explored my material with several processes from different tools, such as GRM Tools, BEASTtools, AudioSculpt and SoundMagic Spectral plugins developed by Michael Norris<sup>52</sup>. In the first two chants, a bell is always played before the choir starts to sing. So it was obvious to me to use these two distinct sounds as the main subjects of the piece. First sketches were created, based on this initial idea of a dramatic work where chants could be in dialogue with bell sounds. Such deep and sorrowful singing inspired me to a metaphorical attribution of the sound material: bells are thought to represent the divine and the voices the human condition. Therefore, the musical discourse was arranged to bear this confrontation in mind.

The first material explored was the bell. This sound is omnipresent and has two functions: firstly, to support the development of the musical discourse carried by the voices

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<sup>50</sup> Harvey (1981).

<sup>51</sup> Please consult list of definitions.

<sup>52</sup> Norris (2015).

and, secondly, to disturb it. I generated a sustaining and stable bell sound for the first function and for the latter created several versions of the original envelope, which could portray a sharp and aggressive sound. These versions featured transposition<sup>53</sup>, distortion<sup>54</sup> and reversal. To generate the sustained frozen bell sound, I started by analysing the original source in AudioSculpt to extract frequency data<sup>55</sup>. I then inserted these values into Max/MSP where, through additive synthesis, I was able to reconstruct the bell spectrum. This enabled me to obtain a clean sound without the background noise that was present in the original source. The spectrum sounded very close to the original but I found its internal temporal motion static. To create a sense of organic development, another patch was used to control the amplitude of each frequency through random values<sup>56</sup>. Then, in Reaper, I recorded and edited several layers of this sound in order to have different levels of motion. Other processes applied to this new bell sound include Norris's Spectral Averaging and Spectral Dronemaker, so I could have a clear bell sound and a blurred version.

After exploring the bell sound, I transformed the voices in numerous ways. The experimentation with the GRM Evolution demonstrated a preference for stylized sounds, close to sine waves, where I felt it connected better with the sound of the frozen bell. Also, I could smoothly alternate between the original sound source and its sine wave transformation, by gradually reducing the “purity” parameter and by varying the speed parameter to create a more diffused spectrum. This processed material was used throughout the piece as a harmonic background. Beyond this, I used the GRM Shuffling to generate

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<sup>53</sup> Created in AudioSculpt.

<sup>54</sup> Using the Distortion AU plug-in developed by Apple. This can be consulted in Appendix 5.

<sup>55</sup> Demonstrated in Appendix 6.

<sup>56</sup> Appendix 7 contains detailed information about these procedures.

scattered material that helped me to create tension in section **B** (from ca. 4:45). This tension is also intensified through the creation of additional versions of this gesture, including the reproduction of canon style diffused through the speakers. I used the Granul8 and Rot8<sup>57</sup> tools to generate this material. EQ is also applied here to add more brightness to the spectrum.

## Form

To help me to structure the long time span of the discourse, I used the golden ratio to organize the structural points of the piece (Table 4).

**TABLE 4.** *Ad eternum* first timeline sketch.

Timeline	17:00						
Division by $\Phi$	1.618	10:50					
		1.618	6:49				
			1.618	4:01			
				1.618	2:48		
					1.618	1:53	
						1.618	0:58

After devising the general plan, I started arranging the events in order to meet the structural points. Few adjustments to the timeline were made during the compositional process. These adjustments derived from the aural perception/reaction to space, where additional points were needed to convey the musical discourse better<sup>58</sup>. Chant 1 occupies the majority of the piece and is developed in many ways, as mentioned above. The second chant is delivered

<sup>57</sup> BEASTtools. Granul8 allows 8 channel granulation and Rot8 spatialization/respatialization of sources via circular motion.

<sup>58</sup> A final timeline analysis is provided in Appendix 8.

by a solo male voice almost in a repetitive recitative style, alternating with choral responses. This choir, which is not very clear if made up of women or children, offers a contrast, helping to push the discourse towards the second climax of the piece. After section **B**, a more calm and contemplative section (**A'**) is presented, where chant 3 is introduced, using the same stylization techniques as in section **A**. This last chant is a harmonic shift, to a major mode, creating a sensation of relief towards the end of the piece. Complementary sources were added to create additional atmosphere and novelty of sonority: aeolian sounds from a clarinet and a bell and people talking, which had their origins in the soundscape recordings. The final section functions as a coda, combining events from all sections.

## **Spatialization**

Different spatial positioning of the sources and their processed versions were explored in *Ad eternum*. The spatialization options turned out to suggest an imaginary church and its surroundings. I tried to keep the original sources more focused in the front, with the synthesized version/sine wave sounds spread through all the channels, as an extension of the main source. This could be linked to the idea of a listener facing the altar, with most sounds having their origin there.

In section **A**, the main chant 1 is spatialized from a distant location to a middle one. Space itself is developed in section **B**, where chant 1 is scattered through all the channels and in several layers of spatial distance, to produce an intense moment, surrounding the listener. Section **A'** returns to spatialization similar to that in section **A**. From around 13:20 the third chant is slowly introduced in the background and gradually moves to an extreme

foreground using channels 3 and 4. This creates a very peculiar effect, as the listener may have the sensation that the choir is moving towards him, similar to a processional moment in the liturgy.

Throughout the piece, the bells are always distributed across the 8 channels with no specific order. The intention was to create unpredictable moments to disturb the voices' discourse. Also, in moments where climaxes happen, the bells are spatialized in all the channels, so that the listener is completely immersed by a massive texture to add even more tension.

## II - Diáspora, for 8 channels

### Introduction

Inspired by Portuguese history and language, *Diáspora* explores the use of multiple sound sources in order to create an imaginary soundscape. It was originally conceived for one of BEAST concerts in Birmingham, performed and premiered at the Ikon Gallery in February of 2014. The final version, presented here, is for 8-channels in a ‘French ring’ configuration, and was performed on the Elgar Concert Hall, at BEAST’s Visions concerts in May 2014. *Diáspora* was my first 8-channel piece and I tried to use this format to articulate connections between different languages and accents representing the idea of diaspora in the archipelago. The discourse is supported through the narrative of a poem by Natália Correia<sup>59</sup>. Hence, it was the first piece in which I explored the sonority of the *viola da terra* sonority in an electroacoustic music context.

### Context

Around 1432 Gonçalo Velho discovered the Azores and Portuguese from several parts of the mainland arrived in the archipelago. Through the following centuries, many other Europeans, such as Bretons, Spanish, Flemish and Moorish, emigrated to the Islands, although Portuguese immigrants were the majority<sup>60</sup>. Dores (2008) explains that due to its geographical location and isolation, the peculiar Portuguese accent in S.Miguel Island may be the result of the crystallization of the 1500’s archaic language from the southern region

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<sup>59</sup> (1923-1993) Portuguese female poet, born on São Miguel Island. The full poem is shown in Appendix 10.

<sup>60</sup> Bento (2008).

of Portugal<sup>61</sup>. His view demystifies the approach of other anthropologists and linguistics who, naïvely, assumed that the origins of our peculiar accent was a result of the interaction with other foreign languages, especially French where the pronunciation of the vowel [ü] is indeed similar. Dores came to believe that this theory might be invalid. His own research indicates similar pronunciation in the regions of Alentejo and Algarve where this pronunciation is seen as being a possible natural variation (the same may have happened to the French language) of Latin over the centuries.

The distorted assumption of having different languages shaping the Portuguese accent, however, led me to create a piece where they could interact in the same space. I could not be more fascinated with the expressive possibilities that could arise from the juxtaposition of speakers of other languages reciting a poem in Portuguese. The text was also immensely suggestive in atmosphere and gestural material. Its character recalls an intimate and mysterious space. Besides Portuguese from mainland Algarve and São Miguel Island, the choice of languages followed the historical documentation of the most common immigrants in the Azores: Spanish, French and German. I was able to record one German, two French and two Spanish speakers who were happy to collaborate with me for this work. Each one of them was asked to recite the poem in a natural reciting speech, whispering and isolating each word, offering me an array of material, ready to be shaped in the studio.

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<sup>61</sup> Alentejo and Algarve.

## Form

The first pre-compositional structure was obtained by dividing six times seven minutes by the golden ratio. As with *Ad eternum*, a few adjustments to the timeline were made during the compositional process.

**TABLE 5.** *Diáspora* Form

Sections	1	2	3	4	5	6	7	8
Pre-compositional timeline	0:00	0:39	1:03	2:05	3:07	4:32		
	0:39	1:03	2:05	3:07	4:32	7:00		
Piece's final timeline	0:00	0:40	1:04	2:10	3:01	4:25	<b>6:10</b>	<b>7:10</b>
	0:40	1:04	2:10	3:01	4:25	6:10	<b>7:10</b>	<b>9:00</b>

The distribution of the text inside the timeline was not completely predetermined. The piece begins with fragmented words from the first stanza, where articulation between the voices could be compared to a polyphonic motet. Words are placed in different orders destroying any sense of logic or meaning. This helped to establish an enigmatic mood, as blurred whispers and half words are randomly placed throughout the channels. There is no specific scheme for their spatialization at this point. The idea was to have a dramatic introduction, a game of expectations, prompting listeners to search for meaning. This atmosphere is also intensified by percussive sounds: knuckles hitting a harp and dry hits in the back of the viola da terra open the piece demanding attention from the audience. This puzzling discourse develops itself for a while until the moment we hear for the first time a clear spoken voice saying “The forgotten Island” (0:40). Here the spoken voice marks the end of the first section, followed by a violent percussive sound and a scratched string.

After 0:40 the materials unveiled in section 1 are further elaborated and the first stanza is presented complete, still whispered, but spatially located at the front. Slowly we focus our attention towards the centre of the room. At 1:04, a spoken voice destroys this secretive environment to announce the third section, where spoken voices accumulate, unfolding the poem. Once again combinations of whispering and normal speech are explored, incorporating the fourth verse of the poem (2:10). Section 4 starts by introducing an event that will be highly elaborated in section 6 – the detuned chords from the viola da terra. The music returns to a more calm and secretive atmosphere in which whispers blend with wind sounds. The listener is slowly taken to a different soundscape in section 5 – seashore – where the sound of the viola da terra gradually emerges towards the first climax of the piece, through a loop (on the A string) that increases in intensity and synthesized chords. At around 4:25 we hear the beginning of section 6, defined by a shift of sonority to a dream-like atmosphere, carried by spoken voices and detuned chords from the viola da terra. This idea was based on the text, where voices emphasize the phrase “Que pelos caminhos do sonho”<sup>62</sup>. Further, percussive events progressively accumulate to build tension towards the second climax of the piece, which arrives at around 7:10, helped by repeated chords and an amalgamation of voices that push the discourse forward. The last part is a re-statement of previous sections: the reintroduction of the evocation of the seashore, synthesized chords from the viola da terra and wind sounds are blended with whispered voices that recite the last two verses of the poem. Around 8:32 a spoken voice declaims the last verse, though incomplete, to announce the end of the piece.

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<sup>62</sup> “That in the mist of dreams”. Translated by Lígia Malheiro.

