Compositional techniques in acoustic and electroacoustic music

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MUSICAL SCORES AND RECORDINGS ARE EXCLUED FROM DIGITISED THESIS

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For
Rubén, Maria Elena†, Ricardo and Elenita

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Declaration

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Abstract

Part I of this thesis examines three works by the author for electroacoustic sounds with or without a live instrument as well as three acoustic works, all composed between 1991-1997. The general purpose of this writing is to provide the reader with a complete framework underlining the different compositional strategies, aesthetic concerns and technical issues employed in the creation of the works discussed. However the main subject of this thesis is not the text itself, but the six compositions presented.

In the Introduction to this dissertation I present some ideas and reflections on the context of the most recent developments of new Latin American composers born in the 1950s and in the 1960s.The reason for such a choice is because I believe that those composers, although they have been writing music in different countries and live markedly different lives, share a community of musical approaches that can only be explained by their common national culture. As a social phenomenon, music reflects not only its time, but its place. My work as well as some of the works of these Latin American composers could be explained under the same common guidelines, so the question is: what is it in this continent that sets our music apart? I hope that this Introduction could begin to explain such questions, and serve to provide a wider cultural context for my aesthetic and musical background, within which the works submitted may be more adequately assessed.

Chapters 1 to 6 present the various compositional strategies specifically developed for the creation of each of the works. In these chapters the creative process is presented from the first, often abstract or extramusical ideas that have launched my imagination towards the creation of the music, to the most technical issues taken on during the compositional cause. I hope that this complete framework will provide useful information for a deeper analytical approach to the pieces presented, in terms of the composer's main goals and the results obtained.

In Chapter 7 my intention is to explain what I have learned so far, hopefully trying to define the new medium, in this case the world of electroacoustic music plus some other new aesthetic and technical concerns in relation to how it affects me as an individual composer.

Part II consists of a score and a recording of each of the works discussed in Part I.

Part I

Introduction *Towards a new Latin American music*

Taking part in a musical performance is a way in which the participants affirm, explore and celebrate their sense of who they are.

Christopher Small, in Elliott Schartz and Daniel Godfrey, NY : 1993.

0.1 Aesthetic and Cultural background

To understand the most recent developments in art, it is necessary to point out the existence of a determining phenomenon that started taking shape from the 1970s on, and that could be described as a transformed perception about *modernity* and what it means to the arts.To question a modernity that during the whole century had presented itself as an emancipating process within society, has led us as a consequence to question the validity of the process of constant search in the field of the arts, as well as the rejection of the canons of a modernism whose goals seemed to be unreachable. To this new way of thinking, which is part of post-industrial discourse and, at this time, is related to a new crisis of western civilisation, *modernity* is practically a finished episode, that includes the exhaustion or demise of any avant-garde.

The heterogeneous character of Latin American social and cultural formations[1] made it possible for discontinuous, alternative, and hybrid forms to emerge that challenged the hegemony of modernity.
Thanks to this heterogeneity of Latin American cultural formations there is something recognisable about some new Latin American composers born in the 1950s and in the 1960s. For example, although Aaron Copland and

Dimitri Shostakovich worked in the same decades and responded similarly to the same great world events, their music has recognanizably American and Russian accents. On the other hand although Alejandro Viñao, Michael Rosas Cobian from Argentina, Agustin Fernandez from Bolivia, Javier Alvarez, Arturo Marquez from Mexico, Alonso Toro, Paul Desenne, Julio D'Escriván and Ricardo Lorenz from Venezuela, or Roberto Sierra from Puerto Rico have been writing music in different countries and live markedly different lives, they share a community of musical approach that can only be explained by their common Hispanic culture.

Every composer matures by learning how to express musical ideas, working within a musical culture, while gaining personal experience that somehow provides the substance of musical expression. I believe that the panorama offered in Mexico and Latin America by the work of the generations from the 1950s on, lies in the wealth of original personalities as well as in the multiplicity of the practised styles, techniques, and instrumental conceptions owed to an assimilation of diverse influences.

Obviously depending on personal inclinations and linking, a series of eclectic elements can be appreciated in these works which accept both neo-romantic and neo-expressionistic elements, a certain kind of *sui generis* minimalism, new complexity, from serial to electroacoustic music, musics of eastern cultures and elements from folklore and popular culture or mass culture, which George Yúdice defines as: "a moving continent which is constantly devouring, transfiguring and returning symbols generated in the bosom of the most diverse segments conforming to the heterogeneous social weave of our countries".[2] In this regard Alejandro Viñao points out:

> " Latin American eclecticism seems to be not only experimental but affirmative and therefore suggests a clear vision of the sound world composers are trying to put forward. Furthermore, this sound world is not the "Nationalist" artificial marriage of an ethnic melody or rhythm to a European form, but the actual creation of new forms which are the result and consequence of imaginative and coherent use of the chosen material, whatever the origin and nature of it might be".[3]

In other words new Latin American composers cannot only rely on the formal techniques of Western European music, They like to recycle their own traditions in national and international markets. Unlike some modernist composers, this new perspective does not necessarily go after innovation *for the sake of innovation,* but rather after the rearticulation of alternative traditions that, as a consequence, can generate and structure new types of languages starting from different already existing socio-cultural roots. Yúdice says that "modernity generates its own anti-modernity but subdues it to the same rules of specialisation, thus constituting its internal contradiction".[4] In other words, 'postmodernism'[5] appears as a consequence of an ill-implanted modernism. This phenomenon can be perceived even more in the daily surrealism of a country like Mexico, where all kinds of contradictory ideas are observed: for example, the indigenous culture of Chiapas rendering homage to a Coca-Cola bottle, or the neon altars in the Spanish churches, or Mickey-Mouse bearing a charro-hat, or finally, the coarse replica of the statue of liberty in the state of Tabasco.

On the other hand, thanks to the heterogeneous character of social and cultural Latin American formations, it is possible that discontinuing, alternative and hybrid forms appear, which have challenged the hegemony of modernity. Yúdice makes the following statement: "The tribal Indian cultures coexist with the traditional peasantry, the descendants of the slaves, the lumpens of the

misery belts, and with a cosmopolitan elite that would be at its best in Paris or New York".[6]

Latin American composers intend to establish new relations with tradition and the modern world; to achieve this, pastiche is a clear way of understanding the appropriation of styles, by means of which it is not intended to reject or celebrate the past but to subsume it. In other words, the pastiche does not reject the past with a mocking, disdainful or ironical attitude, the pastiche accepts it such as it is. Rethinking the avant-garde means allowing tradition to be rearticulated.

Moreover, thanks to the loudspeaker revolution, twentieth-century audiences have more varied tastes and experiences than any comparable group in history. Since Webern, Mozart, Tibetan chant, Perez Prado or Dixieland jazz are available in record shops, and an all inescapably part of our century, why not use them all? We live now with many musical histories and many musical presents. Composers themselves can provide us with answers. In the words of Lukas Foss: "Man has a double need, to return to his past, which is home, and to discover the future. Then he feels that he is living in the present."[7]

The rearticulation of traditions in Latin America allows us to assume alternative positions inside modernity; on the other hand, the criteria, forms and terms of such practices of rearticulation are as old as the original. Old, because they nourish themselves with their traditions; original, because they do not operate any longer only within the frame of class or nation.
In addition to this, for these composers modernisation is not a matter of replacing traditional 'high' and 'popular' forms but of reformulating their function and meaning. 'High', 'popular' and 'mass' are no longer to be found

in their familiar places. The traditional and the modern are mixed together all the time. Artisans sell weavings and native pottery in front of art museums. Painters who might once have been classified as elite incorporate quotes from comic strips in their works.

The composers of these new generations assume this new way of thinking which pervades present art, moving gradually away from the conceptions of modernism. As a generation, they look for the expansion of individual talent without establishing distinctions between the elements of local origin (folklore and popular music) and the processes, techniques or styles of non-Western and Western European music.

