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Portfolio of Compositions with Accompanying Commentary

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I, Elias Kotzias, hereby declare that this thesis is original and that the work submitted is my own.

Abstract

The aim of this commentary is to present and discuss my individual style of electronic composition and the issues surrounding it.

The research is primarily concerned with the creation of soundscapes[1]. Within these soundscapes I am trying to experiment sonically with representation of physical environments and/or with psychological conditions. Another feature of my creative approach is that it focuses on the use of human sounds as raw material as a major part of the compositional process. Recorded voice, breathing, heartbeat as well as many other sounds produced by and/or from the human body are manipulated, electronically or not, and combined in order to create a 'blurring' and all this functions within the soundscape. My compositional methods allow a blending of natural and electronic sound elements[2].

This method raises issues such as; what is the difference between a natural and an electronic sound when they produce a similar sound effect?; and in which ways can human sounds be manipulated so as to awaken the human subconscious?[3] In my works I have incorporated various compositional methods based on ideas previously explored by composers such as Jani Christou, Brian Eno, John Cage, Luciano Berio and Steve Reich. However, I have appropriated them in my personal compositional aesthetic which, genre wise, arguably stands somewhere between experimental /avant-garde and ambient music.

This commentary presents my ideas and techniques on which the portfolio of works composed during the period of doctoral research is based. The commentary also contains a series of illustrations that I have developed to assist the reader's understanding of the theoretical concepts.

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1 The definition and use of the word 'soundscape' are explained in Chapter 1: Methodology and compositional approach, p.17-18.

2 In Chapter 1 I explain the way in which sounds can be considered as objects. In the same chapter I define the way in which I relate features of objects to sound features.

3 My understanding of the human subconscious is based on Carl Jung's theories and is explained in Chapter 1: Methodology and compositional approach, p.13-14.

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Introduction

The main purpose of this commentary is to provide a presentation and discussion of issues surrounding a portfolio of selected musical compositions written during my doctoral research studies in electronic composition at Royal Holloway, University of London. The topics under discussion include the general background behind these works, the concept of each work and the techniques of composition applied.

My serious interest in electronic and experimental composition started when I was studying for a Master's degree at Royal Holloway, University of London. It was at this time that my interest was fired up because I realized that my musical ideas could perhaps be best expressed and developed within an electronic compositional context. One of the Master's assignments I was asked to complete was to compose four varying cues for a television natural history or geographic documentary on the subject of North Africa. Although still conceived on a tonal basis, these four cues were my first attempt to compose electronic music. Additionally, I used these cues as my first opportunity to combine recorded live instruments[4] in a sequencer with software instruments.

In 2006, I composed *Mechanic Core*, an electronic[5] piece of music using software instruments. It was my first attempt to think of music not as a 'linear' phenomenon but rather as a static sonic object. It was also the first time I tried to portray 'non-musical elements' through music[6]. During the process of composing this piece I tried to put aside my previous principle concern in composition; that of musical form.

4 Mr Brian Lock provided me with live recordings of an oud (traditional Arabic string instrument) and a ney (traditional Middle Eastern end-blown flute).

5 I use the term 'electronic music' to mean music composed with software instruments and/or not recordings, while I use the term 'electroacoustic music' to mean music which is based on the combination of software instruments and/or recordings and live instrument(s).

6 I tried through sound to describe the operating core of a machine.

These electronic pieces also helped me in developing my thinking about music's relationship with the audience. As an undergraduate student I always believed in the aesthetic of 'Art über alles'. I was not concerned whether my compositions had an emotional impact on the audience as long as they displayed the skilful manipulation of compositional techniques and explored 'ideas'; along the line of thinking promoted by the so-called Second Viennese School. It was during my Master's studies when I realised that musical composition and art making were meaningful for me really as much as they evoke feelings and in terms of their emotional significance and impact on the audience or individual listener.

I decided to focus my musical philosophy on a more 'human-centred' approach to writing. This in turn led to my interest in human body sounds and their primitive nature. This then lead to my interest in the human subconscious and its relationship and 'awakening' through and to the sounds imprinted on it. This idea and my desire to further to investigate and experiment with the ideas surrounding it lead me to this research degree.

Right from the beginning of my programme of doctoral research I have had good opportunities to work in Physical Theatre, and with, in my opinion, some very talented choreographers. To be able to compose electronic music which would be used and choreographed to was a very exciting and challenging prospect to me. Since I was not previously familiar with dance and choreography, it was a useful opportunity to explore new ways of expressing myself through composition from a new angle. In addition, the discussions about the projects with the choreographers further pushed me into pursuing an intuitive approach and also highlighted that I really did want to focus on my research in terms of experimentation[7] as methodology. *Atopos* is my first composition for physical theatre. It was composed in 2007 during my first year of PhD research. This composition illustrates my early experiments with human sounds and their blending with software instruments.

7 I have attended the making of most of the choreographies. The choreographers were following a phenomenological approach. They were improvising in space trying to leave their senses open. Consequently they were making a selection of the movements which seemed to them the most appropriate and compatible to the central idea, and then they created the choreography. Being acquainted with these procedures, I decided to apply these creative procedures to my compositional techniques.

Since the aim of this commentary is not only to provide a description of the compositions, but also to illustrate my approach, I have included discussion of the theoretical background and a detailed description of my compositional aesthetic in Chapter 1. In Chapter 2 there is a discussion of the works themselves; which I present in three categories; incidental electronic and elecroacoustic music, electronic, and electroacoustic music[8]. The works illustrated in this chapter were all composed between 2007 and 2011. In other words the works presented in this commentary are therefore categorised according to aesthetic considerations and not their chronology of composition.

In order to aid the reader's understanding I have provided graphs after the discussion of each piece. These graphs show the instrumentation, timings of musical 'events', and outline structural aspects of the pieces[9]. The compositions can not be represented in more traditional notated manners. Part scores are created for individual pitched instruments physical or software. There is a full score of *The Cry of the Burnt Trees* which comprises parts for three clarinets, one live and two software.

During my research I also composed a number of works not included in the portfolio. I have decided not to include them because they would not aid further the ideas discussed in this commentary. The works not included, but written during the doctoral study are:

1. *The Gaze that Scours the Landscape* (14:00) Electronic Incidental Music composed in April 2007. Premiere in Bristol, in June 2007. Dr. Libby Worth, choreographer.
2. *Atopos* (10:00) Electronic Incidental Music composed in January 2008. Premiere at Royal Holloway, University of London in February 2008. Eeva Hautala and Konstantinos Thomaides, choreographers.

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8 I use the term 'incidental electronic music' to mean music for stage works and composed with software instruments and/or not recordings, while I use 'incidental electroacoustic music' to mean music for stage works which includes software instruments and/or not recordings and 'live' performer(s): (instrumentalist(s) or/and vocalist(s)).

9 *The Cry of the Burnt Trees* is the only piece that does not a graphic presentation since it has a score.

3. *Place One* (4:50) Ambient Electronic Music composed in February 2008.
4. *My Sea* (7:30) Electroacoustic Music for piano and computer, composed in October 2008. Premiere at University of Macedonia, Thessaloniki, Greece in March 2010. I played the piano.
5. *This Sunset* (3:20) Electroacoustic Song composed in January 2010. Premiere at University of Macedonia, Thessaloniki, Greece in March 2010. Roxanne Papadimitriou (Soprano Voice), and Manousos Ploumides (bass clarinet)
6. *Waiting For...* (18:00) Electronic Incidental Music composed in February 2010. Premiere in Tallinn, Estonia in March 2010. Juri Näel, choreographer and dancer.
7. *Occupying Space in Time* (9:40) for Solo Marimba. Composed in October 2010. Premiere in Athens, Greece in February 2011. Theodor Milkov, percussionist.
8. *Sew Dance* (11:00) Electronic Incidental Music composed in August 2011. Dr. Libby Worth, choreographer.

Chapter 1: Methodology and compositional approach

One of the fundamental concerns of my compositional approach is to do with the perception of sound. I conceive sound as an object, or even better, as raw constructive material, which I manipulate in my compositions.

A material object[10] is characterised by its three dimensions, length, width, height, and also the material which it is made from and its texture. In a similar way, a sound object[11] is characterized by its three 'acoustical dimensions', which are; duration, pitch and dynamics. The material of the sound object is perceived by the researcher as the sound 'genre', while the structure of the sound object is termed 'texture'. The texture of each sound object is classified in terms of its complexity. The material object is located in space and bears a certain 'colour'. In a similar way, the sound object is located in time and bears a particular timbre. The location of the sound object in time is considered a) in relevance to the time placement of other sound objects and b) in relation to its inner time structure. The inner time structure depends on the duration of the sound object, the repetitions of its appearance, and the differentiations it might be subjected to, such as diminution or elongation. The timbre refers to the provision and formation of the harmonic spectrum which the sound object prevails, and in most cases it depends on the sound source and the audio transmission medium. The sound source is the transmitter, which emits the particular sound object, and the audio transmission medium may be gas, liquid, solid or plasma.

10 The term 'material object' refers to any object made of matter, constituted of one or more substances.

11 The term is an English translation of 'object sonore' and was invented by Pierre Schaefer. Nowadays, the term is used in literature concerning the networked music and concatenative synthesis, as is underlined by Brian Kane in his article 'L' Objet Sonore Maintenant: Pierre Schaeffer, sound objects and the phenomenological reduction', Organised Sound 12 Issue 1, Cambridge University Press, UK, 2007.

However, there are sampled software sounds which are transmitted through electronic appliances, or recorded sounds which are emitted through other sound reproduction appliances. In these cases although the transmitter affects the timbre of the sound object, it does not determine it.

Another characteristic of material objects is their 'applicability'. For example, there are utility objects, such as the chair or the vase, and objects that stimulate sentiments, such as paintings or decorative objects, which are all referred to as 'sentimental' objects. Transferring this categorisation to the world of sound, I consider that there can be 'utility' sound objects and 'sentimental' sound objects. I use and find helpful this categorisation of sounds in my own approach to composition. An example of a utility sound could be a police siren, while a sentimental sound object could be, for example, the entry motif of Beethoven's fifth symphony. Concerning the material objects, an interesting feature is that these objects may alter their function from utility to sentimental or vice versa. For example, chairs could be used as a constructive element in a visual artefact[12]. In a similar way, sound objects may alter their use from utility sounds to sentimental sounds or the reverse. For instance, car horns could function as constructive material in a musical composition[13]. This 'switching function' of sound objects is an interesting feature I also like to explore in my compositions.

In discussion of the 'historical background' of a sound object I refer to its ability to activate auditory memory through relationships with events in listeners lives. In other words, particular sounds can rekindle in listeners events, images and emotions they have experienced in their past. Perpetual psychologist, Stephen McAdams (1984), notices that listening often to a certain sound equals to listening to the 'voice source', or the event producing the sound: [...] *to hear a sound is often to hear the cause of the sound*.[14] Everybody is able to identify a cat mewing, as long as he has ever heard

12 For example, '1600 Stacked Chairs' Installation at 8th International Istanbul Biennial, 2003 by Columbian artist Doris Salcedo.

13 György Ligeti used 12 car-horns in the opening of his opera, *Le Grand Macabre*, 1974–77, revised version 1996.

14 McAdams, Stephen, *Spectral Fusion, Spectral Parsing and the Formation of Auditory*, Ph.D. Thesis, Stanford University, California, 1984, p. iv.

a cat in his life. This sound possesses a certain 'past', and therefore a 'history'. Occasionally a sound can be associated with trauma, for example, and, when heard, it can reawaken the feeling of the traumatic event[15]. To take an extreme example a child who has witnessed the murder of its parents may relive the event when hearing gunshots, whereas the same sound for a hunter will have entirely different responses[16]. According to the theories in Depth Psychology, sound is crucial to the recollection of memories in the human subconscious.[17] Carl Gustav Jung (1916)[18], as well as post-Jungian researchers, such as James Hillman (2004)[19], Helen Bonny (1978)[20], Arnold Mindell (1985)[21] and Mary Lynn Kittelson (1996)[22] have used the terms 'sound image' and 'acoustic image' understanding the sound as a multi-channelled experience.

From what I have written above in my description of the 'sound object', my conception and use of the term is somewhat different from that of its inventor. Pierre Schaeffer, who originally coined the term 'object sonore' – which in English is usually translated as 'sonorous object' or alternatively 'sound object' - described the meaning of the term through a phenomenological approach.[23] According to Schaeffer, the sound object is a small sound unit (measured from of tenths of a second up to 2 or 3 seconds), which through reductions is deprived of any non-

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15 Kittelson, Mary Lynn, *Sounding The Soul: Listening To The Psyche*, Daimon, Einsiedeln, Switzerland, 1996, pp. 245-249.

16 Post-traumatic stress disorder is an anxiety problem that develops in some people after extremely traumatic events, such as combat, crime, an accident or natural disaster. People with PTSD may relive the event via intrusive memories, flashbacks and nightmares; avoid anything that reminds them of the trauma; and have anxious feelings. They did not have before that are so intense their lives are disrupted. American Psychological Association: http://www.apa.org/topics/ptsd/index.aspx adapted from Alan E. Kazdin, ed. *Encyclopaedia of Psychology: 8 Volume Set*, Oxford University Press, USA, 2000.

17 Feldman, Josie, Corinne, *The More We Listen: Towards A Depth Psychological Understanding of Sound as Image*, (MA), Pacifica Graduate Institute, California, 2011, pp. 38-56.

18 Jung, Carl, Gustav, *The Transcendent Function*, In H. Read & M. Fordham & G. Adler & W. McGuire (Eds.) (R. F. C. Hull, Trans.), The collected works of C. G. Jung (Vol. 8, pp. 67-91), Princeton University Press, Princeton, 1958A, (Original work published 1916).

19 Hillman, James, *The Thought Of The Heart And The Soul Of The World*, Spring Publications, Putnam, 2004.

20 Bonny, Helen, *Facilitating GIM Sessions*, Bonny Foundation, Salina, 1978.

21 Mindell, Arnold, *River's Way: Process Science Of The Dreambody*, Viking-Penguin-Arkana, New York and London, 1985.

22 Kittelson, Mary Lynn, *Sounding the soul: Listening to the psyche*, Daimon, Einsiedeln, Switzerland, 1996.

23 Schaeffer was influenced from Edmund Husserl, inventor of Phenomenology, as shown in Brian Kane's article: 'L'Objet Sonore Maintenant: Pierre Schaeffer, sound objects and the phenomenological reduction', Organised Sound 12, Issue 1, Cambridge University Press, 2007.

musical context already given to it, such as its spatio-temporal existence and the sound source, which produced it. The 'Acousmatic' experience, as Schaeffer called this methodological process of reduction, reduces sounds to the field of hearing alone. Nevertheless, Chion (1994) cites in his book called Audio-Vision[24]:

> [...]Schaeffer thought the acousmatic situation could encourage reduced listening, in that it provokes one to separate oneself from causes or effects in favour of consciously attending to sonic textures, masses, and velocities. But, on the contrary, the opposite often occurs, at least at first, since the acousmatic situation intensifies causal listening in taking away the aid of sight.

On the other hand, defining the sound object through the comparison of its features to those of a material object –characteristics which I conceive as analogous –, I attempt to prompt both the audience and myself to perceive the sound as a multi-channelled experience. Features of sound objects, such as time, space, source, or cause, are not only there, but also become material for my compositional experimentation.

An important factor in choosing which sound material I am going to use before I start composing is the potential 'degree of transformation' that selected sound objects contain. The term 'degree of transformation' refers to how many parameters[25] of a selected sound object can potentially be manipulated to serve my own compositional priorities. For example, in my compositions, one of the main perimeters I have experimented with is the altering of the dimensions and the timbre of a sound object. To do so, I have applied a combination of electronic techniques and effects such as echo, delay, elongation, diminution, slicing, looping, transposition, retrogression, inversion and panning[26]. Two examples of how I alter the 'use' or the 'history' of sound objects can be found in my compositions *Silence* and *Gaza*. In *Silence,* heart beating is used as a rhythmical pattern while in *Gaza* the sounds of cutlery are used

24 Chion, Michel, *Audio-Vision: Sound on Screen*, ed. & transl Gorbman, Claudia, Columbia University Press, New York, 1994, p. 32.

25 The term 'parameters' of a sound-object refers to its dimensions, timbre, source, use and history.

26 For example, I retrograde the recorded interviews and I 'loop' a contrapuntal structure of recorded voices in *Emersion.* In *Space x 2* I elongate the recorded soprano voice and in *Sea, the Whales* I have changed the pitch of the recording of the paper-clips.

in order to simulate the clanging sound of an empty rifle shell hitting upon a metal surface.

Sounds produced by the body hold a particularly important position in my music. Body sounds have been used in electronic music-making since the late 1950s as Simon Emmerson points out in *Living Electronic Music* (p. 62)[27]:

> Since the inception of musical concrete in 1948 human presence in general and human body sounds specifically have haunted the soundworld. This is not just through the obvious intrusion of the human voice into the discourse, but in reference to the body and rhythms of limp, breath, and heartbeat, and in the representation of personal and psychological spaces.

Since then, body sounds have been continuously used in electronic composition and they lend them themselves to it, as compositional material, extremely well[28].

I have been fascinated by human body sounds as a sound source for my own composition as I am very much interested in the idea of the person and their memories. Body sounds are continually present throughout a person's lifetime and they form part of all essential human functions and activities. For example, perhaps two of the most fundamental are the sounds of breathing and heart beating as they signify the very existence of life itself. Changes in these sounds, for example, the sound of rapid breathing or a fast heartbeat could indicate a medical problem and these changes are an important feature of why they are so interesting for composition. Other obvious examples, just to give two more, could include the various meanings associated with say, clapping or laughter. In my attempt to establish a sense of intimacy and engagement with the audience with my music, I use body sounds extensively throughout my compositions. In order to make interesting, dramatic and engaging compositions I manipulate the recorded body sounds using as

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27 Emmerson, Simon, *Living Electronic Music*, Ashgate, England & USA, 2007.

28 For example: *Inside-Out* by Andre Borges at the Sallis Benney Theatre, Brighton- UK. Taken from the YouTube description (http://www.youtube.com/watch?v=GzLxrxGMMDo):
'The work involves the use of live inner body sounds as musical material, combined with sounds of other music instruments and light bulbs that are controlled by the body sounds using Arduino technology. The video was recorded during his degree show in performance and Visual Arts at the University of Brighton, 2011.'

wide a variety of techniques as I can. For instance, in *Silence*[29], I use heart beating and sounds of breathing. In different points in the work, I reverse the recorded breathing patches and elsewhere I add electronic effects, such as echo and distortion. Another technique I use is to make body sounds mimic electronic sounds and vice versa so 'blurring' distinct boundaries.

For the purposes of clarity, in my own compositional method I have classified body sounds into three groups. The first group comprises the sounds produced by the body involuntarily. The most prominent among these sounds are: the heartbeat, breathing, coughing and hiccups. In the second group are sounds produced deliberately by the human body such as applause, sounds produced by the collision of body parts (palms, feet, hands etc.), sounds from the articulatory organs (lips, teeth, tongue, mandible etc.), and the voice in general. In *Space x2* for example, I use teeth sounds, tongue and lip sounds as well as articulated speech. In the third group I include all the sounds produced by the human body in performing actions towards an external object. I have included sounds of nail crackling and finger tapping on different surfaces, as well as the dropping of objects on surfaces made from different materials. In my work *Emersion*, I work with sounds of paper being crinkled and torn whereas in Gaza I use sounds of metal cutlery being stirred.

I am now going to continue to develop my description of the term 'soundscape'. As material objects that are located in space create a natural environment or a landscape, in a similar way sound objects that are located in time create a sound environment, a 'soundscape'. For my own compositional use I refer to the term 'soundscape' to mean electronic or electroacoustic composition which 'describes' an environment; this could be a natural environment such as a forest or the sea, but it could also be a social environment such as the sound environment of a workplace or an auditorium full of students. Some examples of soundscapes, in the way that I understand them for my own work included in this portfolio are *How People Understand* and *Sea, the Whales*. I also use the term 'soundscape' to refer to a composition which describes psychological conditions. My piece *Silence* is a composition of that kind.

29 There is a detailed description of this composition in pp. 24-34.

In my soundscapes, I use pre-recorded sounds of natural and social environments, as well as electronic and standard musical sounds. I attempt to use all these sound objects in my soundscapes, in order to describe the macrostructure as well as the microstructure of environments. In other words, in my soundscapes, the sound objects illuminate both the general ambience and emotional content I perceive in certain environments (natural, social, psychological), as well as the actual sonic details which form the environments. I think of my compositional approach as similar to that of the painter[30]. Like avant-garde painters, my aim is not to create a representation identical to the real thing but to reconstruct a soundscape filtered through my own perception in the phenomenological sense, as described by Maurice Merleau-Ponty (1993),[31] and through my own personal artistic style. For example, if I need to construct the soundscape of a car accident, I do not just reproduce the real sound. I try to 'feel' a car accident and then, in order to compose its soundscape, I try to convert that feeling into sound. In order to 'feel' such an accident, I imagine the colours, sounds, pictures, space and smells in the case of a real one.

The term 'soundscape' was invented by the Canadian composer and environmentalist Raymond Murray Schafer. The term refers to a specific sound or a group of sounds stemming from a broader sound-environment. The term is subjected to the science of acoustic ecology. However, the term does not solely refer to only natural acoustic environmental sounds. It is also applied to any sound environment produced by either natural sources or human activity such as the sound environment of a playground or the mechanical sound environment of a factory. A combination of more than two such sound environments comprises noise pollution. The term soundscape can also stand for a recording of a particular group of sounds which is reminiscent of the original acoustic environment.[32]

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30 Brian Eno also puts the composer in the same position as the painter. See 'The Studio as Compositional Tool' in: Cox, Christoph and Warner, Daniel, eds., *Audio Culture, Readings in Modern Culture*, Continuum, New York and London, 2004, p.129.

31 Maurice Merleau-Ponty in his philosophical work on visual arts has claimed that 'artistic style is nothing else than the artist's vision of the world, it is what goes between the subject in relation to others and the world. It is the allusive logic of the perceived world'. See Galen A. Johnson ed., *The Merleau-Ponty Aesthetics Reader; Philosophy and Painting*, Northwestern University Press, 1993, p.27.

32 Schafer founded the World Soundscape Project, an international research project in the late 1960s at Simon Fraser University. The project initiated the modern study of Acoustic Ecology. Its ultimate goal is 'to find solutions for an ecologically balanced soundscape where the relationship between the human community and its sonic environment is in harmony'. His ideas are thoroughly

In my soundscapes a basic field of compositional experimentation is the interrelationship and interplay between electronic and natural sounds. In trying to find the interesting relationships, combinations, and differences between the electronic and the natural sounds, I examine the area between the natural world and the world of technology as well as the position of humans in this complex environment and how technology has changed the way we acoustically perceive our sonic surroundings. The technique I use the most is to alter the parameters of a natural sound to such an extent that it seems like a fabricated electronic sound and vice versa. For example, in my work *Happy Enough?*, the software instrument The Alm/EXS24/Logic Pro sounds like real sheep bells while in *Silence*, the beat which is constantly heard in the background as a rhythmic pattern is an altered recording of a live heartbeat which I transformed into an electronic beat.

All my compositions are grounded in a particular non-sonic idea. My first concern before organising the sound material of each composition is to develop this idea by creating some sort of 'script' in my mind[33]. For example, the underlying idea behind *Gaza* is the Israeli invasion in the winter of 2008-2009 and the grief over the lost lives, while the script behind *Sea, the Whales* is about the positive feedback we gain from our contact with the sea along with our fear of the unknown dark abyss which the sea can also represent. After this process is complete, I then begin my process of selecting appropriate sound material.

My choice of the sound material is generally based on my instinct, and it is a procedure of trial and error. More specifically, I firstly spend some time to record as many sounds that interest me as I can and from as many sources and venues as possible. Then, I experiment with these sounds by changing their parameters (such as length, pitch, timbre, complexity and volume) and by combining them. At the end of this procedure I narrow down this palette into the particular material that I wish to work with. As far as the body-sounds[34] are concerned, I manipulated them in a way

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explained in his three publications: Schafer, R. Murray, The New Soundscape, Universal Edition, London 1969, *The Book of Noise*, Price Print, 1970 and *The Tuning of the World*, Random House Inc, 1977.

33 By 'script' I mean scenario, story.

34 As explained in p. 16-17.

where I always keep the central idea in my mind. I record the body sounds myself, from my own body and if it is a larger project I also record sounds made by the other participants. In the final part of this process, I deconstruct[35] these sounds through electronic manipulation and audio morphing techniques[36], altering their main features in some of the ways I referred to at the beginning of this chapter. The next stage of my process is to blend these sounds into sound-groups, thus creating the main sound-textures that I subsequently compose with to create my works.

The sound structures used in the compositions included in this portfolio form two basic groups. The first is, what I regard as, 'the climax', where I gradually augment various parameters of the material of the piece throughout its duration. By 'gradually augment' I mean to gradually intensify sound parameters such as the volume, pitch, speed and complexity. *Silence* is one of the pieces in the portfolio which is built around a climax in this way. The second way I organise the material is by juxtaposition and alternation of contradictory textures. The method should hopefully be clear in *Space x 2* in which there are especially clear textural alternations.

I am currently working in a context of ideas inspired by the musical compositions and theoretical texts of Jani Christou, John Cage, and Brian Eno. Although these composers hold different views on music and their works follow different trends and styles, certain ideas conveyed in their works as a whole have inspired me to further develop my personal compositional style. Before going on to write about my compositional concerns in detail, I would like to describe the theoretical and philosophical background to my work and how it has emerged from the ideas and music of these composers.

It is generally recognised that Jani Christou (1926-1970, Greek: Γιάννης Χρήστου) was one of the most important Greek avant-garde composers. His articles 'A Credo for Music'[37] and 'Enantiodromia'[38] describe his philosophical ideas about

35 I use the term 'sound deconstruction' describing the procedure while I change many of the parameters of a sound.
36 Audio morphing techniques include distortion, echoing, equalising, altering of the attack or the envelope of a sound etc.
37 Jani Christou, "Ena pistevo ya ti mousikiā" [A Credo for Music], publi. Epoches, vol. 34 (1966).
38 Jani Christou, *Enantiodromia*, publi. Source N.6 (1969).

‘transformations’ in music[39]. Christou considered that when transformations do not occur, music acquires a decorative character. By the term ‘transformation’ or ‘metamorphosis’ he implied that music should contain elements which have an impact on the audience’s psyche. He considered art and music in particular as the major vehicles for the transformation of human emotion. For Christou, music was not only a means of entertainment but also an educational tool. This is similar to the role of art in Greek antiquity[40].

Christou is attributed with the introduction of the term ‘Metapraxis’ into philosophy. Metapraxis as a term is used to explain illogical and unexpected actions in music. Every living art embraces a set of characteristic actions based on collective expectations. When an action occurs in accordance with collective expectations, this action is called ‘praxis’. When an action breaks the boundaries of the collective expectations, it constitutes a metapraxis. For example, when a conductor conducts an orchestra, this is an action. When the conductor is called to run, speak, scream or dance, this is a metapraxis, because it is an action beyond the logical boundaries of his art. Metapraxis is an attack on the cognitive and the rational as well as an attack on the collective ideas prevalent in a particular system.[41]

His observations on metapraxis were an inspiration for my own views on music making. One of my aims is to distinguish the parameters of sound-objects and then to alter them in order to create a new sound-object filtered through my own instinct and concerns. In my works the idea of metapraxis is basically focused on sound and is not to do with the performance of my compositions. The sound-objects I create through altering the sound parameters aim to cause a surprise reaction [an unexpected result]. For instance, the use of cutlery to simulate the clanging sound of an empty rifle shell hitting upon a metal surface conveys a sense of irrationality. The sounds of cutlery are expected to function in the sound environment of a kitchen, hence the ‘history’ of the sound as referred to above. However, positioned in a totally

39 In his articles Christou explained how music, when it is not decorative, must have the power to transform the audience, the musicians and the musical work itself.

40 Σακελαρίου, Μ.Β., *Η Αθηναϊκή Δημοκρατία*, Πανεπιστημιακές Εκδόσεις Κρήτης, Ηράκλειο, 1999, p. 468 [Sakelariou, M.B., *The Athenean Democracy*, University of Crete, Heraklion, 1999]

41 Lucciano Anna-Martina, *Jani* Christou, *Works and Personality of a Greek composer of our era*, Yorgos Leotsakos trans., Bibliosynergatiki, Athens, 1987.

different sonic environment, they are deprived of their 'sound history', and therefore acquire a totally new quality, which is not logically connected to their original source. In this way, I aim to induce a kind of metapraxis of sound.

Apart from metapraxis, Christou's other ideas on music and art have contributed to my own compositional thinking. For example, I also consider that music should not have a decorative character and should have an emotional impact on the audience. Nevertheless, I do not believe that the role of music is restricted to education or personality formation. I am also concerned with the power of transformation of 'acoustical energies' where sound can trigger human subconscious[42]. I share with Christou the view that the danger for both composer and listener lies in their seduction by the decorative element in aesthetics. On the other hand, I consider that music can convey a variety of meanings and functions. As a result, I consider my thoughts closer to the views of Brian Eno as described by Erik Tamm[43]:

> In Eno's music we find qualities that are commonly, if somewhat superficially, associated with art and popular music respectively: on the one hand, a genuine concern for values of thoughtfulness, reflection, craft, creativity and originality; on the other hand, an acknowledgment of the needs of the audience, a sense of music as a functional, social phenomenon, and a lively interest in the full global spectrum of contemporary musical styles and tendencies.