## Approach to the materials

The exploration of different sonorities followed the same kind of approach developed in *Ad eternum*. Various experiments<sup>63</sup> were made on the recorded voices, in order to create several layers of similar sounds. These additional processes included scattered, sustained and time-stretched sounds that enabled a gradual evolution between them. The meaning of the text also suggested the generation and articulation of gestures/sonic events. Examples include additional sounds fabricated to convey a soundscape that could suggest an imaginary island<sup>64</sup> and scattered sounds, dispersed through the channels as suggested by the phrase “Espalha em volta o luar”<sup>65</sup>.

The integration of the viola da terra within the context of acousmatic music was one of the main challenges in this piece. Several transformational processes<sup>66</sup> took place as an attempt to detach the viola da terra from its folk environment and to place it in a new sound world. I used three main sound gestures: the initial chord from a traditional song called *Saudade*<sup>67</sup> (in D minor), a noise sound made by scratching the A string with the fingernails and a loop from a plucked A string sample. Other techniques include the transition and fusion with other sounds, for example around 2:00, where the time-stretched voice is crossfaded with the loop of the viola da terra at a point where both fundamental partials match. Isolated consonants were also explored to generate most of the material in the piece. The Portuguese language can vary from a very aggressive articulation of lips and tongue to

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<sup>63</sup> Time-stretch, crossfade and synthesising techniques.

<sup>64</sup> Sea and wind sounds that direct the listener to a possible association of an island shore.

<sup>65</sup> “And scattered around the moon”. Translated by Lígia Malheiro.

<sup>66</sup> Replication of processes developed in *Ad eternum*, including the use of Freeze tool from GRM to transform pitch and generate the detuned chords present in section 6.

<sup>67</sup> Translated longing/nostalgia.

a softer sonority (see Appendix 12, which contains a table linking such vocal sonorities to other aural phenomena).

## **Spatialization**

The spatialization reflected some of the actions and the atmosphere described in the text. To enhance the sensation of anxiety, intimacy and mystery, the whispering voices were placed mostly on the side and rear speakers and speaking voices were spatialized to be on the main front and wide loudspeakers for a more convincing sense of presence<sup>68</sup>. Tension and surprise are also conveyed by the unpredictable spatial locations of percussive sounds and the circular diffusion of the scratching sound. A significant moment is created around 3:50, when the synthesized chords of the viola da terra move from the front to the rear, creating the sensation of being immersed in a wave. Section 6 and 7 are rich in delivering different perceptions of space, as the viola da terra alternates between a distant and near image while voices are mainly near. Also, tension is enhanced by the circular motion of the percussion events round the full 8-channel space.

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<sup>68</sup> Wishart (1996).

### III - *(des)Integrasons*, for vocal quartet

*The act of transcription (like that of translation) may imply three different conditions: the identification of the composer with the original musical text, the turning of the text into a pretext for analytical experimentation and, finally, the overpowering of the text, its deconstruction and its philological “abuse”. I believe that an ideal situation occurs only when the three conditions come to blend and coexist. Only then may transcription become a truly creative, constructive act.*

Luciano Berio<sup>69</sup>

*(des)Integrasons* was written for a workshop given by the *Exaudi Vocal Ensemble* at the University of Birmingham in February of 2014. It is a further exploration of the deconstruction of the Portuguese accent of S. Miguel Island and the abstraction of traditional songs into a new context. The title itself is a play on words. The correct word in Portuguese would be *desintegrações*<sup>70</sup>. By replacing the last syllable “ções” by “sons” (meaning sounds) we will have the homophone correspondence to how the regional accent from S. Miguel would sound. This idea was borrowed from a great friend, composer Nuno Estrela, also from S. Miguel, who called one of his pieces *emosons* (*emoções* – translated to *emotions* mean *emosounds*). Thus, it implies a dual intent explored in the piece: the disintegrations of the original material and its integration into another context.

I wrote the quartet after composing *Diáspora*. On one hand, this was very difficult as I was used to having immediate aural feedback. On the other hand, coming back to paper composition turned out to be quite interesting as I began to see the clear impact of my time in the studio. The most direct impact of the studio on my work concerned my perception of time and the desire to work freely, without being bound to a specific time signature or pre-

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<sup>69</sup> Berio (1984).

<sup>70</sup> In English ‘disintegrations’.

existing schematic plans concerning rhythm. *(des)Integrasons* was composed quite intuitively and in a very short amount of time.

The text – or rather the *non-text*, as there is no attempt at having an understandable syntactical meaning – makes use mainly of vowels and consonants. Sounds used are part of interjections and the words *aquela*<sup>71</sup> (*the*) and *que* (*that*), extracted from *Aquela ilha Esquecida*<sup>72</sup>. Another development was the recreation of the pronunciation used in S. Miguel Island. To be recognizable by singers not familiar with Portuguese language I used the International Phonetic Alphabet<sup>73</sup>. A combination of Portuguese and French phonetic representations was necessary as the illustrations of the European Portuguese phonetic alphabet are based only on the Lisbon accent. This adoption of the French phonetic concerns mainly the phonetic “ø” (in French *eux*) and the vowel “ü” (in French *tu*), both significantly used in S. Miguel Island.

Besides the use of fragments of Natália’s poem, I also used three folk songs to create musical material: *Chamando a Moreia*<sup>74</sup> (*Calling the Moray Eel*); *Lembrança das Almas*<sup>75</sup> and *Fofa*<sup>76</sup>. Each of the sources provided me with separate elements: speech interjections, melodic direction and harmonic content, respectively.

The piece starts with a group of interjections based on the track *Chamando a Moreia*. The intention was gradually to transform from a sound world based on speech to

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<sup>71</sup> Phonetically written in the score: e-ke-lø

<sup>72</sup> Based on the same poem as *Diáspora*.

<sup>73</sup> IPA (1999)

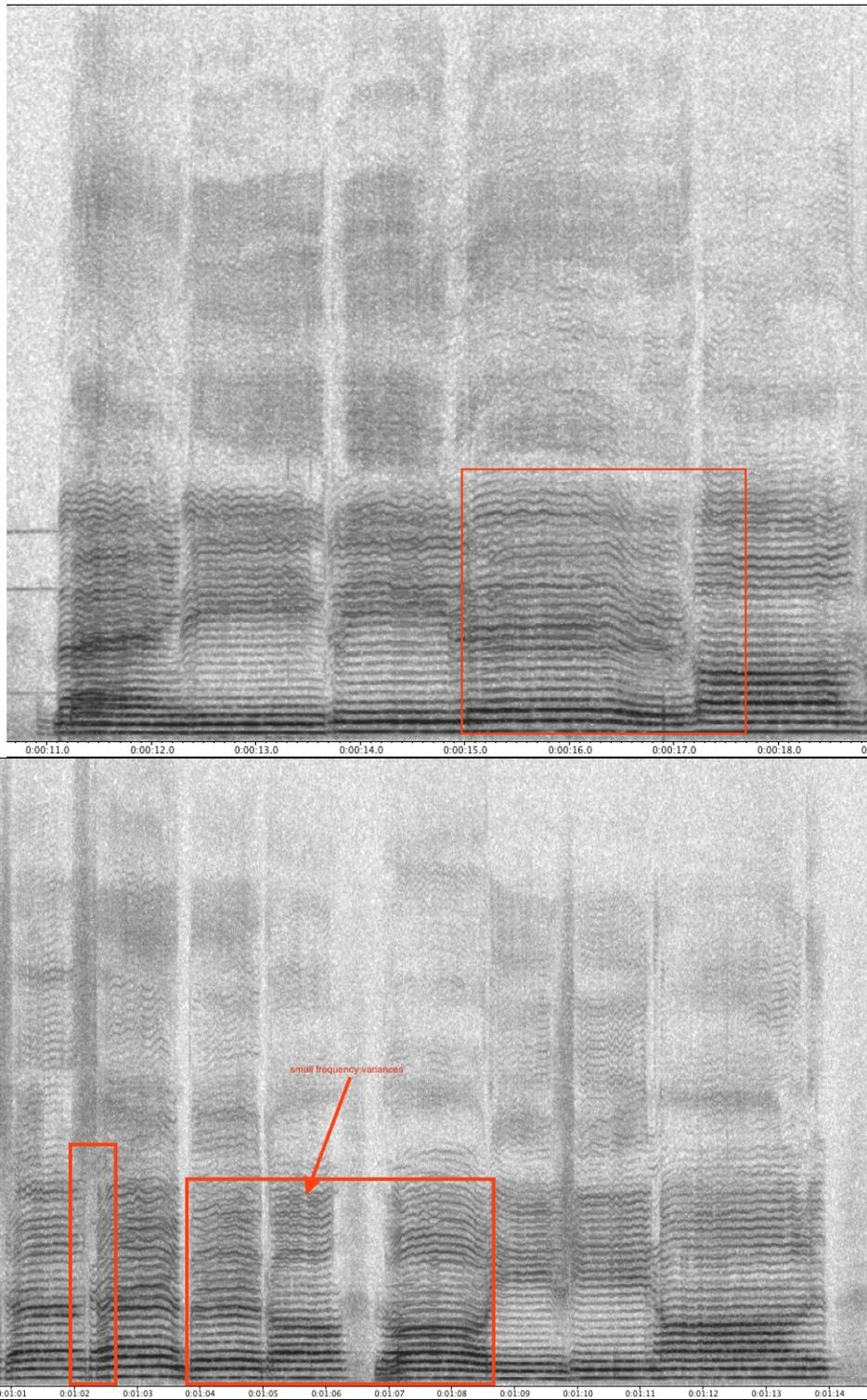
<sup>74</sup> Sound Anthology – CD 2, track 22.

<sup>75</sup> The same chant used in *Ad eternum*.

<sup>76</sup> Sound Anthology – CD 4, track 24. I used the two initial chords played by the viola da terra.

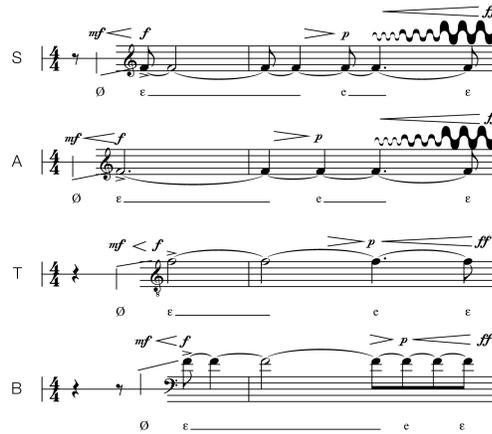
one based on pitched sound. Further, when hearing the recording of *Lembrança das Almas* in the Sound Anthology, one can hear the small differences between the singers: one voice trembles more than the other (frequency modulation), breaths are dislocated and, at certain moments, words are not rhythmically precise. Moreover, the melodic direction is mainly stepwise.