Composers like Alejandro Viñao or Javier Alvarez have transformed their own music language through the internal assimilation of the melodic and rhythmic structures of African, Asian, and Latin American ethnic music. Alonso Toro from Venezuela, or in this case Michael Daugherty from United States, have been interested in both Latin American or U.S. socio-political issues. In Daugherty's *Sing Sing: J. Edgar Hoover* (1992), a work written for the Kronos Quartet, we hear the recorded voice of Hoover (who directed the FBI virtually unchallenged from 1932 until his death in 1972). Alonso Toro on the other hand, recorded Venezuela's ex-president Carlos Andres Perez, and through some electronic manipulation and sampling processes, made him 'sing', turning his speech into a very ironic bolero song: the soul of Caribbean culture. The last clear example belongs to Julio D'Escriván[8] in his piece *Trois bagatelles du bongó* (1992) a set of three short pieces for flute, *bansuri* (a flute from India) and tape commissioned by Luis Julio Toro. D´Escriván says: " I decided to compose a piece that would be definitely anti-modern in the Schönbergian sense, a piece that would reflect the different ways which a composer has to face today, in order to make a living with his music; that is, be honest to himself while he communicates with the audience in the eclectic

language of the end of century". [9] The first bagatelle represents an improvisation on the guitar by the legendary rock star Jimi Hendrix; the second one uses the *bansuri* along with the tape part that represents the contrast of sounds between the city and the tropical jungle. To evoke urban life, the last bagatelle presents the flute against the rhythmic frame of a set of drums included in the tape, as well as sounds such as human voices processed electronically.

These examples show us how Latin American composers were able to use knowledge of western contemporary music language along with jazz, rock, salsa, pop and folk music from many areas of the world, enriching and pushing their own tradition forward. Lastly, in Latin American countries where numerous traditions coexist with varying degrees of modernity , and where sociocultural heterogeneity presents a multiplicity of simultaneous patrimonies, this process of interchange and reutilisation is even more intense. The assumption of our cultural identity is based on a patrimony in which high, popular, folk, indigenous and mass art enrich and transform each other reciprocally.

To me, the importance of this new aesthetic approach lies in the fact that it has allowed young Latin American composers to identify themselves with social and cultural changes, without renouncing their tradition in its recognisable elements: folklore and popular culture, together with hybridisations coming from abroad (rock, jazz, blues, folk, pop, etc.). However it is important to say that the essence of Latin American music is not to be found in the superficial imitation of 'exotic tunes and rhythms of the Aztecs', as Viñao has pointed out, "it has to be related to the honest representation of the inevitable living force

which is intellectually and technically independent of its own past as it is from the European tradition, and its finding the way to convey its own eclectic and contradictory magic which is the magic of the Latin American continent".[10]

0.2 The present work seen within the explosive mixture of Latin American cultural confluences

Outlining the concepts above I shall try to define some of the musical and aesthetic trends which stand out in my compositional work and place myself within the above-mentioned features. Such ideas strongly related to the pieces presented in this thesis, can be summarised in the following way:

1) The inclination to recycle popular forms, whether folkloric, pop or urban within the composition with or without electroacoustic media.
A clear example is found in *Concierto Candela* in which Caribbean and folk Latin rhythms are used within a strong personal technique. I am also interested in folk cultures that are not my own, forming part of a wider fascination with musical traditions, as in the second movement of this concerto in which I use the sound world and some of the procedures of the Gamelan music of Indonesia.

2) The rearticulation of a tradition which leads to the creation of imaginary traditions.
Most popular cultures in Latin America invent and recreate their myths by interpreting foreign cultures, and by taking from them icons that are mixed and combined with ones of their own. *Altar de Muertos* is a piece that invents its own myths and rituals departing from experiences that are as full of mixture and contradiction as contemporary Mexican culture itself. In other words in

Altar de Muertos I tried to put forward the ritual concept of death within Mexican culture from the past to the present by composing a piece that could recreate my own perception about death within a unique, imaginary and magic musical tradition.

3) In the case of electroacoustic music, there exists a great concern for dealing with tape as an extension of the instrument played live. The best example is found in *Things like that happen* for cello and tape in which I experimented with timbre and texture transformations within the relationship between an acoustic instrument and the tape part. The main thrust of this work aims to delve into the expressive potential of the cello, interacting with a tape part that, though functioning in many different ways and as an unexpected new world, nevertheless emerges from the same musical material as the cello and, furthermore, acts as an extension of this instrument which throughout it all drives the work.

4) New forms of rhythmic exploration, in which rhythm is felt not as a result of the combination of durations but as a series of pulses or dance-movements.[11] This concept could be applied to all the compositional work presented. There is also a great concern for the development of rhythmic processes derived from polyrhythms, polymetrics, shiftings, superimpositions of rhythmic layers and so on, adapted equally to traditional instruments and to electroacoustic sounds.[12]

5) Forms of plural heterodox conception.
If there has been any common goal among many Latin American composers it is one of freedom; freedom from assumptions about how music should sound and how, where, and when it should be performed, and freedom to

explore all sonic possibilities, whatever their source. I believe that such a great range of technical and non technical resources can be integrated within a compositional process without losing one's individuality or integrity. Within the pieces presented in this thesis I have tried to transcend eclecticism, striving to fuse tonal, modal or whole-tone scale passages with atonality, East and West. We just need to look at the instrumentation of *Concierto Candela* that clearly represents the duality here described: the encounter of a percussion soloist playing a number of instruments from diverse cultures: Chinese opera gongs, European cow bells, pre-Hispanic teponaxtlis, etc. with a symphonic orchestra formally established in Western culture. Also past and present; *En Pares* is my first attempt to explore musical ideas within the field of antiphonal music, a concept developed by the Venetian School during the late Renaissance period but developed here within an original and much more contemporary approach into a unified and more broadly communicative personal language.

Lastly, an interesting aspect during this writing process was the re-articulation of alternative traditions that can create and structure new languages, departing from already existing social/cultural roots. Moreover by doing so, I was able to speculate and search for new relations between tradition and the modern world, finding a point of union between sources of my own Latin American culture and processes, techniques and styles of non-Western and Western European music. It is within this approach that I hope my work will make contribute towards the creation of a more fertile cross-cultural environment. In relation to this, David Harrington of the Kronos Quartet says: "It is interesting to note musically that if one adventures far enough west it becomes the east, far enough south and it becomes the north. That is the advantage of living in a circular world."[13]

Notes and references

[1] From the indigenous cultures of Mesoamerica to the Spanish and European colonisation, from African slavery immigration to the Mexican Revolution, Latin American countries have developed into modern societies as an amalgam of several different cultures.

[2] George Yúdice:*On the edge, the crisis of contemporary Latin American culture,* University of Minnesota Press, Minneapolis, USA: 1992, page 2.

[3] Alejandro Viñao:*Magic realism in music: four electroacoustic compositions,* Ph.D., City University, London, 1987, page 16.

[4] George Yúdice:*On the edge,the crisis of contemporary Latin American culture,* University of Minnesota Press, Minneapolis, USA: 1992, page 6.

[5] The concept of 'postmodernism' in this thesis has been considered not as style, nor a movement, but only as statement of where we are, in other words; it has been taken as an answer to modernism.

[6] George Yúdice:*On the edge,the crisis of contemporary Latin American Culture,* University of Minnesota Press, Minneapolis, USA: 1992, page 1.

[7] Elliott Schwartz and Daniel Godfrey: *Music since 1945: Issues materials, and literature,* Schirmer Books, New York, USA: 1993, page 262.

[8] Julio D'Escriván writes music for films and for TV and radio commercials and jingles. He has a Ph.D. in electroacoustic music from City University, London.

[9] Alfredo Rugeles:*Crossover-contemporary art music, popular and folk music in Venezuela,* New world music magazine, number 8, 1998, pages 37-38.

[10] Alejandro Viñao: *Magic realism in music: four electroacoustic compositions,* Ph.D., City University, London,1987, page 17.

[11] I feel this is a general characteristic of many Latin American composers who in a very natural way have reconsidered the idea of pulse and rhythm and the formal implications at many structural levels in clear opposition to the idea of time as a parameter defining exclusively the duration of a note.

[12] Please refer to later chapters for specific explanation of the different technical strategies for rhythmic development .

[13] David Harrington, personal communication, 1996.

Chapter 1 *Magna Sin* for tenor steel pan and tape

Integration of the composer's acoustic musical background into the electroacoustic music world

"If the electronic instrument, the synthesiser, has no nationality,
the performers carry their own in their hands"

Alejo Carpentier, "Ese músico que llevo dentro"
Editorial Letras Cubanas, La Habana, Cuba, 1980

1.1 Introduction

Magna Sin, for tenor steel pan and tape was composed in 1991-92 on a commission from Sonic Arts Network, as part of the two concerts of electroacoustic music celebrated at the Purcell Room, South Bank Centre, featuring unusual instruments from around the world. Within a festival called "Electrifying Exotica" seven world premières plus another four works were presented featuring instruments such as European accordion, Bolivian charango, Korean kayagum, Japanese shakuhachi and Trinidadian steel pan. *Magna Sin* was premiered on the 8th May 1992 as part of this festival by Mexican percussionist Ricardo Gallardo.