In essence I agree with Brian Eno; that a work of art can be not only artistically meaningful, but also popular.

My thoughts on music and the idea of metapraxis of sound have further been inspired by the philosophical work of John Cage. In a documentary film by Miroslav Sebestik in 1992, Cage claims that he wanted to free himself from his memories, to see and hear things as if everything surrounding him was new and as if he was just a tourist[44]. He gives the example of two Coca-Cola bottles. Although they are identical, they

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42 Feldman, Josie, Corinne, *The More We Listen: Towards A Depth Psychological Understanding of Sound as Image*, (MA), Pacifica Graduate Institute, California, 2011, pp. 38-56.

43 See; Eric Tamm, *Brian Eno; his Music and the Vertical Color of Sound*, Da Capo Press, Boston, 1995, p.8.

44 Documentary film by Miroslav Sebestik, *John Cage. In love with another sound*, 1992.

seem completely different because they are viewed from a different angle and are placed in a different position in space and time. His conclusion is that no two Coca-Cola bottles are the same. Applying this to music, no sound is identical to another. Although it might share the same parameters with another sound, every sound is different firstly due to the sound environment in which it is included and secondly because of the way we hear it. I share the opinion that sound should be used in variable ways as an original sound-object. My aim is to constantly re-listen to sounds from a different angle[45], and to re-think them based on the above idea.

In this chapter, I have aimed to explain my thoughts concerning my ideas about the sounds that I choose and the compositional procedures I apply to them. I have highlighted the important features of my compositional methodology and technique, and I have described the most important factors which have shaped my compositional thought. In the next chapter, I will provide a detailed analysis of the works included in this portfolio.

45 The philosopher Maurice Merleau-Ponty claimed that 'true philosophy consists of re-learning to look at the world', a view similar to Cage's ideas that sounds should be re-heard without any memory. See Maurice Merleau-Ponty, *Phenomenology of Perception*, Colin Smith translation, Routledge, London, 1958.

2.1 INCIDENTAL MUSIC

2.1.1 Invention on Silence- Silence

Incidental Music for Singer (male or female), Actor or Dancer and a Macintosh Laptop[46]

Supplied materials: avi file & aif file
Duration: approx. 6':30''
2007-2010

In 2007 I read the play *Waiting for Godot* by Samuel Becket[47]. I found this play extremely interesting and I decided to adapt its main idea as the basis for my next composition. The two movements of this work, *Invention on Silence* and *Silence* were composed in reversed chronological order. *Silence*, the main piece, was composed in 2007 while *Invention on Silence* was composed as an introduction to the main piece in 2010. I also wanted to work on a piece for a computer and two performers, a singer and an actor or dancer. *Silence* is written for computer and actor while *Invention on Silence* is for a solo singer. The reason I later added the *Invention* to the main piece was that I perceived a lack of balance in *Silence* when performed by itself. *Silence* is about a person and his/her psychological state. This person is impersonated by the dancer and the music describes him/her physically and psychologically. At the end of the piece I introduce sound elements describing a

46 As all of the compositions included in this portfolio, *Silence* is composed in Logic, which is a software sequencer working only on Macintosh operating systems.
47 Originally written in French in 1948, the play was translated into English by Beckett himself. The world premiere was held on January 5, 1953, in the Left Bank Theater of Babylon in Paris.

second person who does not make a physical appearance. An additional idea then, as well as trying to solve the issue of balance was to restore the lack of the second person's appearance. Thus, the solo singer in *Invention on Silence* is the second person implied at the end of *Silence*.

Waiting for Godot is one of the most important plays of the 'Theatre of the Absurd'[48]. The dramatic context of the play focuses on the relationship between two so-called, tramp-clown figures, Vladimir and Estragon[49]. These two characters wait for Godot, who we don't know whether is a real person or not. In the play Godot never comes to meet them. *Waiting for Godot* 'is a play in which nothing happens'[50]. The main creative idea focuses on 'anticipation'. The two characters meet daily and wait in anticipation to meet someone. Despite the meaninglessness and hopelessness of their dialogues and actions, they continue with their daily meetings. This idea of 'anticipation' for something to happen, for someone to come, or even for finding meaning in life was what inspired me to compose this work. In my composition I attempt to offer a different interpretation of this main idea.

In *Silence* the concept of anticipation is expressed by the sounds someone hears in his head or the sounds someone produces in a state of waiting. The performer, actor or dancer must remain verbally silent throughout the piece. He/she is called to create a choreography based on the music and to translate the music into movement. The title *Silence* stems from the idea that the music is a description of the sounds produced in the performer's head and body. In the complete performance of the work, audience are supposed to have the impression that they enter into the performer's head and feel his/her emotions, especially anticipation, and thus become part of the actual performance.

Taking the chronology of the composition into consideration the description of *Silence comes* first, below and is followed by the commentary about *Invention on Silence.*

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48 Martin Esslin coined the phrase 'Theatre of the Absurd' in his homonymous book *The Theatre of Absurd*, Vintage Books, USA, 2008.
49 Samuel Beckett, *The Complete Dramatic Works*, Faber & Faber Limited, London, 2006, pp.07-88.
50 Trevor Griffiths, *The Theatre Guide*, 3rd ed., A&C Black Publishers Limited, London, 2003, p.23.

Silence

With the music of *Silence*, as with all of the compositions included in this portfolio, I have tried to describe a particular 'story' or 'idea'. The story of *Silence* is about a person who is waiting for someone to come or something to change in his/her life. The waiting time lasts for 4':08" minutes. Then he/she feels the presence of another person and the anticipation starts to wane. I have tried to describe in music the feelings and thoughts of the person while he/she is in the state of expecting someone or something, and the person's actual 'mental' encounter with another person.

Silence is an electronic piece of music which uses recordings of heart beats, breathing and various verbal material as its fundamental material. As a traditional score to this piece would not aid the points I'm trying to make about my research in this commentary I have instead created a graphic in which the structure, texture and timings are as clearly as possibly illustrated. This graph is on page 34.

In terms of sound material, I use two groups of sound: recorded sounds and electronic sounds. In order to make clear the ways in which I use the sound material, I have matched sounds with capital letters in the graph on p.34. The group of recorded sounds consists of: A: heart beating, B: human breathing, C: recordings of the word 'when', D: recordings of the word 'why', E: recordings of the words 'live' – 'alive' - 'together', F: recordings of the words 'silence' – 'trauma' – 'alleluia' - 'sanctus', the syllables 'ca' – 're' – 'fo' - 'ti', the consonants 'f' – 'k' - 's' and the vowels 'a' – 'e' – 'i' - 'o'.[51] The group of electronic sounds comprises the following: G: Sampled voices performing glissandi on vowels i and a /Quantum Leap Symphonic Choirs, H: software instrument/2079 /Absynth4/Native Instruments, and I: sampled gong /Orchestral Kit/EXS24 /Logic Pro with or without decay from electrocardiogram.

51 The sound of heart beating is taken from Pink Floyd's track *Money* which is included in the LP: *The Dark Side of the Moon* and written in 1973. In order to produce the words 'when', 'why', 'alive', 'together' and sounds of breathing I recorded myself. The recordings of the words *live* and *together* were made with the voice of Roxanne Papadimitriou. For the other recorded material, I used my own voice and other friends' voices.

The shape of this piece contains two climaxes [52] which occur at 01':53" and 03':49". The work starts with the word 'silence' and immediately afterwards the sound of the beating heart enters which remains almost constant until the end of the work. The heart beat participates in the run-up to these peaks by gradual acceleration and gradual volume increase. On the other hand, the sound of the human breathing starts calmly and becomes anxious at the peaks of tension. These two sounds, the heart beating and breathing, are the only sounds which are produced from the human body unconsciously[53]. With these two human and so-called 'non-intentional' sounds I intend to represent the physical presence of the dancer/actor on the stage and his/her physical reactions while waiting. All the other sounds that are heard in *Silence* are used to describe the feelings and thoughts of the performer. In the following paragraphs I will explain how I attempt to describe the performer's presence, feelings and thoughts.

The music of *Silence* unfolds in three layers. By layer I mean a grouping of selective sound/melodic lines (tracks) that fulfills a specific function. The first layer consists of the heartbeat and breath elements which are prominent until the end (groups A, B in the graph on page 34). As I have mentioned above, this layer underlines the physical presence of the actor on the stage or in the performance space. The second layer consists of the words 'why' –'when'-'live'-'alive'-'together' (groups C, D, E).

The second layer describes the performer's consciousness. The first two words, 'why' and 'when' are the basic questions in the performer's mind during his/her waiting time. They are involved in the climax through their altering at the peaks of tension. This 'altering' depends on electronic elaboration, distortion and retrogression. The articulation of the words 'why' and 'when' is not emotionally charged in the beginning but becomes more dramatic at the peaks of tension. The last three words in this second layer, 'live', 'alive' and 'together' are used to conclude *Silence*.

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52 By the term 'climax' I mean an increasing gradation of the parameters of the sound material. These parameters correspond to volume, speed and complexity.

53 I am referring to the sounds audible to our ears. Though, in 1951, Cage visited the anechoic chamber at Harvard University. Cage said that he heard two sounds, one high and one low. When he described them to the engineer in charge, he informed Cage that the high one was his nervous system in operation and the low one his blood in circulation. (from Richard Kostelanetz, *Conversing With Cage* , 2nd ed., Routledge, New York and London, 2003, p. 244).

The rest of the sound groups, which are the processed[54] words 'silence'- 'trauma' - 'alleluia'- 'sanctus' etc. (F in the graph), the sampled voices /Quantum Leap Symphonic Choirs (G in the graph) and the software instrument /2079/Absynth 4 /Native Instruments (H in the graph) constitute the third layer. All these sound groups illustrate the subconscious of the performer. Like the other layers, the third layer starts calmly, speeds up gradually, and becomes more kinetic and louder at the peaks (1':53" and 3':49").

The two peaks of tension are marked by the sound of the sampled gong/Orchestral Kit/EXS24/Logic Pro. The first peak occurs from 1':53" to 2':02" and the second peak from 3':49" to 4':06". At the second peak, the decay of the gong sound is amalgamated with the sound of an electrocardiogram. The first peak describes a 'false alarm'. At that moment the person falsely believes that someone is coming or something is changing. The second peak describes the end of his/her anticipation.

At 04':08", after the second peak, another beating heart sound enters which is not synchronised to the first. The new heart beat signals the performer's feeling of the presence of another person. At 4':19" the female voice enunciates the word 'live', at 4':22" the male voice pronounces the word 'alive', and the synchronization of the two heartbeats is finally achieved at 4':30". Both voices are heard at 4':32" saying the word 'together'. The two heartbeats continue synchronized for 5" until 4':37", when the music stops abruptly.

Invention on Silence

In 2010, two years after a performance of *Silence* at Royal Holloway, University of London, in June 2008, I decided to add a prelude[55] and I composed the *Invention on Silence* which introduces the sound material of *Silence* and offers any future director and/or actor of this work the freedom to create a 'mise-en-scène'. For these reasons along with those explained in pages 24-25 I consider the performance of *Invention on Silence*

54 I applied various techniques on these recordings. Most important is the slicing and the rearrange of the syllables of these words.
55 I have explained the reasons in pp. 24-25.

and *Silence* inseparable.

I decided that *Invention* should be a work for solo voice (male or female), since I, as many others, consider the human voice as the most direct 'instrument' for conveying emotions. The primitive sound of the solo voice has an immediate effect in gaining the interest of the audience. That is because I believe that the human voice, produced by the human body, has a direct impact on the subconscious, as the voice is the first sonorous object the human possesses right from his birth.

The reason I gave this piece title *Invention* has to do with the compositional character of the work. I have already referred to the basic verbal material I worked with in *Silence*. The construction of *Invention on Silence* is based on the words 'when', 'why' and 'silence'. Inspired by the idea of the 'open work' as explained by Umberto Eco in '*The Poetics of the Open Work*', I intended with *Inversion* to create an indeterminate[56] piece of music. I have created a graphic score and it resembles what Eco describes as a 'construction kit'[57].

Drawing from my knowledge of Byzantine and neumatic notation, I created a score which lays out only the ascending or descending pitch direction and the sequence of the words' syllables[58]. The pitch, the phrasing as well as the tempo are left to the performer's artistic discretion.

In terms of description I use three specific pitch directions, one for each word (A, B and C in Fig.1). The words 'silence' and 'when' follow a descending movement from a high to a low pitch, although their structure is different. The word 'why' follows an ascending movement from a low to a high pitch. I divide the words into syllables based on vowels. From this categorisation seven vocal units ensue, three for 'silence' and two for 'why' and 'when' respectively, each unit corresponding to one syllable (A1-A3, B1 and B2, C1 and C2 in Fig. 1). These units describe elementary vocal movements.

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56 In *Invention on Silence* pitch, volume, time and form are not determined but choices of the performer.

57 Umberto Eco, 'The Poetics of the Open Work', *Audio Culture: Readings in Modern Music* , Cox, Christoph and Warner, Daniel (eds.), (New York and London: The Continuum International Publishing Group Inc, 2005), p.169.

58 Syllables of the words 'silence', 'why' and 'when'.

The curved line denotes the use of portamento and the straight line denotes the absence of portamento. The straight horizontal line shows a sustained pitch. Thus, the straight ascending line indicates an ascending movement of the voice from a low to a high pitch without portamento, and the straight descending line indicates a descending movement of the voice from a high to a low pitch without portamento. The curved ascending or descending lines indicate the same movements with portamento.

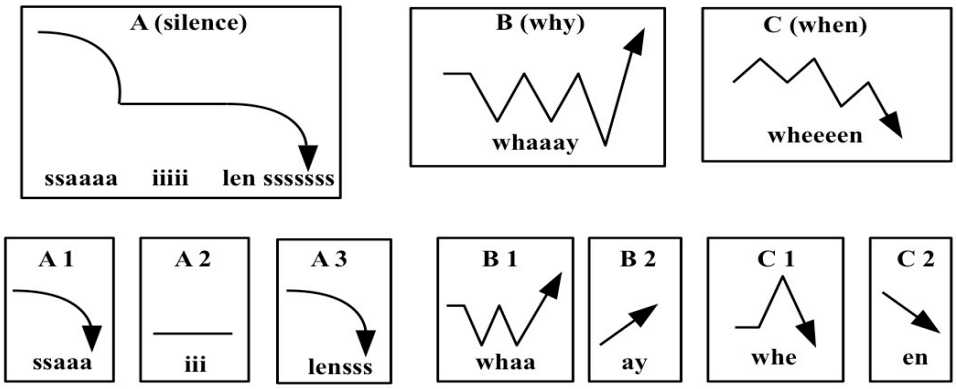


Fig.1

Then I form the following sequence of vocal units:

B2-C2-B2-C2-A1-A2-C2-A3-C2-A3-A3-A3

B1-B1-C1-B1-C1-C1

A3-B2-A3-C2-A3-B2-C2-C2-A3-A1-A2

C1-C1-B1-C1-B1-B1

C-C-B-C-B-A-A

Please see in Fig. 2 a graphic representation of this sequence.

Invention on Silence

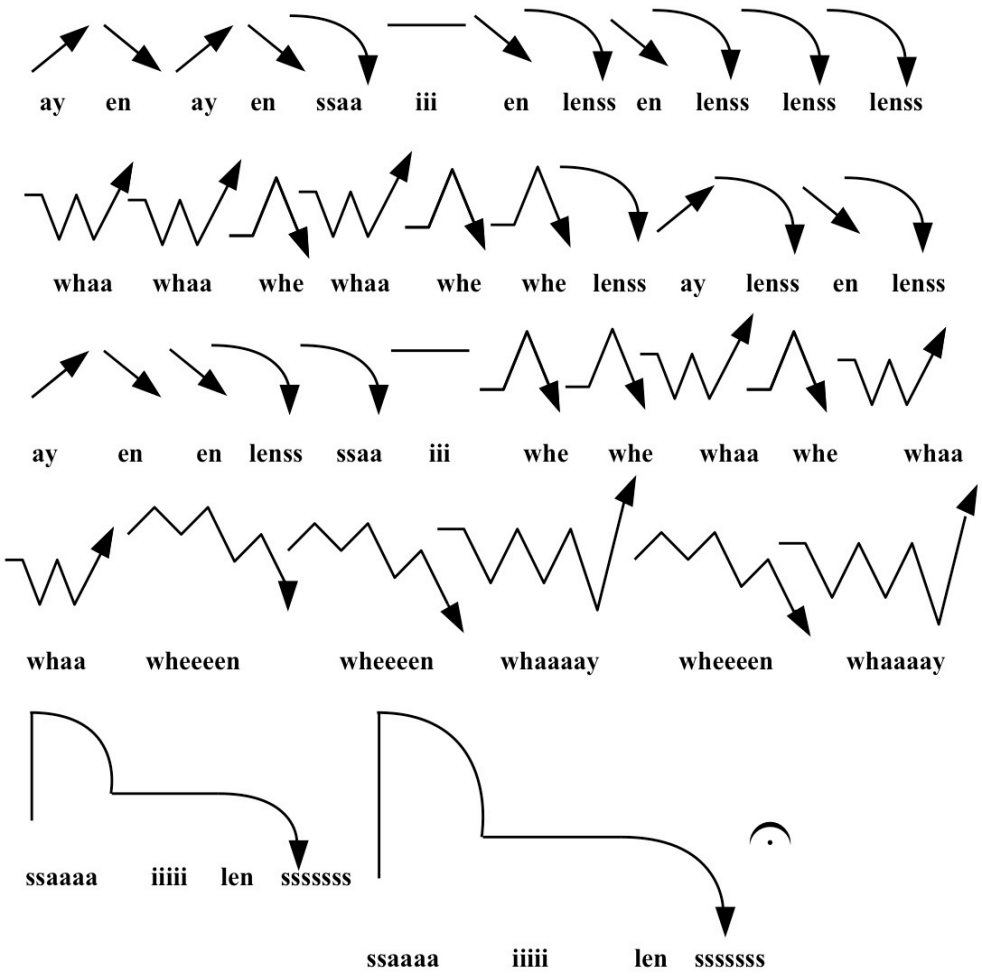


Fig.2

Invention on Silence & Silence

In his article 'A Credo for Music' Jani Christou[59] argues for the superiority of the liberating function of art over its decorative function.[60] His stage work *Anaparastasis III [The Pianist]*, composed in 1968, is based on his idea of metapraxis[61]. Christou's work for actor, ensemble and tapes relies on the most primitive and universal human anxiety, that is the need to communicate. The work is musically descriptive of the mind of a

59 Jani Christou (1926-1970) was one of the most influential Greek composers.
60 Jani Christou, Review *Epoches, vol.34*, February 1966.
61 See pp. 20-22.

pianist during a performance.[62] My work *Invention on Silence-Silence* owes much to *The Pianist*, which Christou himself called a 'psychodrama'. *Silence* as well describes musically an 'Inner' sequence of deep feelings. The difference between the two works lies in the perception of the performance. Although Christou provides very detailed directions (even for the lights), he wants each performance to be an original re-enactment of the work. In my case, only the second part of the work, i.e. *Silence* on its own, is composed as a fixed[63] musical work which requires no additions or alterations.

Silence shares common features with *Elektrokardiogramm* by Kraftwerk.[64] In *Elektrokardiogramm*, Ralf Hütter and Fritz Hilpert use breathing and a cardiogram pulse as I did in *Silence*. Both sounds are used as the basic rhythmic pattern. In *Silence*, my use of the heartbeat and breathing focuses on speed, expression and tension. I aim to stimulate the audience and create a sense of anxiety and not just to provide a central 'beat' like in *Elektrokardiogramm*.

In terms of structure *Invention on Silence* shares some common elements with Stockhausen's *Klavierstück XI,* composed in 1956. As Cage points out: '[T]he function of the performer in the case of the *Klavierstück XI* is not that of a colorist, but that of giving form'.[65] *Klavierstück XI*, is intriguing because it is performed off a one-page score in which various passages are selected randomly, and the performance ends when any passage is repeated for the third time. In *Invention on Silence*, I provide only voice figures which include basic information about voice direction. Hence the performer is asked to re-create the work and to contribute to its composition. However, my own work differs from Stockhausen's in the choices the performer has to make. In *Invention on Silence* the performer does not choose the sequence of the voice figures but he/she has a significant influence over the tempo, pitch, dynamics and phrasing of the music.

A complete performance of *Invention on Silence* and *Silence* is scheduled for April 2012

62 From Michael Stewart's notes in the booklet of the CD: *Jani Christou vol. III Patterns and Permutations, Mysterion, Anaparastasis III [The Pianist]*, Sirius, SMH 200112 2, 2000.

63 *Silence* is a piece played by the computer in an invariable way.

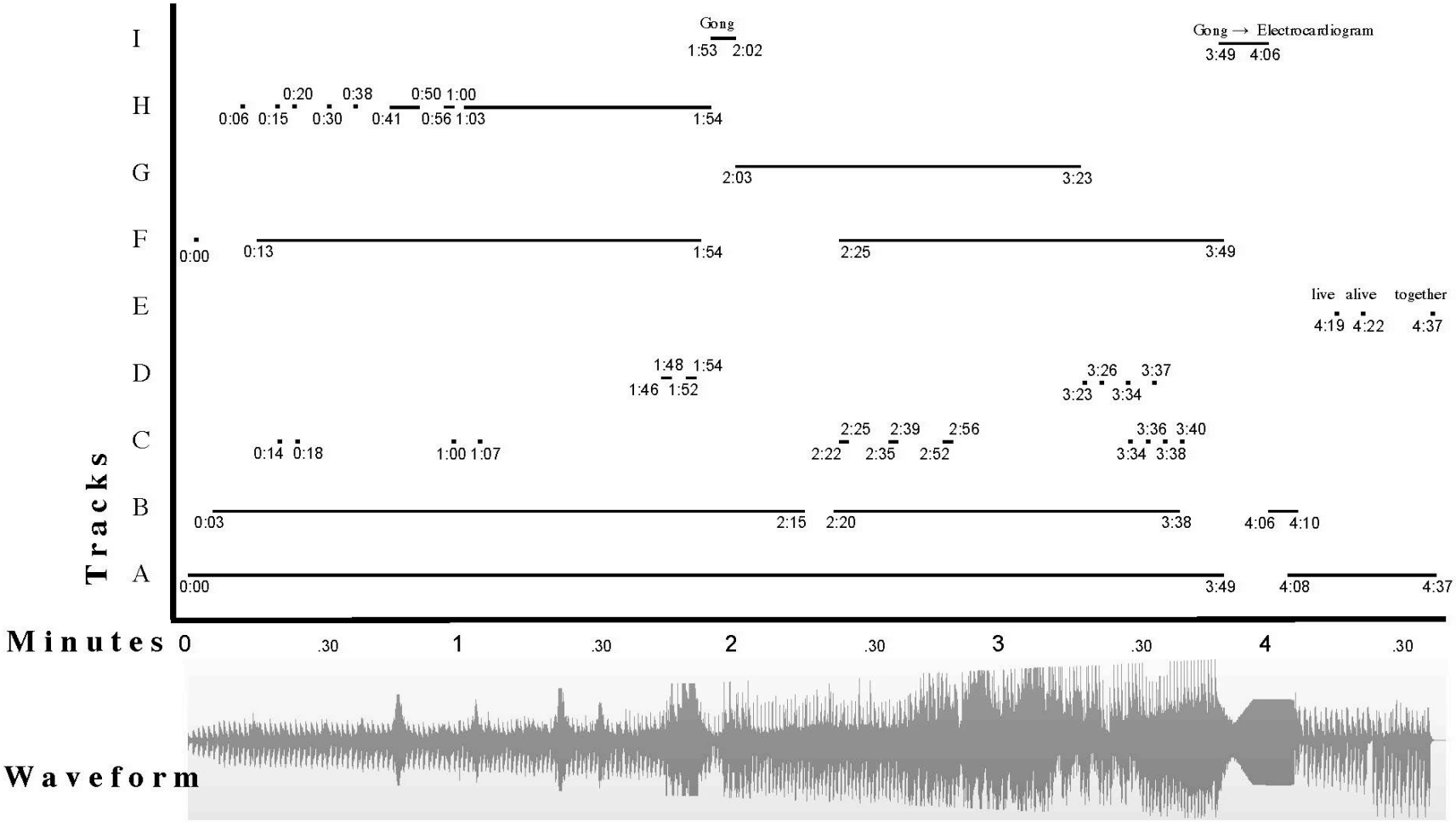
64 *Elektrokardiogramm*, Hütter and Hilpert comp., L.P. 'Tour de France Soundtracks', released on August 4, 2003.

65 John Cage, 'Composition as Process: Indeterminacy', *Audio Culture: Readings in Modern Music*, Cox, Christoph; and Warner, Daniel (eds.), p.177.

at Duncan *Theatre* in Athens. A concert performance was also held at the University of Macedonia in Thessaloniki on March 1st 2010 and another one at Attikon Conservatoire in Athens on November 28th 2010.

Silence

A: Elaboration of recorded heartbeat. **B**: Recorded breathing. **C**: Elaboration of recordings of the word *when*. **D**: Elaboration of recordings of the word *why*. **E**: Recordings of the words *live*, *alive*, *together*. **F**: Processing of the words *silence*, *trauma*, *alleluia*, *sanctus*, and the syllables *ca*, *re*, *fo*, *ti* and the consonants *f*, *k*, *s* and the vowels *a*, *e*, *i*, *o*. **G**: Sampled voices performing glissandi on vowels *i* and *a* (Quantum Leap Symphonic choirs). **H**: Electronic instrument (2079/Absunth 4/Native Instruments). **I**: Sampled Gong (Orchestral Kit/EXS24/Logic Pro) and sound of an electrocariogram.



2.1.2 Space x 2

Incidental Music for Josh Ward's choreography *Space x 2*

Supplied materials: avi file & aif file
Duration: 9':58''
2009

This composition was composed for Josh Ward as part of one of the projects that he had to undertake for his Master's degree in Physical Theatre at Royal Holloway, University of London. He asked me to compose original music as he wanted control over the whole of his production. We agreed that I would compose the music based on his brief and that he would create his choreography on this music. The performance of the piece took place at the Boiler House, Royal Holloway University of London, in April 2009. The video presented in this portfolio is a recording of that performance.

The idea behind this work was to examine creatively the impact of the social and natural environment on people. By social environment I mean every environment which involves humans and human activities. Examples of social environments include towns, a university campus, a factory teeming with workers or a city street in rush hour. By natural environment I mean every ecosystem that is not (or little) influenced by humans such as a forest, a lake, a desert or a waterfall. The title 'Space x 2' is derived from the two different 'spaces'. These are the human being[66] and the surrounding environment[67] that he/she has to confront in order to form his/her personality. In *Space x 2* I have named the human being as 'Inner' and his/her surrounding environment as 'Outer'. In this work Josh and I wanted to illustrate the interaction of these two 'spaces', the human being and his/her surrounding environment.

66 I consider the human being as an individual space which comprises a material volume (body) and an immaterial environment (thinking and feelings).
67 The surrounding environment of a human is every social or natural environment in which he/she is embedded.

After Josh and I discussed the project, we decided that we wanted to reinforce the philosophical idea behind *Space x 2* with some concepts drawn from Greek philosophy[68]. It was Josh's idea that the 'Inner' encompasses the triptych of the human personality: body-cognition-emotion. He thought that each of these three elements should be explored by a separate dancer. Each dancer should embody one of these concepts and all of them should represent a single human personality onstage[69]. Also, inspired by ancient Greek philosophy and the ideas about the universe current in that era, I suggested that, for the 'Outer', we should make use of nature's four elements: fire-water-earth-air[70]. My creative approach was to match each of these elements (fire-water-earth-air) with a separate group of sounds, and then to integrate them into a single sound environment in order to express the unity of the four elements.

In compositional terms, I grouped the sound material into layers[71] as I did in *Silence.* I formed one layer for the 'Outer' and one for the 'Inner'. For the 'Inner' layer I used recordings of speech (which I reversed), whispers, sounds of tongue clicking and muttering, and of nail tapping on a metal surface. Since speech is regarded as logical, I use it to signify cognition in this piece. I reversed the speech recordings because I didn't want any specific meaning to be derived from them but to represent human cognition in general. Emotion is represented by the whispers, as the sounds and voices of the subconscious. I used the recorded sounds of tongue clicking and muttering, and of nail tapping on a metal surface as products of the body's function.

The four elements of the 'Outer' are represented by four electronic sound groups: the low range of Orbit Station/ES2/Logic Pro 8/Apple for fire, the low range Goa Remix/ EXS24/Logic Pro 8/Apple for earth, the Percussion Kit/EXS24/Logic Pro 8/Apple for water and the high range of Orbit Station/ES2/Logic Pro 8/ Apple for air. My intention was to create two separate groups of sounds to describe the two layers; prerecorded

68 We talked about thoughts of Plato, Socrates and Aristotle on human behaviour.

69 The three dancers that participated in *Space x 2* were Melanie Grossenbacher, Evi Mitsopoulou and Anna Poyhonen.

70 Also known as classical elements. Plato characterizes the elements as being pre-Socratic in origin from a list created by the philosopher Empedocles (ca. 450 BC).

71 As previously said, by layer I mean grouping of selective sound/melodic lines (tracks) that fulfills a specific function.

sounds for the 'Inner' and software electronic sounds for the 'Outer'. A graphic representation of *Space x 2* is provided on pp. 40-41.