Other features present in the recording include: heavy articulation at the end of the melodic phrase; pitch variances; rhythmic uncertainty; forced tone and glissandi (Fig. 13). It could be claimed that the fact that these singers had no vocal education or knowledge of vocal placement, the production of sound directly from the throat, gives the sensation of a heavy and raw sound. For the sensitive ear this creates a physical sensation of tension. As mentioned before in relation to *Ad eternum*, this is a song of grief; the sensation of heaviness may be implicit in its ritualistic context. This element is explored in, for example, measures 16-22, where all the voices are singing a middle F. For the alto this note can be quite comfortable but for the soprano, tenor and baritone it may be a struggle.



**Figure 13.** *Lembrança das Almas* spectrogram, where we can see the glissando in the end of the phrase (image above) and the slight frequency changes between the voices creating a sort of beating (image below).

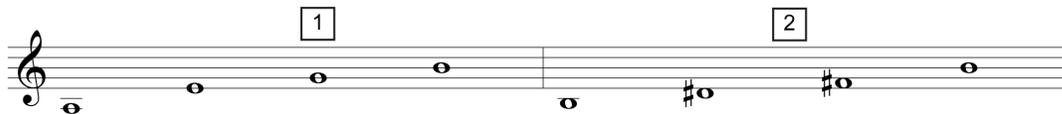
Besides the exploration of *glissandi*, several passages in the piece feature individual trembling (frequency modulation), notated as wavy lines above the notes:



**Figure 14.** *(des)Integrasons*, measures 18-19.

This exploration of nuance in timbral colour is also a stimulus for motion, forcing the musical discourse forward.

Most of the harmonic structure is simply the result of the superimposition of the various melodic lines until around measure 38, where I realized that some sort of harmonic support was necessary to facilitate voice leading, enabling a sense of closure or cadence in contrast to the previous complex and dense discourse. Two main chords are used, extracted from the beginning of the folk tune *Fofa*, that is played in a viola da terra:



**Figure 15.** Example of the two principal chords used in the piece, extracted from the folk tune *Fofa*.

The texture is gradually decaying after measure 44 – in stepwise manner – until it reaches chord 1 in measure 50. Variation was achieved through ornamentation of neighbour notes and *glissandi*, resulting in a crossfade between the two chords causing an ambiguous harmony.

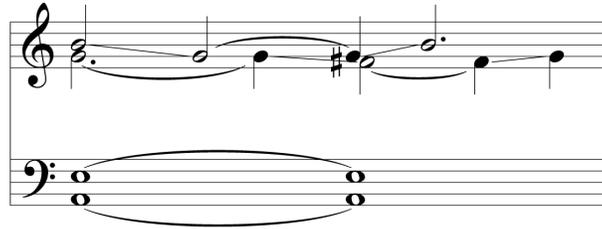


Figure 16. Variation around chord 1.

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S *p* *mf* *p* *fp* *sf* *p* *mf*  
 m e i e a m e i e e i m

A *pp* *p* *fp* *mp* *pp* *ppp*  
 m e i e a m e m

T *p* *mf* *p* *fp* *mp* *ppp*  
 m e a m e m

B *p* *mf* *p* *mp* *fp* *ppp*  
 m e i e m e a m e m

Figure 17. Variation around chords 1 and 2.

Because I particularly like the entanglement between the voices, the musical discourse continues with this kind of counterpoint (from measure 59) around D# and F but reduced to two voices, bringing some changes in both density and timbre. The harmony opens out at measure 68 where all the voices come together in a homophonic gesture. This idea of entanglement between the soprano and alto is again explored in measure 78, where all the voices gradually increase towards the climax in measure 83. After the workshop, I felt it necessary to extend measure 86 by adding 4 seconds. Therefore the final score does not match the recording. After the climax, the music returns to the initial sound world of combination between pitched and speech based sounds that evolve to white noise, fading towards the end of the piece.

I wrote this piece quite intuitively, without regard to any preoccupations about structural balance. The overall form respects the isolation of elements and their individual exploration in a relationship similar to what happens in medieval counterpoint. This similarity exists in the use of heterophony and horizontal thought, but does not extend to the use of any kind of isorhythmic techniques.

The final form can be perceived as follows:

**TABLE 6.** *(des)Integrasons* form.

<b>Sections</b>	<b>A</b>			<b>B</b>		<b>A'</b>
Measures	1-51			52-88		89-100
<b>Micro form</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	
	1-14	15-29	30-51	52-77	78-88	

## Ensaio Sobre Cantos – Summary

Three distinct works were presented here with their basis on shared materials from popular songs. The 8-channel piece *Ad eternum* takes three ceremonial songs from the *Sound Anthology*, as the main basis for the creation of a large dramatic work. Its exploration shows an effort to deconstruct and re-integrate these sources into an alternative context of acousmatic music. Two distinctive sounds – bells and voices – were the focus of multiple transformations, resulting in a combination of electronic and concrete sounds that were brought together as a way of linking these two elements.

*Diáspora* was my first attempt at using the viola da terra in an electroacoustic context. This was important because it had a major impact for the development of future works like *Estudos Sonoros* and *Sketches*. Also, an effort was made to detach the instrument from its popular context and its common idiomatic mannerisms, turning it into something different. In *Diáspora*, the viola da terra sound was developed with different processing procedures and its integration into the electronic medium proved to be effective through the notion of *normalizing* events. I believe coherence was achieved through linking timbres with distinct sound natures, through the repetition of elements throughout the discourse and through recapitulation in form.

In the end, I was satisfied with the outcome of *(des)Integrasons* as I felt that I was reaching a sonority that came from the intrinsic elements of my main sources, including voice leading, types of articulation and the recreation of the sources' timbre. These features will be a constant development in further works.

## 5. *Cinq étapes sur une ligne I, for ensemble*

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Inspired by Azorean lace, this work was written for a workshop by the *Hermes Ensemble* at the University of Birmingham in May of 2014. For some time I had been interested in the idea of using lace-making as an inspiration for composition. Independently of their various purposes, the shapes of these artefacts are remarkable and visually fascinating. The extraordinary sense for detail and textural complexity, are qualities that have always fascinated me in art – not because complex is synonymous with superiority or merely to follow a current fashion, but because I believe it enables the viewer/listener to experience several interpretations/perspectives of the work, which enriches itself every time it is reproduced/perceived. It enables constant (re)discovery.

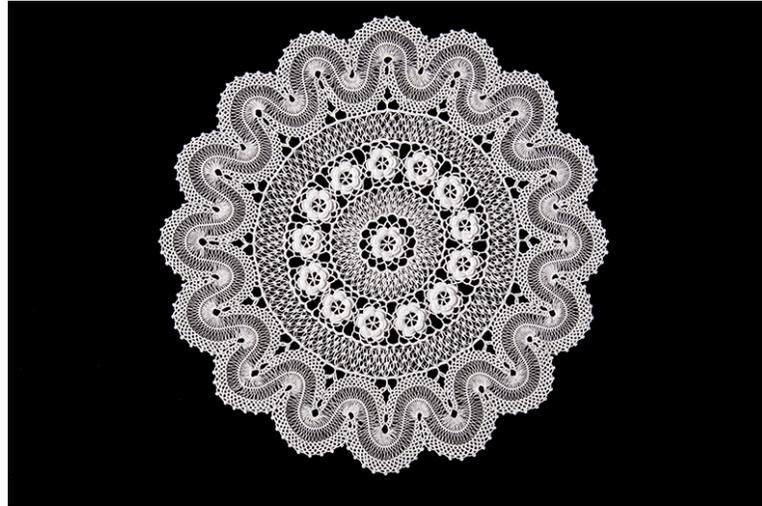
The craft of lace-making is very popular in the Azores Islands, with the most common using bobbins or needles:



**Figure 18.** Bobbin lace, most common on Faial island



**Figure 19.** Needle lace, most common on S.Miguel island



**Figure 20.** Lace by Filomena Cardoso, S. Miguel Island<sup>77</sup>.

## Representing ideas in sound

*“Music and the designs or a repeated pattern in a rug have much in common. Even if it be asymmetrical in its placement, the proportion of one component to another is hardly ever substantially out of scale in the context of the whole.”<sup>78</sup>*

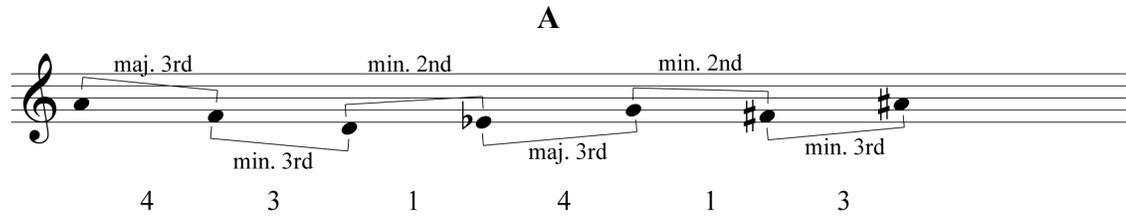
Morton Feldman who explored the visual elements of textile in music, was interested in “what is symmetrical and what is not.” His thinking about “a disproportionate symmetry, in which a symmetrically staggered rhythmic series is used... as the point of departure” resonated with me and led me to create this work. I was interested in the process of lace-making, of how threads are intertwined in order to build different patterns and give a sense of form. Also, I was absorbed by the sense of delicacy that these works portray, even though they build various degrees of textural density.

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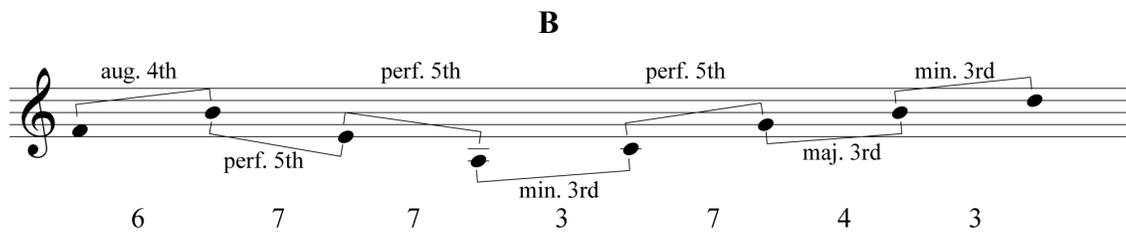
<sup>77</sup> Centro Regional de Apoio ao Artesanato (Regional Centre of Craft Support), <http://www.artesanato.azores.gov.pt/artesaos.php?lingua=1&familia=2&subfamilia=>, accessed in April 2014, translated by Ângela da Ponte.

<sup>78</sup> Feldman (1981).

I started by creating two different series as kernels for material generation:



**Figure 21.** Melodic idea A. The numbers below each interval indicate the semitones.



**Figure 22.** Melodic idea B.

In order to generate further material I took the number of semitones present in both series to create form and rhythm. I decided to use the Fibonacci series to organize the macro form to help me create a sense of expansion. By summing each of the semitone numbers of both melodic ideas, I obtained the following result:

**Table 7.** The Fibonacci series and the creation of measures.

<b>A)</b> $4 + 3 + 1 + 4 + 1 + 3 = 16$	<b>B)</b> $6 + 7 + 7 + 3 + 7 + 4 + 3 = 37$
A = 16	B = 37

Further process for the entire piece:  $16 + 37 = 53$ ;  $37 + 53 = 90$ ;  $52 + 90 = 142$

This predetermined scheme was the initial guideline, but during the compositional process several adjustments were made, not entirely following the scheme. Below is the final form:

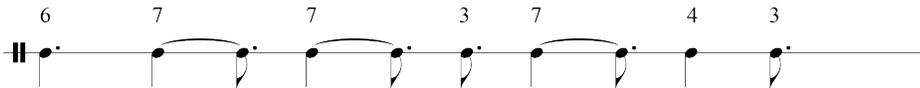
**TABLE 8.** *Cinq étapes sur une ligne I* Macro form.