When I was invited to participate in this project and asked to write a piece for steel pan and tape, immediately I was confronted with two main different problems: it was the first time I had been asked to compose a piece for a live instrument and tape, and the steel pan was a completely new instrument for me, (I had once heard it played in New York city) and for which hardly any notated literature existed.[1]

During the process of formulating musical ideas I felt myself lost in a large

group of questions about all kinds of subjects, some of them related to the use and function of a live instrument in the context of electroacoustic music and how to integrate this new world into my musical aesthetic background and knowledge, plus other questions about how to write for the steel pan and how to relate acoustically speaking this new sound source with the electronic media.

Since I had never worked with electronics before an entirely new world was open to explore and experiment without having any pre-conceived formulas or specific techniques. I knew from the beginning that the use of improvisation, experimentation and the careful utilisation and development of my ear towards choosing all kinds of different sound sources according to my imagination and personal outlook, would be essential during the creative process. Meanwhile I was aware of the endless sound resources and possibilities of electronic manipulation but also the danger of getting lost trying to use everything, and in fact not achieving and communicating anything that could last as good material. With percussion instruments something similar happens: you have so many instruments available that you want to use them all, although you do not know exactly what to do with them.

Before I started working on the piece I decided to hear many different examples of electronic music for solo tape or with a live instrument, and learned and exchanged ideas with my colleagues and my supervisor in order to feed and restrict myself to specific musical ideas and sound sources that could function within my aesthetic approach and cultural background. Meanwhile I spent a large number of hours in the studio learning the

techniques and functions of the different equipment available. During that period I found great possibilities and unimaginable musical experiences in which I learned that the act of composition implies two different processes and each one complements the other: the intellectual discipline that puts together all the theories or techniques that make up the essence of the music, and the creative stimulus that takes us on that crucial journey into our own imagination which is one of man's greatest experiences.

Magna Sin consist of six different rhythmic-melodic sections, whose unifying factor is the continuous development of the material presented at the start of the work. The tape part has the same principle and functions as another instrument, not merely a backing track for the percussionist to follow comfortably; the piece requires synchronisation and a great deal of concentration in order to achieve for the desired effect.

The tape was recorded at The City University's electroacoustic studios; its main components are steel pan sounds, flute multiphonics, various metal objects, guitar strokes and other percussion instruments, all electronically manipulated and transformed. The title of the piece and the tenor steel pan share the same origin: the oil industry. *Magna Sin* is the name given to the Mexican version of unleaded petrol, used in Mexico city to minimise pollution.

1.1.1 Before starting to work with electronics

As I said before I decided to listen to a lot of electronic music and read about different materials related to it: how this music was composed, what sort of technical problems the composer has to deal with, what types of aesthetic concerns exist, in order to understand in a deeper sense the way in which

technology has affected musical creation. When I started gaining knowledge about this new way of producing music I found myself lost in the middle of a jungle in which I could not separate technical issues from aesthetic matters. In other words, I realised that if I wanted to work with electronics I would have to understand that compositional insight will have to be developed alongside technical expertise.

In the musical composition process every single sound and musical idea which the composer would like to use requires the elaboration of a specific purpose combining technical competence along with aesthetic solutions and standpoints. This affects all kinds of music, whether instrumental or electroacoustic. But the main difference between the two is the way in which each process takes place: electroacoustic music is composed and produced in the electroacoustic studio. Through specific processes such as recording, signal processing, synthesis, the composer creates and produces the entire work, in other words he becomes responsible for the whole process as he is the composer and performer as well. Instrumental music composition develops in a different context in which the composer creates the music in his head and then transcribes his ideas into music notation (the score) and then the music comes to life when it is performed.

Although this is an obvious difference, when you work with electronics the creative process of course takes a different route. Now the time of speculation responds to an instant reaction of your aural perception about the material you are dealing with . This is a very important tool if you know how to use it. If you are conscious about how the music has been produced and what it sounds like, then you can start learning and interacting with the following two processes- the rational one in which you apply your technical knowledge

about sound manipulation, sound synthesis, computer techniques and so on, and the irrational one that is a kind of a 'magic process' in which by listening, experiment, and improvising you enrich significantly your inner sound world. In other words, working with electronics led me to open my imagination, and creativity towards a completely new way of thinking and working in which experimentation and development of a new aural environmental sound world, evolved a new aesthetic outlook within my compositional experience.

Moreover, because every sound source could be part of the wide colour palette of a work, I felt again the danger of getting lost trying to use this endless sound material without knowing how to integrate it into a compositional context. The solution was to restrict myself to very few sounds each of which I could understand and analyse from its constitution and behaviour (timbre, density, motion and so on) and then use within the possibilities of the electronic medium, in order to find coherence with the sound material and the musical goals. The fundamental point here was not where I took my basic sound material from but how I took it and what I did with it.

Bearing in mind these considerations I recognized that new ways of structuring sound material would have to be experimented with. I am referring in particular to the utilisation of sound sources with their own particular musical gesture[2]. Such sound material had to be understood, absorbed and integrated as part of my compositional strategy. Formal and structural elements become the necessary outcome of the technical procedures applied to the sound sources .

Such experience was for me one of the total advantages of being introduced into the electroacoustic music world. Finally I must say that the artist is the witness of his time and working with technology was a new way of learning about musical creation. It was like entering into a completely new forest in which I had slowly, even painfully, stumbled about finding my own path. Nevertheless I always tried to seek under my own new code the total possibility of experience.

1.1.2 The tenor steel pan

Thanks to instantaneous global communication, we are able to access music from all over the planet. Rapid travel has made possible the experience of all kinds of music both in concert halls and in non-Western traditional places of origin; the emergence of ethnomusicology as an academic discipline has brought such music to university campuses. As a result, many "academic" musicians have realised that music rooted in the traditions of Western civilisation, really constitutes a tiny fraction of the musical world in its totality.

The influence of non-Western cultures has offered not only a vast treasury of sounds that are still fresh but also a broad range of alternative perspectives that have influenced to a great degree the course of Western concert music. Two main aspects have to be mentioned: a) distinctive melodic, harmonic, or rhythmic practices, and b) the quality of sound produced by instruments, tuning systems, and methods of performance not found in the traditional Western mainstream. The Trinidadian steel pan belongs to the list of unfamiliar instruments to Western listeners that has been offered new experiences especially in sound colour to Western concert composers. Besides its beautiful sound, there is another poetic and magical aspect to

its construction and cultural context that made me think and consider this instrument very important and very inspiring to make music with.

Man, with his body becomes a musical instrument in himself, a natural one, and this sound-making capacity is shared with animals, as well as natural world elements: water, rocks, the sky (thunder), wind, and so on. Every human being is (potentially, at least) a walking, living breathing sound machine. Musical instruments, like tools and machines are extensions of man's body, they expand and bring out his musical potentiality, delighting his ear with new timbres and sounds, and making possible new forms of expression. Furthermore, talented and deeply feeling musicians all over the world make highly creative and expressive music no matter what they find in their hands. According to David Reck " One famous African musician was described by an admirer: He could make beautiful music with anything. If all he had in his hands was two rocks... he would make them sing".[3]

Musical instruments, no matter what culture on earth they are found in, often represent the most complex development of the technology of that culture. For example, the brass and woodwind instruments of twentieth-century Europe or America are mass-produced by machines in factories, with special scientific specifications to ensure uniformity and acoustical correctness. But even in so-called primitive societies (often found in third world countries), instruments touch the limits of technical skill and thought. For building an instrument, even with 'found' materials such as gourds, sticks, bamboo, cans or pots, is no simple matter. There must be knowledge and practical experience of acoustics, of the way sound and different pitches can be made and modified.

What I really liked about the steel pan of Trinidad and other Caribbean islands was precisely the ingenious application of the tuned gong[4] principle: different sections of the top (or bottom) of a large oil drum are hammered out into tuned bulges or indentations to give all notes of the scale. I was also touched with the idea of using an industrial oil drum which only means 'a waste metal object' for building an instrument in black African agricultural communities, where daily life consisted of struggling against poverty and injustice, with people having to fight and how to survive and deal with it.