Space x 2 is a 10 minute piece and it is divided at 6':10" by a 30 second pause where no music is played and one of the dancers performs a solo in silence. Another important structural element of this piece is that there is no climax[72]. In terms of structure, *Space x 2* comprises a series of alternations of two contrasting sound textures. The first texture presents the 'Inner' and 'Outer' in balance[73] and it has the following characteristics: soft volume, loose sound structure and absence of tempo or any rhythmical pattern. The second texture presents the 'Inner' and the 'Outer' differently. Its structure is very dense, loud and short compared to the first sound texture. In the second texture, the software instruments of the 'Outer' play clusters[74] as opposed to the abstract solo sounds they play in the first sound texture. Also, in the second sound texture the recorded whispers are combined with muttering. Moreover, these two sound elements of the 'Inner' are distorted and their gain is amplified. As a result of this manipulation, this particular sound combination is profoundly altered. In the first texture, whispers and muttering function as background elements. They are soft, and they are not organised in any particular structure or figure. In the second sound texture though, they function as foreground elements. They are loud and organised into specific rhythmical patterns. The first sound texture describes the co-existence of the 'self' and the surrounding environment. The second sound texture describes the constraint exerted by the surrounding environment on the human being.

Like in *Silence*, in *Space x 2* I use a musical sound as a signal to point out significant musical events[75]. The 'signal' sound is the metronome[76]. It appears twice. The fist time is from 0':29" to 1':09 and it introduces the 'Outer'. The second appearance is from 6':02" to 6':10", when the 30 minute solo dancing with no music starts.

Space x 2 was a good opportunity for me to experiment further with the use of the voice combined with electronics. In this piece, I developed further my techniques of voice

72 See fn. 51, p. 27.

73 In this texture when 'Inner' has a strong presence (it is quite loud, or has a dense structure, or both) then 'Outer' stays in the background (it is soft in volume, or sparse, or both) and vice versa.

74 'Cluster' or 'tone cluster' is a musical chord comprising at least three consecutive pitches in a scale. In *Space x 2* I use clusters of 8 to 10 consecutive pitches in a chromatic scale.

75 In *Silence* the 'signal' sound is the sound of the sampled gong.

76 I use the clicking sound of the metronome and its A 440Hz.

manipulation compared to what I did in *Silence*. Although in *Silence* I use prerecorded voice and breathing, the sounds retain their integrity and are kept distinct. In *Space x 2*, I tried to blur and process the recordings so that they would not be distinctive when compared to the electronic sounds. In addition, in this piece I have experimented extensively with using the same recorded material but trying to produce entirely contrasting sound effects from it. While the whispers and mutterings in the first sound texture function as sustained background sound elements, in the second sound texture they become punctuative and function as foreground rhythmic sound elements.

In this piece I was inspired by *Thema (Omaggio a Joyce)* for voice and tape by Luciano Berio, composed in 1958. *Thema* established a new way of presenting the interrelationship between speech, sound and text. In Berio's piece the central element is the use of voice and its amalgamation with tape sounds so that one is converted into the other. To do this, Berio applied on the singer's voice[77] a very quick tremolo so as to resemble other tape sounds in the piece. In other cases he used tape sounds that imitate voice sounds. For example, he use a lot of tape fast forward and fast rewind along with other tape techniques and at many points in the piece there is little or no distinction between the voice and the electronic sounds. Another technique he used is tape slicing. One interesting cut and repetition is that of the 's' at the ends of words performed by his wife, Berberian. Berio combine these repeated 's' sounds with tape sounds creating, in my opinion, a 'confusing' effect: in some cases there is no clear distinction between the voice and the other tape sounds. My techniques of slicing, reversing, elongation and shortening of the voice sounds are similar to Berio's. However, in *Thema* Berio stresses the meaning of the text. For me the significance of the text is of minor importance compared to its sound quality.

The main problems I had to deal with in *Space x 2* concern the performance and the *mise-en-scène* of the choreography. Josh and I had to discover a means of portraying the psychological impact of the conflict between the person's 'Inner' world and his/her environment. My music initially had no breaks. After extensive discussions we came up with the idea that the music should pause and that the choreography should depict the

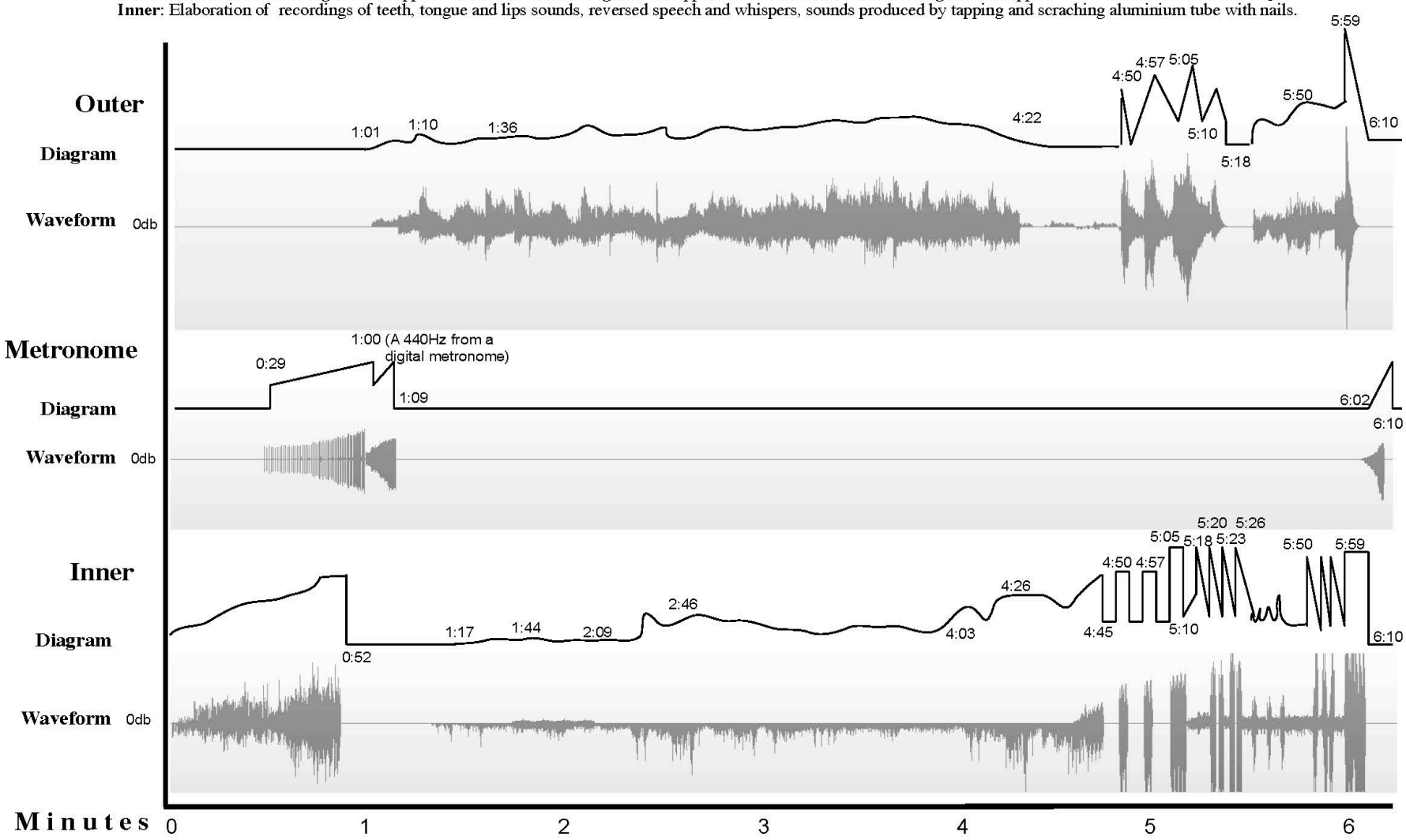
77 Cathy Berberian.

dancer's feelings and thoughts about what has gone on before the pause. Our intention was to create an effect of REM or paradoxical sleep - the phase of narcosis and when the subconscious predominates, the brain reassesses mechanically the actions of the past and the person is unable to engage in logical reasoning. The dancer performs the choreography for 30 seconds in complete silence[78] as if hypnotised. This sound pause performs a double function. On the one hand it clearly divides the two separate sections of the piece, and on the other hand it underscores the intensity of the second sound texture by contrasting it with the absence of sound during the pause.

78 In terms of music.

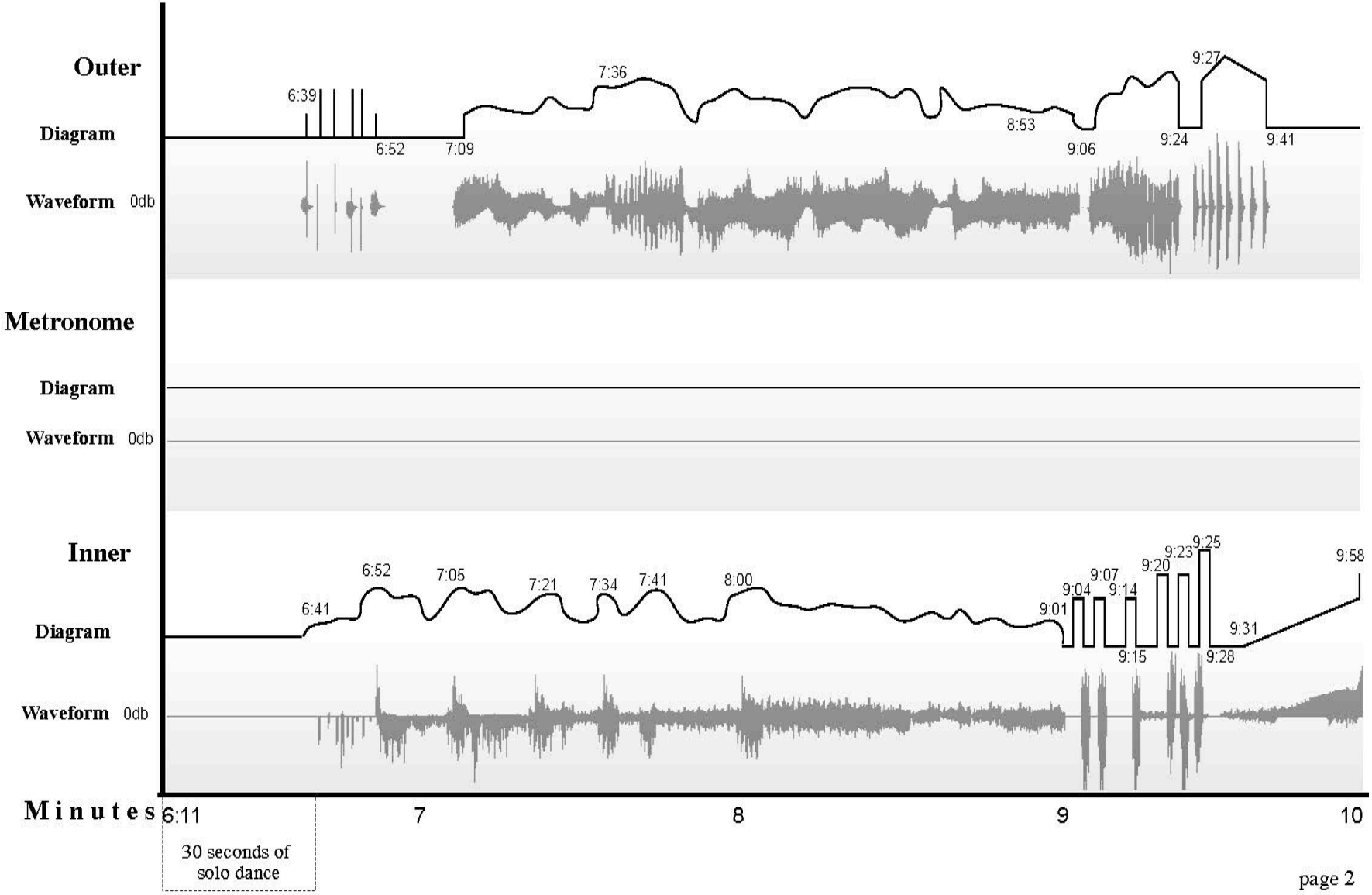
S p a c e x 2

Outer: Orbit Station/ES2/Logic Pro 8/Apple, Goa Remix/EXS24/Logic Pro 8/Apple and Percussion Kit/EXS24/Logic Pro 8/Apple, **Metronome**: Seiko SQ44
Inner: Elaboration of recordings of teeth, tongue and lips sounds, reversed speech and whispers, sounds produced by tapping and scraching aluminium tube with nails.



Space x 2

Outer: Orbit Station/ES2/Logic Pro 8/Apple, Goa Remix/EXS24/Logic Pro 8/Apple and Percussion Kit/EXS24/Logic Pro 8/Apple, **Metronome**: Seiko SQ44
Inner: Elaboration of recordings of teeth, tongue and lips sounds, reversed speech and whispers, sounds produced by tapping and scraching aluminium tube with nails.



page 2

2.1.3 How People Understand

Incidental Music for Josh Ward's choreography *How people understand*

Supplied materials: avi file & aif file
Duration: 11':05''
2009

After our first project *Space X 2*, Josh Ward and I decided to do a second project, and we worked together on *How People Understand*. I tried to develop further some of the compositional procedures that I had used previously with Josh in this new piece. This work is much more concerned with the human voice compared to my previous works. The fundamental material of this piece consists of recordings of the human voice which I made in a variety of different places. I use, for example, voice recordings from places like busy streets, lecture rooms, a university campus and also from the television.

The concept of *How People Understand* is based on a love triangle and describes the relationship of a couple going through a crisis when a common friend tries to seduce one of the partners. The music describes these relationships and unfolds in five scenes: 1. The introduction and first attempt at seduction, from the beginning to 3':33'', 2. The second attempt at seduction, from 3':33'' to 5':00'', 3. Interlude – The love scene from 5':00'' to 7':02'', 4. The third attempt at seduction from 7':02'' to 10':02'' and 5. The epilogue and final decision of the girl to follow a path of solitude from 10':02'' to 11':05''.[79]

In terms of the organisation of the composition's material, I follow the grouping method that I explained in relation to the previously discussed works[80]. In *How People Understand* the sound groups are as follows: A: prerecorded[81] sounds from streets of London and the Royal Holloway campus and lecture rooms, my voice, television and

79 See the Graphic on page 45.
80 *Silence* and *Space x 2*.
81 All of the recordings used in *How People Understand* were made with the Sony MZ-RH1.

radio broadcasts[82], B: a reversed speech fragment[83], C: sampled male and female pitched shouts in monophonic and polyphonic patterns, D: sampled male and female choruses[84], E: electronically processed recordings of a female voice[85], F: recordings of my breathing, G: rhythmic patterns of reversed cricket (the animal sounds)[86].

I use recordings of the city and the university environment to recreate a soundscape. This soundscape is continuous and functions as a central unifying element. (it is the A in the graph on page 45). At the beginning of the piece, I use the reversed fragment of my voice (B in the graph) as a 'signal sound'[87]. This marks the start of the piece, the onset of other musical events and the ending of the first scene. I also use it in the fourth scene as a cue for the dancers. The sampled pitched shouts (C in the graph p. 45) are crucial to the meaning of the 'story' since they represent the human instincts, the most primitive element of human behavior. I use the sampled choruses (D in the graph) to represent the communication between the three dancers. The recorded female voice (E in the graph) depicts the woman's feelings[88]. I use the recordings of breathing (F in the graph) to describe how I see the reaction of public opinion[89]. The reversed sound of the cricket (G in the graph p. 45) is used in the middle section of the work for tension relief.

How People Understand, consists of five undivided scenes[90]. The three characters are presented in the fist scene, where the first attempt at seduction and the ensuing confrontation between the two men takes place. This introductory scene ends at 3':33". The second scene starts right after the end of the first. In this second scene there is another attempt at seduction of the girl. There is also a second attempt at seduction followed by the couple's reactions this time. The third or 'middle' scene comes 5 minutes after the beginning of the work. This scene shows the couple in love and the temporary

82 BBC Television and Radio.
83 In order to produce this sound fragment I first recorded myself while I was reading out loud and in variable pitches a long series of syllables. Then, I selected a very small part of the recording and reversed it.
84 For C and D I have used sounds from Quantum Leap Symphonic Choirs sound library.
85 Soprano Roxanne Papadimitriou.
86 Sweep FZ3/EXS24/Logic Pro.
87 Signal sounds in *Silence* and *Space x 2* are the sounds of the gong and the metronome respectively.
88 As I said before, the three dancers impersonate a couple and a seducer.
89 I extensively used sounds of deep and quick inhalations in order to create the feeling of astonishment.
90 There is no pause between the scenes.

acceptance of this fact by the friend/ seducer. In the forth scene, from 7':02" to 10':02", a third attempt at seduction is made which is resisted by the couple. *How People Understand* ends with the last scene, from 10':02" to 11':05", where the woman decides to stay alone.

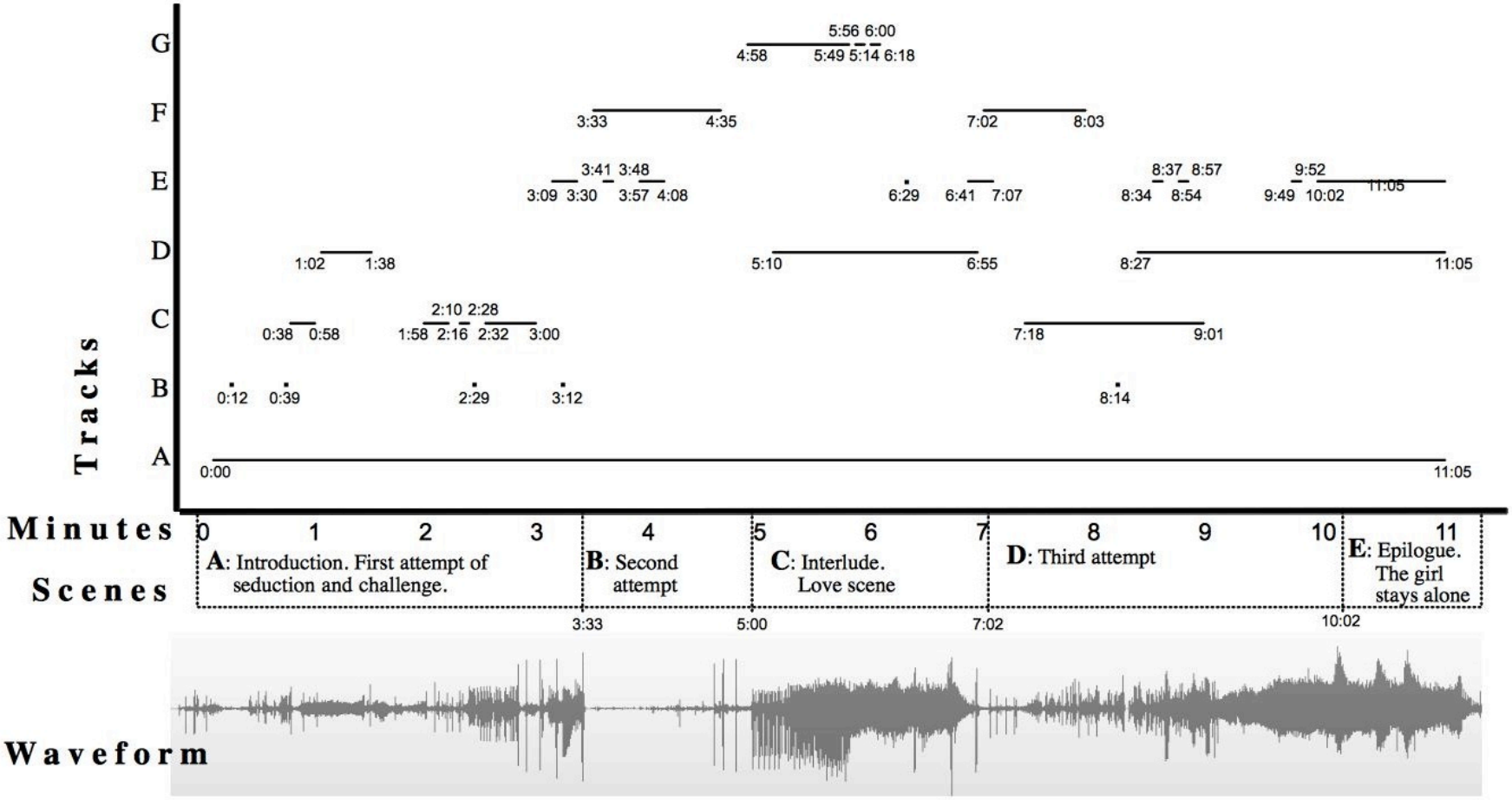
Space x 2 and *How People Understand* are collaborations between Josh Ward and me and both were performed in the same venue[91]. In both works there is a blending of electronic sounds and recorded human sounds. The difference is in the selection of human sounds. In *How People Understand* I use recordings from various sources and venues[92], whereas in *Space x 2* I include only recordings of my body sounds[93]. I did so because with my music in *Space x 2* I wanted to describe a personal human behavior and thus I used only one human's sounds. On the other hand with my music in *How People Understand* I intended to describe the behavior of three humans and so I used human sounds from various sources. Taking all of the above into consideration I feel that *How People Understand* as a natural successor to *Space x 2*.

How People Understand was first performed in June 2009 at Boiler House of Royal Holloway University of London. The dancers were Melanie Grossenbacher, Josh Ward and Konstantinos Thomaides.

91 Boiler House of Royal Holloway, University of London.
92 As I said before, these are recordings of the university campus, lecture rooms, city roads, myself, soprano Papadimitriou, etc.
93 Recordings of my teeth, tongue, lips, whispering and speaking.

How People Understand

A: Soundscape of city university, television and radio. All sounds are reversed. **B**: A reversed fragment of my speaking. **C**: Electronic male and female pitched shouts in monophonic and polyphonic patterns (Quantum Leap Symphonic choirs). **D**: Electronic male and female choruses (Quantum Leap Symphonic choirs). Used in sustained pitches which slowly alter in slight glissandos. **E**: Solo female voice. Recorded and digitally processed. **F**: Recordings of my breathing. **G**: Rhythmic patterns of reversed cricket sounds (Sweep FZ3/ EXS24).



2.1.4. Emersion

Incidental Music for Vicky Spanoviangelis' multimedia project *Emersion*

Supplied materials: .avi file &. aif file
Duration: 21':40"
June 2011

Emersion is a multimedia project combining dance, music, video and architecture that I collaborated on with Vicky Spanovagelis as part of her PhD research[94]. In my discussions with Vicky I realised that our research projects were largely compatible in terms of our interests and methodologies. We therefore decided that it would be interesting to collaborate on a research project, the outcome of which is *Emersion*.[95]

Vicky's PhD research focuses on the investigation of the interrelationships between architectural and choreographic practice from a bodily perspective, underpinned by Body-Space-Event relationships. Vicky used the Acropolis and the New Acropolis Museum in Athens as the location for her fieldwork. Her choreographic research is based on the human experience of space, how architecture affects our bodies and how choreography can in turn offer insights to architectural design. *Emersion* is one of the works resulting from her research, particularly concerning the missing Caryatid, and is part of a multimedia interdisciplinary project combining movement, music, film and architecture. Vicky based her choreography on the concept of the missing Caryatid who narrates the history of Athens. Apart from being a decorative figure, the Caryatid was once a female model for the sculptor, a living woman. The double nature of the Caryatid, the metamorphosis of the girl (dancer) into Caryatid is the key concept of the work which defines its structure.[96]

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94 Vicky Spanovangelis is an architect and a choreographer and she is currently completing her PhD thesis with the title *Spatialised Performativity: An investigation of Choreography and Architecture as Interdisciplinary Practice*, Dance Department, University of Roehampton, London.

95 I should clarify that *Emersion* was almost completed when I was called by Vicky to compose music for this particular project.

96 In the next paragraphs I will explain how this metamorphosis is essential to the structure of *Emersion*.

In light of Vicky's research project, I decided to create a polyphonic soundscape drawing upon various sources. I used phrases drawn from the dancer's narration[97] and two recorded interviews[98] with the archaeologist Konstantinos Kazamiakis[99] and the architect Yiannis Aesopos[100]. Before having worked on these recordings, I asked Vicky to think about the most significant words in the above interviews, which we could use in order to impart a structure to *Emersion*. After discussions with Vicky we chose the following words taken from the interviews: from the English text we selected the words 'amorphous' – 'reconstruction', 'border' – 'diffusion', and from the Greek text the words 'κρυφό' [krifo: hidden][101] – 'τυλιγμένη' [tiligmeni: wrapped], 'αντίγραφο' [antigrafo: copy] – 'ξεχασμένο' [xehasmeno: forgotten]. These words, which we grouped in pairs, determine the dramaturgical and musical concept of *Emersion*. The work comprises four uninterrupted[102] parts, *Prelude* and *Part One* to *Part Three*[103]. Each of these pairs defines a part.

The dramaturgical structure of *Emersion* is based on a series of landscapes drawn from the performer's journey. The dancer starts the choreography by impersonating a girl. As the performance moves on, the girl is gradually transformed into a Caryatid. During the time that she impersonates a girl, the dancer unfolds her personality and describes the contemporary city of Athens. During the time that she impersonates a Caryatid, the dancer seeks to reconstruct the fragments of herself and the ancient city of Athens.

Since this performance was an experimental stage in a larger project[104], my intention was

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97 I have used two phrases from the dancer's narration. The first is 'Time she stopped' taken from Beckett's play *Rockaby* written in 1980. The second phrase is 'She has defeated time' taken from Kiki Dimoula's poem *British Museum, Elgin Marbles* from the anthology *Erebus* written in 1956.

98 Vicky Spanovangeli conducted the interviews. One of the interviews is in English and the other is in Greek.

99 Konstantinos Kazamiakis is an architect and archaeologist at the Archaeological Service of Prehistoric and Classical Antiquities.

100 Yannis Aesopos is an architect, director of the architectural office 'Aesopos' in Athens and associate professor of architectural and urban design at the University of Patras, Department of Architecture. He has written the books *The New Acropolis Museum* and *Contemporary Greek City*.

101 I have placed in brackets the Greek words in Latin characters and their translation in English.

102 There is no intermission or any other pause between the sections of *Emersion*.

103 A table of *Emersion's* structure is available in Appendix I, p. 85.

104 *Emersion* is the third and last of a series of works that Vicky Spanovangeli completed during her Ph.D. research. The first is *Athens Void*, the second is *Skin* and the third is *Emersion.*

to incorporate sounds produced during the research procedure and the rehearsals of this project[105] into the musical composition of *Emersion*. In order to facilitate the description of *Emersion*, I provide graphs on pages 54-57. In Table 1, p. 58, I also provide a list of the sound material used in this work.

This work differs from my previous works in that in this composition I make use of only two software instruments – namely the sampled Doorbell/EXS24/Logic Audio, and the sampled orchestral Triangles/Orchestral Percussion/Kontakt 4/Native Instruments. The rest of the musical material consists of recordings of the cityscape, noise[106], or sounds made by the people who worked on *Emersion*. To get those sounds I asked the director, the dancer and the choreographer to record their voices while they were reciting words and phrases from the two poems and the two interviews. Additionally, I used recordings of the dancer while she was practicing during the rehearsals[107], and I also used sections of the recorded interviews with the two scientific associates – Kazamiakis and Aesopos[108].

In *Emersion* I tried to musically illustrate the dual nature of the dancer as woman and Caryatid, and to describe the stages of the woman's transformation into Caryatid, a sculpted figure on the Acropolis. The metamorphosis begins after the *Prelude* in *Part One* and ends at the end of *Part Two*. As one would expect, the Prelude is the preparatory stage where I introduce the personality of the woman, and *Part Three* is the final stage where the Caryatid gradually loses her identity and returns to her previous form, the woman. In terms of music material, each section introduces new sound groups, while the material of previous sections[109] still persists. The procedure is illustrated in Fig. 3, where the 'A'- 'D' are the sound groups introduced in each section.

105 The two interviews used as sound material in this musical piece are part of Vicky Spanovangeli's PhD research. The two phrases taken from Becket and Dimoula have been previously used in *Skin,* a predecessor of *Emersion* as previously mentioned. Moreover, I gathered a lot of sound material from recordings of *Emersion* rehearsals.
106 I recorded white and pink noises from www.simplynoise.com
107 I refer to the sounds produced by the pressure of her feet on the floor.
108 See fns. 98 & 99, p. 47.
109 Apart from *Prelude*.

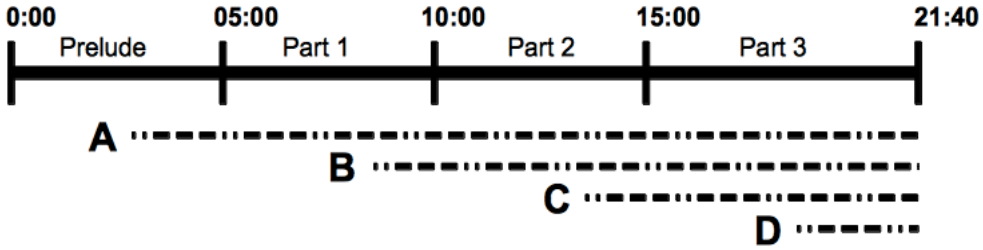


Fig.3

In *Prelude* I attempt to musically portray the woman and the scenery[110]. In order to describe this scenery I created a soundscape of the city of Athens by recording conducted tours from the Acropolis' Museum and sounds from the city of Athens[111]. I subsequently combined these recorded sounds with white and pink noise[112]. This soundscape, because it describes the scenery, is constant throughout this composition.