Section	A	B	A'		C	B'	A''
Measure	1 – 15	16 – 29	30 – 57	58 – 70	71 – 85	86 – 101	102 – 142

I generated rhythmic cells by using the same sequence of semitones from melodic ideas A and B and decided that the shortest value – 1 – represents the semiquaver:



**Figure 23.** Rhythm A.



**Figure 24.** Rhythm B.

To represent the idea of intertwining and the various degrees of textural density, I created several rhythmic sequences based on the previously generated rhythm A. These sequences were created with different objects in PWGL<sup>79</sup>. Throughout sections A and B, I explored various levels of superimposition by using one sequence (firstly applied in the clarinet) and cutting fragments, rearranging it and using processes of imitation. In contrast with these sections, a more vertical and delicate texture is conceived in section C, based on

<sup>79</sup> Detailed procedures can be consulted in Appendix 14.

rhythm B (Fig. 24).

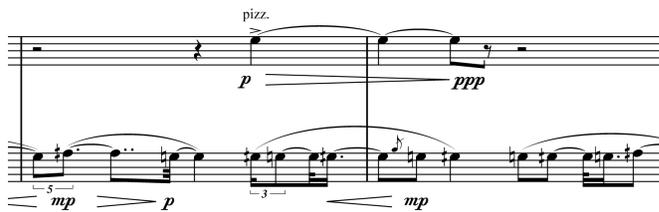


**Figure 25.** Clarinet rhythmic material generated in PWGL and used throughout section A.

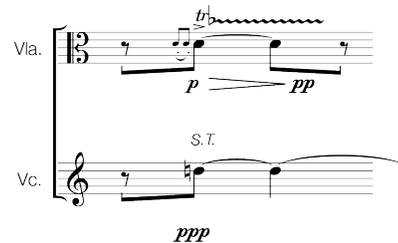


**Figure 26.** Example of superimposition through imitation and variation made by the flute.

Timbre ornamentation is also seen as a motif exploration. For example, the flute always accompanies the melodic line carried by the clarinet to enrich it. This is a recurrent procedure through the piece and also explored by the viola:



**Figure 27.** The flute ‘colouring’ the clarinet, measure 6-7.



**Figure 28.** The viola ‘colouring’ the cello, measure 43.

In section B, freshness is achieved through a change in orchestration, conveyed by the piano and percussion, whose rhythmic sequence is based on rhythm B (Fig. 24). The string material section was written afterwards, on top of them. These new gestures on the strings, give an improvised feel and will be further explored in section B'. Section A' recapitulates some of these gestures presented in A, while adding progressively new rhythmic cells (in the piano) that helps to support this entire section. These cells, extracted from the clarinet rhythmic material (Fig. 25), were rearranged to create a false sensation of patterning. Feldman speaks about this effect as “an attempt to formalize a disoriented memory”<sup>80</sup>. Rhythmic cells are repeated in a non-systematic way to create the illusion that the music is going somewhere. The same idea is continued from measure 58, this time carried by the percussion.

Section C takes again rhythm B as main idea, and a homophonic, but light, texture is created in contrast to other sections. Whereas the pitch material of the previous sections was partly based on intervals from melodic idea A, here I replicate some of the procedures explored in *La Mer Soulevée*, using the object ‘frequency modulation’ object in PWGL, to generate other harmonic sequences based on intervals from melodic idea B. Quartertones were allowed in this operation to create the melodic line on the flute<sup>81</sup>.

The final section A'' summarizes the musical ideas developed through the piece – the reintroduction of heterophony – and comprises the main motif carried by the clarinet, the string gestures elaborated in section B and the irregular rhythmic patterns conveyed by

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<sup>80</sup> Feldman (1981).

<sup>81</sup> The harmonic construction can be consulted in Appendix 15.

the piano and percussion. Towards the end, I tried to slowly to reduce the overall gestural activity, so one could have the sensation of decay.

## **6. *Ao Desconcerto do Mundo*, for narrator, ensemble and electronics (stereo)**

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The Sond'Ar-te Electric Ensemble (Lisbon) commissioned this piece for a project aimed at young audiences (around 10 to 13 years old). The aim was to use poems by famous Portuguese writers in the context of contemporary music with electronics. The Ensemble is dedicated to the promotion of new music using the electronic medium as an intrinsic element of the ensemble. The poem given to me was entitled *Ao Desconcerto do Mundo*<sup>82</sup> by renaissance poet Luíz Vaz de Camões<sup>83</sup>.

This poem, at its core, is a very complex one. It deals with irony and moral values, concepts that had to be deconstructed and explained to the children before the concert. Because of its complexity of meaning, my compositional ideas focused more on the repetition and fragmentation of specific words to portray the atmosphere, as well as being the basis of sonic exploration. The text's deconstruction helped me to build timbre connections between the narrator, the ensemble and the electronic part.

The principal idea was to have a direct connection between the electronic part and the ensemble. Many gestures that are performed by the musicians are either in a direct dialogue with the fixed part or presented in a transformed version. The same principle is applied to the voice where a selection of words or elongations of its consonants are isolated in order to be orchestrated by the ensemble (for example Fig. 29). The vocal material was

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<sup>82</sup> Translated as "On the disharmony of the world".

<sup>83</sup> Full poem and its translation can be consulted in the appendix 16.

shaped with recordings of myself reciting the poem in a whispered tone. The electronic part uses instrumental pre-recorded samples:

- a) woodwinds: aeolian sounds, jet-whistle (flute);
- b) strings: scratching tone, jeté, sustained sounds bowing the tailpiece and the bridge, col legno battuto;
- c) piano: harmonics and nail scratch along the strings;
- d) voice: words or consonants that suggested motion (trill, e.g. “r”), sharp articulation (plosives, e.g. “p”) and sounds related to aeolian sounds (fricative, e.g. “s”).

The image shows a musical score for Measure 31, marked with a circled '2'. The score includes staves for Violin (Vin.), Flute (Fl.), Bass Clarinet (B. Cl.), Violoncello (Vc.), and Narrator (Narr.).

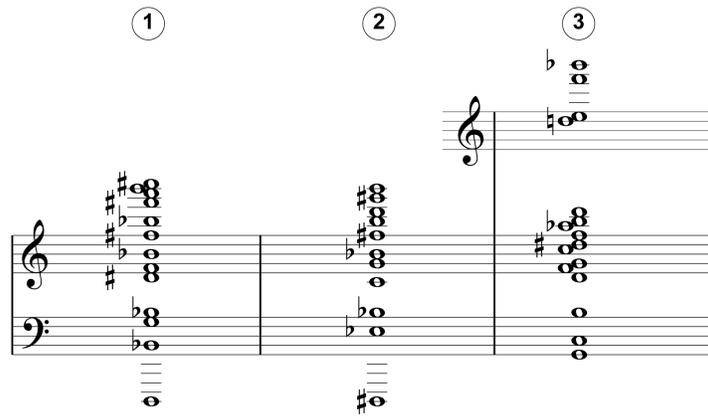
- Vin.:** Features a melodic line with dynamics *p*, *mf*, and *pp*. Above the staff, there are markings 'S.P.' and 'S.T.' with arrows indicating a transition.
- Fl.:** Remains mostly silent, with a single note circled in red in the final measure, marked *pp*. A red arrow points from this note to the narrator's text.
- B. Cl.:** Features a rhythmic pattern in the final two measures, marked *p* and *pp*.
- Vc.:** Features a single note in the final measure, marked *p* and labeled 'ord.'.
- Narr.:** Contains the text: 'bons - sss\* - - - - - vi sem - pre pas - sar gr(tr)ja - - - - - vessss\*'. The final 'sss\*' is circled in red, with a red arrow pointing to the circled note in the flute staff.

**Figure 29.** Measure 31, is an example of timbre relationship between the voice and the flute.

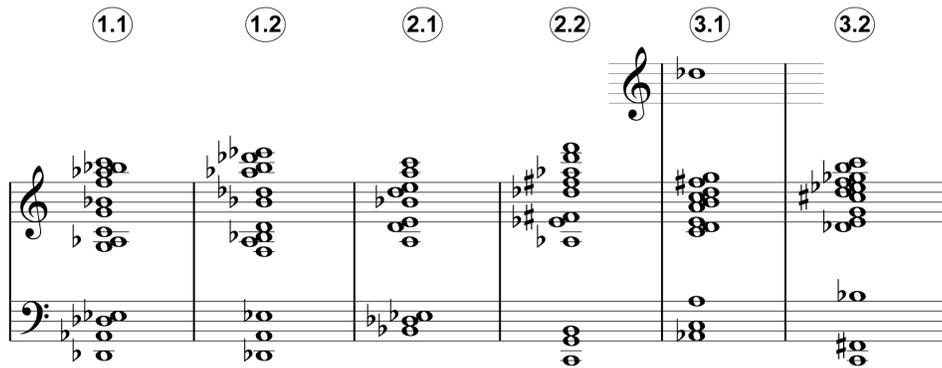
The image shows a musical score for five parts: Violin (Vln.), Flute (Fl.), Bass Clarinet (Bv. Cl.), Violoncello (Vc.), and Narrator (Narr.). The score is divided into four measures. The Violin part starts with a dynamic of *mp* and has a performance instruction 'S.T.' with an arrow pointing to the right, followed by 'ord.' and a key signature change to *b<sub>b</sub>*. The Flute part has dynamics *f*, *pp*, *p*, *f*, *pp*, *f*, *p*, and *ff*. The Bass Clarinet part has dynamics *pp*, *f*, *pp*, *p*, and *pp*. The Violoncello part has dynamics *mp* and *pp*, with performance instructions 'S.T.' and 'ord.' and a key signature change to *b<sub>b</sub>*. The Narrator part has a dynamic of *p* and the instruction 'spoken naturally'. The lyrics 'gra ves - assa' are written under the first two notes of the Narrator part, and 'Os bons vi sempre passar graves tormentos;' are written under the last two notes. A red circle highlights the notes 'gra ves - assa' in the Narrator part, and another red circle highlights a similar phrase in the Bass Clarinet part, with a red arrow pointing from the Narrator part to the Bass Clarinet part.

**Figure 30.** Measure 32, further connection with the clarinet.

The compositional approach for material generation and treatment used many of the technical developments learned from previous pieces, such as *Diáspora* and *Cinq étapes sur une ligne I*. These include spectral analysis and other spectral techniques for transformational processes of my sources, the production of several layers of rhythm and superimposition of gestures. I started by composing the electronics adding the instrumental part afterwards.