Steel drums are built in three or four sizes giving an entire melody-harmony range and are usually accompanied by assorted rattles, claves, bells, and other percussion instruments. The pans are hit with short wooden sticks to which a cautchum or rubber pad is fifted at the hitting end. The note layout is not consecutive, each unit gives off to some degree the pitch of its neighbours, and therefore contiguous units are tuned when possible to octaves, fifths and fourths and so on.

The steel pan I used for *Magna Sin* is called: tenor steel pan or "fourths and fifths" type (see Figure 1.1).

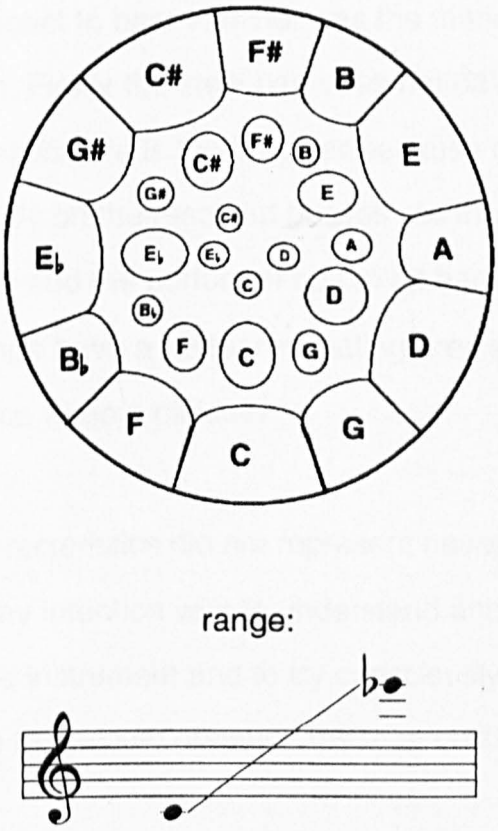


Figure 1.1: *Magna Sin*: tenor steel pan "fourths and fifths" diagram

As we can observe from the diagram (Figure 1.1), the layout of pitch does not correspond to a diatonic or chromatic one, therefore diatonic or chromatic formations are not neighbouring. As simple as it is for most instruments to play a C major scale, for the steel pan the performer has to move in a semicircular fashion, jumping and stepping forwards and backwards in order to reach the appropriate notes of the scale.

This became one of the main aspects to be taken into account and understood from a composer's point of view, in other words, most of my musical sketch material was carefully designed with the diagram of the fourths and fifths pan and revised later on in practice with Ricardo Gallardo. Thanks to this fruitful relationship I was able to transcend this technique for my own musical ideas and goals.

The other important aspect to bear in mind, was the manner of producing sound on the steel pan. Firstly the steel pan does not have a long resonance and furthermore this resonance is too irregular because of the damping exerted by the main body on the resonant bosses. As the notes get higher, the bosses become smaller and the performer has to hit harder. But the notes of the middle and low range have a better resonating area and the performer can strike with less force without difficulty.

In my case, these characteristics did not represent necessarily a disadvantage. In fact my intention was to understand and accept the acoustical nature of the instrument and to try consciously from the beginning to develop a language that would enhance these acoustic properties.

1.1.3 Aesthetic speculations about how to integrate the composer's acoustic musical background into the electroacoustic music world

My intention is to explain how I understood and assimilated the meaningful content of the electroacoustic music language, from the point of view of being a Latin American composer, into my own artistic musical background.

The purpose of using the electroacoustic medium came to me for various reasons: Firstly, it looked so attractive to work with sounds coming from all kind of acoustic sources, not being restricted in terms of colour and timbre to the traditional instruments of the orchestra. The idea to create my own personal orchestra and sound colour, became one of the biggest aims towards developing my imagination into a new compositional strategy. This will involve not only the combination of sounds creating specific colour

textures but the actual fact of being able to construct each sound in terms of its timbre, form, motion, range, and dynamic. Secondly, the utilisation of the electroacoustic medium offers a new search towards the total experimentation of musical ideas that could only be performed and realised through the use of an electroacoustic studio environment. The utilisation of a computer and other electroacoustic resources led me to experiment with rhythmic structures and other compositional processes that could not be performed in an acoustic music context. Some examples refer to the use of extremely fast movements, complex polyrythmic textures, extremely high or lower registers, sound spatial movement and so on.

Likewise, because electroacoustic music is composed in real time, I was able to have total control over the music, and move from the experience of trying to imagine the sound of a score, to the instant feed-back available through the monitors in the studio. As a result of this, I experimented and improvised, researching the development and direction of a new compositional way of thinking. Finally, I realised that the tape part could be conceived as an extension of a live instrument. This allowed me to speculate with the idea of extending, interacting and complimenty the acoustic properties of any acoustic instrument towards unexpected new sound worlds.

These two general ideas helped me to find the way in which I decided to start work, but still I had some aesthetic speculations to work out. The first question arose when I started thinking about the music I had been producing with acoustic instruments and the music I would be able to realise with the electronic equipment available.

The new electronic devices are but a means for producing new sounds to play

with. What matters is not how they are produced but how they are used. Similarly, although I felt isolated as a Latin American composer working for the first time within the electroacoustic music environment [5], my aim was to focus on dealing with composing music. In other words: musical parameters such as: harmony, rhythm, articulation and formal process took the same hierarchical functions as in acoustic music but through a different route and context. The computer, synthesisers and the loudspeakers become now the new medium in which I had to reconsider some of the compositional strategies applied in my previous acoustic works, now used in the context of electroacoustic music.

I was also obsessed with the idea of trying to be myself in a spontaneous way. At that moment, I felt that working with electronics would lead me to lose my identity as a Latin American composer. The answer to that fear was very simple as Alejo Carpentier has said: "If the electronic instrument, the synthesiser, has no nationality the performers carry their own in their hands".[6] The key point as I said before, was not where you take your basic material from or what sort of electronic equipment and programs you use, but how you take it, and what you do with it.

Because my knowledge of psycho-acoustics plus other technical issues was still in its infancy, the mystery of working with electroacoustic music brought to me new ways of perception in which magic and reality become one single thing. Alejandro Viñao explains: "In a continent where the dividing line between magic and reality has not yet been clearly drawn, people do not try to explain the magical as they do in Europe. When Magic is understood it becomes reality and the dividing line is subsequently drawn. The striving in Latin America is not to understand reality; the striving is to control it."[7]

Electroacoustic music offers a new world where the line which separates magic from reality has not yet been clearly defined. Although there is no doubt of a risk involved in dealing with electronic resources - especially structural problems due to using noised-based sound objects - the richness and the ambiguity of this aspect, plus the fact of not being familiar with it, become one of the main factors to be explored, learned and experimented in order to achieve a new compositional experience.

Finally, the emphasis in gaining and learning control as opposed to understanding the formal complexities of the electronic medium were the basis from which I decided to start my compositional work process.

1.2 Finding and recording sound material

One of the main difficulties I had as I started working on the piece was the method of choosing the sound material. The richness of work with electronics refers to the fact that any available sound may be found to be useful depending on the musical context proposed by the composer, and confirmed through his or her ear. In my specific case (without having any experience in sound manipulation and the structural organisation of the sound sources) the easiest way to start, was to structure and develop the piece departing from a strong acoustic live sound source as a main reference determined *a priori.* In other words I asked myself to create a sonorous electroacoustic music world related to the live instrument, the steel pan. The answer was to obtain most of the electroacoustic sounds from the steel pan in combination with other percussive metal instruments sharing the same peculiarities, in order that the final product would present a unity in terms of sound-colour and timbre textures.

The other aspect to take into account before I started recording the sound sources, was to explore the relationship between the conventional sounds of different acoustic instruments and the sounds these instruments could produce but which can only be played or articulated with a limited degree of dexterity by a human performer. I am referring to the use of new instrumental techniques such as flute multiphonics, scraped sounds on different percussion instruments (congas, tamtam, different size cymbals) all kinds of glissando sounds, guitar strokes and so on. Thanks to electroacoustic editing processes, physical limitations of range, polyphony, velocity and loudness were extended and reinforced creating new astonishingly beautiful soundscapes

We could imagine some non-conventional instrumental sounds such as flute multiphonics that could only be played in a certain register, with a very low dynamic range, being transformed and developed with the help of technology. The result will create and extend the conventional flute sound world to a completely new context . For example we could imagine a giant orchestra of multiphonic sounds being produced on every note of any scale. For this a single multiphonic sound could be mixed with other multiphonic sounds with different pitches to produce a kind of choral effect, then, by changing the frequency, amplitude and pitch envelope, we could have a new sound even more rich and interesting in terms of timbre, shape and colour.