To represent the woman musically, I have recorded the dancer's voice reciting words and phrases from Beckett's play *Rockaby* and Dimoula's poem *British Museum, Elgin Marbles*, and the dancer's body sounds, such as sounds produced by her running, walking and breathing[113]. The recorded words and phrases are 'μοναχή' [monahi: alone][114], 'τις χειμωνιάτικες βραδιές' [tis hemoniatikes vradyes: during the winter nights], 'time', 'defeated', 'stopped', 'death', 'hunt' and 'human'. In order to vary these sound groups, the recorded word and phrases and the body sounds, I frequently apply on them several electronic techniques. Among these techniques are distortion, echoing, change of pitch and/or time, retrogression and/or inversion, slicing and/or looping. An interesting use of electronic slicing and looping of recorded words takes place in the *Prelude* from 1':04" to 1':14'. The procedure applied is as follows: I use syllables cut from the words and phrases and reiterate them[115]. Then, I record eight of these altered syllables almost simultaneously[116].

110 By 'scenery' I mean the woman's surroundings. When the dancer is a 'woman' Vicky intended to present a female citizen of Athens. Thus, the 'scenery' is the city of Athens (people, streets, buildings, traffic etc.)

111 Recordings from busy streets and traffic in Athens as well as coffee shops and the subway.

112 See fn.105, p.48.

113 These 'body sounds' were recorded during the rehearsals of *Emersion.*

114 I have placed into the brackets the written in Latin and the translation in English of the previous Greek word.

115The number of these iterations is limited to three or four.

116 One decasecond phase difference. Ten decaseconds equals to one second.

The only software sound I have used in *Prelude* is the sampled triangle[117] in order to intensify the sound texture at selected moments (1':14"/ 2':20"/ 4':35"/ 4':39") and to mark the end of *Prelude* at 4':57".

Part One of *Emersion,* which follows *Prelude*, begins at 5':06" with the sounding of the sampled doorbell/EXS24/Logic Audio[118]. This software instrument is used to indicate the change in the woman's feelings and her apprehension in view of her forthcoming metamorphosis into Caryatid. In particular, I wanted to express this alteration in her emotional condition by the gradual change of register of the sampled doorbell. This software instrument starts in a high pitch (C_8) and gradually descends to C_0 towards the end of *Part One*. The melodic line of the sampled doorbell consists of a constant variation of a combination of two motifs. The first motif is shown below (bars 1-3 in the score, Fig.4):

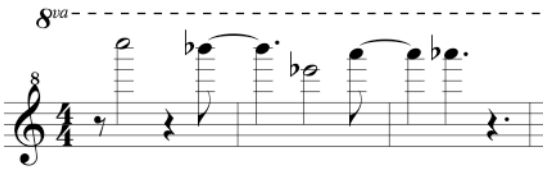


Fig.4

The second motif is (bars 29-31, Fig.5);

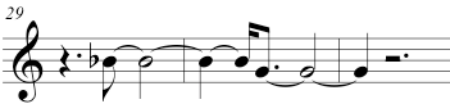


Fig.5

And the combination of the two (bars 67-70, Fig.6);

117 Triangles/Orchestral Percussion/ Kontakt 4/Native Instruments.
118 The score of the sampled doorbell is available in Appendix II, pp. 86-87.

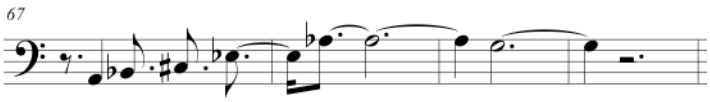


Fig.6

In this section I used the two interviews and reversed them. In these interviews the two architects describe the urban and social structure of Athens. I have also applied distortion and echo to these reversed interviews. The reason I did so is because I wanted to create an effect of obscurity and haziness in order to stress the meaning of the key words of this section: 'amorphous', 'κρυφό' [kryfo: hidden] and 'hidden'. Additionally, the words taken from *Rockaby* and *British Museum, Elgin Marbles* are more clearly enunciated than in *Prelude*. *Part One* ends with a compilation of recorded footsteps.

Part Two of *Emersion* comes right after *Part One* and constitutes the central section of the whole composition. This is the section in which the transformation of the woman into Caryatid occurs. In *Part Two* the verbal material taken from the two interviews is presented in its original form and not reversed as in the previous section. I decided to do so because in this section there is no 'hidden' situation and no need for music to express that. On the contrary, the woman's transformation into Caryatid is apparent to her.

The words selected by Vicky and me that are present this section are: 'reconstruction' 'wrapped' and 'τυλιγμένη' [tiligmeni: wrapped]. The use of these words and in particular their repetition invokes a double meaning; for instance, when the word 'wrapped' is heard repeatedly, the word 'trapped' is formed. I create this effect with the word 'trapped' in this section in order to illustrate how the woman's 'identity' gradually retreats, giving way to the Caryatid's 'identity'.

In *Part Two* I use the sampled triangle (Triangles/Orchestral Percussion/Kontakt 4/Native Instruments). It starts at 10':59" and plays a three note ostinato (F-E-F sharp). This ostinato plays throughout this section and gradually accelerates and becomes louder. At 11':22" a block of verbal material[119] starts and then accelerates and becomes louder in tandem with the triangle. With these two sound elements I intend to musically represent

119 This 'structure of verbal material" refers to a canon-like recitations of words taken from the interviews. These words are recited by the director of *Emersion*, Konstantinos Papadakis.

the culmination of the woman's feelings during her transformation into Caryatid; the sound intensity[120] culminates at 14':59", which is the end of *Part Two* and the peak of *Emersion*.

The final section of Emersion, Part 3 starts at 15':07" This section describes the completion of the woman's metamorphosis into Caryatid and the return to her original identity as a living woman. At the beginning of this final section, the metamorphosis is complete in theatrical terms and the two characters - the woman and Caryatid -are merged into one for a brief moment. This convergence of the two characters lasts only for a few seconds, from 15':12" to 15':35". In order to musically portray this unity, I synchronize some of the significant words of this section, 'private', 'public' and 'surface', with the sampled doorbell/EXS24/Logic Audio.

To illustrate in *Part Three* the 'deconstruction', the loss of the Caryatid's identity and the return to the woman's original state, I use sound recordings of scenographic material. Since the Caryatid's 'dress' was made of paper, I decided to use the sounds of paper being crumpled and torn to pieces in order to describe the abandonment of the Caryatid's identity. The words and phrases selected by Vicky and me that signify this 'deconstruction' are: 'uncontrolled diffusion', 'stillness', 'motion', 'ξεχασμένο' [xehasmeno: forgotten] and 'remembered'. These sounds are used in combination with the sampled doorbell but not synchronously. At the start of this section, the synchronisation of the words with the sampled doorbell describes the unity of the woman and Caryatid. Later, their non-synchronisation aims to describe the separation of these two identities. In particular, at 18':44" the woman is separated from the Caryatid, which is reduced to a work of art without a human feature. At this point I start to use the words 'forgotten', 'cast copy', 'ξεχασμένο' [xehasmeno: forgotten], and 'αντίγραφο' [antigrafo: copy] in order to describe the Caryatid as a sculpture and work of art. *Emersion* ends with Vicky Spanovangelis pronouncing the phrase 'stillness in her motion', referring to the Caryatid.

In composing *Emersion* I was inspired by Steve Reich and in particular his *Bikini*. In

120 In terms of volume, speed and texture.

Bikini, which is the middle act of his video opera *Three Tales* composed in 2002[121], Reich uses electronic sounds in synchronization with the recorded text, especially in the countdown of nuclear weapons testing, in order to underline and reinforce the meaning of the text. I have synchronised the sound material in *Parts Two* and *Three* of *Emersion* in a similar way in order to highlight the importance of the concept words of these sections. Additionally, as a means to maximise the tension in *Part Three*, I have used the semitonic motif of the sampled triangle. I was inspired by Györgi Ligeti's 2nd movement of *Musica Ricercata*, composed in 1953. In this movement a semitonic motif is performed on a piano in various octaves and in my opinion, with great emotional impact.

In the summer of 2000 I attended a theatrical performance of *Persae* [Persians] by Aeschylus[122], the ancient Greek tragedian. It was a restaging of a performance of 1965, originally directed by Karolos Koun with music by Jani Christou. What impressed me most in this performance was the way Christou manipulated the tragedy's chorus. He divided the chorus in two sections to create a sense of verbal counterpoint; he asked the first group of the chorus to recite a phrase whispering, and the second group to begin reciting some seconds after the entrance of the first. The groups continued to repeat the phrase, and the verbal canon was complemented by tape sounds. I was fascinated by this technique and I tried to apply it in *Emersion* by using extracts from the interviews and other verbal material in this sort of counterpoint. The soundscape ('Ap' in graphs 52-55) is used in a similar manner as the tape is used by Christou in *Persae.*

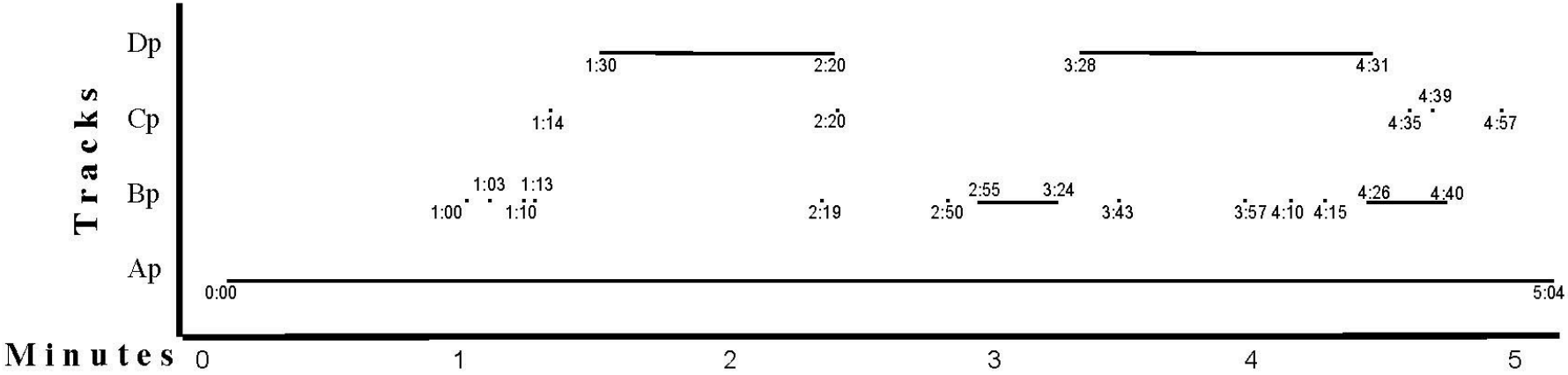
Compared to my previous works, *Emersion* is a large-scale piece of incidental music, and it is my most recent composition included in the accompanying portfolio. There were four performances of *Emersion* at Duncan Theatre, Athens, in June 2011, which were part of a research project as noted in the beginning of 2.1.4. A complete performance is also scheduled to take place at the New Acropolis Museum in the summer of 2012.

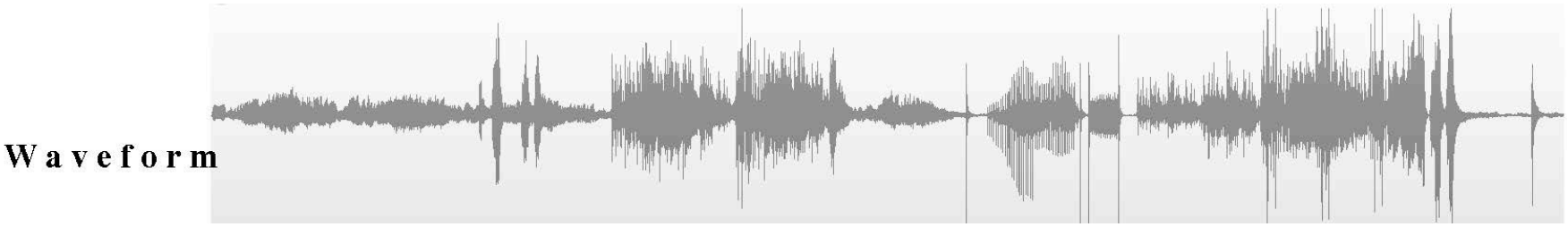
121 Steve Reich, *Three Tales* a video opera which comprises three acts: Act 1 – *Hindenburg*, Act 2 – *Bikini*, Act 3 – *Dolly*.

122Αισχύλος [Aeschylus]; c. 525/524 BC – c. 455/456 BC.

Emersion: Prelude

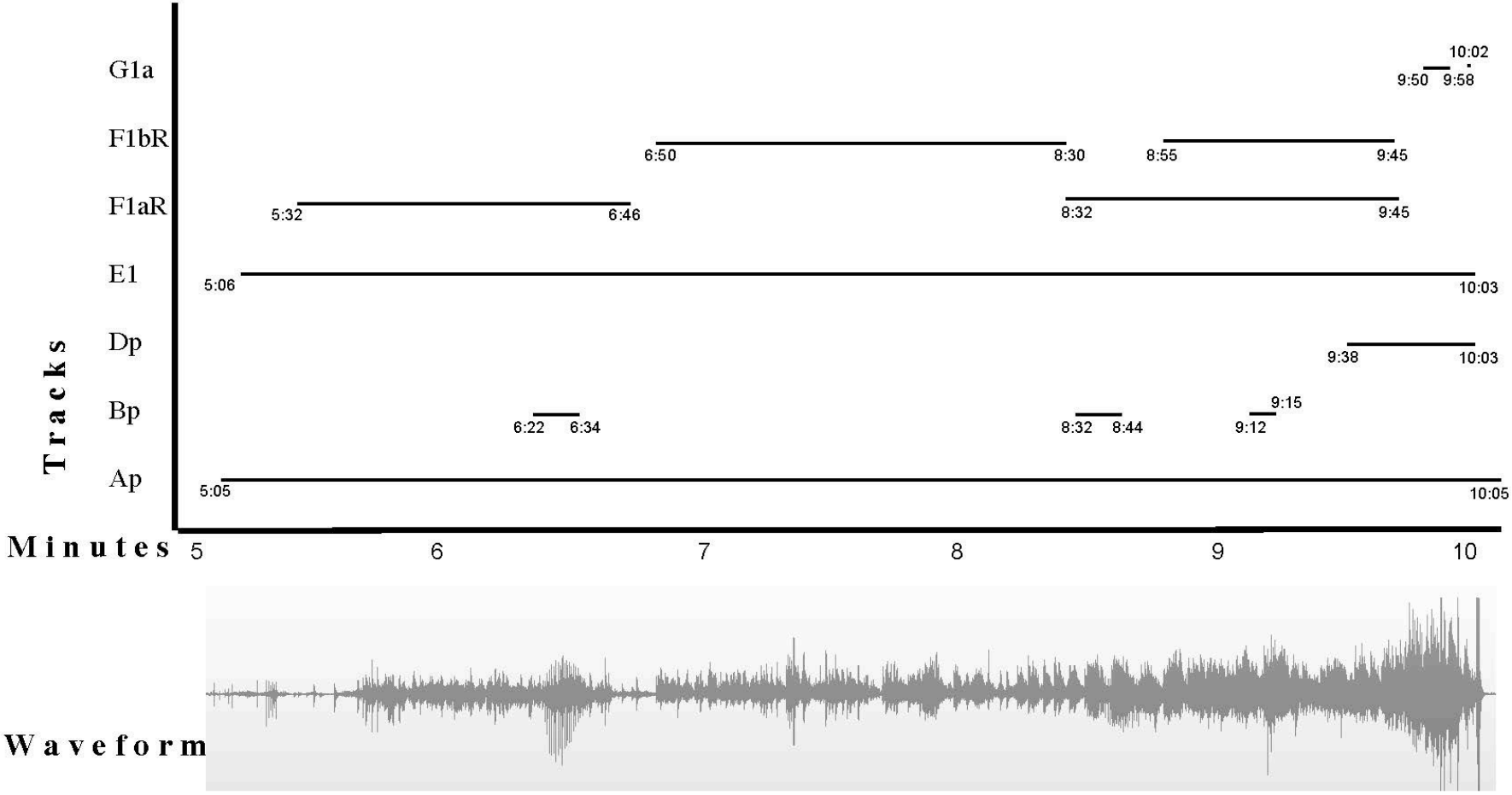
Ap: Soundscape of Athens, Parthenon, Museum of Acropolis blended with white and pink noise. **Bp**: Words of Dimoula's poem. *British Museum* and words of Becket's play, *Rockaby* recited by the dancer, Olga Spiraki. **Cp**: Electronic orchestral tringle, Kontakt 4/Native Instruments. **Dp**: Processed recordings of footsteps and rehearsal sounds of the dancer. **E1**: Sampled door bell, EXS24/Logic Audio. **F1aR**: Reversed fragment of Kazamiakis' interview. **F1aN**: Fragment of Kazamiakis' interview. **F1bR**: Reversed fragment of Aesopos' interview. **F1bN**: Fragment of Aesopos' interview. **G1a**:Words from the two interviews recited by the director, Papadakis. **G1b**:Words from the two interviews recited by the composer, Kotzias. **G1c**: Words from the two interviews recited by the choreographer, Spanovangelis. **G1aCan**: Canon-like structure of words from the two interviews recited by the director. **G1aCou**: Counterpoint of words from the two interviews recited by the director. **G1cCan:** Canon of words from the two interviews recited by the choreographer. **Ha**: Recordings of creasing paper. **Hb**: Recordings of tearing paper.





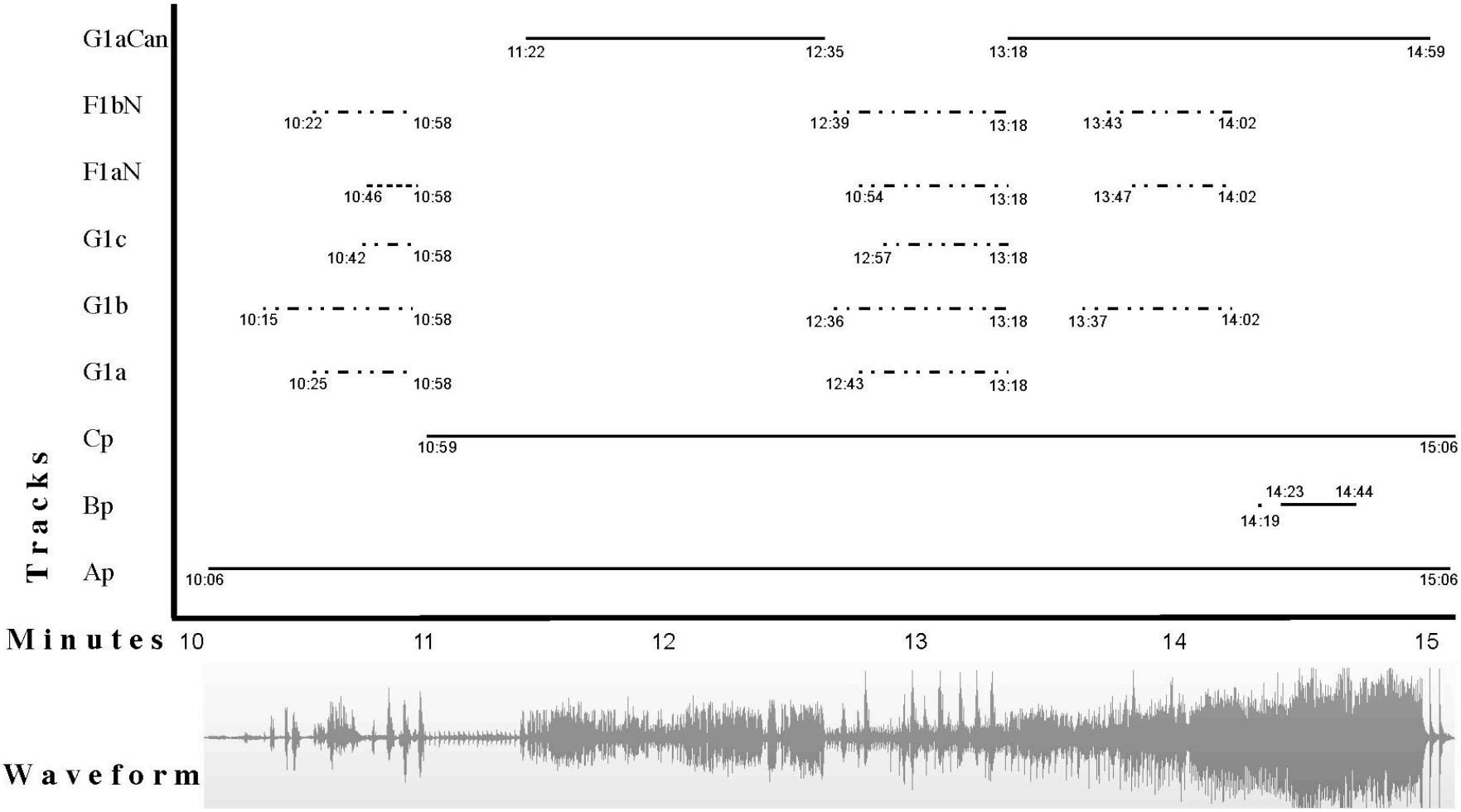
Emersion: Part One

Ap: Soundscape of Athens, Parthenon, Museum of Acropolis blended with white and pink noise. **Bp**: Words of Dimoula's poem. *British Museum* and words of Becket's play, *Rockaby* recited by the dancer, Olga Spiraki. **Cp**: Electronic orchestral tringle, Kontakt 4/Native Instruments. **Dp**: Processed recordings of footsteps and rehearsal sounds of the dancer. **E1**: Sampled door bell, EXS24/Logic Audio. **F1aR**: Reversed fragment of Kazamiakis' interview. **F1aN**: Fragment of Kazamiakis' interview. **F1bR**: Reversed fragment of Aesopos' interview. **F1bN**: Fragment of Aesopos' interview. **G1a**:Words from the two interviews recited by the director, Papadakis. **G1b**:Words from the two interviews recited by the composer, Kotzias. **G1c**: Words from the two interviews recited by the choreographer, Spanovangelis. **G1aCan**: Canon-like structure of words from the two interviews recited by the director. **G1aCou**: Counterpoint of words from the two interviews recited by the director. **G1cCan:** Canon of words from the two interviews recited by the choreographer. **Ha**: Recordings of creasing paper. **Hb**: Recordings of tearing paper.



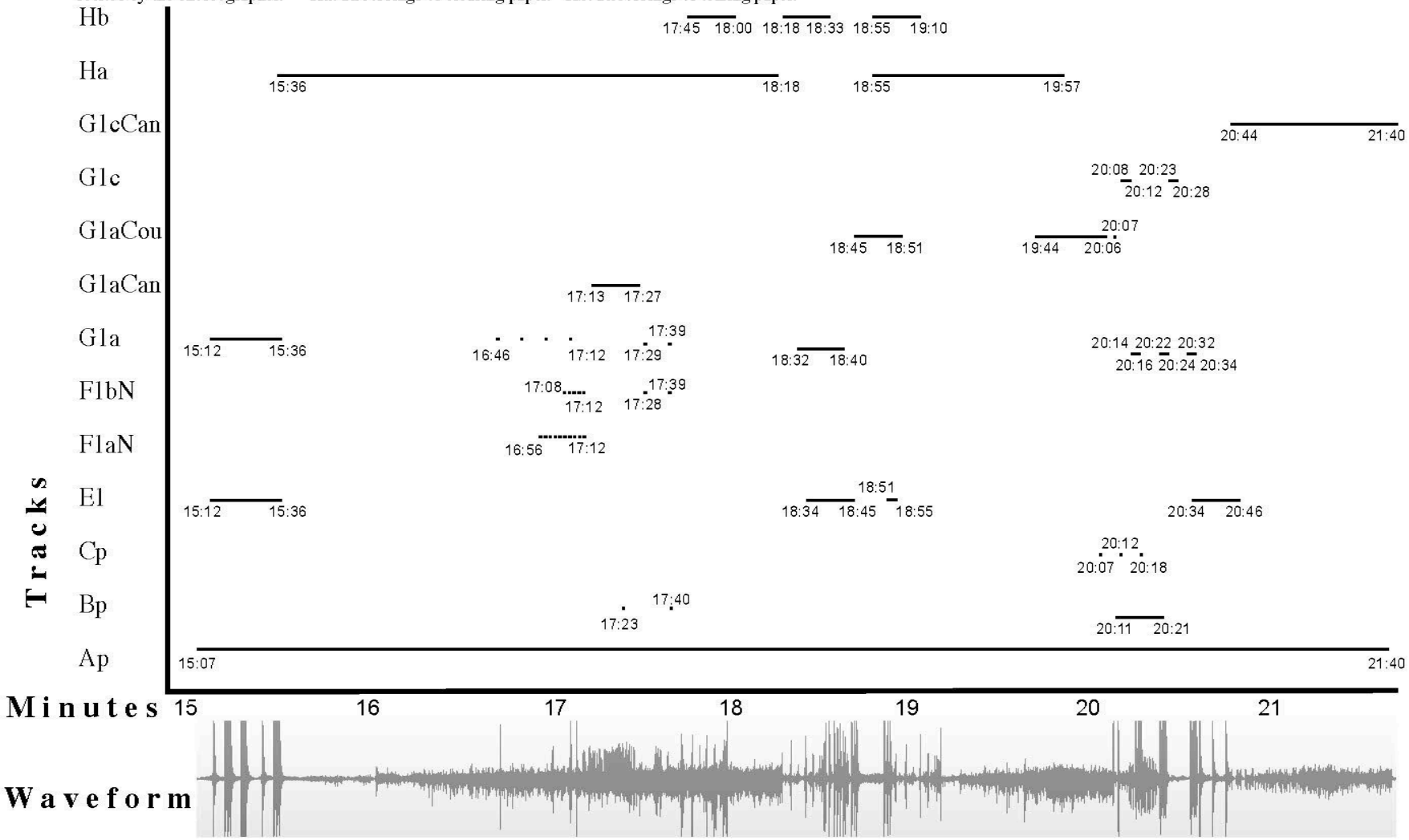
Emersion: Part Two

Ap: Soundscape of Athens, Parthenon, Museum of Acropolis blended with white and pink noise. **Bp**: Words of Dimoula's poem. *British Museum* and words of Becket's play, *Rockaby* recited by the dancer, Olga Spiraki. **Cp**: Electronic orchestral tringle, Kontakt 4/Native Instruments. **Dp**: Processed recordings of footsteps and rehearsal sounds of the dancer. **E1**: Sampled door bell, EXS24/Logic Audio. **F1aR**: Reversed fragment of Kazamiakis' interview. **F1aN**: Fragment of Kazamiakis' interview. **F1bR**: Reversed fragment of Aesopos' interview. **F1bN**: Fragment of Aesopos' interview. **G1a**:Words from the two interviews recited by the director, Papadakis. **G1b**:Words from the two interviews recited by the composer, Kotzias. **G1c**: Words from the two interviews recited by the choreographer, Spanovangelis. **G1aCan**: Canon-like structure of words from the two interviews recited by the director. **G1aCou**: Counterpoint of words from the two interviews recited by the director. **G1cCan:** Canon of words from the two interviews recited by the choreographer. **Ha**: Recordings of creasing paper. **Hb**: Recordings of tearing paper.



Emersion: Part Three

Ap: Soundscape of Athens, Parthenon, Museum of Acropolis blended with white and pink noise. **Bp**: Words of Dimoula's poem. *British Museum* and words of Becket's play, *Rockaby* recited by the dancer, Olga Spiraki. **Cp**: Electronic orchestral tringle, Kontakt 4/Native Instruments. **Dp**: Processed recordings of footsteps and rehearsal sounds of the dancer. **E1**: Sampled door bell, EXS24/Logic Audio. **F1aR**: Reversed fragment of Kazamiakis' interview. **F1aN**: Fragment of Kazamiakis' interview. **F1bR**: Reversed fragment of Aesopos' interview. **F1bN**: Fragment of Aesopos' interview. **G1a**:Words from the two interviews recited by the director, Papadakis. **G1b**:Words from the two interviews recited by the composer, Kotzias. **G1c**: Words from the two interviews recited by the choreographer, Spanovangelis. **G1aCan**: Canon-like structure of words from the two interviews recited by the director. **G1aCou**: Counterpoint of words from the two interviews recited by the director. **G1cCan:** Canon of words from the two interviews recited by the choreographer. **Ha**: Recordings of creasing paper. **Hb**: Recordings of tearing paper.



Sound Elements in Emersion

Ap: Soundscape of Athens, Parthenon, Museum of Acropolis combined with city sounds and white and pink noise.

Bp: Words from Dimoula's poem. *British Museum, Elgin Marbles* and words from Becket's play, *Rockaby* recited by the dancer, Olga Spiraki.

Cp: Electronic orchestral triangle, Kontakt 4/Native Instruments.

Dp: Processed recordings of footsteps and rehearsal sounds of the dancer.

E1: Sampled door bell, EXS24/Logic Audio.

F1aN: Fragment of Kazamiakis' interview.

F1aR: Reversed fragment of Kazamiakis' interview.