**Figure 31.** Example of the harmonic material obtained through a spectral analysis, forming the basis for the entire piece. Chords 1 and 2 were obtained from the first 8 seconds of the electronic part and the third chord was obtained from an analysis of a piano harmonic also used in the electronic part. The partials were extracted according to their amplitude, and then converted the frequencies of the strongest partials to MIDI notes.



**Figure 32.** Example of new harmonic material based on chords 1, 2 and 3, using the ‘frequency distortion’ object.

Other rhythmic gestures present in the piece were also based on degrees of imitation of the fixed part. For example, the scratching sound on the violin (measure 9-10), *col legno* battuto from measure 55 on the strings and the jet-whistle sounds on the flute from measure 59. The complete form is as follows:

**TABLE 9.** *Ao Desconcerto do Mundo* form.

Macro level	A				B			C
Measures	1-78				79-137			138-160
Micro level	1	2	3	4	1	2	3	
	1-21	22-31	33-54	55-78	79-94	95-112	113-137	

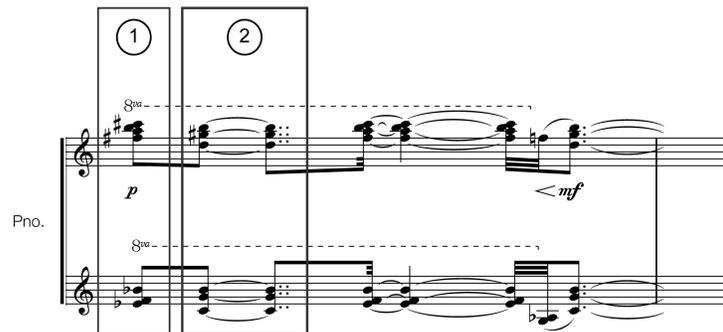
Section **A** uses the text of the first verse, in its original order or mixed, and is regarded as an exposition of musical elements and their relation to the statement of the poem. Section **B** explores the three first sentences of the second stanza in a more contemplative ambience, developing the idea of questioning goodness, and disdain of it, as a quest for truth. Finally section **C** concludes the work with the final two sentences. Here, the idea was to emphasize the ironic position of the subject, presenting musical material that is completely new and bizarre in comparison with what is heard previously.

The main materials developed at the beginning include the scratching tones in the string section, scraping the strings of the piano and harmonics. My intention was to confront the listener with a raw and tense sound, associated with the word “tormentos” (“adversity”). Therefore, the musical discourse, and even the further processed material, offers irregularity and insecurity in its development<sup>84</sup>. Complete sentences are repeated and alternated with fragmented versions. Variation comes in the form of accentuation of certain syllables and processing through time stretching and reverberation. The piano harmonics section as well as the electronics, functions similar to a medieval *talea* technique. It is seen as an element of unity throughout the piece, as other sections emerge.

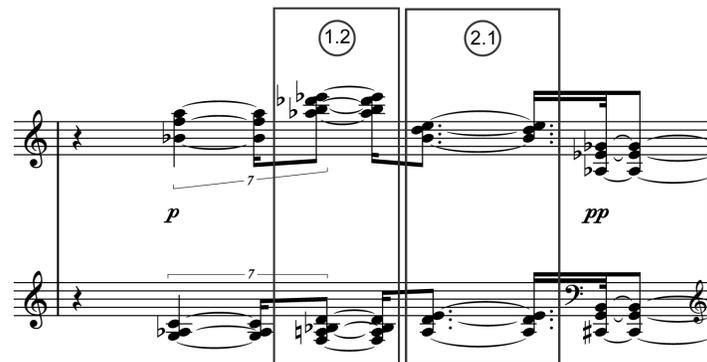
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<sup>84</sup> For example, the irregular granular effect in the violoncello at 0:30. The uneven temporal behaviour of the piano harmonics also contributes to this instability.

In measures 33-54 a more calming micro section is presented. Long aeolian, multiphonics and string noise sounds are layered. Here I felt the necessity of stabilizing the musical argument, contrasting with the preceding unstable tension. A new idea enters with the homophonic piano chords, which alternate between chords 1, 2 (Fig. 31) and the frequency distortion versions (Fig. 32).



**Figure 33.** Example of the two main chords distributed on the piano, measure 41.



**Figure 34.** Example of further harmonic development, measure 54.

From measure 55 the music gradually becomes more agitated with events distributed in a contrapuntal manner. Tongue-ram, jet-whistle, jeté, col legno battuto – articulations that are agile and may imply imprecision – help to re-establish the idea of instability, gradually

growing in density to conclude section **A**. The flute part was generated using the same technique of ‘frequency distortion’ based on chords 1 and 2.

Section **B** begins with a rupture: silence. A more calm and more sparse texture returns, developing elements from measures 33-54 for around two minutes. The narrator’s part is also less active, intended to invite the audience to reflect on the words “When I tried to question”. The same layering method was used here and repetition reinforces the idea of stability. From measure 108, frantic lines similar in nature to those around measure 55 are gradually introduced. The strings and woodwinds are very active, alternating between tone and percussive elements such as tambura and Bartók pizzicato (strings), slap and tongue-ram (woodwinds). The content of these parts disregards the harmonic content present in the fixed part (a synthesized version of the third chord of Fig. 31) and in the flute (which continues with frequency distortion material from chord 1). I generated individual random lines for the violin, bass-clarinet and cello in an attempt to represent chaos. The piano part is morphologically different from the counterpoint provided by the rest of the ensemble. Besides keeping the irregular harmonics ostinato, its function is simply to create noise (by stroking the strings inside the piano), helping the increase of amplitude towards the end of section **B**. The section concludes by making a small recapitulation of the first measure of the piece.

As mentioned above, the last section presents a complete shift in sonic material. The electronic part was created through the granular synthesis of a white noise sound, using the *munger~* object in Max/MSP. The resulting sound is a cloud of clicks that form the basis of

this last section. On top of it, the instruments will imitate, as closely as possible, this kind of sonority as follows:

- a) woodwind section: random and soft articulation by clicking the keys;
- b) string section: pressing the strings of the bow against the wood part of the instrument and releasing it slowly.

Some recognizable gestures are introduced: aeolian sounds and multiphonics emerge from the voice and the piano carries variation of the harmonics.

## 7. *Homenagem Subconsciente, acousmatic (stereo)*

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This was definitely one of the most gratifying and enjoyable pieces to compose. I consider this one to be the most mature electroacoustic pieces in this portfolio. The concept behind this work is the one of framing stories (comparable to the 1000 Arabian nights story), where a central story hosts other different stories<sup>85</sup>. Also, *Homenagem Subconsciente*<sup>86</sup> makes a tribute to Bernard Parmegiani who I realized became an influence in this work, after playing his piece *Dedans-Dehors* (1977) in a miniBEAST lunchtime concert dedicated to him. *Homenagem Subconsciente*, was premiered at O’Culto da Ajuda (Lisbon, Portugal) in March 2015 and was also performed in the Elgar Music Hall during the BEAST FEaST 2015 festival.

The sound material used in this piece includes several recordings of different places<sup>87</sup> mixed with instrumental samples (a brassy tuba on C#), electronic sounds and the use of a folk song called *A mulatina*<sup>88</sup> from the Sound Anthology. I did not use any pre-determined schematic plan: instead, the intrinsic and extrinsic properties of the sources were explored to build a narrative that could suggest constant expectation. Small ‘stories’ alternate with the main ‘story’ (the festivity) in which I tried to disrupt any sense of musical phrase development through fragmentation and by not entirely revealing them. This way, a kind of suspension is created, intended to hold the listener’s attention through wanting to

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<sup>85</sup> Abbot (2008).

<sup>86</sup> In English *Subconscious Homage*.

<sup>87</sup> A recording of an anual festivity held in Vila Franca do Campo, in S. Miguel; a recording of the canals area in Birmingham and a recording of my mother cooking.

<sup>88</sup> Sound Anthology – Vol. 4, track 29.

know more about these musical events. Different memory links are explored here too. I repeated, rearranged and transformed the sources throughout the different sections, in order to build coherence between the different ‘scenes’<sup>89</sup>.

## **Analysis**

The piece starts with a marching band from the festivity recordings. This introduction establishes the main story to which the other will be related. The scene is distant and gradually moves forward towards the listener (0:00-0:36), until a sudden violent bass-drum strike disrupts the previous space to introduce another one – a surreal one, perhaps happening only in our mind, while we can still listen to the festivity soundscape in the background, distorted. From 0:36 to 2:24 an irregular processed bass-drum pattern accompanies this soundscape, structuring this section, while sustained synthesized sounds are gradually introduced, helping to shape this idea of surreality. Further, fragmented sounds progress to a breath-like sound moving from the right to the left speaker pushing the discourse forward (1:45). The strike from the bass-drum and the wind-like sounds will be used throughout the piece as triggers to enable the transition to another ‘story’<sup>90</sup>.

At 2:24 we shift to another ‘scene’: sounds of cutlery on a pan suggests that we are inside a kitchen. Wind and synthesized sounds make the connection with the previous ‘scene’, until a crescendo triggers the third section. Here, two different spaces co-exists<sup>91</sup> creating a new soundscape. The gradual use of a high-pass filter on the canals area

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<sup>89</sup> For example, the tuba sample, around 3:22 is superimposed on the soundscape where, within the context, it evokes an association of a boat horn, whilst from 4:45 is the central focus for timbre exploration that suggest a connection with the marching band source.

<sup>90</sup> For example at 2:54.

<sup>91</sup> The festivity recording and the canals area recording.

(Birmingham) suggested the generation of a high granular sound, and that consequently suggested the integration of the kitchen space that contained the water sound. The tuba sound is slowly introduced, each time getting louder, escalating into the next section of the piece (4:07).

The festivity ‘scene’ appears again, along with electronic sounds that progressively intensify, enabling the transition to the marching band ‘scene’, evoking a distant memory of the beginning of the piece. From here, the tuba timbre is further developed, through a series of filterings, accompanied by a fast rhythmic low synth ostinato that helps to build tension. In addition to this, breath-like and granular sounds are spatialized in multiple directions to help to push the music forward. At 5:23 the tuba sound is now transformed into a sustained sound, in which various fragmentations of the marching band ‘scene’ are superimposed. Both sounds are processed with a ring modulator, evoking a parallel space where someone could be tuning a radio.

The sustained sound evolves into a crescendo, reaching the climax at 6:27 – a fireworks ‘scene’. Most of the ‘stories’ throughout the piece are processed. Here, I intended to not apply any sound manipulation so it could have a major impact. Towards the end, a new ‘scene’ (*A mulatina* tune) is juxtaposed with the fireworks one, with the latter gradually fading out, leaving the folk tune to conclude the piece.

## 8. The viola da terra

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### Introduction

Besides my interest in using folk songs or other elements related to culture from the Azores for the creation of new music, my attention gradually turned to the viola da terra. This fascination flourished when hearing the recordings of the *Sound Anthology of the Azores*, where this instrument can be perceived in many of the tracks. I immediately asked myself: why has this instrument been neglected for a long time, left out of the normal catalogue of classical instruments and considered, at best, a minor one? As a composer, why did I never consider using this instrument before?