I was also interested in recording various instrumental gestures. For that purpose I asked the Mexican percussionist Ricardo Gallardo to play different melodic-rhythmic patterns on the steel drum and other percussion instruments such as congas, bongos and glockenspiel. After recording these musical gestures, I started experimenting to find diverse loop points for specific

rhythmic or melodic objects that could be further developed within the piece. This was meant to create different kinds of textures having their own particular flavour, inner rhythm and harmonic field.

Once I had obtained the recorded sounds for *Magna Sin,* my first approach was to classify them according to the following criteria:

1 - Sustained sounds: a chorus of flute multiphonics and other flute sources holding a note with or without vibrato, long tamtam and gong resonance sounds, and different kinds of glissando sounds performed on the steel drum.

2 - Short sounds from different object sources such as cans, metal litter bins, sounds played on the skirt of the steel drum, percussive tongue ram effect produced on the flute (which sounds a minor seventh lower than the real note), key slap sounds on the flute, guitar and mandolin strokes and strummings, and güiro sounds.

3 - Sounds with a rhythmic gesture defined by myself. For example: different rhythmic patterns played on the congas and bongos, rhythmic and melodic gestures played on the steel drum, and glockenspiel glissando gestures.

1.2.1 First approach to editing and programming the recorded sound material

Magna Sin was conceived at a Macintosh SE30 computer, using Mark of the Unicorn's *Performer* sequencing software. The tone generators used were a Yamaha TX802 synthesiser and Akai S1000 sampler. The main idea from which I decided to start editing and programming the sound material was to manipulate sound in ways that ordinary instruments could not. In other words my aim was to explore and extend the acoustic properties of traditional sound sources into a complete new sound world.

When I started working on the piece I realised that the act of composing refers to what one does with the sound and not to the sound itself. Therefore the process of editing and programming sound material becomes essential as part of the compositional work process. Moreover when an electroacoustic composer creates a sound he is already composing the musical gesture which that sound will imply through the process of designing his own sounds, he is creating his musical material and discovering it at the same time. Now I will describe the general editing and programming techniques of the sound sources used in *Magna Sin:*

1 - Most of the recorded sounds were designed to loop rhythmically, so that when a sound is sustained pulse might be implied.

2 - I tried to experiment with different rhythmic combinations of looped sounds. This involved different editing and programming techniques: detuning a recorded rhythmic object onto a higher pitch will sound faster. By combining different looped sounds playing different pitches we can obtain several rhythmic pulses creating interesting rhythmic combinations. For example: some conga and bongo gesture sounds were detuned and played together with the original ones creating interesting rhythmic delays.

3 - I decided to mixed different sounds with similar characteristics: sustained sounds such as flute multiphonics, slow glissandos on the steel drum, and a large resonating tam-tam or gong sound. The materials were designed to be performed together within a program in which the main idea was that the combination of the sounds could be transformed electronically using an envelope with a very slow attack and release time. Furthermore, through using a kind of filter, the quality of the sound object could become softer, aquatic and ethereal.[8]

4 - Some of the short metal sounds were looped and played in many different registers creating all kinds of rhythmic and acoustic effects. Afterwards I

experimented with sound panning, by placing certain sounds in different locations of the stereo soundscape. The final result gave the idea of a giant machine producing mechanic explosions of metal sounds moving in many different ways between the speakers.[9]

1.2.2 The role of synthesised material

The synthesised sounds use in *Magna Sin* were developed by the composer using a Yamaha TX802 synthesiser and edited on a Macintosh computer with the help of the Opcode TX editor librarian.
In general most of the FM sounds employed in *Magna Sin* were:
a) short sounds with a percussive envelope: fast attack with very little or no decay;
b) rich sustained sounds with a very slow attack and slow release;
c) sounds with a characteristic timbre and texture programmed by myself.
Preliminary experiments suggested the idea of using synthetic sounds to blend and reinforce some of the acoustic sounds. For that reason, synthetic sounds used in the piece were not easily recognisable within the final musical context. However they played an important role since they served to emphasise and enrich the musical colours, melodic lines, textures and gestures of the different musical ideas proposed by the composer.

1.3 The relation of the steel drum to the electroacoustic tape part[10]

As I mentioned at the beginning of this chapter, in *Magna Sin* one of the main ideas was that the tape part's function as another instrument would and not merely act as an accompaniment for the percussionist. My idea was to

establish a real musical dialogue between the steel drum and the tape part for which the performer would need perfect synchronisation and a great deal of concentration in order for the desired effect to take place.

Now I would like to discuss some of the compositional strategies used to integrate the electroacoustic sound material with the live instrument. One of the most important strategic considerations came from the idea of dividing the main musical material between the two parts.

Sometimes this relationship developed an instrumental music dialogue between the tape part interacting with similar rhythmic-melodic ideas as the steel drum, and sometimes the tape part's function served to emphasise certain rhythmic- melodic passages of the steel drum . If we look at the first page of the score (bar 17, Allegro Giusto ♩=115) we can observe that the tape part serves to emphasise and enrich, rhythmically speaking, the main melodic phrase presented in the steel drum part. As the melodic phrase becomes more complex and further develops, the tape part starts gradually changing its function, interacting with the live steel drum's musical material and establishing a new relationship in which the main interest is the musical dialogue created between the two parts (see pages 2 and 3 of the score).

I was interested in the kind of virtuosity in which the greatest difficulty for the percussionist was not in the playing of his instrumental part but in understanding it from the inside, including the inner musicality of the tape part and to play with that in a creative way with perfect synchronisation to the point of being able to integrate the two into a whole piece of music. Furthermore, hearing only the tape part or the steel drum part in itself, we could not necessarily understand its musical meaning and construction, which will only

make sense when the two parts are played together. In other words, the musical discourse most of the time has been constructed like a jigsaw puzzle in which one part compliments the other one, and only by assembling them can we really hear and understand the overall picture.

However it is important to mention that my goal while composing the piece, was that the tape part should develop an identity of its own especially during its solo. At a very early stage I made the decision to keep the traditional role of soloist the same. The steel drum has its solo cadenza at the very end, as well as the tape part having two solos at the beginning and in the middle section of the piece. Ultimately, because I looked for sounds that would blend well with the steel drum, the resulting musical performance had a better acoustic cohesion.

1.4 Analysis of *Magna Sin*: First rhythmic-melodic section

Although my plan is to discuss the general structure further in this chapter, it is essential to analyse how I presented the main musical material of the first section from which all the work was derived and further developed. Generally, I started to construct my basic phrases from several different rhythmic- melodic motifs in order to have more variety of material and produce music which was more subtly evolved and richly diversified. Virtually the whole piece derives from the rhythmic-melodic motifs given in the first phrase presented at the very beginning in the steel drum part. All the melodic motifs used in *Magna Sin* were carefully written, taking into account the layout of the fourths and fifths pan design. Therefore, most of the melodic patterns were constructed around the 4th and 5th intervals, as well as the resulting harmony that was also built sharing the same intervallic quality. I decided to start work

composing a simple rhythmic-melodic phrase that would have a personal distinguishing characteristic which made it instantly identifiable (see Figure 1.2).

First rhythmic-melodic idea:

Antecedent:

Consequent:

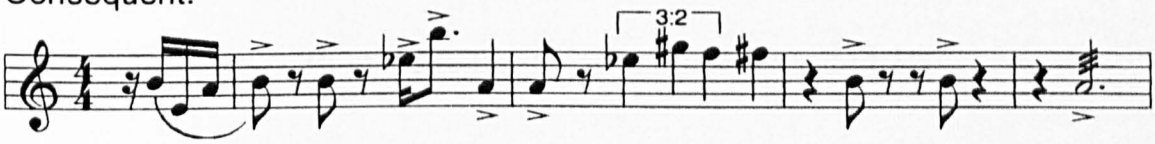


Figure 1.2: *Magna Sin*: First rhythmic-melodic idea

There is no certain formula for making good, original musical phrases, but what probably made the material instantly distinctive was the rhythmic design of the melodic motifs. Although pitch material is also important in this case, rhythmic designs were the ones that gave decisive shapes to the musical discourse. Without the rhythmic motifs, melodies will lose their identity.

Regarding memoralibity, it is essential that melodic and rhythmic patterns recur (see Figure 1.3).