F1bN: Fragment of Aesopos' interview.

F1bR: Reversed fragment of Aesopos' interview.

G1a: Words from the two interviews recited by the director, Papadakis.

G1b: Words from the two interviews recited by the composer, Kotzias.

G1c: Words from the two interviews recited by the choreographer, Spanovangelis.

G1aCan: Canon-like structure of words from the two interviews recited by the director.

G1aCou: Counterpoint of words from the two interviews recited by the director.

G1cCan: Canon of words from the two interviews recited by the choreographer.

Ha: Recordings of crumpling paper.

Hb: Recordings of tearing paper.

Table 1

2.2 ELECTRONIC MUSIC

2.2.1. Happy Enough?

Electronic Music

Supplied materials: .aif file
Duration: 6':17''
March 2008

After a conversation with my supervisor, Brian Lock, about the 'power' of experimental electronic music in portraying feelings, I decided to compose an electronic piece in which I would express 'positive' feelings[123]. The reason I wanted to compose a composition like this can be found in my previous works. All of them dealt one way or another with 'negative' feelings such as stress, anticipation[124], adversity and tension[125]. With this in mind, I composed *Happy Enough?* in March 2008. With the title of this piece I intended to implicitly pose a question to the audience: 'Was this piece you have just listened to happy enough?' or 'Did the music you have just listened to make you happy enough?'

In *Happy Enough?* I used software sounds and recorded sounds, as in all my previous pieces. This time, however, I did not use any verbal or other human body sounds but instead the recorded sounds of a violin. I also used another pitched instrument in this piece – a sampled vibraphone[126]. I preferred the software instrument over the natural one because I wanted to use notes that exceed the higher and lower registers of the natural vibraphone.[127]

In terms of describing the sound material, I use two main groups of sounds in this piece,

123 Tranquility, peace and serenity.
124 *Silence.*
125 *Atopos.*
126 Vibraphone/ EXS24 Logic Pro.
127 In the next paragraphs I will describe the use of the sounds of the violin, the sampled vibraphone along with all the other sounds that make up *Happy Enough?*.

and I have classified them as in my previous compositions; the first sound group consists of recorded sounds and the second of software sounds. The first group, the recorded sounds, includes: birdsong (B in the relevant graph)[128] and violin sounds (G)[129], performed by the violinist and friend Andreas Chaniotis. The second sound, the software sounds, consists of: the pad Spacious/ Hybrid Morph/ Logic Pro (A), the sampled Vibraphone/EXS24 Logic Pro/Apple (C), the Sound FX/ EXS24 Logic Pro/Apple (E), the Alm/EXS24 Logic Pro/Apple (F) and the Sweep FZ3/EXS24 Logic Pro/Apple (D).

This piece shares with my other compositions the same method of using sounds to describe non-musical objects[130]. The difference with my previous works is that this piece is not based on a narrative story but on three different 'images'. Before composing I imagined three images, each of which portrays tranquility[131]. The first one is a violin player practicing, totally absorbed in his work and, as it were, isolated from the rest of the prevailing sonic environment. The second one is the image of a girl jogging and using an iPod in Hyde Park, full of positive energy on a beautiful day and using her iPod earphones The third image is imprinted on my subconscious and stems from my memories as a child, when my parents and I used to spend summers in a Greek village. I remember the general air of tranquility which was embodied, for me, by the shepherds attending to their flocks.

Having described these three images, I will now attempt to explain which sounds I selected to portray each image. To convey the first image, that of the violin player, I have used recordings of a violinist while performing. I asked Andreas Haniotis, a violin player, to perform an improvisation including difficult or unusual techniques or effects. I asked him to do so because with portraying this 'demanding' playing in *Happy Enough?* I intended to 'explain' the violinist's focus on his practising. After recording the violinist while he was improvising, I selected segments of double stops, harmonics, short glissandi in the high register, full string glissandi, middle register notes and sustained low register notes. Trying to create a 'minimalist' effect, I repeat these segments in various

128 Please see the relevant graph description on page 64.
129 The recordings of birdsong were made with a Sony MZ-RH1 at Wilhelma Zoo in Stuttgart in May of 2007. I also used the same minidisc recorder to record the violinist A. Haniotis in January of 2008.
130 By 'non-musical objects' I mean stories, situations, images, psychological conditions, etc.
131 Tranquility for me is the serenity, the calmness.

combinations in the composition.

The second image – that of the girl jogging in Hyde Park – is illustrated by a 'techno'-like music pattern which is evocative of the music the girl listens to while jogging. I tried to describe musically this image by presenting a pattern that evokes techno music in terms of rhythm, melody and harmony. This pattern, which is shown below in Fig.7, is played by Sound FX/EXS24 Logic Pro[132].

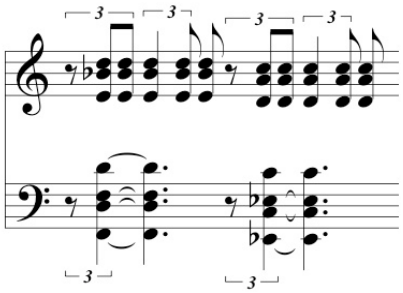


Fig.7

I selected the bells and the sound of crickets as the characteristic sounds for the third image – the Greek countryside. Instead of using recorded bells and crickets, I used the Alm/ EXS24 and the Sweep FZ3/ EXS24 respectively. I applied reverb, echo, and distortion to these two software instruments to emulate a more 'real' sound of the sheep bells and crickets.[133]

In terms of structure, I have organised my material by selecting a group of sounds for each of the three images, as I explained above. At the beginning of the piece, these sound groups are distinct while towards the end they blur. There are other sound groups as well, which I used in order to facilitate the unification of the music material. The main software instrument I use for merging the sound material is the pad Spacious/ Hybrid Morph/Logic Pro. I composed long, sustained pitches for this and it provides a sense of

132 Sound FX is a collection of sounds and melodic and rhythmical motifs. The pattern I have used comes from such motifs. Figure 7 shows how I hear these motifs in terms of pitch and time.

133 In all my works, I am especially interested in changing the parameters of sound in order to transform it into something different.

‘loose tonality’[134]. There is a ‘blurred’[135] transition from G to C and back to G, but since my intention was not to create a tonal piece, there is no sense of transposition to the subdominant and return to the tonal. In order to integrate the sound material, I have also used birdsong and other natural environmental sounds. Birdsong and other natural environmental sounds are present in all three images and thus they serve to unify the sound material throughout the piece.

This ‘loose tonality’ I have just described is also illustrated by the sampled vibraphone.[136] The vibraphone plays an important role in this piece. In some cases it is used to evoke one of the three images and in others, in combination with the pad and the birdsong, it serves to unify the sound material. In particular, from 2':18" until the end of the piece it accomplishes an adjusting role, playing a C major chord.

In *Happy Enough?* the vibraphone is important for another reason. I use it as the instrument which conveys the feeling of happiness and naiveté, playing most of the time the C major chord with slight rhythmical and melodic alterations[137]. I deliberately insert ‘false’ notes in the chord arpeggios to express the feeling of spontaneity. The effect I am trying to create is a sequence of C major arpeggio notes as if played by a child. The vibraphone is the main instrument which provides the tonality. Towards the end of the piece, the sounds of the vibraphone are separated into two fragmentary melodic lines, both playing at extreme registers, one very high and the other very low. The upper melodic line leads to G major and its relative minor (E minor), when the bass melody plays an extended C major.[138] With the vibraphone I have intended to impart a feeling of calmness and serenity.

134‘Loose tonality’ is the tonality that is not established. It is linked with ‘modal’ music but not exclusively. Paul Bowles used the term ‘loose tonality’ in: *Paul Bowles on Music*, eds. T.Mangan & I. Herrmann, Univeristy of California Press, 2003. This term is also used in many web-pages among them:
http://www.culturewars.org.uk/index.php/site/article/good_music_shame_about_the_hype/
http://www.colineatock.com/six-canadian-composers.html
http://davidskinner.net/kwetzinskyskinner/index.htm
http://www.eyebachchoir.co.uk/news.htm

135 Simultaneously with these tonal transitions there are pitches from other keys.

136 Vibraphone/EXS24 Logic Pro.

137 Score of the sofware vibraphone is available in the Appendix III, pp. 88-90.

138 I use the pitches of the C major scale plus the G sharp pitch.

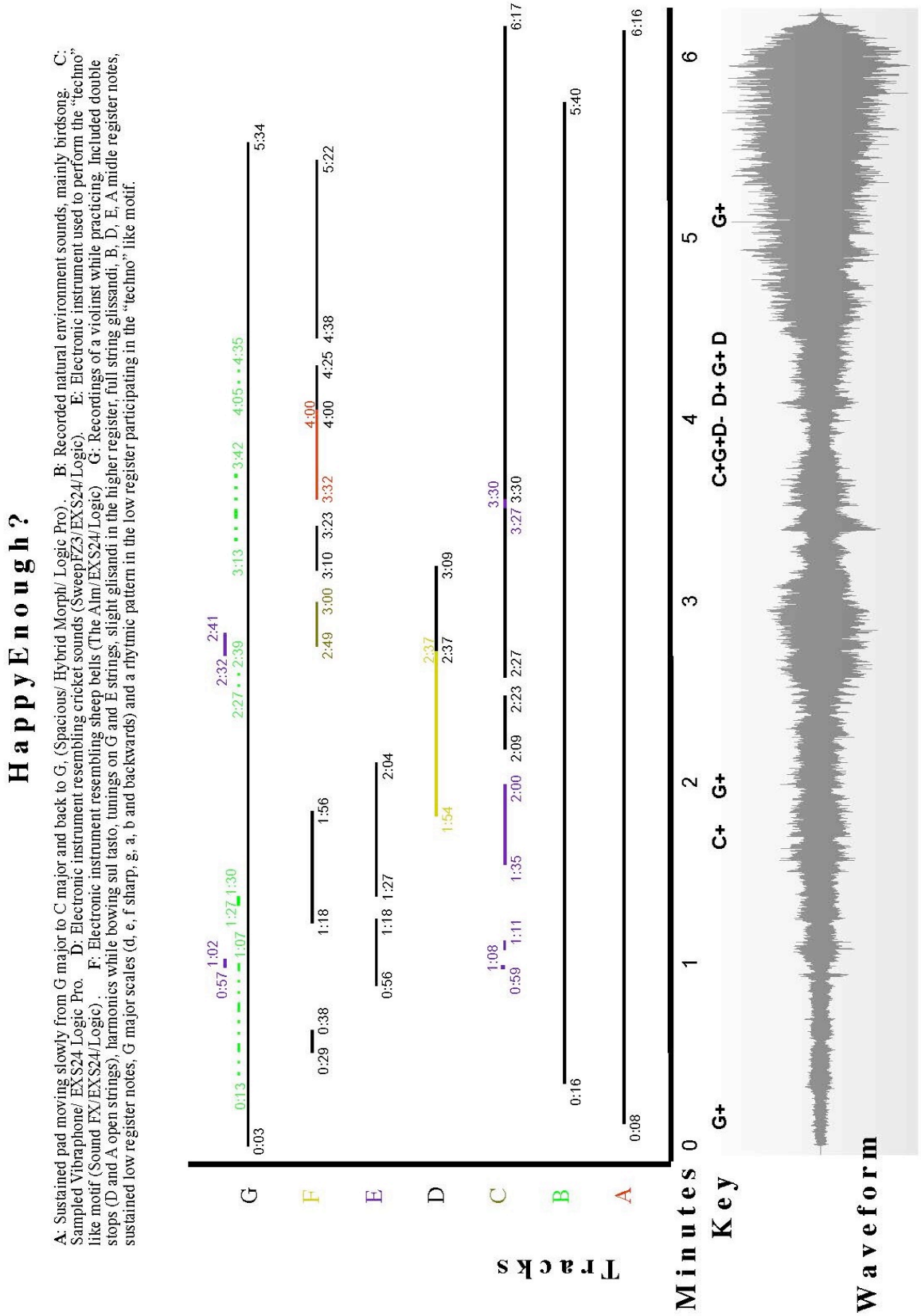
There is a constant change in the role of the sound groups in describing the three images throughout the piece. By this I mean that certain sound groups are used to describe images other than those they were initially designed to describe. In particular: In certain cases the violin is used in a way that imitates birdsong (0':13" to 1':07", 1':27" to 1':30", 2':27" to 2':39", 3':13" to 3':42" and 4':05" to 4':35"). In other cases the violin imitates the 'techno'- like motif (0':57" to 1':02" and 2':32" to 2':41"). The Alm/ EXS24, which is used to imitate the bells, becomes tonal and assists the vibraphone's melody from 2':49" to 3':00", while from 3':32" to 4':00" it merges with the pad. The Sweep FZ3/ EXS24, which is used to imitate the sound of crickets, is also used to imitate the sound of bells from 1':54" to 2':37". This interchange between sounds favours the blending of the sound elements and provides a 'sonic' unity in *Happy Enough?*.

In *Happy Enough?* I have drawn from more than one compositional style. The styles used include 'ambient-lounge', 'environmental', 'collage', 'experimental' and 'minimal'. 'Ambient-lounge' refers to the sound of the sustained tonal pad (Spacious/Hybrid Morph/Logic Pro). 'Environmental' refers to the use of the birdsong, the other natural environment sounds, the cricket chirping sounds (Sweep FZ3/ EXS24) and the sheep bells (The Alm/ EXS24/). 'Collage' and 'experimental' refer to the sounds of the recorded violin. 'Minimal' refers, in some cases, to the vibraphone's line. Additionally I borrowed the idea of the use of birdsong in environmental music from López[139]. I view *Happy Enough?* as a work in which I experimented with combining diverse musical genres[140].

Happy Enough? was performed on November 28th 2010 at the Attikon Conservatoire in Athens.

139 Francisco López, 'Environmental Music', *Audio Culture*, Cox Christoph and Warner Daniel eds.
140 An interesting term describing the existence of several musical styles within a musical piece is 'Polystylism'. Sofia Gubaidulina, Alfred Schnittke György Ligeti, Carl Orf, Arvo Pärt Krzystof Penderecki and Julian Anderson are among the composers that have used Polystilism.

The black lines and timings denote a sound element indicate by a letter (A – G). The coloured lines and timings indicate the respective affiliations to other sound elements.



2.2.2 Sea, The Whales

Electronic music

Supplied materials: aif file
Duration: 10':04''
2008

Sea, The Whales is an electronic music piece completed in September 2008. The need to compose this piece sprang from my observations[141] and thoughts concerning the functions of sound in diverse environments, and in particular the functions of sound in an underwater environment. I have been frequently intrigued by questions such as how sound is transmitted under the sea surface, how humans perceive sounds underwater and why underwater sound sources are so hard to track. The sounds we hear underwater are blurred and ambiguous. A book that helped me to understand the way humans hear underwater is Alfred Tomatis' *Nine Months in Paradise* where he describes the embryo's acoustic abilities[142]. Dr Tomatis explains that the embryo acquires the ability to hear from the fourth month of pregnancy. The mother's voice, transmitted through the amniotic fluid and bone vibration, fills the fetus with a sense of well-being and provides a vast number of stimuli to the brain and nervous system. I believe that embryos, fish and sea mammals may share common auditory structures and may absorb sounds similarly through bone vibration. With *Sea, The Whales*, I wanted to compose a soundscape to describe human feelings and their relationships with underwater environments.

All these observations, thoughts and readings led me to form the conceptual idea behind *Sea, The Whales*. The idea was to create two different sound environments[143], two sound 'images', both describing human contact, physical or mental, with the sea. The first

141 These observations took place at a beach in Andros, a Greek Island. At the seashore I produced sounds such as by stirring pebbles and sand. I also focused on the sounds of sea waves and the sounds of the bathers. Subsequently, I dived into the sea and I produced or focused on the same sounds underwater. I realised that I perceived sounds differently than when I was on the beach. On the second time, the sounds were distorted in such a way that I couldn't identify their source and their direction.
142 Alfred Tomatis, *Nine Months in Paradise*, trans. into Greek by Logiaki Amalia, Reo, Athens, 2007.
143 I consider 'sound environment' and 'soundscape' as identical concepts.

sound ‘image’ depicts the tranquility and peacefulness a human being may feel in contact with the sea. The second sound ‘image’ describes the agitation and fear a human being may feel when confronting the alien and bizarre environment of the abyss.

The structure of *Sea, the Whales* comprises one unified form with two ‘moods’[144], one for each image. The change from one mood to the other is not immediate but occurs gradually since, at the end of the first and the beginning of the second mood, there are overlapping sound elements[145].

The software sounds I have used in this piece are: the software instrument Alcove Fields/Absynth 4/Native Instruments and the software instrument Angel/Absynth 4/Native Instruments. The recorded sounds[146] I have used in this piece are: sounds of wind, children voices[147], paperclips and whispers[148] (please see the relevant graph on page 70).

Another idea I had during the preliminary research for this composition was to use sounds whose sources were hidden or misleading. By this I mean that just as I couldn't distinguish the sources of the sounds I heard when I was underwater, so I wanted the sources of the sounds I would use to be hidden from the audience. Additionally, I would use sounds in such way as to resemble other sounds (from other sources). With this in mind, I decided to use paperclips to imitate the sound of moving pebbles and sand. To achieve this, I recorded paperclips being stirred and dropped on a wooden floor. After recording I used the techniques of slicing, overlapping, distortion, partial reverse, tape delay, echo and time-pitch change in order to create the effect of the sound produced by pebbles and sand, when stirred by the sea waves.

Another example of ‘sound source altering’ is the use of recorded wind and children’s voices. By using different recordings of wind and children’s voices simultaneously and

144 State of mind and feeling.
145 The sound material of the second segment starts a little before the end of the first segment. Also, sound elements of the first segment enter for a while into the second segment. Moreover, there is sound material which is common to both segments and constantly present throughout the piece.
146 All recordings have been made with the Sony MZ-RH1.
147 From a play ground near my house in Greece.
148 I have recorded myself.

by applying pitch and time changes, echo and partial reverse, I created the effect of sea-breeze and distant seagulls' sounds. Additionally, the overtones of the software instrument Alcove Fields/ Absynth 4, which are heard[149] along with the composed line, give the impression of whale songs.

At 5':05" I insert the recorded whispers to which I have applied echo, tape delay, pitch change and overlapping. I use the whispers to gradually introduce the second mood which corresponds to the second image[150]. To create these whispers, I recorded myself whispering continuously the Greek phrases 'η καταστροφή του περιβάλλοντος, η εξαφάνιση των φαλαινών' [e katastrofi tou perivalondos, e exafanisi ton falenon: the environmental destruction, the extinction of whales][151]. I have used these whispers more as a sound effect, rather than for their cognitive meaning, and I did that because I didn't want to 'restrain' the feelings and thoughts of the audience. If I had used the whispering as originally recorded, I would have 'directed' the audience, at least the Greek audience or the audience which would be familiar with the Greek language, to a very specific 'path' of understanding.

Both software instruments[152] used in *Sea, The Whales* are pitched, and their melodies create a 'loose' sense of tonality. This 'loose' sense of tonality is achieved by the constant key changes on both instruments' lines and also by the fact that the two instruments are not related in a sense of tonality. I did this because my intention was to create a prismatic[153] effect. For example, Alcove Fields plays a D major, while Angel performs simultaneously an F major[154]. The keys mainly shift chromatically or in thirds or fourths[155]. Due to the sustained melodies of the electronic instruments which blend

149 These harmonics are produced by the software instrument algorithm. I have discovered it by chance and I was more than happy to use it.
150 As described in the previous page.
151 I have placed in brackets the Greek phrases in Latin characters and their translation into English.
152 Alcove Fields/Absynth 4/Native Instruments and Angel/Absynth 4/Native Instruments.
153 By analogy with prismatic vision. Just as vision through a prism is vague and fragmented so prismatic hearing functions in a similar way.
154 The score of the electronic instrument Angel is included in Appendix IV, pp. 91-92.
155 The keys for the Alcove Fields are: D major- F♯ major- D♯ major- D major- F♯ major- B minor and B major- C♯ major and G♯ major- D♯ major- F♯ major- E minor- C♯ minor- A major- C♯ minor- G♯ minor- D♯. The keys for the Angel are: F major- A major- F♯ minor- D major- B minor- F minor- A major- D major- B minor- D major- F major- G major- A minor- E minor- D minor- F♯ major- D major- E major- A major- C♯ major and A major.

into a polytonal or multi-harmonic structure, the harmonic environment is opaque, generating an effect of confusion.

As in *Happy Enough?*, in *Sea, the Whales* I was inspired by environmental music and the work of Francisco López[156]. I share his view that the description of natural environments as tranquil places is only limited to the pastoral aspect of nature. Although abundant in silent creatures, the sea provides an extraordinarily noisy environment, as in López's *La Selva*[157] recorded in 1998. I wanted to develop this approach further by focusing not only on the quantity of sounds produced in the soundscape, but also on their quality. I chose the 'whales' in the composition's title not only because whales are 'noisy' sea mammals, but also because of the distinctive quality of the sounds these creatures produce. The low pitches and the sustained sounds of whales create a more alienating effect compared to the cheerful dolphin overtones.

In conclusion, in this piece my research focused on creating a prismatic soundscape. My aim was to create a sound environment which would produce a sense of underwater existence. It is clear that my concern was not limited solely to the audibility of sounds underwater. I aimed at a composition which, when performed, would impart to the audience the illusion of being enclosed in a sound-bubble secluded by all external sounds. Any sounds penetrating into that environment would be altered and prismatically filtered through the bubble's surface. My intention was thus to provide a kaleidoscopic illustration of sounds.

As far as the performance of this piece is concerned, I considered that in order to create this particular sound effect, I could not give a performance in a concert hall in the fashion of an ordinary music performance. In my opinion, a hall with cozy sofas where the audience would be able to make themselves comfortable and no light sources would be more appropriate for a performance of this piece. In this way, the audience would be able to experience the illusion of being brought back to the embryonic stage or transferred to

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Score of the electronic instrument Alcove Fields is cited in the Appendix V, pp. 93-96.

156 Francisco López is an avant-garde experimental musician, sound artist and writer.

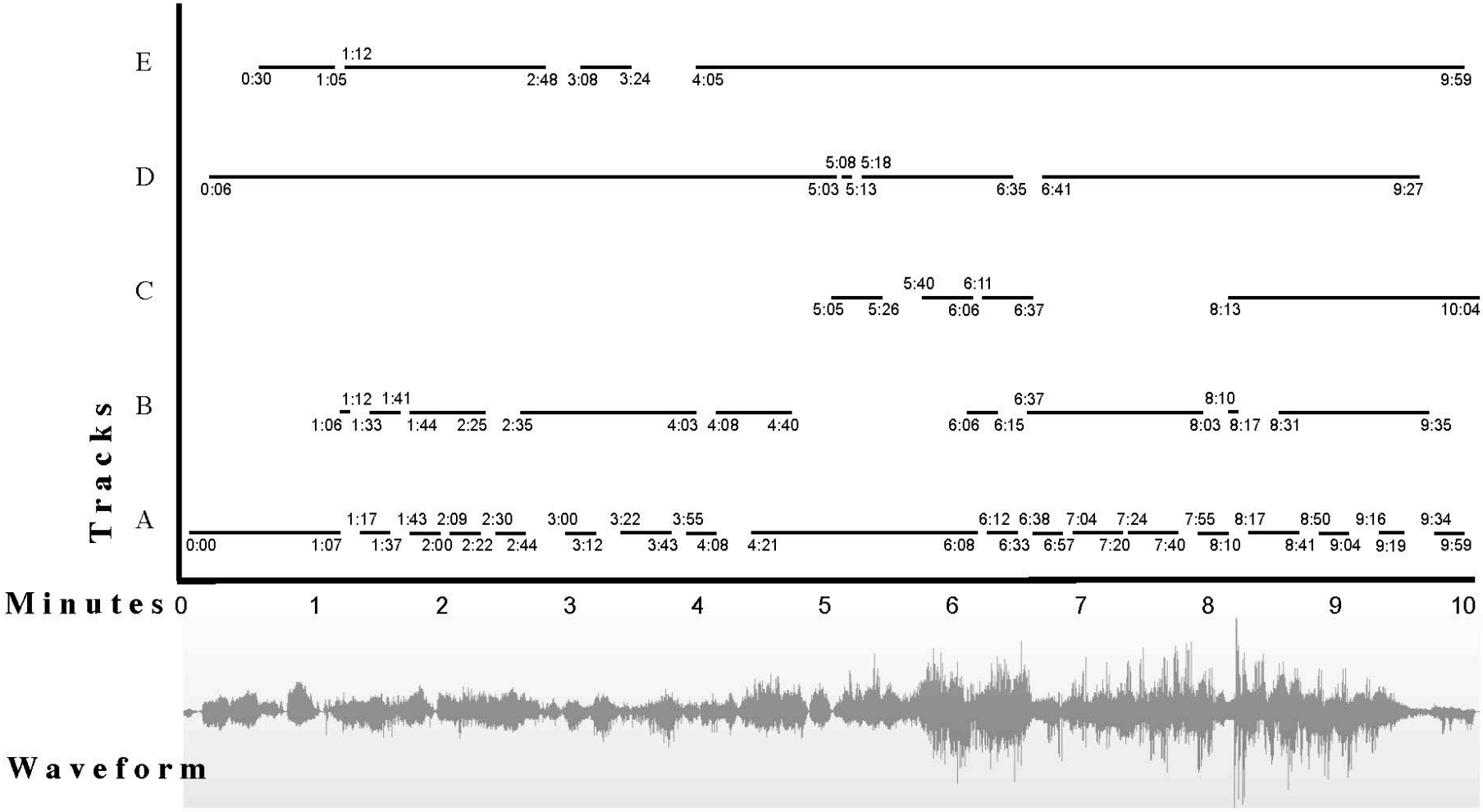
157 Francisco López, 'Profound Listening and Environmental Sound Matter', in *Audio Culture*, Cox Christoph and Warner Daniel edits.

an underwater environment.

Sea, the Whales was premiered on March 1st 2010 in Thessaloniki at the University of Macedonia and on November 28th 2010 at Attikon Conservatoire in Athens.

Sea, The Whales

A: Elaboration of recorded wind and children's voices. B: Processed sounds of paper clips. C: Processed whispers. D: Electronic instrument (Alcove Fields/Absynth 4/Native Instruments). E: Electronic Instrument (Angel/Absynth 4/Native Instruments).



2.3.1 The Cry of the Burnt Trees

Electroacoustic music for solo clarinet and a Macintosh laptop[158]

Supplied materials: avi file & aif file
Duration: 7':45''
May 2008

The Cry of the Burnt Trees is my first attempt to compose music inspired by an event. Before this composition all my other music was based on concepts and ideas, and I had never before written music referring to a concrete event. In 2007 terrible wildfires in Greece transformed picturesque countryside into scenes of devastation[159]. This was one of the worst ecological catastrophes in decades in Greece. After the fires had been extinguish, the authorities reported that over seventy people and sixty thousand animals had died, six thousand people had been left homeless, fifteen thousand properties had been destroyed and four and a half million olive trees had been lost. Twenty-four foreign countries pledged to offer Greece their assistance. The most appalling image conveyed by the media was that of a young woman who was found by a rescue team in her car charred, embracing the corpses of her two children. The media described it as one of the most tragic events since World War II[160].

This tragic event had such a strong impact on me that I decided to compose *The Cry of*

158 It should be a Macintosh operating system since I have worked with Logic Pro. I play on stage through Logic Pro two software clarinets, Clarinets/Westgate Studios.
159 http://news.bbc.co.uk/2/hi/8215772.stm and http://en.wikipedia.org/wiki/2007_Greek_forest_fires
160 Greek television channels, among them Mega Channel TV, Antenna Channel TV and the National TV Channels ET1 and ET2.

the Burnt Trees. I conceived of my composition as a therapeutic process that would enable me to heal from the trauma caused by the devastation. Therefore, compared to my other works, this piece is less focused on abstract ideas and more on exploring and expressing my own emotional response to this disaster in as direct and cathartic way as possible. The structural features of the piece that I discuss below were more the spontaneous outcome of an effort to express my feelings instinctively than of any calculated design thought out in advance.

The Cry of the Burnt Trees, as its title implies, is a lament. It is a lament for the trees, the tragic 'protagonists' of the 2007 catastrophic forest fires. It is composed for one 'live' clarinet and two software clarinets (Westgate Studios). The decision to use software instruments along with a physical one is derived from the structure of the piece, which contains two sustained melodic lines with constant small glissandi[161] and an animated expressive melodic line. The first two sustained lines could only be played by software instruments because they are almost impossible to play by a live performer. The third line, which is the most expressive of the three, is more suited for a live clarinettist[162].

Before starting to compose this piece, I conceived an outline of its final form. In Fig. 8 I have tried to illustrate this scheme. The 'A' lines would be the sustained lines, one at a relatively low register and the other at a higher register, and the 'B' line would be the animated melodic line, starting at a middle register compared to the other two. This 'B' melodic line would follow an animated motion covering and exceeding in pitch the registers of the 'A's.

In Table 2 I deliver a picture of a Logic Pro's screen set[163] in order to show the proximity between the conceived outline (Fig. 8) and the final formation of *The Cry of the Burnt Trees.*

161 Small pitch differentiations, slides above and below an original tone.
162 I have video and audio recordings of *The Cry of the Burnt Trees* with the clarinettist Manousos Ploumides.
163 'Piano Roll'/ 'Arrange Window"/ Logic Pro, Table 2, p. 75.