Around twelve years ago I was invited to a concert where a local folk group was celebrating ten years of existence. There, I heard for the first time the viola da terra as the focus of instrumental music. The famous player, Miguel de Braga Pimentel, presented instrumental popular repertoire in such virtuosity that my perception of the instrument altered completely. During the concert he talked about the repertoire dedicated to the viola da terra and discussed it openly with the public. At some point he said: “I would like this instrument to be as important as a piano or a violin, and perhaps, one day, why not write a concerto for it?” Perhaps this thought has been with me all these years...

But it was not until when I met Rafael Carvalho, that I started seriously considering writing for it. Rafael is a performer and promoter of this instrument and he has been teaching it at the Conservatoire of Ponta Delgada since 2007. Along with his colleague Ricardo Melo, Mr. Carvalho has been encouraging the playing of this instrument – and, in

fact, the number of players is increasing. Besides the local residents, each year more people have been coming to the Islands wanting to know more about this peculiar instrument. This is an exciting time to develop new music for the viola da terra and to demonstrate its viability in contemporary art music.

## **Context**

The viola da terra has always been attached to its origins: folk music. Its main function is to accompany voice, and to start and drive popular dances<sup>92</sup>. Like all folk/traditional songs, the entire repertoire is naturally acknowledged, and played, through means of oral transmission and imitation. Musicologists and musicians have been aware of the deficiency of written documentation and started to make recordings and write scores of our musical heritage. But it is only recently that any ‘methods’ concerning the practice of the viola da terra have appeared<sup>93</sup>. Such methods include exercises of scales and chords, traditional songs, transcriptions of classical guitar pieces from other composers (for example Aguado and Sor-Coste<sup>94</sup>). The original tunes that appear in these books are composed by the authors themselves, and are mostly in a folk style; others are arrangements of bossa nova songs. These books are indeed of benefit in supporting musical education in respect of this instrument, both in our own culture and abroad, but they contain no coverage or exploration of contemporary practice. This is understandable: as these methods have their basis in the authors’ personal experiences which evidently come from a traditional training; these publications reflect that experience and practice.

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<sup>92</sup> Morais (2010).

<sup>93</sup> Melo (2005) and R. Carvalho (2013).

<sup>94</sup> Melo (2012).

The project *Transmutações para a viola da terra*<sup>95</sup>, performed in 2010, was perhaps the first public experiment combining popular songs played on the viola da terra with electronics. Composers Miguel Carvalhais, Pedro Tudela and Vítor Joaquim worked in close collaboration with Rafael Carvalho at instances where “human practices (traditional festivities, chants, regional expressions, etc) were crossed with soundscape adding a new layer of sounds to the one of the viola da terra to achieve new sonorities”<sup>96</sup>. However, after this experiment there is no record of further attempts to explore the instrument in any kind of unusual musical context. Therefore, I believe my work adds a new insight into its practice, allowing performers and composers to experience the different ways in which to approach this instrument. The following works try to explore different sonorities with different mediums, in order to understand its behaviour and its possible integration in other contexts. Given the lack of available players, I took up the challenge myself and acquired a viola da terra and learned it in order to be able to demonstrate the results of my compositional efforts.

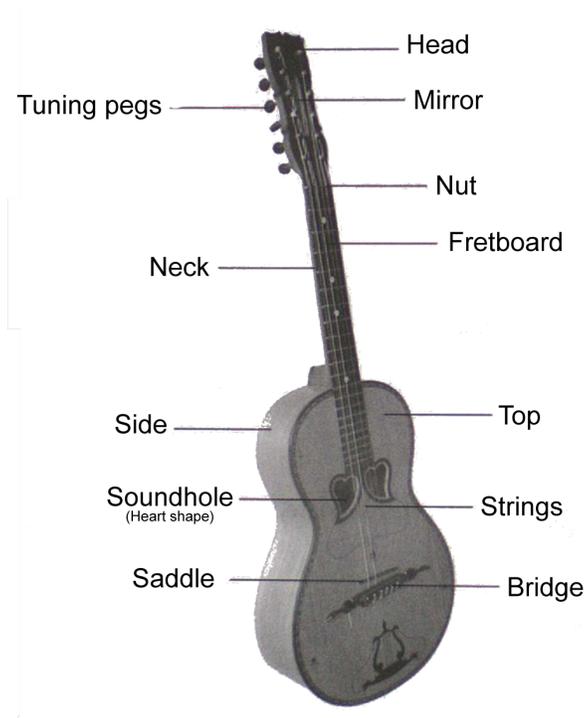
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<sup>95</sup> Translated as: Transmutations for the viola da terra.

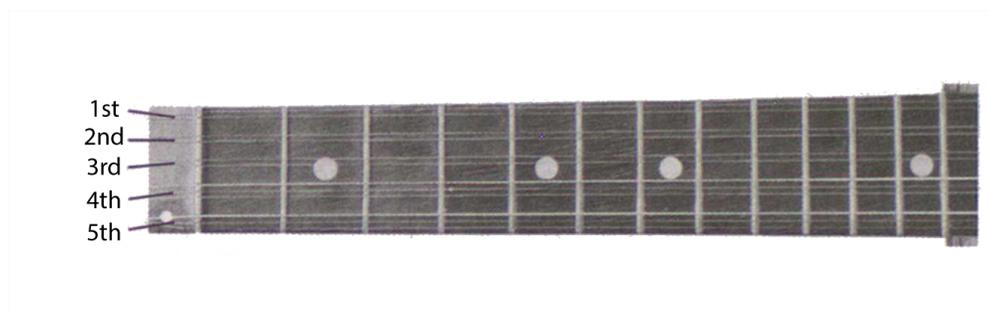
<sup>96</sup> Nascimento (2012).

## The instrument

The following images<sup>97</sup> provide information about the viola da terra, its tuning and main techniques:

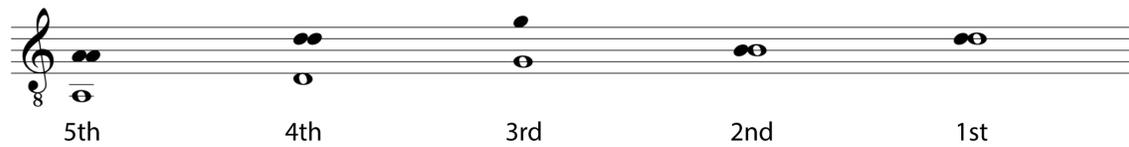


**Figure 35.** Standard twelve-string viola da terra ordered in five courses.



**Figure 36.** Fretboard showing the five courses string order: two courses of triple strings (4<sup>th</sup> and 5<sup>th</sup>) and three courses of doubled strings (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup>).

<sup>97</sup> Figures 35 and 36 are extracted from Melo (2012); Translated by Ângela da Ponte.



**Figure 37.** Tuning of the strings.

Figure 35 shows a standard viola da terra. There are other violas that may have a different body width and sound hole configuration, depending on the constructor and island. The main reason for this is that “this instrument is considered a craft object subject to its constructor’s personal touch”<sup>98</sup>. It has twenty-one frets and players perform mostly up to the 12<sup>th</sup> fret as the most comfortable zone. The low strings A and D are made of nylon and are coated with wire or copper. The remaining strings are made of steel. Consequently, the sound quality is naturally influenced by the strings’ material, but also its amplitude is increased through the addition of double strings that are tuned in octaves and unison (Fig. 37). The instrument radiates a very interesting resonance and a greater depth of sound than might be expected from such a relatively small body<sup>99</sup>.

Historically, the main technique of the viola da terra involves the use of the right-hand thumbnail to pluck the strings between the bridge and the sound hole. The use of other finger is very rare in traditional practice. The use of the index finger (adopted from Portuguese guitar technique) is largely played in the archipelago’s central group, as is using the rest of the right-hand fingers to play in a *rasgueado* technique. The tuning indicated in *Figure 37* represents the São Miguel Island tuning, which is the one used in this portfolio.

<sup>98</sup> Almeida (2010). Translated by Ângela da Ponte.

<sup>99</sup> 96 cm of length; 30,5 cm bottom width; 23 cm upper width. This is the current model that the constructor Raimundo Leonardest is making as his standard viola da terra and the one I acquired.

## 9. *Estudos Sonoros – I Matéria Prima (stereo)*

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### Introduction

The two *Sonic Studies* presented here aim to explore different sounds that are not idiomatic of this instrument within the folk tradition. A first volume titled *Matéria Prima (Prime Material)* was intended firstly, to develop new ways of approaching the instrument through the implementation of sounds that are explored and played in zones that are not the most common ones, seen as new technical resources – extended techniques – of sound production; secondly, to contribute to new repertoire dedicated to the viola da terra, thereby providing students with a means through which to engage these new sound resources with the electronic medium. For this reason, each study was set to be around two minutes long to focus on the development of one sound and the technique implicit in it.

I carried out research<sup>100</sup> on other techniques belonging to other plucked instruments similar to the viola da terra. The following techniques, borrowed from the classical, steel and electric guitar, seemed to be possible and contributed new and interesting sonorities to the viola da terra: natural and artificial harmonics, hitting the soundboard, rasgueado, tambura, scratching with fingernails on the strings, the use of a bottleneck, tapping, hammering, pull-off, bending and slap. The notation used follows the conventions of the classical guitar. Melo (2012) and Carvalho (2013) adopted these same conventions for fingering, string and fret designations.

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<sup>100</sup> Works by Kampela (1989-93), Lachenmann (1977) and Ferneyhough (2004). Other techniques used on popular music such as rock or blues.

Concerning the compositional procedures, I wanted in this work to experience freedom from any kind of pre-compositional schemes or systems. I also intended to understand the outputs of software improvisation and sound processing in order to comprehend what could be considered an appropriate musical gesture in combination with the instrumental part. The electronic manipulation of recorded samples suggested additional material for the viola da terra part that would otherwise have been unimaginable. In both studies the fixed media part was composed first, providing the main form and atmosphere, on top of which instrumental improvisation would be performed and recorded. After being satisfied with a performance I would then proceed to transcribe it into the score.

### ***Fantasia***

A study focused on different *shades* of noise was achieved by scratching distinctive regions of the strings with the fingernails. This sound material had been explored previously in a different context in the piece *Diáspora* where I had, at the time, the idea of writing studies in which I could isolate and develop different sounds from specific performance techniques. Therefore, the scratch with fingernails (mainly on the A string) is the principal gesture developed throughout the piece. Its development consists of different articulations along the string and beyond the saddle. These different articulations used various processes available within the Cecilia software, involving abrupt cuts of the main sample and its transposition.

The overall form is divided in three main sections:

**TABLE 10.** *Fantasia* form.

<b>A</b>	0:00 – departure, establishment of the main source and its variation 0:53 – transition (bridge) to the second section ( <b>B</b> )
<b>B</b>	1:04 – further exploration in a more dynamic motion, intended as the climax
<b>A'</b>	1:52 – recapitulation of gestures in <b>A</b> and its conclusion (ca. 2:11)

The decision to adopt a simple form is related to my concern that students should be able to recognize and memorize the kind of organization that also occurs and is explored in other genres, such as classical forms, folk and pop songs. The score also introduces some representative notation as an attempt to aid the performer to follow and learn the fixed part. The absence of a metronomic click-track here aims to give a certain freedom to the performer and encourages the exploration of a connection between the instrument and the fixed part, without the pressure of following a beat.