Main rhythmic cells used in the piece:

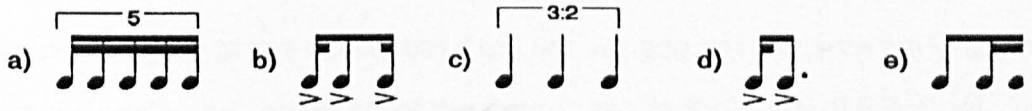


Figure 1.3: *Magna Sin*: Main rhythmic cells

Thanks to the different decisive rhythmic cells, melodic phrases become rich and vital. Moreover, the utilisation of those rhythmic designs served as a basis from which I decided to develop the main musical material.

1.4.1 Continuous development of the musical material

The musical discourse was composed as a series of continuous sections in which short rhythmic-melodic patterns are developed. These patterns are repeated systematically creating a certain feeling of mechanicity[11] in the music. However in each repetition, change or variation has been introduced in order to increase the complexity of rhythmic and pitch interaction between the tape and the steel pan, so that the structure is set in forward motion.

If we look at the first melodic-rhythmic phrase (see Figure 1.2) of the steel drum part, we observe that the main distinctive feature of the antecedent's phrase is the quintuplet rhythmic-melodic motif and its resolution to the B flat. This vital character will be presented and developed in different contexts through all the musical discourse.

If we look at the score from bars 53 to 58, we could observe that this passage prepares the climax and the entrance of the second section, showing the insistent repetition of the quintuplet pattern with its different resolutions to B

flat (bars 53 and 54), F sharp (bars 55 and 56) and G sharp (bars 57 and 58). Other examples refer to the reutilisation of this pattern in the recapitulation of the piece, (page 9 of the score, bar 169), its variation at the solo cadenza of the steel drum's part (page 12 of the score) and in the coda of the steel drum's part again (page13 of the score).

Similarly, rhythmic motifs of the consequent part of the first section's phrase (see Figure 1.3) are developed in the same way, obtaining a very strong sense of unity in terms of the elaboration of the musical material presented in the first section of the piece.

1.5 Overall structure of the work

Magna Sin is a piece consisting of six different rhythmic-melodic sections (see Figure 1.4).

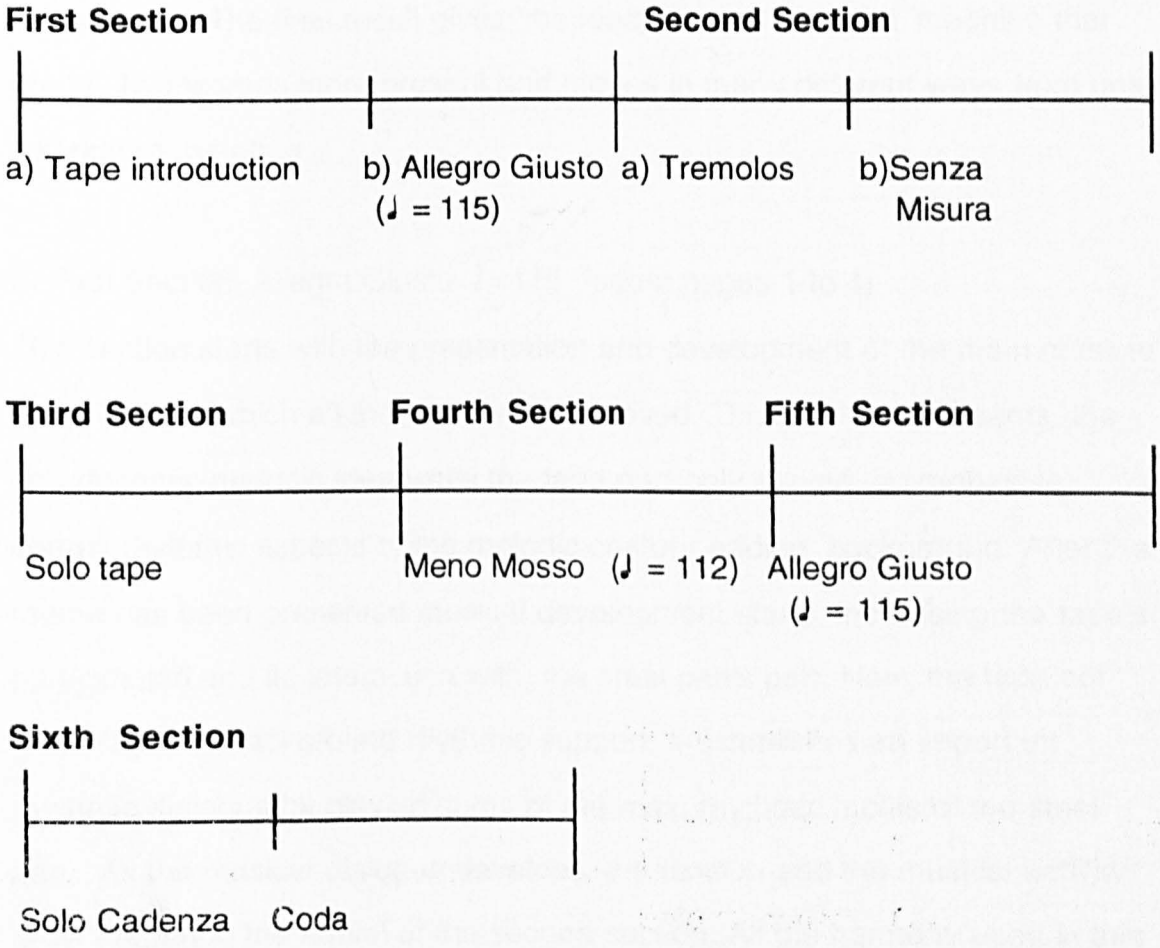


Figure 1.4: *Magna Sin:* Overall structure diagram

1.5.1 Tape[12] introduction and First Section (score pages 1 to 4)

a) Tape introduction:

The piece starts with a solo tape introduction. The musical idea is to introduce the listener to a kind of subtle magic metal sound world from which the steel drum grows and is further developed. For this, short metal and other percussive sounds including those played on the steel drum's ring, were looped and played in many different registers of the keyboard, creating different rhythmic and sound colours. Furthermore, I experimented with sound panning by placing the sounds in different locations of the stereo

soundscape. The final result gives the idea of a metal sound machine that gradually becomes more present and moves in many different ways from one speaker to the other.

b) First Section: Allegro Giusto ♩=115 (score pages 1 to 4)

This section starts with the presentation and development of the main musical material from which all the work will be derived. The steel pan presents the first rhythmic-melodic idea while the tape part only serves to emphasise certain rhythmic aspects of the melodic contour adding background. After the theme has been presented musical development starts, increasing the tape's participation and its interaction with the steel pan's part. Now, the tape not only plays the background rhythmic support, it establishes an important rhythmic dialogue by playing some of the main rhythmic motifs of the steel pan. As the musical dialogue develops, the tension and the musical activity grow preparing the arrival of the second section. All the harmony used in this section derives strictly from the melodic motifs of the steel pan. In many cases the tape part plays the same notes as the live instrument, but sometimes it completes and reinforces certain notes of the rhythmic phrases with different percussive chords.

1.5.2 Second Section (score pages 4 to 6)

a) "Tremolos"

This section has been divided into two parts; the main idea of the first part is to change the mood of the previous one, by giving to the listener a little rest in terms of the musical activity. The steel pan develops a kind of 'choral speech' by playing a series of different intervals such as minor 2nds, minor 7ths, major 7ths, and augmented 4ths. The tape enriches the steel pan's part by playing

the same intervals but with different colours and timbres, and extending those intervals by adding new notes obtaining different harmonic chords. This passage ends with the gradual introduction and development of the rhythmic motif (see Figure 1.3 letter (b)), played with the steel pan and increasing musical activity on the tape.

b) Senza Misura (score pages 5 to 6, bar 92)

The main idea for this transition section was the opposition of the mechanical to the flexible. For this purpose, the steel pan's part develops a kind of small cadenza using, in a very free manner, melodic patterns based on the pan's layout. Meanwhile the tape accompanies with a mixture of rational and irrational rhythms, using bell-like and short percussive sounds.