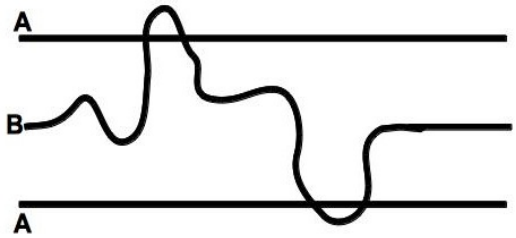


Fig. 8

The Cry of the Burnt Trees could be divided in two sections according to the musical material. In the first section, the two software clarinets play sustained tones with microtonal bendings of ¼ and ¾ of tone until 5':40"[164]. By these quarter-tone bendings I wanted to describe the bending of the trees caused by the fire and the wind. The 'live' clarinet plays a lamenting melody[165]. This melody is based on a single motif constituted by the notes E flat, D flat, B flat and F sharp. This melody comprises a series of variations and developments of this specific motif. In Fig. 9 I present three variations and one development of the melodic motif.

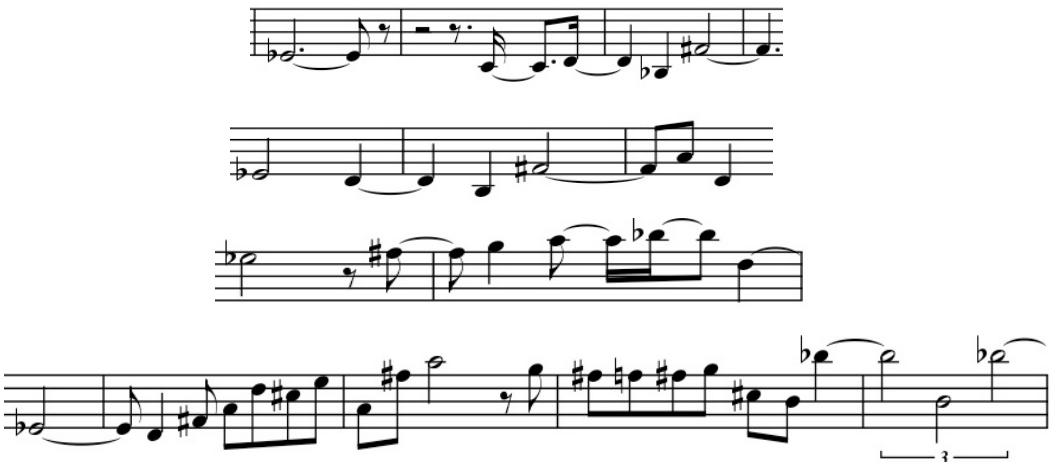


Fig. 9

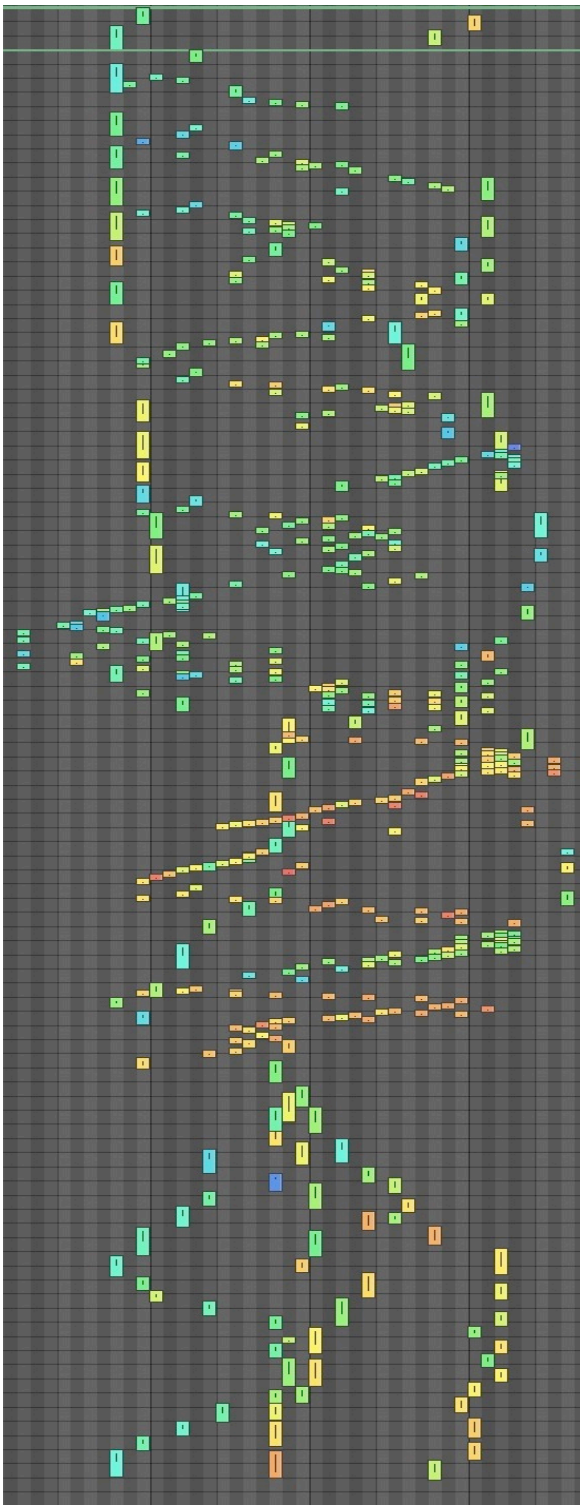
The second section of this piece starts at bar 78 of the score, at 5':41". From that moment on, the clarinets play sustained pitches with quarter-tone bending[166]. This last section starts with semi-tone and tone harmonical dissonances. One software clarinet starts with B, the other with B flat and the 'live' clarinet with A. With these dissonances I wanted to musically express the lament. In order to reinforce this dissonance I have applied

164 5':40" corresponds to bar 77.
165 Full Score of *The Cry of the Burnt Trees* is available in the Appendix VI, pp. 97-101.
166 The two software clarinets continue the previous sustained motion while the 'live' clarinet follow from this moment the same motion.

different tuning from the beginning of this piece: the two software clarinets are tuned in A 440Hz and the 'live' clarinet is tuned in A 443Hz. While I was composing the piece, I constantly kept an image in my mind, that of a burnt forest where the air passes through the tree trunks, and instead of causing the leaves to rustle, it spins the ashes around creating whirlwinds from the fire's leftovers. In the second and last section of *The Cry of the Burnt Trees* I intended to describe this image.

The Cry of the Burnt Trees was premièred in Thessaloniki at the University of Macedonia on April 1st 2010. Manousos Ploumidis was the solo clarinettist. There were several issues I had to confront when writing the score for the clarinet. I had composed the three clarinet lines in Logic Pro, and subsequently I tried to create a score using this programme. However, there was a mis-notation of the microtonal intervals in the score produced by Logic Pro. Therefore, I had to rewrite the score using a musical notation-focused programme. I used Finale 2010 by MakeMusic but the result was still not satisfying. This caused synchronization problems during the rehearsals with the clarinettist. To solve this problem, I handed two different audio files to the performer, in addition to the score. The first file included all three clarinet lines and the second one included only the two software clarinet lines. I did this to help him practice in synchronization with the computer. Eventually, the clarinettist gave an excellent performance in the première.

A B A



A B A

Table 2

2.3.2 Gaza

Electroacoustic music for clarinet and a Macintosh laptop[167]

Supplied materials: avi file & aif file
Duration: approximately 11':17''
2009

On December 27 2008, a three-week bombing and invasion of the Gaza Strip was undertaken by Israel[168]. The 'Gaza War', or the 'Operation Cast Lead' as the Israelis called it, was the event which inspired me to compose *Gaza*.

The way I selected the sound material of *Gaza* is similar to the approach I adopted in previous works[169]. The software sounds include: Atmospheric FX/EXS24 Logic Pro/ Apple, Percussion Kit/EXS24/Logic Pro/Apple and Persian Santoor/EXS24/ Logic 8/Apple. The pre-recorded sounds are: the words 'solution', 'illusion', 'revolution', 'evolution', sounds of muttering, lip smacking and tongue clicking[170], sounds of cutlery, and excerpts of news bulletins from the international media[171]. I also use the sounds of a helicopter, a siren, a wolf, children, thunders and storms, taken from commercially available sound libraries[172]. Additionally, I use two 'live' clarinets, one in B flat and a bass clarinet. (See the relevant graphic on page 81).

I grouped the sound material in four layers[173]. The first sound layer includes the sampled Persian santoor[174] and the 'live' clarinets (clarinet in B flat and bass clarinet)[175]. With

167 As fn. 157, p 71.
168 http://news.bbc.co.uk/2/hi/7818022.stm
169 *Silence*, *Happy Enough?* and *Sea, the Whales*.
170 I recorded myself.
171 BBC News, CNN International, Al Jazeera TV (English Version), Channel 1 (Israel). Deutsche Welle (Germany) and Mega TV (Greece).
172 These sounds are recordings and samplings I have found in the sound library of Logic 8. All are played through the Logic's sampler EXS24: 'Rush 3', 'Nature Sounds', 'Sweep Effects', 'Big Bang', 'Various Ambiences Bank', 'NewYork Ambience' and 'Schoolyard'.
173 I have explained the way I use the term 'layer' in chapter 2.1.1. p. 27.
174 The score of the sampled Persian santoor is available in Appendix VIII, p.103
175 Only one performer is needed to play both clarinets since I include between the two parts an interval

these instruments I attempted to express my personal feelings about the war and the loss of human lives. These feelings are illustrated by the clarinets' melodies, which are played by a 'live' performer.[176] I believe that a physical clarinet is more suited for expressing emotions because, compared to the sound of a software instrument[177], the sound quality of a physical clarinet is 'richer' in overtones, more flexible in sound timbre, and has a natural legato. The sound of the sampled Persian santoor/EXS24/Logic 8/Apple, on the other hand, is very similar to the sound of the real instrument. I also selected these instruments due to their geographical connotations. With the sampled santoor I wanted to evoke a sense of the Orient and particularly the Middle East, while with the clarinets I wanted to evoke the reaction of a European.

The second sound layer concerns my thoughts about the war. I decided to use some words to illustrate these thoughts[178]. I recorded my voice on the words 'revolution', 'illusion', 'evolution' and 'solution'. These words were selected not only for the interesting way they could be used due to their almost identical endings ('-ution' and '-usion'), but also for their literal meaning. With these words I wanted to evoke the revolutionary ideas about war, the social evolution provoked by war, the illusory madness of war-making and the solution which, in my opinion, is never reached through war. There are moments in *Gaza* where I try to convey a more complex message. By this I mean that I intend to integrate different meanings. To achieve this in musical terms, I divide the selected words in syllables and I repeat these syllables by changing their order. Thus, the articulation of the syllables is mixed in such way that the message is that evolution is transformed into revolution, which could become solution, but the result is nothing but illusion. In addition to these words, I used recorded body sounds of lip

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large enough to accommodate the performer to change clarinets.

176 The score of the clarinets' melodies that I handed to the clarinettist is available in Appendix VII, p. 102. The starting and ending points of the melodies are not determined in an absolute way. The timings indicated on the score (p.102) are additions to the original and are meant only to help the reader to follow the music.

177 The software clarinets I had in my disposal and with which I compared the physical instrument were: Clarinets/Westgate Studios, Clarinet/ GarageBand/EXS24/Logic Pro/Apple, Clarinets/ Kontakt 3/Native Instruments.

178 As in *Space x 2* (pp. 35-41 and especially p.36), where I use verbal material to represent human cognition in general, in *Gaza* I use recorded words to illustrate human thoughts. The difference is that in *Space x 2* I didn't want to express any specific thoughts, which is why I reversed the verbal material. In contrast to that, in *Gaza* I kept the recordings of the words in their original form because I care about the meaning of these words.

smacking and tongue clicking[179] in order to describe the rattling bones of the two parties' (Israelis and Palestinians) ancestors. I also used recordings of cutlery to illustrate the sound of weapons[180].

The third sound layer concerns war as an historical fact. It consists of recorded media (television) announcements and live reporting. In order to be as objective as possible with regard to this event, I decided to use a variety of sources. Therefore, I interpolate segments of news bulletins from Greek, American, British, Israeli, German and Arabic media. I selected the most ubiquitous channels for this purpose, including BBC, CNN and Al Jazeera.

The fourth and last sound layer includes the rest of the material: Atmospheric FX, Percussion Kit, Rush 3, Nature Sounds, Sweep Effects, Big Bang, Various Ambiences Bank, NewYork Ambience and Schoolyard (B, C and G sound groups in the graph on page 81). It is with this final layer that I intended to bind together the sound material of *Gaza*. This 'binding' works in two ways: in terms of time and in terms of sound. In terms of time, this sound layer binds *Gaza* together by providing rhythm and introducing other sound elements. For example, the sampled gong (orchestral Kit/ESX24) introduces the recorded news bulletins, the clarinet's first melody, and the melody of the sampled Persian santoor. In terms of sound, this layer supports other sound elements. For example, the melody of the Persian santoor is supported by a 'war soundscape' created with sounds of the fourth layer: Rush 3, Big Bang, Sweep Effects and Various Ambiences Bank.

I have organised the music in three main segments according to the sound material used. In the first segment, which extends from the beginning to 4':17", I use the sound layers 2 – 4. The second layer evokes the thoughts about the war, the third layer evokes war as an historical fact and the forth layer is the one that binds the sound material. With the first segment I intended to create a musical narrative of the invasion and to portray the reaction of public opinion against it.

179 This kind of body sounds I also use in *Space X 2*.
180 More specifically, I intended to simulate the clanging sound of an empty rifle shell hitting on a metal surface.

In the second segment, from 3':38" to 6':46" I use the 1st and the 4th sound layers. The 1st layer represents the human feelings elicited by this war through the melodies of the clarinets and the Persian santoor, and the 4th layer supports the 1st layer by creating a 'war soundscape'. In particular, the ending of the first segment overlaps with the start of the second segment which begins at 3':38", a little before the entrance of the clarinet's melody at 3':44". This melody is a ten bar cadence with two successive endings: the first in B minor and the second in F sharp minor[181]. From 4':35" to 5':45" the sampled Persian santoor plays a D minor melody which consists of a phrase[182] repeated three times and a cadence. The last melody of the second segment is played by the bass clarinet from 5':50" to 6':38". This melody extends in 24 bars and it is in F sharp minor. The melodies of the santoor and the bass clarinet are accompanied by the 'soundscape of war'. At 6':37", a little before the ending of the bass clarinet melody, I use children's voices from a kindergarten until 6':46". These voices portray innocent children laughing, yet it is precisely this laughter that they are deprived of during the war. At this point, the feeling of shock and disgust about the war that I want to convey reaches its peak. The insertion of children's laughter transfers us to a serene and peaceful environment, which is in absolute contrast to the previous sounds of sirens and helicopters.

This serene and illusory atmosphere is interrupted at 6':37" when the word 'illusion' is heard, marking the third and final segment of the piece. The word 'illusion' refers to the illusive thoughts of happiness and peace for the war victims. In this part, from 6':37" up to 11':17" (this depends on the clarinettist's tempo)[183], I use a mixture of the material from the previous sections drawn from all four layers. At 9':40" the bass clarinet starts playing its second solo melody in F sharp minor. At 10':05" all the sounds from the computer stop, while the clarinet continues its melody until 11':17"[184] and gradually diminishes in intensity towards the end. With this effect of the solo clarinet closing the piece, I intended to show that human feeling is the only thing left after the destruction of war.

181 The score of the clarinets' melodies is available in p.102.
182 The repetitions of the phrase are not identical but very similar. See the relevant score on p.103.
183 I have allowed the clarinettist to perform freely in tempo. I have taken into account the approximate time he/she would need to perform the solo lines, and I have thus manipulated my material more loosely in the entrances and closures of the melodic lines.
184 This timing is based on the performance that took place at Thessaloniki in March 2010.

In *Gaza* I share some techniques with Steve Reich and in particular with his documentary video opera *Three Tales* of 2003[185]. In Reich's compositional aesthetics, the text constitutes a means of creating tempo in music. He segments the text in phrases and stresses certain syllables, thus creating rhythmic motifs and tempo. Like Reich, I also use recorded documentary material. My manipulations concern only a fragment of this material. Media recordings are mixed together in such a way that only certain words and phrases from the text are clearly audible. There is only one phrase highlighted: 'there are people alive-without food-without assistance'. This phrase is deliberately emphasised in order to draw attention to the atrocity of war. In *Three Tales* Reich uses speech as melody: speech-melody. His speech-melody is linear, whereas in my case multiple speeches are simultaneously heard creating a speech-chorus instead of a speech-melody. In *Hindenburg* from *Three Tales*, Reich creates intensity through the persistent use of rhythm. In the case of *Gaza*, I create tension by focusing less on rhythm and more on sound density and complexity, in the sense of the 'speech-chorus' referred to above.

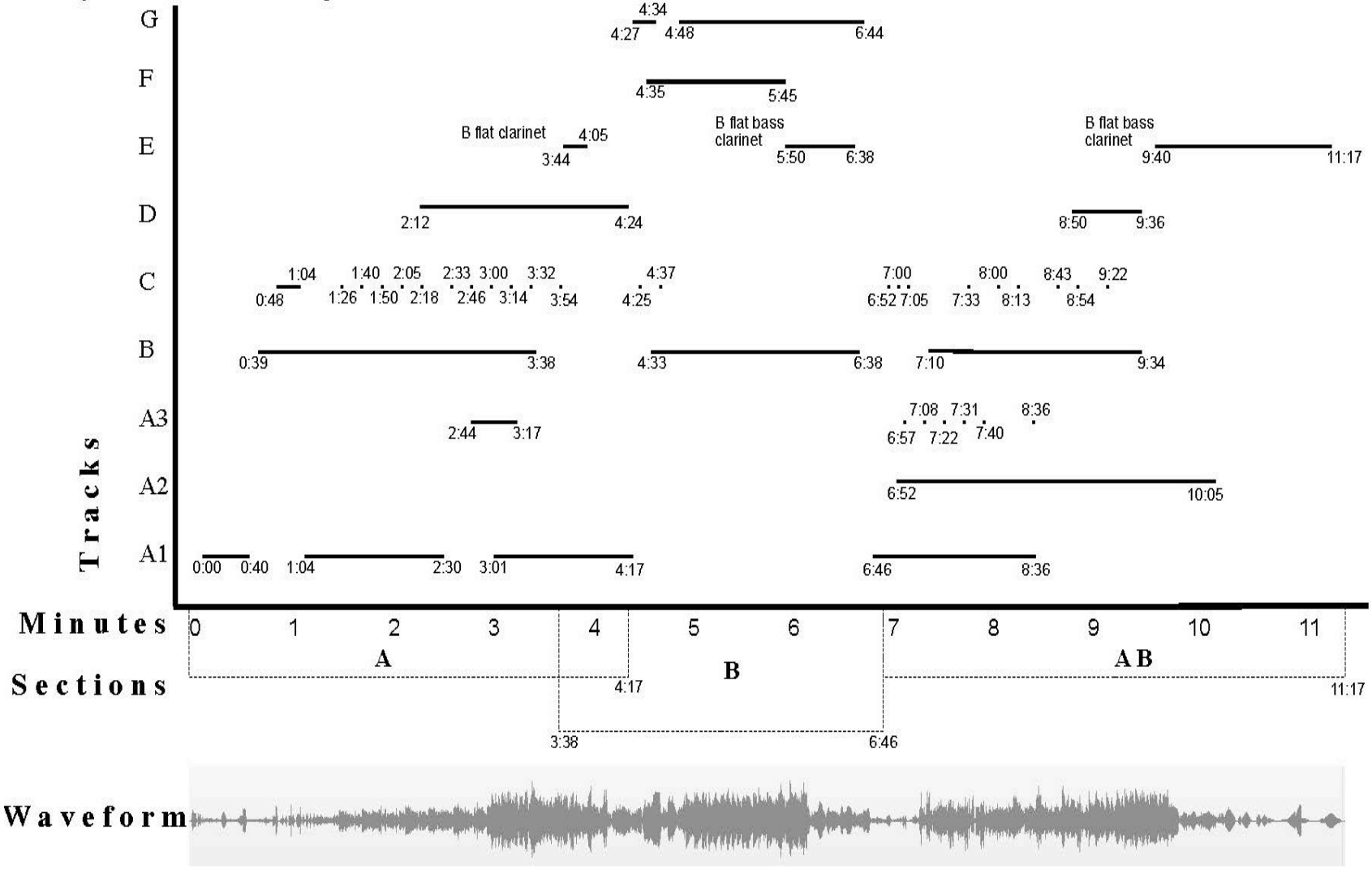
In conclusion, I have explored how a non-decorative musical piece could convey an anti-war political message. I attempted to musically portray the atrocious aspects of warfare. I was deeply affected by this particular event, and I was especially troubled by the plight of the innocent victims in this conflict. The words 'illusion', 'solution', 'revolution' and 'evolution' are clearly articulated in contrast to other pieces included in this portfolio[186] where the text is used mainly for its 'sound effect'. Since my aim was to convey a message, I present these words clearly to the audience, but in some cases I blur the syllables in order to create an effect of ambiguity.

Gaza was completed in January 2009 and its premiere took place in Thessaloniki, in March 2010. It was presented to the public in a concert performance with no video projection. A full performance of the piece is scheduled for October 2012 in collaboration with Olga Chalkidou, a video artist with whom I have discussed the creation of a video for *Gaza* and who I already collaborated with on *Emersion*[187].

185 See fn. 120, p. 53.
186 *Space x 2* and *How People Understand*.
187 Olga Halkidou created the videos for *Emersion*.

Gaza

A1: Elabotation of the recorded words *solution*, *illusion*, *revolution* and *evolution*. **A2**: Processing of recorded sounds made by my lips tongue and teeth. **A3**: Processing of recorded sounds of cutlery. **B**: Electronic instrument, Atmospheric FX/ EXS24 Logic Pro. **C**: Electronic simiulations of orchestral percussion,otchestral kit/EXS24/Logic Pro. **D**: Elaboration of recordings of interational media. **E**: Melodic lines of live clarinet in B f at and bass clarinet in B f at. **F**: Melodic line of electronic Persian Santoor/EXS24/Logic Pro. **G**: Sounds of helicopter, siren, thunders, storms, kindergarden, and wolf.



Chapter 3: Conclusion

My doctoral research has focused on the use of human sounds, and especially of the human voice, in the context of an electronic sound environment. I tried to locate the dividing lines between electronic sounds and recorded human sounds, and to find ways to mitigate this division. This research project stems from my broader interest in the aesthetic consideration of sound as a 'sound object'[188]. In this view, sound is understood as an object that carries certain specific qualities such as weight, volume, material, colour, use, duration, history, and source of origin. The results of this research are reflected in many of the compositions presented in this dissertation, such as *Silence*, *Space x 2*, *How People Understand*, *Emersion*, *Gaza* and *Sea, The Whales*.

Another focus of my research concerns the creation of sonic constructions with the aim of representing non-musical events, that is, events that are not restricted to music *per se* but refer to a broader range of human activities. The compositions discussed in this dissertation are not abstract musical compositions but programmatic works that attempt to explore human emotions (*Invention on Silence – Silence*, *Happy Enough?* and *Sea, the Whales*), human relations (*How People Understand*, *Space x 2* and *Emersion*), and historical events (*Gaza* and *The Cry of the Burnt Trees*).

My music, as well as my thinking on music, has been influenced by many composers. I have been intrigued by Pierre Schaeffer's conception of the 'sound object'. I have embraced John Cage's view on the multiple uses of sound[189], Jani Christou's idea of *metapraxis*[190], and the polystylism of various composers, such as Kaija Saariaho, Julian Anderson, Sofia Gubaidulina, Arvo Pärt, Alfred Schnittke, György Ligeti, and Krzystof

188 See p. 12-15.
189 See p. 23.
190 See pp. 21-22.

Penderecki[191]. I have also been influenced by Brian Eno's understanding of the role of music making. In other words, I agree with him that music making should display thoughtfulness, reflection, craft, creativity, and originality, while it should also reflect an acknowledgment of the needs of the audience and a sense of music as a functional, social phenomenon[192].

During my doctoral research, I composed music for various combinations of pre-recorded sounds, software instruments, physical instruments and human voice. I did not venture into the use of live electronics which would allow me to perform onstage, but would divert the attention of the audience. With the exception of incidental music, in all my works I want the audience to focus on the music and not on the performance of a live instrumentalist or vocalist onstage (or my own, if I played live electronics). Live performing, when it occurs in my works, serves primarily two aims: on the one hand, it offers me the live sounds that I need, and, on the other hand, the physical presence of the performer serves the particular needs of each musical composition[193]. In the future I intend to compose works that include live electronics, which will offer me the opportunity to improvise onstage. However, this improvisation as well as my physical presence on the stage will serve the musical composition and will not be focused on the performance *per se*.

As a further step in my development as a composer, I would also like to compose electroacoustic compositions that will feature large orchestral ensembles, as in the *Concerto for Turntables and Orchestra*, composed in 2007 by Gabriel Prokofiev and the *Surrogate Cities* composed in 1994 by Heiner Goebbels. In accordance with my understanding of live performance as I described it above, I would like to compose electroacoustic music in which the electronic sounds will be recorded and will be emitted by loudspeakers, whereas the natural sounds will be produced by the musicians of the orchestra. Each member of the orchestra will participate in the work not only through his/her musical performance but also through his/her active presence on the stage. The

191 See p. 63.
192 See p. 22.
193 I use 'live' solo soprano in *Invention on Silence*, 'live' clarinet in *The Cry of the Burnt Trees* and 'live' clarinet and bass clarinet in *Gaza* (both are performed by one clarinettist).

electronic sounds emitted by the loudspeakers will engage in a complex musical dialogue with the melodies played by each instrument of the orchestra.

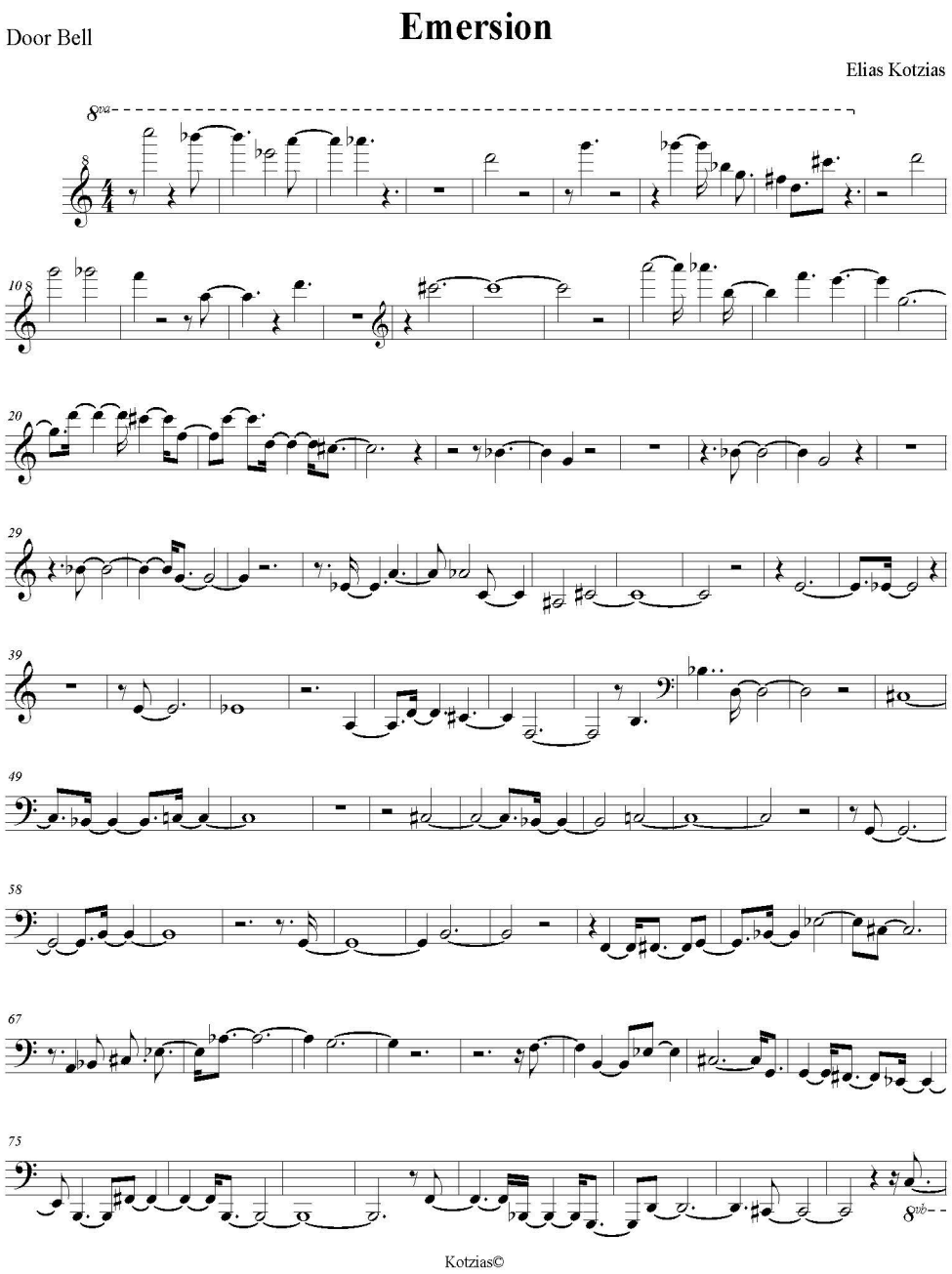
At present I am in discussion about the writing of a large-scale musical work: an electroacoustic opera. The story of the opera will focus on the impact of dysfunctional families –such as divorced families, single-parent families, families whose members engage in drug or alcohol abuse, etc.– on the child's psyche. This work will be the first composition in which I plan to apply the ideas outlined in the preceding paragraph.