From a micro level of events *Fantasia* starts by presenting the main material in a fragmented fashion, followed by a gradual revelation of the source's variations that are presented separately: transposition into several registers, a sense of different types of texture and gradual pitch shifting. Space is also explored: the hard panning evident at the beginning is slowly developed when high granulation is introduced, increasingly filling the space between the speakers up to 0:35. From this point the discourse goes back to fragmentation and hard panning. While section **A** exposes the sound events one after the other, section **B** progresses in a distinctive and energetic motion by overlapping the elements previously described. Dynamic spatialization contributes to the constant tension throughout **B**: fast gestures are scattered in both channels, then instantly move into the background, giving way to another foreground event. The discourse culminates at 1:45

where the viola da terra is rhythmically intense and synchronized with the fixed part. After an abrupt cut-off, the 7-second silence strengthens the perception of rupture and marks the end of section **B**. The last section of this study summarizes the discourse in **A** making use of a gentle glissando fading out to conclude.

The relationship between the instrumental and the fixed part is also very clear. In section **A** the viola da terra has more of a passive role, not being influenced by the active motion of the electronics, focusing on a very slow exploration of the scratch sound. Around 0:30, the articulation changes and it becomes a little more active, changing the perception of pitch through a glissando. The glissando continues, but in a lower range, connecting with the low glissando from the electronic part. In section **B** the instrument is more active contributing to the energetic motion propelled by the electronics. To conclude the re-exposition uses the same type of gestures explored in **A**.

### *Percussivo*

The second study explores percussive sonorities via hitting different zones of the soundboard of the instrument, as well as articulating, in several ways, the muted strings. Five samples were selected to be the main sonic material: single attacks in high, middle and low ranges, by striking the soundboard on different areas<sup>101</sup>, tambura and tremolo. The addition of muted slap and rasgueado techniques<sup>102</sup> resulted from a necessity of change the timbre in the middle of the study. I thought of these changes as being a sound variation of the tambura technique, thus widening the sound spectrum in the higher frequencies.

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<sup>101</sup> Consult the score for further details.

<sup>102</sup> Measures 15 and 16 respectively.

The fixed part was composed using two main tools to process the sources: *munger~*<sup>103</sup>, where I improvised with a MIDI controller, and GRM delay. The use of the computer to determine and generate events in time allowed a certain unpredictability in the musical discourse, leading to a feeling of rhythmic freedom in section **A**, as opposed to a more stable discourse in section **B**.

This study did not share the same method as the previous one in the generation of material for the instrumental part, and a click-track is necessary. While the instrumental part in *Fantasia* was achieved through a process of physical/ gestural mimetic dialogue with the fixed part, the material in *Percussivo* was partly generated in the same Max/MSP patch used for the fixed part, and partly manually written into the score. Afterwards, the generated material was edited in the context of the completed electronic part until the midpoint of the study (approximately at 0:52). Then I used the same conversion technique from audio to MIDI notes in Logic<sup>104</sup> software. The instrumental part of the second half was composed in a mosaic-like relationship with the fixed part, using fragments of the previous material.

The overall form is also in three parts:

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<sup>103</sup> I used two *munger~* objects to process the same sample. This way I could improvise the same source varying the parameters of pitch and grain separation, almost in a contrapuntal way. The spacialization is defined and controlled randomly by the object.

<sup>104</sup> Consult chapter 3 for further information.

**TABLE 11.** *Percussivo* form.

<b>A</b>	0:00	Exposition of the musical ideas, feeling of freedom and creation of expectation
	0:58	Bridge to section B delivered by the fixed part
<b>B</b>	1:02	Energetic and stable discourse: climax
<b>A'</b>	1:22	Variation of ideas explored in A

The technical demands of *Percussivo* resulted in its being far more difficult to perform than *Fantasia*. To perform this study, students may need further sight-reading ability, as the score introduces conventional rhythmic notation. Also, its relationship with the fixed part requires the use of a click-track for a more rigorous synchronization.

## Summary

Two pieces for viola da terra and electronics were developed as the first volume of studies dedicated to exploring and extending the sonic possibilities of the instrument. There are three additional studies that are intended to complete this first volume: on resonances, on texture and one exploring melody. My aim is to write several volumes of studies for viola da terra and electronics in graded levels of difficulty. Although the first volume is not yet fully complete, I find the two studies presented here highly encouraging: firstly, on a technical level, the instrument proved to be capable of producing, with good sound quality, most of the extended techniques that I set out to explore; secondly, on a musical level, the viola da terra is remarkably flexible instrument, demonstrating a wide range of expressiveness, and consequently establishing its own individuality within a context of new sonorities.

## 10. Sketches, for viola da terra and ensemble

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This last work is a further elaboration of the thinking behind the *Estudos Sonoros*. The main compositional concern focuses on continuing the development of extended techniques for the viola da terra and how these can convey a musical discourse. Further, it tries to understand how it might be integrated within the context of a contemporary ensemble – for this reason I consider it a study. *Sketches* was written for a workshop with the BCMG and performed on May 2015<sup>105</sup>.

The first concern focused on linking the sonority of the viola da terra with the one of the ensemble. The ensemble was seen as an augmented dimension of the gestures derived from the viola da terra. This required a subtle kind of orchestration because the sounds that I wanted to explore had a low volume level. Hence, although the viola da terra can project a good level of sound intensity, it would not be as much as most of the instruments of the ensemble. Therefore the global orchestration was very light so as not to overwhelm the viola da terra.

Each movement in *Sketches* addresses a specific technique. In this piece I had the opportunity to explore further other sonorities emanating from the instrument. Therefore, the viola da terra is the core of all the musical material developed by the ensemble. These musical ideas were generated through improvisation on the instrument (for the first and

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<sup>105</sup> These workshops are fundamental for composers to validate certain aspects of a composition but unfortunately time limitations mean that not all the detailed aspects of a work can be covered in a workshop. In the end, I was not able to play the viola da terra part for the workshop and listen to the ensemble rehearsal, so had to record the solo part separately and edit it into the ensemble recording. This of course causes various issues such as synchronization and differences in the acoustic space of the two recordings. Nevertheless, this is a study, and it tries to explore several situations, including the relationship between the viola da terra and the ensemble. I would like to encourage a focus on the compositional aspects of the piece: even if the recording is not perfect it offers a practical view of a possible performance.

third movement) and CAC for the rhythm generation (for the second movement). The three main techniques used in this piece were: hammering and tapping the strings; hitting the body of the instrument in several points; and melodic lines obtained by using a glass guitar slide. Between each movement there is a small interlude that was thought as a way of linking/preparing the distinct movements.

The first movement explores the hammering and tapping technique, a technique borrowed from the acoustic or the electric guitar. These techniques develop the act of hitting the strings with, predominantly with the left-hand, though the right-hand is occasionally required as well. This is also a requirement in the string section on several occasions, in the knowledge that it will be more of a physical similarity than a timbral one – the sound result will be more percussive than pitched (Fig. 38). But the dialogue is appealing to me and, once more, my intentions of making a connection between the viola da terra and the ensemble can be constructed through this kind of technical imitation.

As I was playing the viola da terra part, already fully composed, I realised the rich harmonics emanating from the instrument. The fact that the lower strings are tripled – the low A1 is reinforced by two strings each one octave higher (both are in unison), and the same for the D string – a higher resonance is created. I took advantage of this phenomenon and used it in the orchestration as an echo effect. This is very obvious in the string section, where a combination of natural and artificial harmonics enhance these resonances from the viola da terra (Fig. 39). The choice of harmonics tries to respect the harmonic series of each of the notes from the viola da terra. Some spectral techniques are employed, such as octave

shifting (distorting the natural partial position in relation to its root) and cross-fading partials (Fig. 39).

The musical score for measures 4 and 5 shows a complex rhythmic structure. The solo Vcl. part begins in 4/4 time, then shifts to 5/4, and finally to 2/4. The Vln. I and Vln. II parts enter in the second measure, with the Vln. II part featuring a 'hammer-on' instruction. The Vla. and Vc. parts also enter in the second measure, with the Vc. part featuring a 'hammer-on' instruction. The dynamics range from ppp to mp.

**Figure 38.** Measures 4 and 5 from the first movement.

The musical score for measures 7 and 8 features a variety of time signatures: 2/4, 4/4, and 3/4. The solo Vcl. part is marked with 'on frct.' and 'p'. The Vln. I and Vln. II parts are marked with 'mf' and 'pp'. The Vla. and Vc. parts are marked with 'mf' and 'pp'. Annotations include '10th harmonic of D', '7th and 9th harmonic of D transposed on octave below', and '16th and 20th harmonics from A'. The dynamics range from mf to fpp.

**Figure 39.** Measures 7 and 8 from the first movement.

The second movement is the reutilization of ideas used in the *Sonic Studies* (percussive). In this movement I wanted to have a continuous discourse with a very textural

sonority of several independent layers. For the generation of rhythm, I used the same kind of techniques that I had developed in *Cinq étapes sur une ligne I* with the aid of PWGL. This material was distributed through the ensemble, where I tried to build connections/dialogue between groups of instruments<sup>106</sup>. Also, the percussive technique explored here on the viola da terra enables a good fusion between the percussion and the tambura gestures made on the cello and the contrabass, therefore fitting in the overall sonority of the ensemble. In this movement, I explored the full volume potential of the instrument, which can be heard at measure 74. The harmonic sequences present in this movement were also based on chords that were earlier improvised on the viola da terra.

The third movement reveals a more melancholic feature defined by a dialogue between the viola da terra and the ensemble, with melodic lines mainly in descendent glissandi, similar to a lament. A slower tempo and the ostinato on the bass drum also helps characterize a sober mood. Further gestural imitations are explored in instruments like the piano and the harp, so timbre connections can be made with the viola da terra. The strings of the piano are plucked, and with the sustain pedal on, to resemble the sound of the viola da terra when plucked. The string section contains a background layer comprised of sounds that are closer to noises, creating a sort of undefined atmosphere. I felt this enabled a better focus on the viola da terra solo part, inviting the listener to participate in the overall introspective sound experience.

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<sup>106</sup> For example, the viola da terra imitates the gestures from the harp (measures 55-56) and later on measure 68 the gestures from woodwinds.

## 11. Conclusions

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This commentary presents ten musical works that explore the use of cultural elements from the Azores as inspiration for new compositions. Over the course of my PhD I experimented with several approaches and mediums and was also able to develop my compositional technique in the studio. The use of multiple distinct sources (intrinsic and/or extrinsic to sound) is a standard practice throughout the portfolio in the shaping of musical discourse. Although there is a common goal linking most of the pieces<sup>107</sup>, the final result is a varied group of musical works, where each piece reveals an individual sound world.