1.5.3 Third Section (score pages 6 to 7)

This section comprises a solo tape part in which again the main idea is the opposition of the mechanical to the flexible. As in any solo cadenza in which instruments improvise with a complete sense of emotional freedom, the tape part develops three different giant glissandi played at different registers and with flexible changing tempi. These glissandi sounds include the combination of two sound types: the first one includes some looped sound gestures played on the steel pan having a kind of aquatic sound quality, thanks to the filters and the envelopes used in the editing process, and the second one includes looped short metal sounds with stereo sound panning exploration. The overall result sounds like a giant machine producing mechanic explosions of metal and steel pan looped sounds moving in many different ways between the speakers.

1.5.4 Fourth Section Meno mosso ♩=112 (score pages 7 to 9)

The section starts with a bass ostinato that will serve as a rhythmic platform from which all the rhythmic layers will be further developed. Following the ostinato, new rhythmic layers of different metallic percussive sounds are introduced creating interesting rhythmic counterpoints. Finally the steel pan will make its entrance with rhythmic-melodic patterns based on a whole tone scale enriching the whole texture. This passage ends and a similar process is repeated but this time with a new timbre-texture. This time some of the rhythmic counterpoints are played on the steel pan's skirt while the tape part introduces new percussive sounds along with other glissando sounds. The passage ends with the entrance of some looped conga and bongo gestures on the tape.

1.5.5 Fifth Section Allegro Giusto ♩ =115 (score pages 9 to 11)

This section comprises the recapitulation of the main musical material in a new development and context. The emotional flow for instance, is more intense thanks to the rhythmic activity and interaction between the tape part and the steel pan. In other words, my idea was to hear the main motifs within a more condensed context[13] and their rhythmic interaction with the tape, building the last climax and preparing the entrance of the solo steel pan cadenza which announces the end of the piece.

1.5.6 Sixth Section: Solo Cadenza and Coda (pages 12 to 13)

The solo Cadenza is written around C sharp as a main harmonic colour. This pitch has been gradually announced in the last section by its insistent

repetition in the last few bars (bars 195 to 106). Therefore its arrival in the solo Cadenza feels like a kind of harmonic resolution of the previous passage. The tape part's function serves to reinforce the harmonic colour by playing as a background a long C sharp pedal note. The melodic lines developed in the Cadenza have also been written around the layout design of the fourths and fifths pan. At the very end a subtle variation of the antecedent's phrase of the first section is presented introducing the Coda.

The main feature of the Coda is the aquatic sound colour of the steel pan's looped sounds played in the tape part that serve as a harmonic platform upon which the steel pan improvises with different rhythmic-melodic motifs, derived from the main musical material presented at the beginning of the piece.

1.6 Conclusion

Magna Sin was my first experience writing for a live instrument and electroacoustic sounds together. Because of the amount of new information, I had to use my imagination in so many different directions that at times I found it difficult to reconcile them all in the context of a single piece. This may account for the somewhat inconsistent mixture of procedures or even styles. From the more 'abstract' timbre-texture exploration of the tape solos, to the more 'classical' language of the solo Cadenza on the steel pan, or the jazz-like or ethnic rhythmic dialogues between the two. Besides these procedures, the piece explores various ideas concerning tape and a live instrument that I found of musical interest and perfectly suitable in order to learn about the electroacoustic music world.

In *Magna Sin* the greatest two challenges were to compose a piece for an instrument which I hardly knew, and its relation to the (for me, new) electroacoustic music sound world. From that process I learned and came to the following conclusive ideas:

1 - I understood the metamorphosis principle as the structural formal basis to construct the piece, which included the variation and development of the main musical material.

2 - By experimenting with different studio techniques, various rhythmic looped sound gestures served to elaborate complex rhythmic textures with extremely fast tempi in which the limits of dexterity or fatigue in human performer would be absent.

3 - By using synthesised sounds I was able to create new sounds extending my aural compositional experience.

4 - By using sound manipulation techniques, I extended the timbral world context by not being confined to the practical ranges of real instruments. This included: no limitation to equal temperament scales, unlimited range of glissando sounds, exploration of the sound within space, and the real manipulation of the shape of the sound.

From the experience of writing *Magna Sin* I started learning how to use technology for what I feel could enrich and extend my compositional process. I understand that the future of music lies largely with electroacoustics even though acoustic musical instruments will always be made and exist alongside.

Notes and references:

[1] I am referring to the fact that the steel pan is an instrument that has only been used in concert in the last fifteen years. Among the works that include the steel pan we could mention: *From me flows what you called time* for five percussionists and orchestra by Toru Takemitsu, *Así el Acero* for tenor steel pan and tape by Javier Alvarez, *Padma in meditation* and *Legong* for percussion ensemble by Akira Nishimura, *Macondo* for tenor steel pan and tape by John Paul Jones and more recently, a Mexican literature has been created thanks to the enormous work and commissioning dedication of the Mexican percussionist Ricardo Gallardo. In fact after composing *Magna Sin* I wrote *Rio de las Mariposas* for two harps and tenor steel pan, and *Altar de Neon* for four percussionists and chamber ensemble in which among the featured percussion instruments is included the tenor steel pan.

[2] What I understand by 'sound sources with their own particular gesture', refers to those sound-objects for which I had to take into account that these were not only isolated sounds but could also be considered as 'musical instruments' that we know how to manipulate through understanding their morphology and their own undeniable musicality.

[3] David Reck: *Music of the whole earth,* edited by Charles Scribner's Sons. New York, New York 1977, page 50.

[4] Gongs are large circular sheets of metal that belong to the family of idiophones. The may be flat, bulging, with a central "knob" tuned or untuned; they usually have a bent rim that can be of considerable depth.

[5] It is important to mention that technology development started in advance industrial European countries and unfortunately is often beyond the economic means of Latin American budgets. It has been almost necessary for Latin American electroacoustic composers to travel where the technology is available. For example: Javier Alvarez (Mexico) has worked in England, Sweden and France, or Alejandro Viñao (Argentina) has worked in England, Sweden, France and the USA.

[6] Alejo Carpentier: *Ese músico que llevo dentro,* Editorial Letras Cubanas, La Habana, 1981, page 494.

[7] Alejandro Viñao: *Magic realism in music: four electroacoustic compositions,* Ph.D., City University, London, 1987, page 20.

[8] Listen to the tape looped steel pan sound texture at the very end of *Magna Sin.*

[9] Listen to the solo tape part in the middle section of the piece.

[10] Refer to the full score and tape in order to follow the further discussion. All page numbers in this chapter refer to the score.

[11] This mechanical quality of the musical discourse interacts and blends very well with the editing programs designed by myself in which, thanks to the use of the different looped sounds, the perception of mechanicity is even more rich and complex.

[12] The term 'tape' is used through this thesis to refer to the electroacoustic part which may be played back using any suitable medium (DAT, CD, hard disc etc.).

[13] What I mean by a condensed context, refers to the idea of developing certain musical material within a specific amount of time and then a subsequently new presentation of it develops under the same principles but within a shorter amount of time.

Chapter 2 *Five Micro-Etudes* for tape

From timbre and texture transformations to gestures and resolutions

New music: new listening. Not an attempt to understand.....
Just an attention to the activity of sounds.

John Cage, 'Experimental music' in Silence, London 1968

2.1 Introduction

In the *Five Micro-Etudes* for tape I explore different possibilities of composing for electroacoustic sounds ranging from timbre and texture transformations to different gestures and resolutions. After composing *Magna Sin*, I decided to concentrate on a detailed study of sound material within the field of electroacoustic music. My early personal experience as an electroacoustic composer brought me new ideas on ways of listening to different kinds of sounds coming from a wide variety of acoustic sound sources. With this new aesthetic I tried to understand the different possibilities of musical and sound world expression available within the electronic medium. This way I found that an approach based on spectro-morphology turned out to be one of the most suitable since, dealing with sound materials and musical structures, it concentrated on the timbre of sounds and their shaping in time.

Thanks to digital technology we can explore the morphological and spectral features of a sound-object and, even more, we can manipulate and change it according to our own imagination. Reflecting on these new concepts as well as being aware that any sound-object has its own inner musicality, I decided to structure and develop a new piece starting from the inner gestures

and timbre textures of different sound-objects, recorded from many different kinds of acoustic sound sources chosen by myself in order to fulfil my own compositional ideas.

This work represents my first attempt to compose for electroacoustic sounds alone, and thanks to this experience I have been able to find great possibilities for new structures and organisation much closer to specific gestures than to melodic or rhythmic phrases. However, the piece contains harmonic regions which are subtly suggested, as well as small melodic and rhythmic inflections.