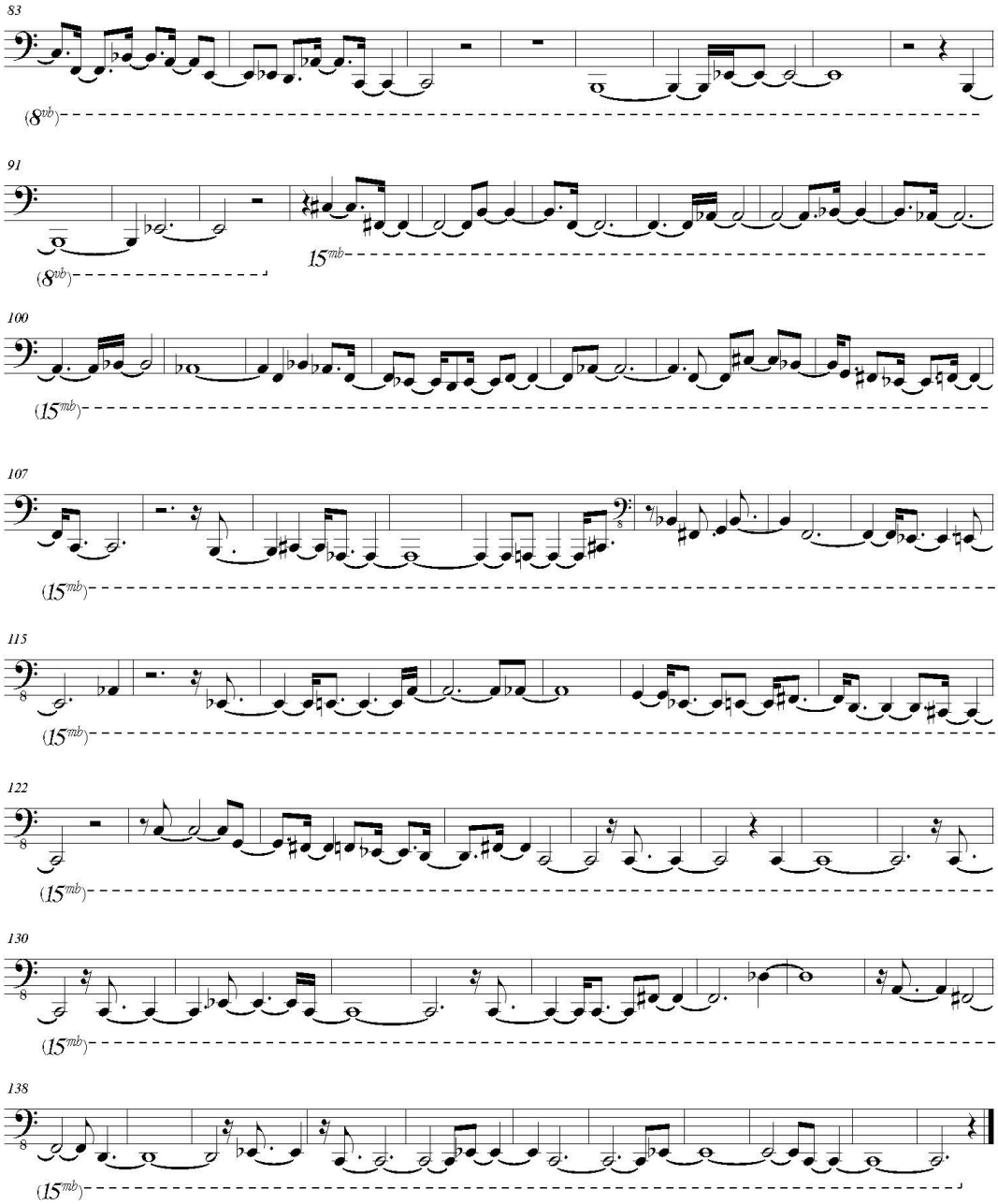
My aim in the future is to continue experimenting with new sound material, new techniques and musical structures. Music composition, for me, is an adventure that takes the adventurer to ever newer territories.

Appendix I

Prelude & City Scape	**Part One**	**Part Two**	**Part Three**	
Base Line Structure				
CONCEPT **Movement & Space**	**HIDDEN & REVEALED**	**HUMAN & COLUMN** **Body & Structure**	**DORIC & IONIAN**	**STILLNESS & MOTION**
Contemporary City Text - Aesopos				
English Text	**Amorphous**	**Reconstruction**	**Border**	**Diffusion**
	The post-war reconstruction of an amorphous, formless city	New urban moves, cut repetition & self generating system of evolution	Polykatoikia syntax creates a soft border between public & private, surface	Uncontrolled diffusion, pay attention to the centre, conditions of no-rule, remark space of collective
Historical City Text - Kazamiakis				
Greek Text	**Hidden (kryfo)**	**Wrapped (Tiligmeni)**	**Copy (Antigrafo)**	**Forgotten (Xehasmeno)**
	The hidden architectural dimension, a multiple presence	Transportation, wrapped her carefully in fabric	Cast copy, The glass case	Forgotten & remembered, 1400 years uninterrupted
Culminating Sentence				
Her stillness in her motion				
Undercurrents				
Whispers →	Dimoula Poem.....	.....	.....	
→	"She has defeated time".....	.....	.....	
→	"She has defeated death".....	.....	.....	
5 minutes	**5 minutes**	**5 minutes**	**6-7 minutes**	

Appendix II

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Appendix III

Happy Enough?

Elias Kotzias

Electronic Vibraphone

♩ = 120

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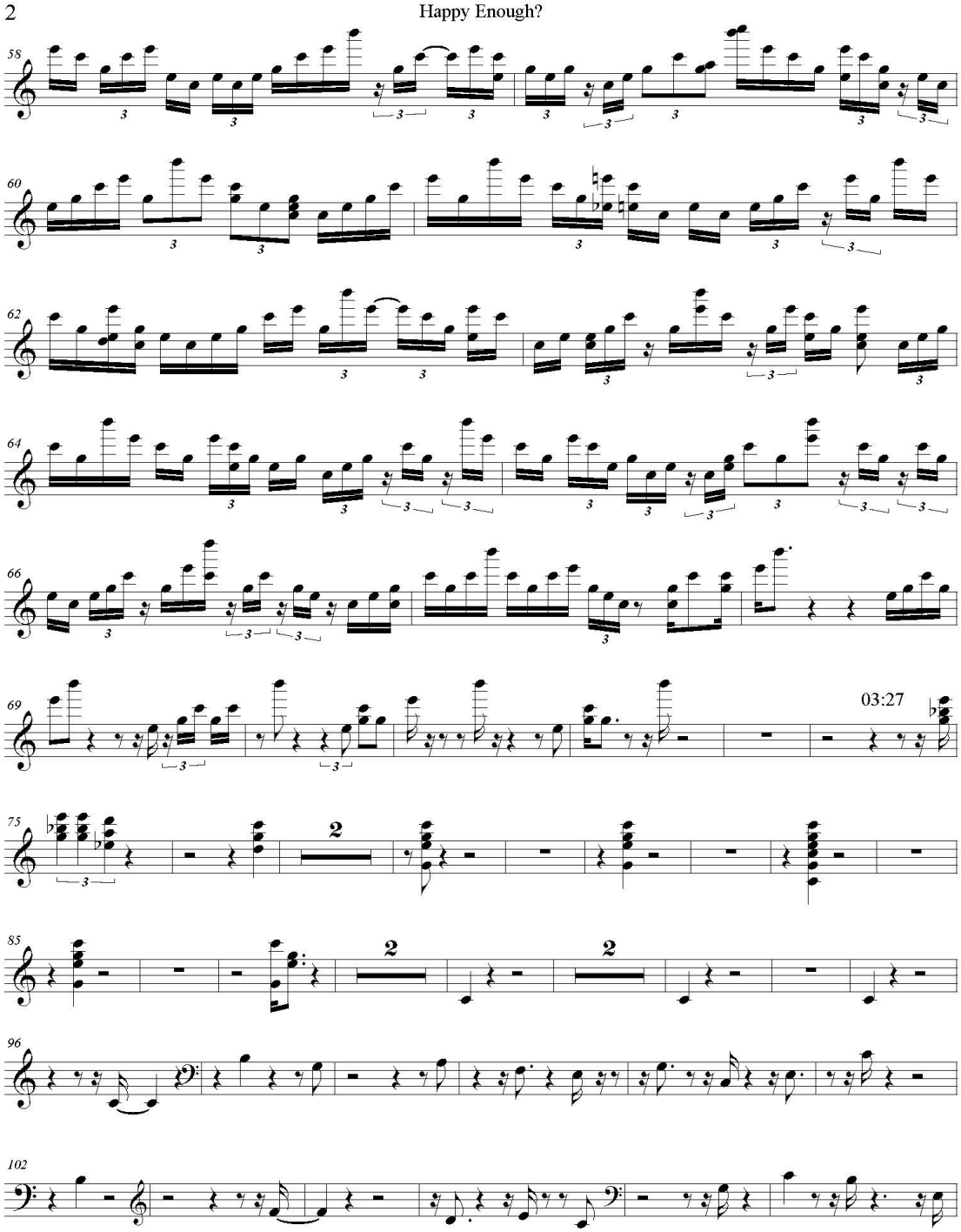
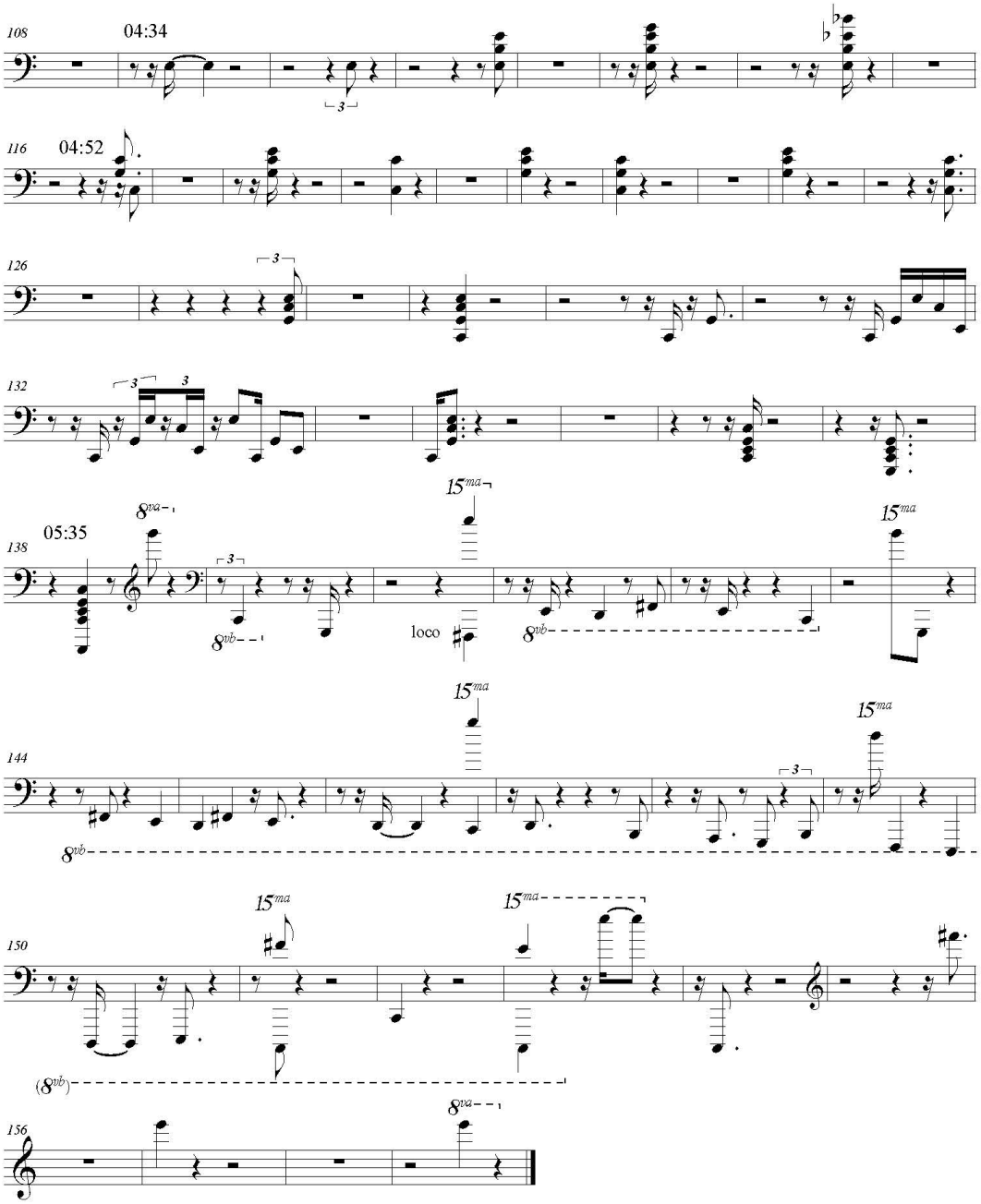
02:18

Kotzias©

Happy Enough?

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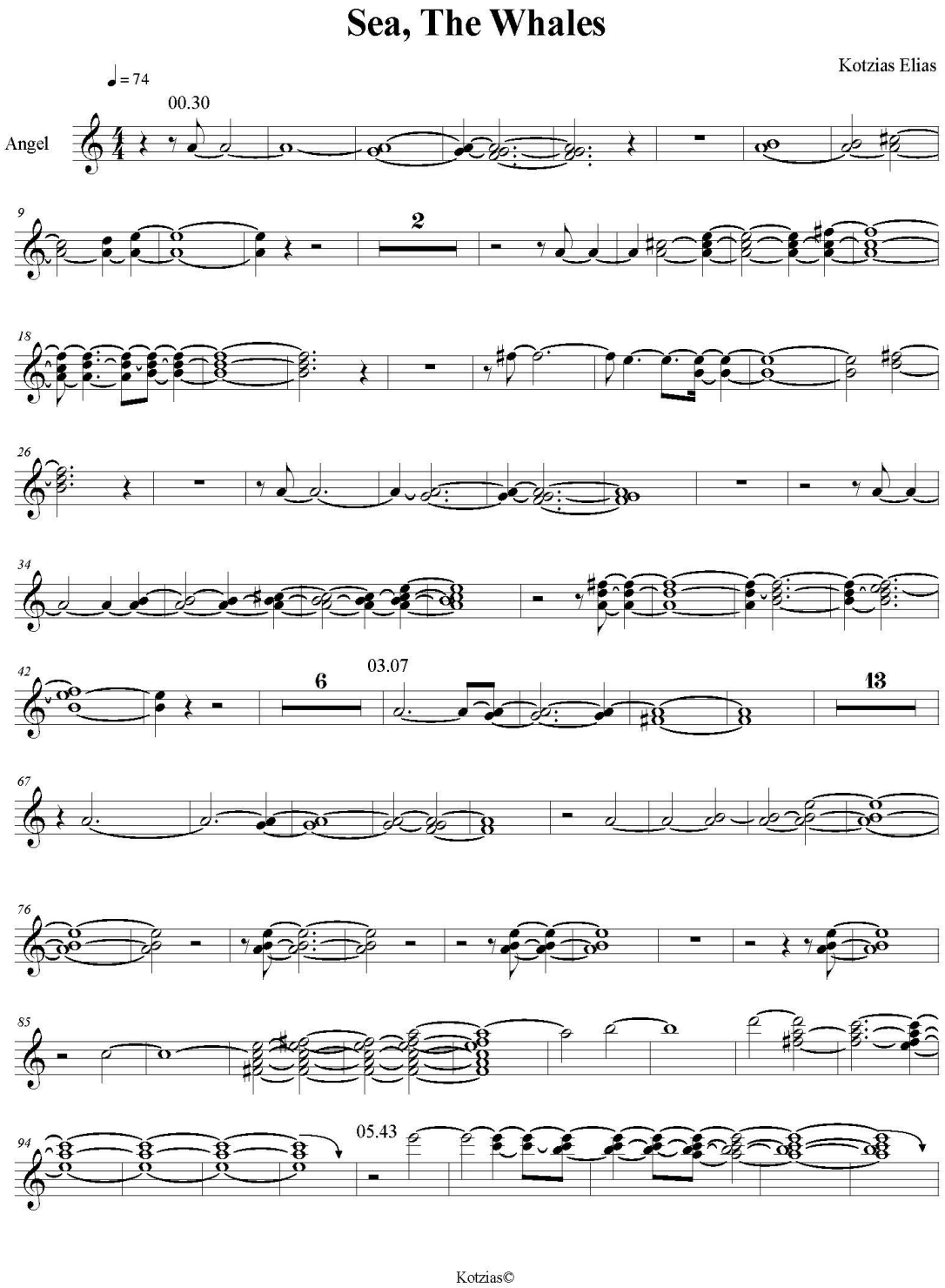
Appendix IV


Sea, The Whales
Kotzias Elias
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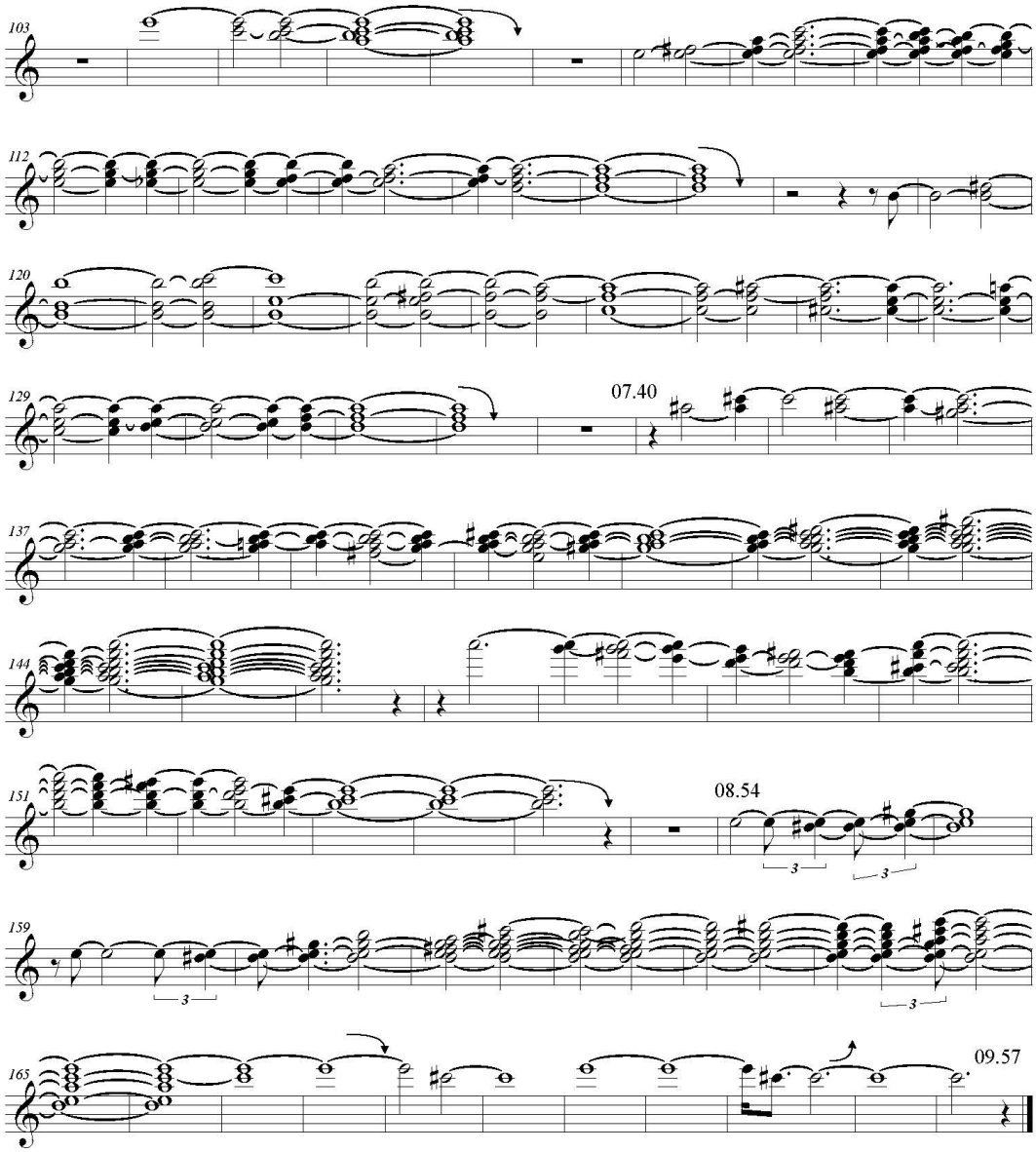
Kotzias©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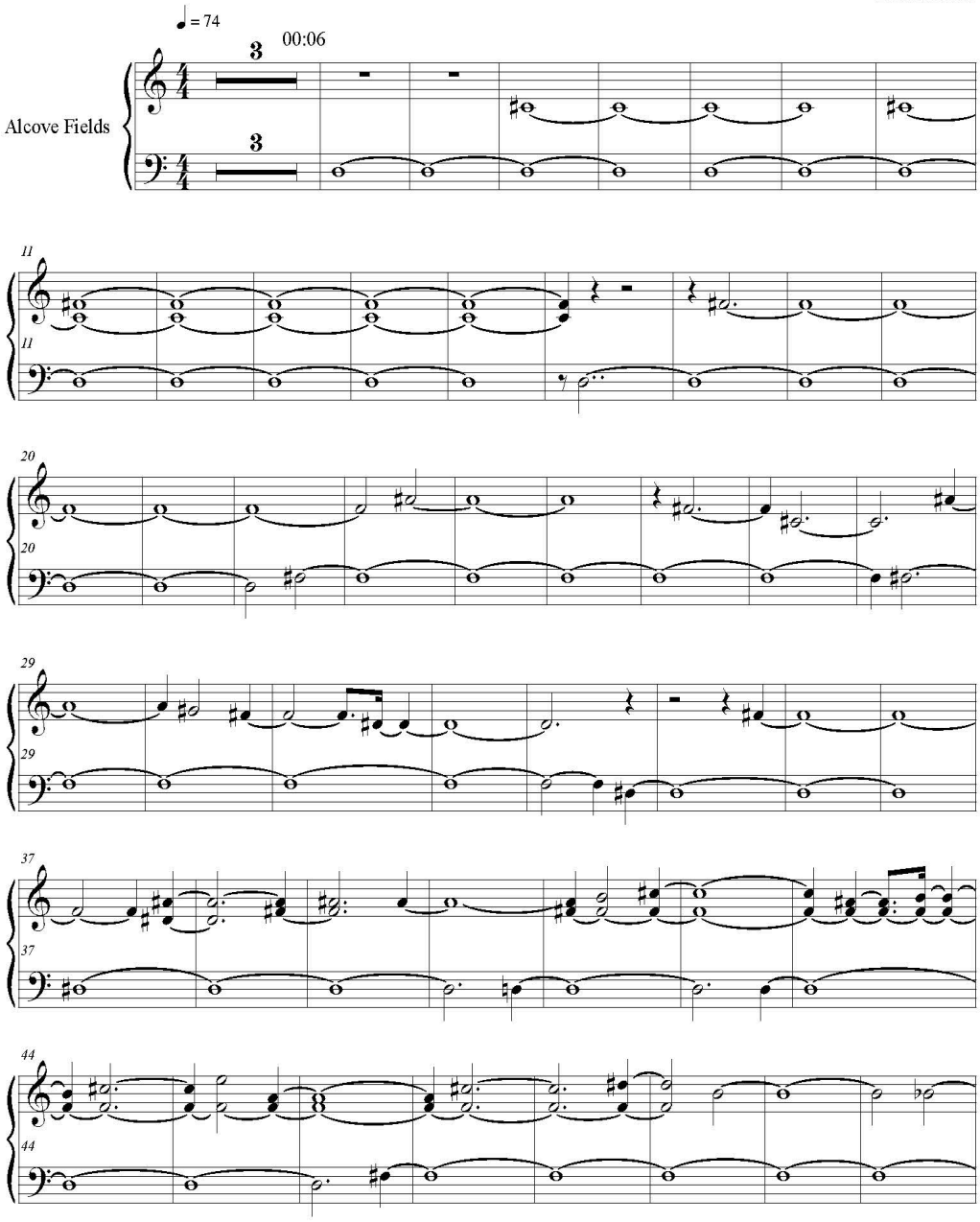
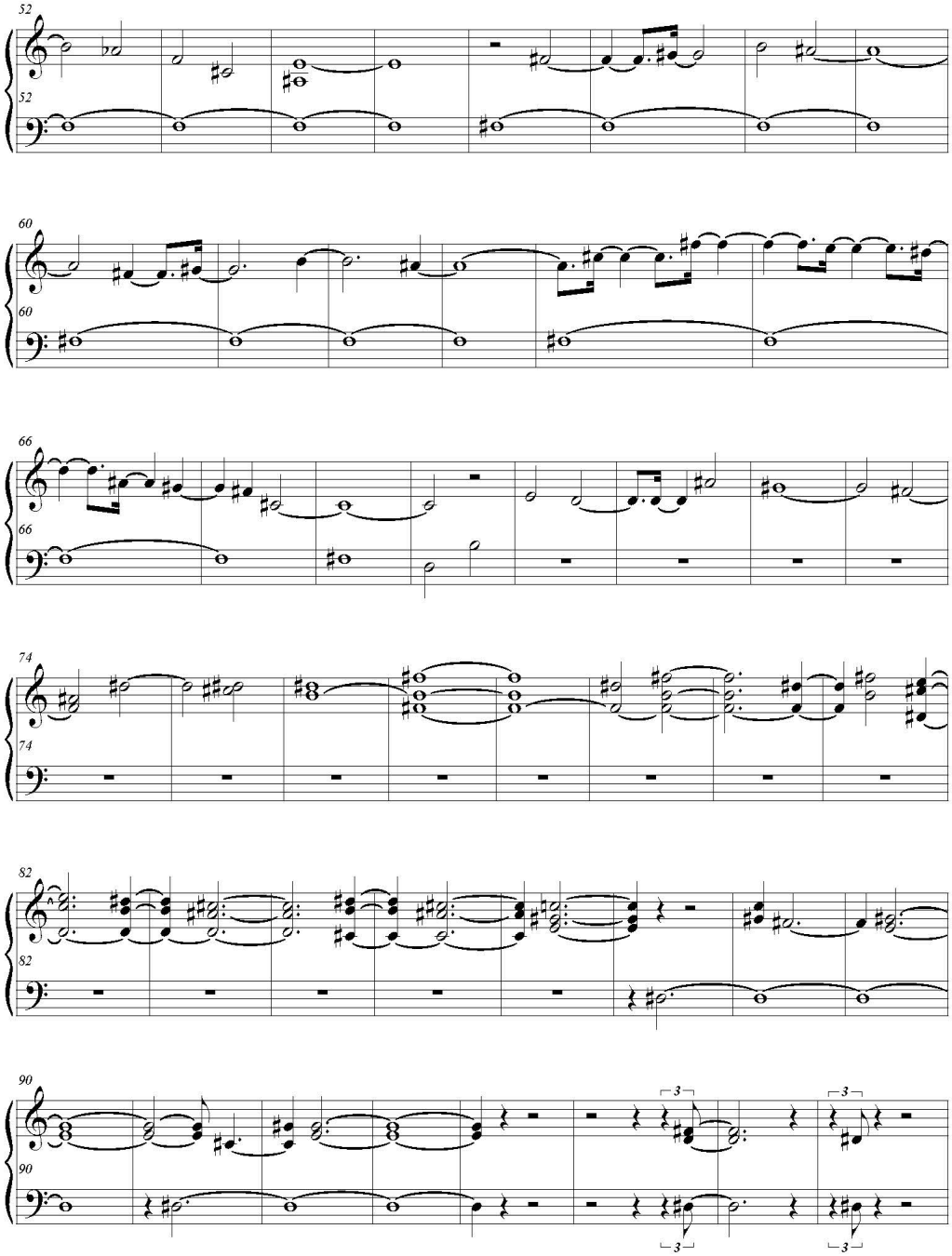
Appendix V