It is also true that many of my approaches may have been a product of the various influences I have been exposed to during my research. I would like to reference composers like Berio, Takemitsu, Lim, Parmegiani, Harvey and Sciarrino<sup>108</sup> as the deepest influences during my PhD. Not only did I identify with many of the procedures used by them in working with material based on cultural elements, but they also encouraged me to develop my own views and to understand why I was interested in working with these elements. It became evident to me that working with materials from my cultural background is a sort of emotional manifestation, embedded in the work, placing myself in past experiences and simultaneously in the present. However, I do not wish these personal views to have any sort of impact on the listener. The music is to be enjoyed by the listener's imagination – in my view, this is the power of music.

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<sup>107</sup> *Ao Desconcerto do Mundo* is the only piece in which I did not use any source concerning popular music from the Azores. However, this piece was developed during the PhD and reveals a preoccupation related to timbre and instrumental connection with the electronic medium, an obvious impact of my time at the Studios.

<sup>108</sup> Where the latter is more evident towards the end of my research, in pieces like *Sketches*.

Regarding the technical aspects of the portfolio, my compositional processes included the use of CAC to produce of results that could not easily be created by hand, offering possibilities that perhaps would not arise in a traditional way<sup>109</sup>. In parallel to this process a non-systematic approach is allowed, therefore enabling decisions that are related to musical intuition or personal taste. When composing, it is important to me to understand how materials can connect with each other to convey a narrative, permitting external sources (that were not planned in the initial scheme) into the process to enrich the music.

Additionally, regular work in the Studios has influenced me to consider other sonic possibilities (through Schaeffer's theory of 'reduced-listening'<sup>110</sup>) and their extension into the instrumental domain, lead to an incorporation of extended techniques and recreation of the sound properties<sup>111</sup> of my sources. This is visible in works such as *(des)Integrasons*, *Ao Desconcerto do Mundo* and *Estudos Sonoros*. Furthermore, a special focus is given to spectral treatments and timbre connections as an attempt at *normalizing* my original sources within the electroacoustic context – for example, in pieces like *Ad eternum* and *Homenagem Subconsciente* where ritualistic elements from the past are transformed and mixed with electronic sounds.

I am satisfied with most of my pieces in this portfolio but I would like to draw particularly attention to the three works which I find the most interesting: *(des)Integrasons*, *Estudos Sonoros* and *Sketches*. I believe *(des)Integrasons* reveals a positive outcome in demonstrating how I could further explore the use of popular songs from the Azores within

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<sup>109</sup> For example, the amplitude analysis of sample recordings for the generation of rhythm in *La Fontaine Rouge* and the harmonic processes using spectral techniques.

<sup>110</sup> Chion (1983).

<sup>111</sup> For example voice leading, timbre, types of articulation.

the instrumental/vocal domain, using the intrinsic elements of the sources. *Estudos Sonoros* and *Sketches*, proved encouraging with regard to how the viola da terra can be taken out of its popular context and integrated into another sound world.

I intend to continue working on these aspects and to explore further the work with the viola da terra. Also, I wish to inspire others to write music for it. I truly believe that, with time, the ongoing production of new repertoire for this instrument will further develop its potential and, hopefully, cement its importance alongside already established instruments in the future musical panorama. If we do not set out an alternative practice for this instrument and stimulate its culture, we may face in the future (as we almost faced at some point in the past) its disappearance – and with it the possible loss of a rich musical culture.

## Bibliography

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ALMEIDA, J. A. F. (2010). *A Viola de Arame nos Açores*. Ponta Delgada: Publiçor - Publicações e publicidade, Lda.

AUDIOSCULPT (2016). [Accessed online from <http://forumnet.ircam.fr/product/audiosculpt-en/> 8 March 2016].

BARREIRO D., P. BATCHELOR, E. BUMSTEAD, J. CARPENTER, A. HARKER, J. HARRISON, E. OÑA AND C. TARREN (2011). *BEASTtools*. Birmingham, UK: The University of Birmingham.

BARONE, J. (2014). *An International Art Festival in the Azores*. [Accessed online [http://intransit.blogs.nytimes.com/2014/06/27/an-international-art-festival-in-the-azores/?\\_php=true&\\_type=blogs&\\_r=2](http://intransit.blogs.nytimes.com/2014/06/27/an-international-art-festival-in-the-azores/?_php=true&_type=blogs&_r=2). html 15 September 2015].

BARTÓK, B. (1949-1950). *The Influence of Peasant Music on Modern Music*. Tempo, New Series, No. 14, Second Bartók Number, pp. 19-24.

BELANCIANO, V. (2015). *A grande obra de arte dos Açores são as pessoas*. [Accessed online <http://www.publico.pt/culturaipilon/noticia/a-grande-obra-de-arte-dos-aco-res-sao-as-pessoas-1704079>. html 15 September 2015].

BÉLANGER, O. (2008). *Cecilia* software 5.0.9 beta, 2013. Montréal: Université de Montreal, L'Institut Arts Cultures et Technologie.

BENTO, C. M. (2008). *História dos Açores*. Ponta Delgada: EGA – Empresa Gráfica Açoreana, Lda.

BERIO, L. (1984), *Voci (Folk Songs II)*, [Work Introduction]. [Accessed online from Universal Editions, database at <http://www.universaledition.com/Luciano-Berio/composers-and-works/composer/54/work/5688>. html 3 July 2015].

CARVALHO, R. (2013). *Método para Viola da Terra - Iniciação*. Ponta Delgada: Pastelaria Studios.

CHION, M. (1983). *Guide des objets sonores, Pierres Schaeffer et la recherche musical*. Paris: Institut National de L'Audiovisuel & Éditions Buchet/Chastel.

CORREIA, N. (2002). *Antologia Poética*. Lisboa: Publicações Dom Quixote.

CYCLING'74 (2016). Max/MSP. [Accessed online from <https://cycling74.com/products/max/> 8 March 2016].

DORES, R. V. (2008). *Sobre a Palatalização da vogal [ü] em alguns falares açorianos*. [Accessed online from <http://www.adiaspora.com/VIIaniversario/Discvictorru.html> 30 June 2015]

EVANS, B. (2005). *The Graphic Design of Musical Structure: Scores for Listeners – Incantation and Mortuos Plango, Vivos Voco*. Montréal: Electronic Music Studies Network.

FELDMAN, M. (1981). *Crippled Symmetry*. RES: Anthropology and Aesthetics, No. 2 (Autumn, 1981), pp. 91-103.

FERNEYHOUGH, B. (2004). *No Time (at All)*, for two guitars. London: Peters Edition No. 7789.

FRAGA, R. (2011). *Eira*. [Accessed online <http://www.rafaelfraga.com/eira.html> 23 August 2013].

GRYMES, J. A. (1990). “Dispelling the Myths: The Opening Bassoon Solo to The Rite of Spring”. *The Journal of the International Double Reed Society, The Double Reed* 13:1, pp. 43-44. [Accessed online <http://www.idrs.org/publications2/journal2/Jnl26/jnl26.index.html> 2 July 2015].

HARVEY, J. (1981). “Mortuos Plango, Vivos Voco”: A Realization at IRCAM. *Computer Music Journal*, Vol. 5, No. 4 (Winter, 1981), pp. 22-24.

INTERNATIONAL PHONETIC ASSOCIATION (1999). *Handbook of the International Phonetic Association: a guide to use the International Phonetic Alphabet*. Cambridge University Press, pp.78-129.

JANSON, H.W. (1986). *History of Art, 3<sup>rd</sup> Edition*. London: Thames and Hudson Ltd.

KAMPELA, A. (1989-93). *Danças Percussivas (Percussion Studies I&II)*, for solo guitar. Author's edition.

LACHENMANN, H. (1977). *Salut für Caudwell*, for two guitarists. Wiesbaden: Edition Breitkopf 8399.

LAURSON, M. and M. KUUSKANKARE. *The PWGL book*, [Accessed online <http://www2.siba.fi/PWGL/downloads.html>]

- LARNER, G. (2012). *The French Revolution*, *BBC Magazine*, February, pp. 27-34.
- LUCAS, P. (2010). *O Experimentar na m'incomoda*. Digital Album: [Accessed online <http://oexperimental.bandcamp.com/album/o-experimetar-na-mincomoda>, accessed on 17 of January 2013].
- MELO, R. (2005). *Manual de Apoio ao Estudo da Viola da Terra Micaelense Volume I*. Ponta Delgada: D.R.A.C.
- MELO, R. (2012). *Manual de Apoio ao Estudo da Viola da Terra Micaelense Volume II*. Ponta Delgada: EGA - Empresa Gráfica Açoreana.
- MORAIS, M. (2010). Prefácio. In J. A. F. ALMEIDA (ed.) *A Viola de Arame nos Açores*, pp. 11-17. Ponta Delgada: Publiçor - Publicações e publicidade, Lda.
- NASCIMENTO, J. W. (2012). *Viola da Terra, Património e Identidade Açoriana*. Master Thesis by the University of the Azores, 2012.
- NETTL, B. (1983). *The Study of Ethnomusicology: thirty-one issues and concepts/ 2<sup>nd</sup> ed.* Illinois, The University of Illinois Press.
- NORRIS, M. (2015). SoundMagic Spectral. [Accessed online from <http://www.michaelnorris.info/software/soundmagic-spectral> 10 March 2016).
- PARMEGIANI, B. (1992). Parmegiani. CD INA C 1012 and 1013. France: INA.GRM.
- PEREIRA, T. (2011). *O Povo que ainda canta. A Música Portuguesa a Gostar Dela Própria* [Accessed online <http://www.rtp.pt/programa/tv/p31331> 10 January 2016].
- PETERS, S. (2015). *Canções Profundas*. [Accessed online <http://spsmrhouse.blogspot.pt/2015/09/musica-folclorica.html> 31 October 2015].
- REICH, S. (2002). *Writings on Music (1965-2000)*. New York: Oxford University Press, Inc.
- RUTHERFORD, T. (2011). *Patterns of Shimmer: Liza Lim's Compositional Ethnography*. *Tempo*, 65, pp. 2-9 doi: 10.1017/S0040298211000349.
- SANTOS, A. (2001). *Antologia Sonora: O Folclore Musical das ilhas dos Açores*. CD 05892 BMSXD, S.Mamede de Infesta: Emiliano Toste.
- SARAMAGO, J. (2009). *CAIM* (8<sup>th</sup> edition). Alfragide-Portugal: Editorial Caminho.

SMALLEY, D. (1997). *Spectromorphology: explaining sound-shapes*. *Organized Sound*, 2, pp 107-126 doi:10.1017/S1355771897009059.

TAKEMITSU, T. (2006). Toru Takemitsu. CD. 8.557760. EU: Naxos.

TAKEMITSU, T. (1995). *Confronting Silence, Selected Writing*. Berkeley, California: Scarecrow Press, Inc.

TARUSKIN, R. (1980). "Russian Folk Melodies in The Rite of Spring". *Journal of the American Musicological Society*, Vol. 33, No. 3, pp. 501-543.

TRUEMAN, D. and L. R. DUBOIS (2006). *PeRColate*, version 0.9b6 Beta Release. New York: The Trustees of Columbia University.

WALK & TALK AZORES (2011). Public Art Festival [Accessed online <http://walktalkazores.org/en> 2 July 2015].