Sea, The Whales

Elias Kotzias

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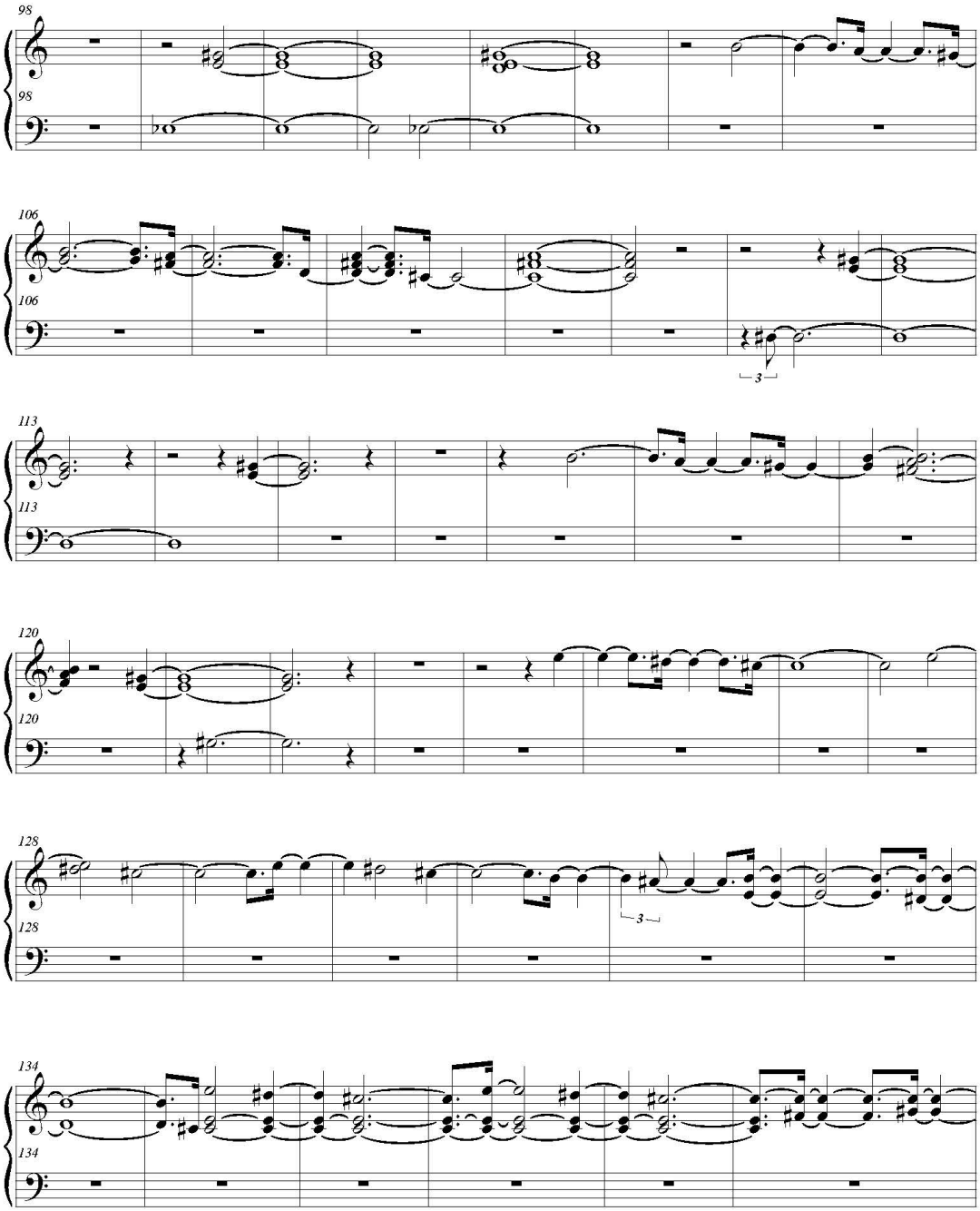
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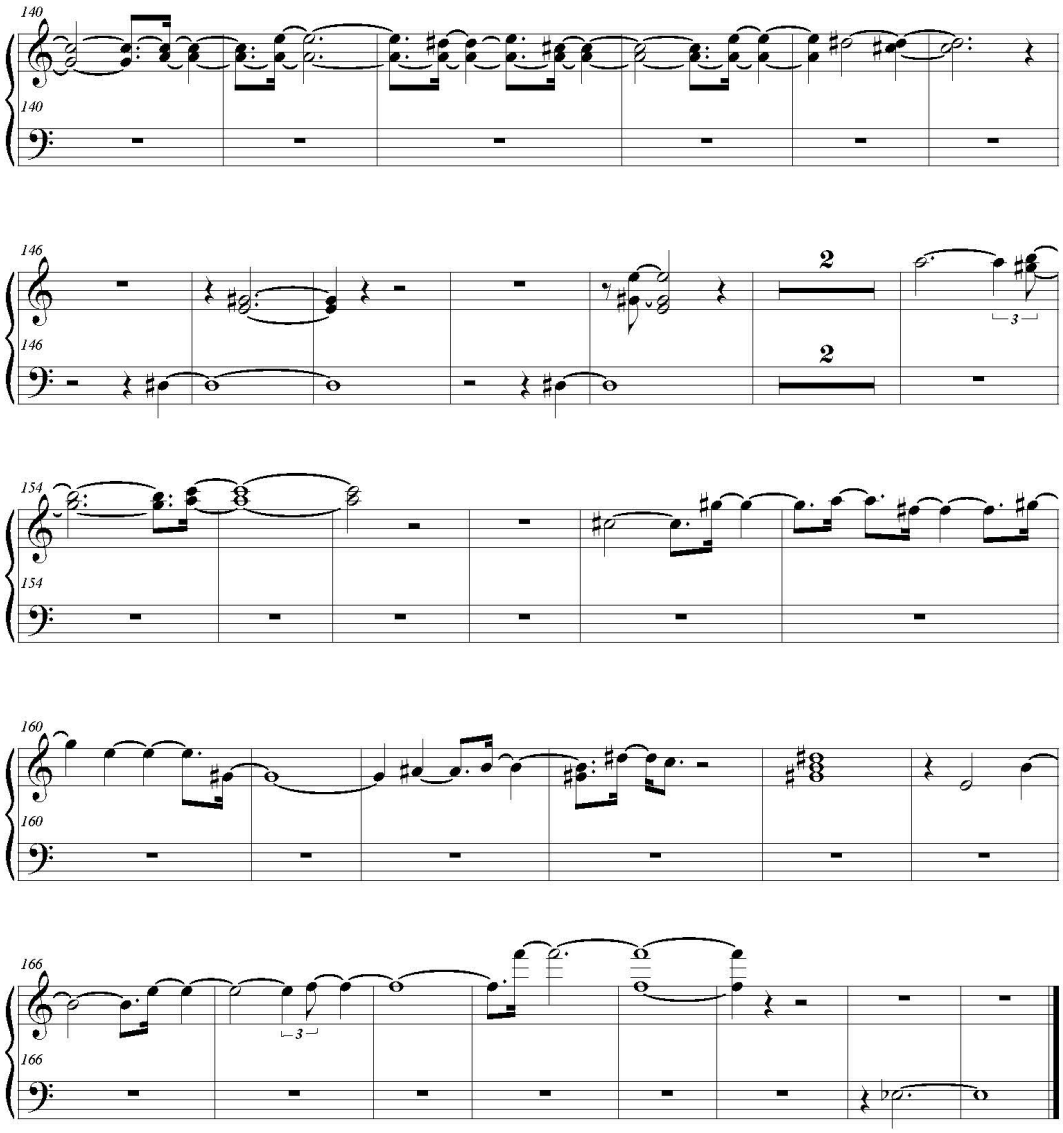
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Appendix VI

The Cry of the Burnt Trees

For clarinet and two electronic clarinets

Score

Elias Kotzias

Largo ♩ = 54 Very Sad

Clarinet in B♭ 1 A=443Hz

Electronic Clarinet in B♭ 2 A=440HZ

Electronic Clarinet in B♭ 3 A=440HZ

Deserted

B♭ Cl. 1

El. B♭ Cl. 2

El. B♭ Cl. 3

* + --------- = microtonal bendings

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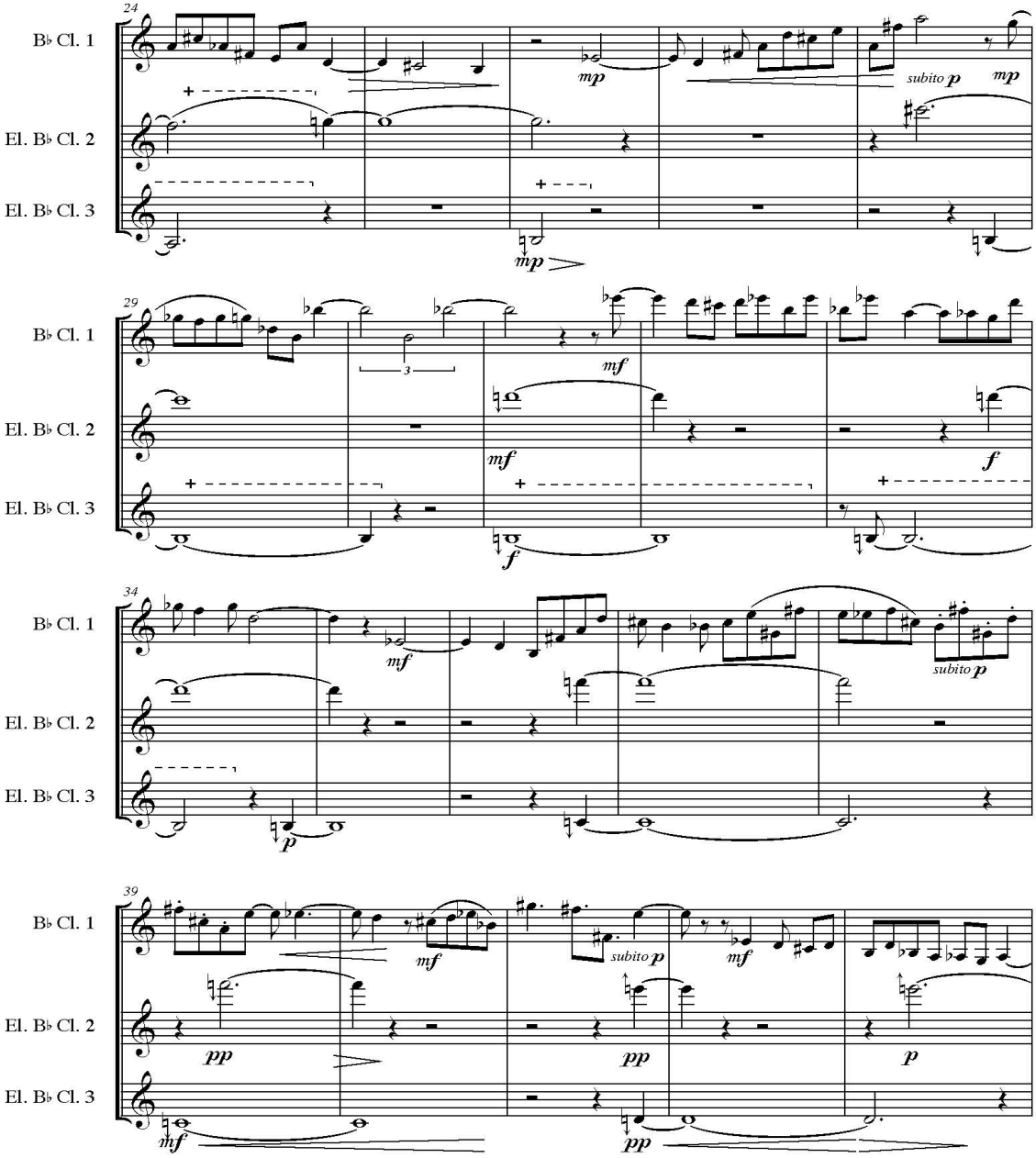
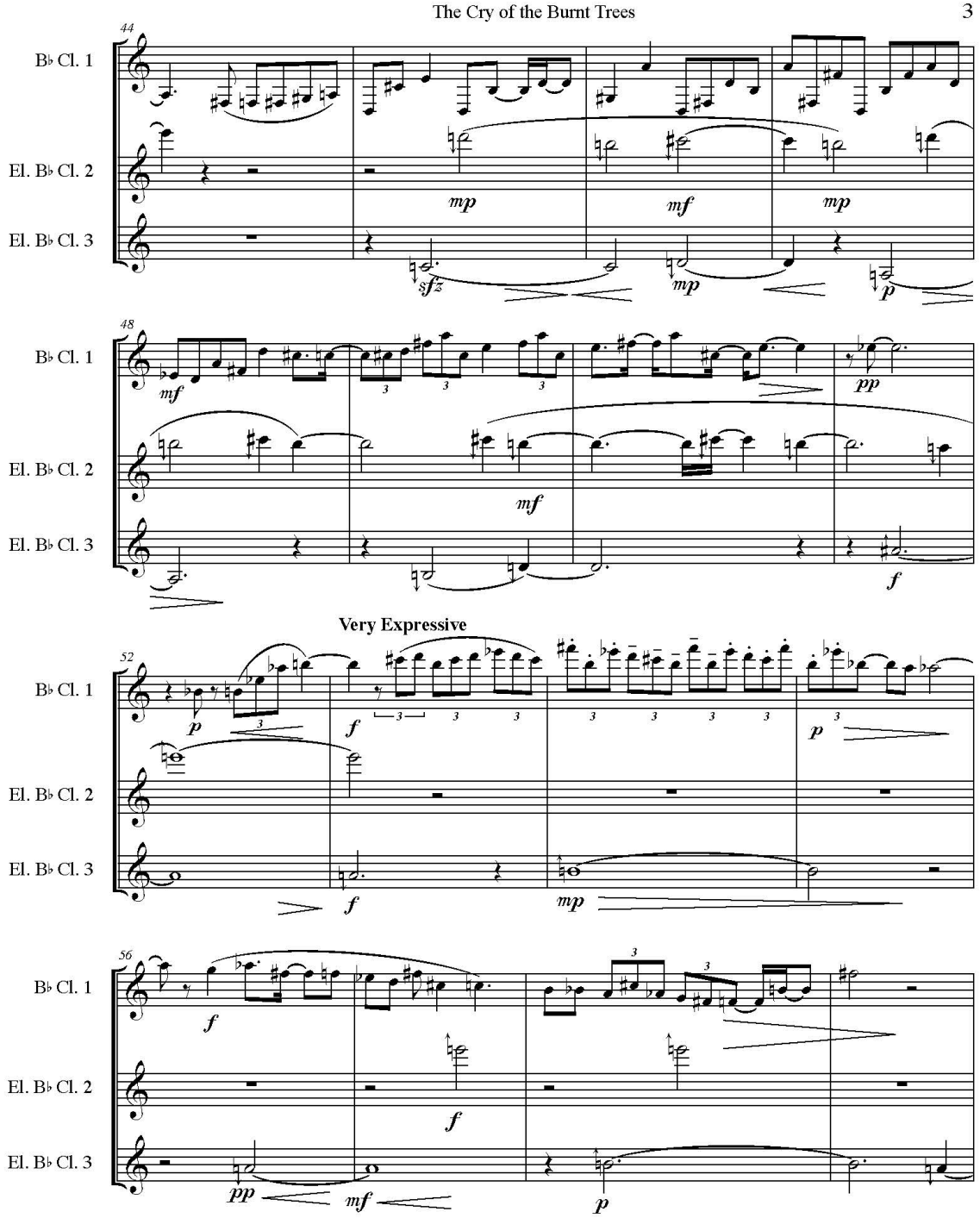
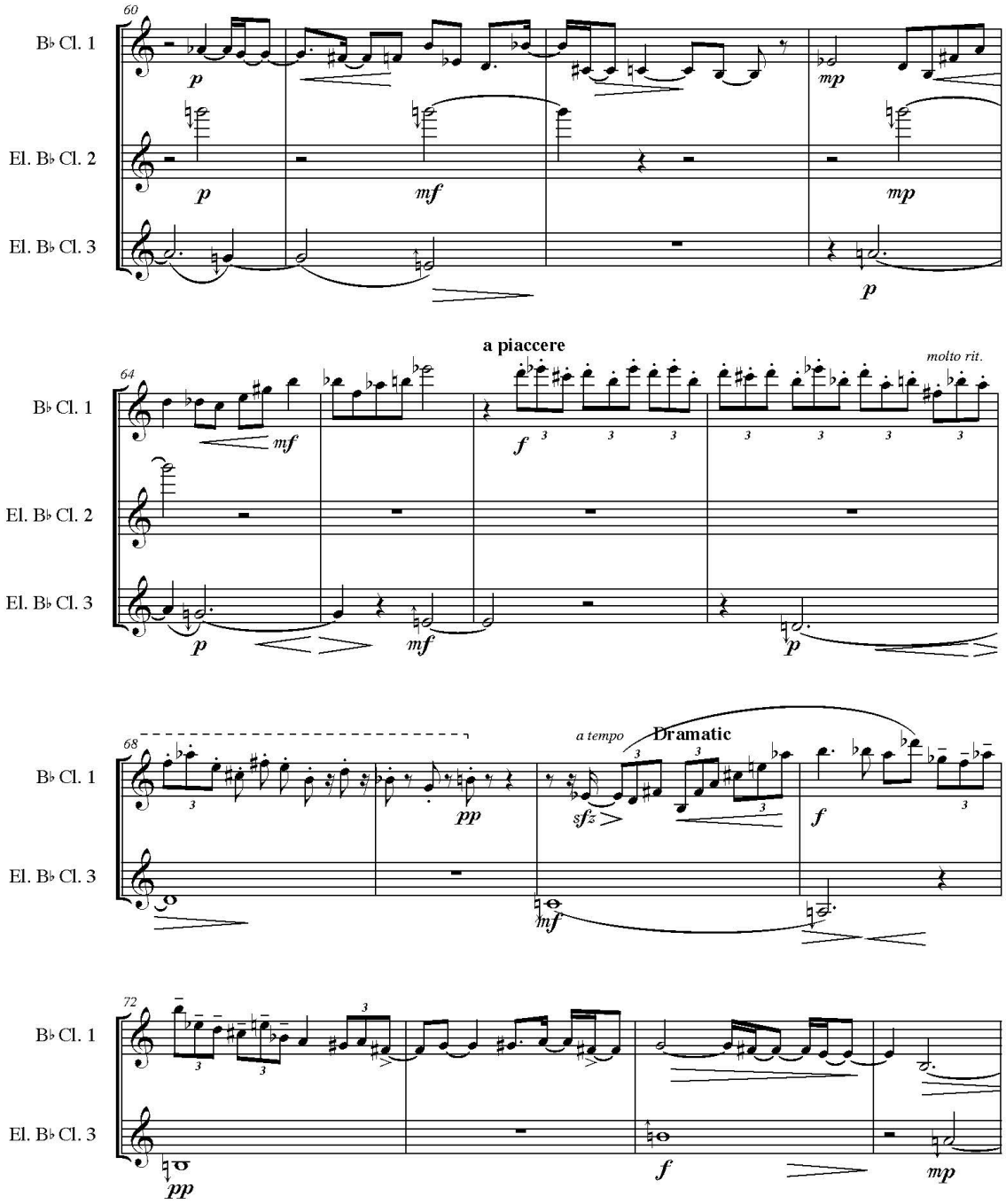
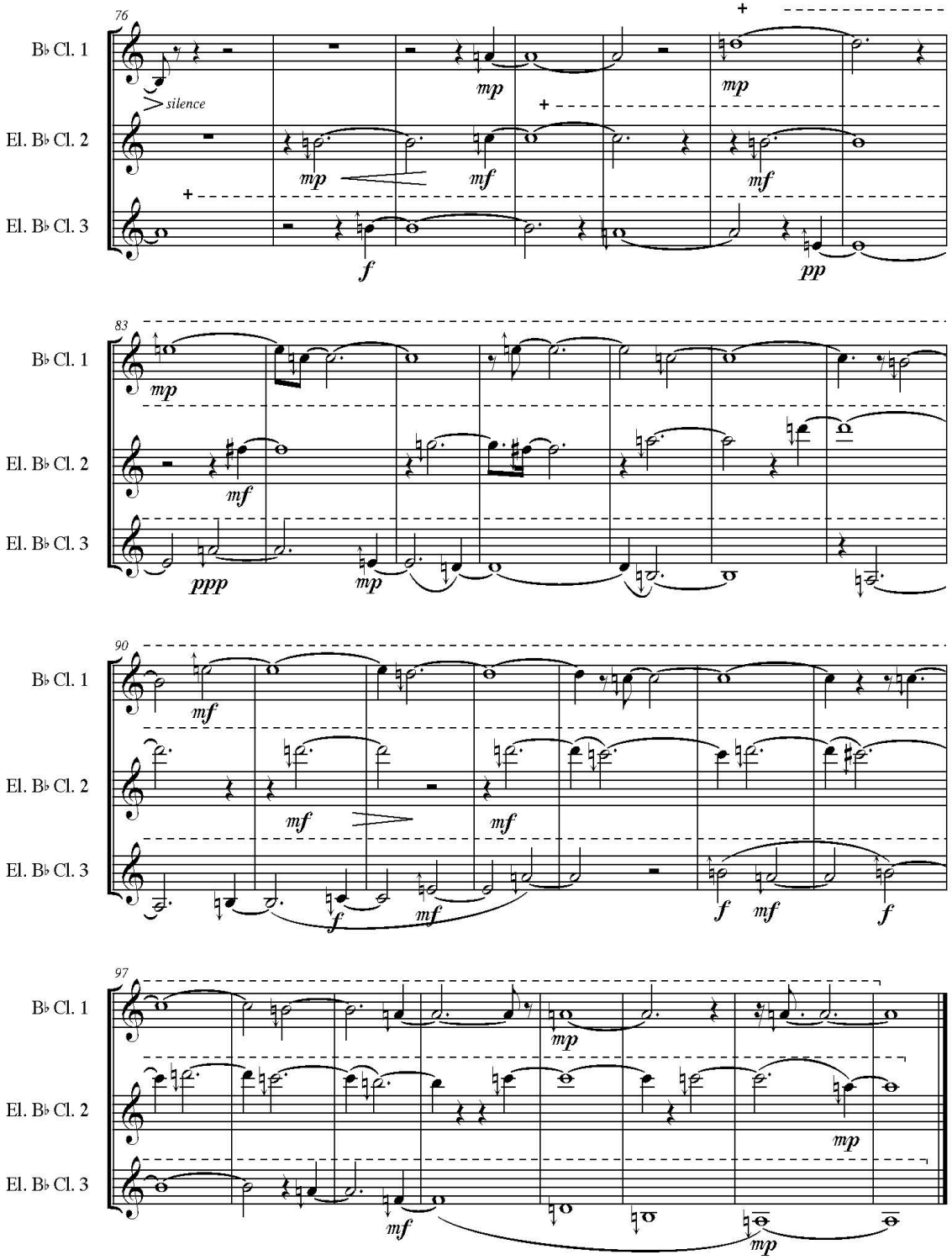
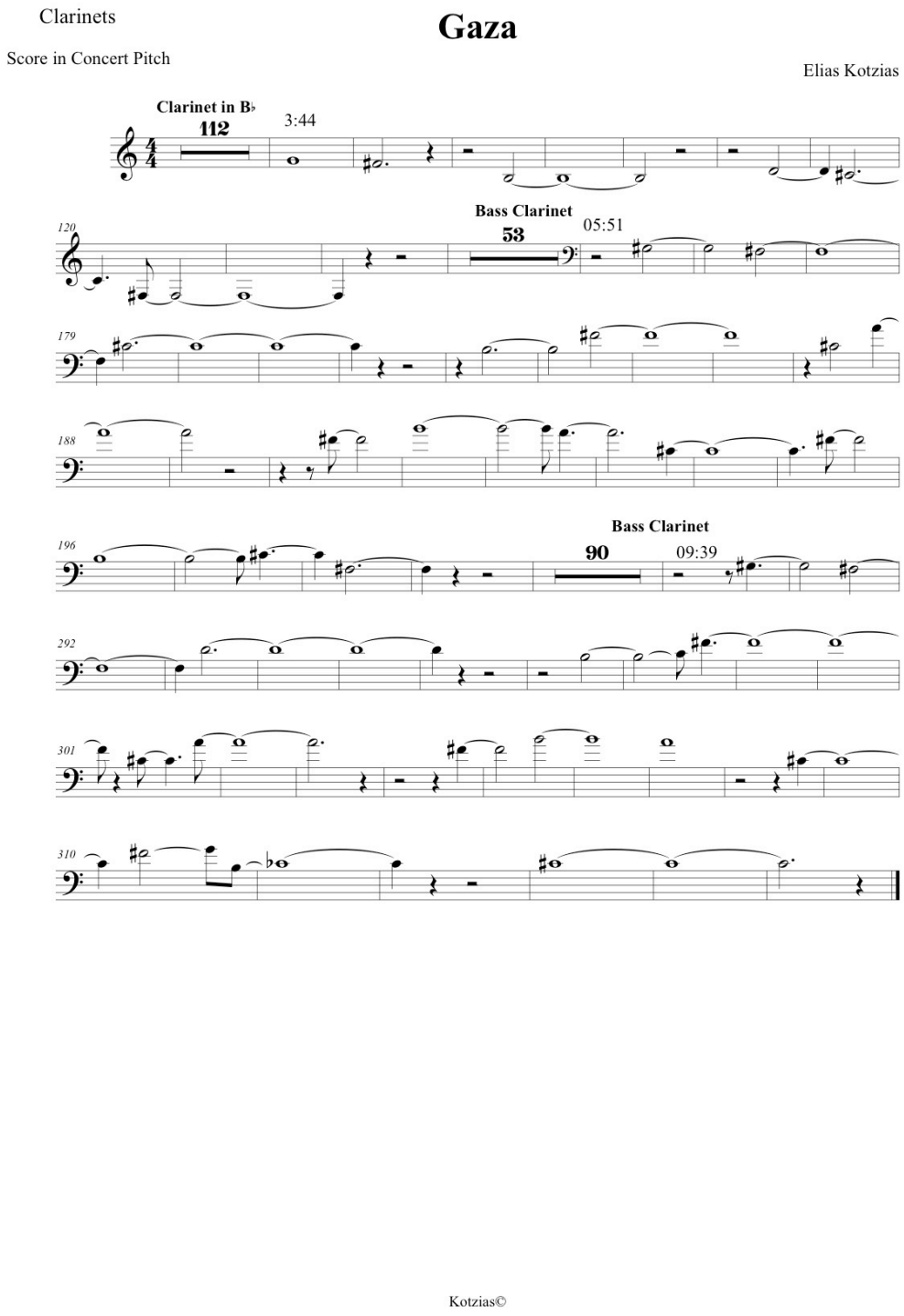

24
B♭ Cl. 1
El. B♭ Cl. 2
El. B♭ Cl. 3
mp
subito p
mp
mp
29
mf
mf
f
f
34
mf
subito p
p
39
mf
subito p
mf
pp
pp
p
mf
pp


44
B♭ Cl. 1
El. B♭ Cl. 2
El. B♭ Cl. 3
mp
mf
mp
sfz
mp
p
48
mf
pp
mf
f
Very Expressive
52
p
f
p
f
mp
56
f
f
pp
mf
p

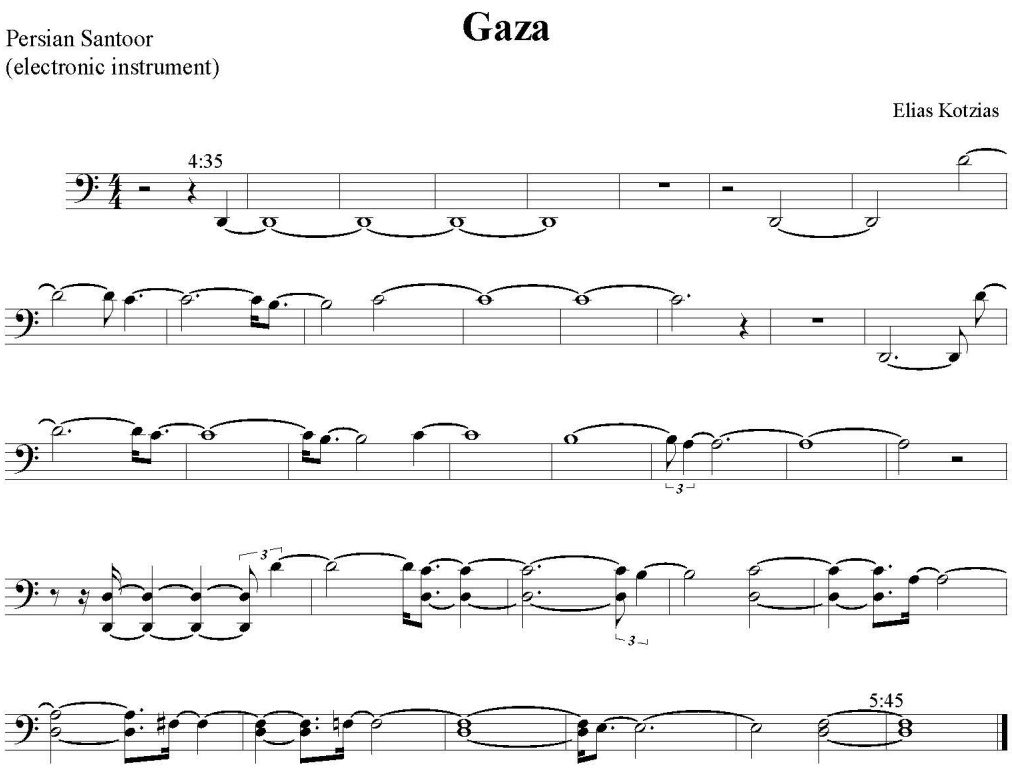

60
B♭ Cl. 1
El. B♭ Cl. 2
El. B♭ Cl. 3
p
mf
mp
a piaccere
molto rit.
64
f
68
a tempo
Dramatic
pp
sfz
72


76
B♭ Cl. 1
El. B♭ Cl. 2
El. B♭ Cl. 3
silence
mp
mf
f
pp
83
ppp
90
97

Appendix VII



Appendix VIII



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