I have always considered that the most effective way to assimilate new techniques is through their practical realisation. In particular, these five studies were excellent for developing new ways of handling sound material structure and organisation. They emerged from improvised textures and musical gestures towards a compositional language which presents may possibilities. The piece consist of five separate études, each treating a specific musical question. Each one requires no more than two minutes to achieve the main ideas proposed. They can be regarded as brief sonorous landscapes.

2.2 Sound Material

One of the main difficulties encountered in the elaboration of these studies was the method of choosing the sound material. Within a spectro-morphological approach, any available sound may be found to be useful depending on the musical context proposed by the composer, and confirmed through his or her ear.

Moreover, the fact that I did not have to worry about the integration of a live instrument with a tape part made things even more difficult in choosing sound sources. In *Magna Sin I* obtained most of the tape sounds from the steel pan in combination with other percussive metal instruments sharing the same peculiarities and, thanks to this process, the final product presented a unity in terms of sound-colour and timbre textures. In the case of *Five Micro-Etudes,* I could not structure and develop the piece departing from a strong acoustic live sound source as a main reference determined *a priori.* However, because of this new challenge I had to use my own imagination with a complete sense of freedom towards such new sonorous landscapes that I had never experienced before. Michael Rosas Cobian has written: "The electronic medium has actually created new poetics for music, indeed an ever-evolving vocabulary, where sounds can be descriptive, communicative, because of their content and not because of the psychological timbral associations that we already expect in the case of traditional instruments and music".[1]

When we hear someone playing an acoustic instrument we assume that there exist certain predetermined limitations of timbre, range and loudness as well as the intrinsic physical limitations of a human player. Referring to this Stravinsky said: "The idea of interpretation implies the limitations imposed upon the performed or those which the performer in function, which is to transmit music to the listener".[2]

In the case of electroacoustic music such devices can be developed beyond the capabilities of any instruments or any performers, in such a way the new challenge for composers is to master a new musical language based on the development of different kinds of sound sources creating new strategies in

which intrinsic gestures, timbres and organic structures evolve as an important part of the language which remains firmly rooted in the nature of sound itself.

Another important aspect of the process of composing these studies was that, in some cases, I did not start from some abstract musical idea to be developed with a specific sound but exactly the other way around. By experimenting and improvising with different sounds, new ideas occurred giving rise to a musical composition. I found that, once I had chosen the sound-objects, I had to take into account that these were not only sounds but might also be considered as musical instruments that we know how to manipulate through understanding their morphology and their own undeniable musicality.

Finally, it is extremely important to comprehend and perceive the nature of a sound and its intimate essence within our musical thoughts, in order to have the key for its successful application as a means of musical communication.

2.2.1 Differentiation and classification of the sound source material

Once I had obtained the sound sources for this tape piece, I decided to classify them according to their own morphological criteria as follows:

1 - Acoustic sound including instrumental or vocal material, treated electronically with the help of an Akai S1000 Sampler.

a) Continuous sounds: with vocal and flute sources holding a note with or without vibrato or glissando, and Japanese temple bells[3] producing a continuous sound with harmonics generated by the friction of the mallet against the bowl's rim.

b) Short sounds from different object sources such as cans, jars, metal litter

bins, guitar and mandolin strokes and strummings, and cello pizzicatos.
c) Sounds with a rhythmic gesture defined by myself. For example: melodic patterns played on African mbira [4], rhythmic gestures played on the congas, glockenspiel glissando gestures or a gesture produced as a result of manual agitation of a jar full of water.

2 - Purely electronic sounds developed by the composer using a Yamaha TX802 synthesiser:
a) Different short percussive bell-like sounds;
b) Continuous glissando sounds and non-glissando flute-like sounds;
c) Additional sounds with specific timbre and texture programmed by myself.

2.2.2 Editing and programming of the sound material

A further step followed the choice of sounds. The sampler is a digital device that records sounds and offers various manipulations of them including keyboard playback with corresponding pitch change. The program available to modify electronically acoustic sounds was Alchemy[5] designed for the Macintosh computer. With such a program I was able, for example, to reverse sounds, cut frequencies, change pitch without changing duration or change duration without changing pitch, and paste envelopes from others sources.

Before I started editing the recorded sounds, a very deep analysis of their morphology and behaviour was needed in order to develop the desired changes and transformations. Thanks to the enormous possibilities within the Alchemy program, the timbre quality and shape of each sound could be transformed to the point of not being able to recognise its acoustic origins. In the case of these studies, transformations were made in such a way that

the acoustic origin of the recorded sounds could still be recognised. For example a conga sound remained recognisable even though its attack had been transposed and extended.

While I was editing the recordings, playing and improvising was an essential process in order to decide the role of each recorded sound in the musical context. Moreover, I could classify the transformed sounds according to their musical characteristics. Subsequently, I had to program the way in which the sounds could be "performed" by the sampler. This specific process involved the combination of different sounds, their location in space and the shaping of amplitude and pitch envelopes. This is one of the most important questions to be decided during the creative work. In other words, the final result of programming would enrich and give the piece its own musical identity. One example is that a single voice sound could be mixed with other voices with different pitches to produce a choral effect articulating different chords or clusters, and through changing frequencies, amplitude and pitch envelopes the final result becomes more rich and interesting. Moreover, if we detune the same sound by a very small interval combining it with the same one at original pitch, we produce a new result in which we gradually hear subtle changes in terms of timbre and inner rhythm.

On the other hand another important tool is the ability to combine different loop points of the sound-objects to produce interesting rhythmic combinations. For example, if we combine two simple looped mandolin samples playing the interval of a fifth, they produce an irregular rhythm of approximately three against two. In such a way by adding more intervals being played over different registers we can obtain more irregular rhythmic combinations, creating complex textures.

The final sound produced as a result of a specific program may very well be initiated by more than one acoustic source. I usually intended to combine sounds from different sources having specific qualities in common. For example, continuous flute and vocal sounds with a wide vibrato were mixed together as well as cello pizzicatos and guitar strokes or rhythmic gestures on the congas combined with kalimba sounds. In the case of making such programs I took many crucial musical decisions that had to be further developed. Hence it was necessary for me to spend a long time experimenting and improvising with the sound sources. A great number of musical ideas came from that process. By the time I had finished all such experiments, half the piece had already been composed.

2.2.3 Synthesised sounds

All the assembled material gave me a wide range of possibilities to explore musical ideas. Preliminary experiments suggested the idea of using synthetic sounds to extend and reinforce some of the acoustic sounds. [6] The synthetic sounds used in the piece were not easily recognisable within the final musical context. However they played an important role since they served to emphasise and enrich musical textures and gestures, or to extend a sound attack. They have also been used to imitate the qualities of some of the sounds in order to change smoothly the timbre of one sound to another one. That is exactly the case in the first Etude, in which we hear a voice glissando changing smoothly to an electronic sound glissando.

2.3 Different strategies for mastering a new compositional language

Since the electroacoustic composer has the power to manipulate her own sounds, she is creating the material and discovering it at the same time. Thanks to digital technology, composers can dream of manipulating sound in ways that ordinary instruments cannot, in their present condition. Composers can create a new sound world of unlimited possibilities by actually extending the aural experience.

Such manipulation of sounds allowed me to experiment with extremely fast tempi, since the limits of dexterity or fatigue in the human performer would be absent, through the elaboration of the complex superposition of cross rhythms. This was done by editing and manipulating the speed and direction of the sounds, by playing with location in space, by using microtonal scales and, in a timbral context, by not being confined by the practical ranges of real acoustic sound sources.

Following these considerations and because of the richness of the sound world I had made for my tape piece, I decided to master the new musical language growing from these improvised textures and musical gestures that resulted from the process of editing and assembling the sound material. Moreover I decided to explore this territory obviously new within my compositional experience, with as few preconceptions as I could, and risking as much as possible. Hence, I divided the piece into small exercises in which I tried to experiment and play with timbre and texture transformations of the sound material on the one hand, and the attacks and resonances of the musical gestures on the other.

By combining different sound sources sharing similar characteristics I was able to create subtle timbre and texture transformations. Moreover, the new technology of musical data processing enabled me to work using the most complex musical gestures that I could not have conceived or produced with any other means of expression, and in which the work of composition could take place in real-time through improvisation, and in deferred time through the modification of these improvised elements.

Ultimately, the altered auditive representation of the different sound-objects permitted me to perceive new metaphoric consequences within a new musical dimension. Such procedures involved different strategies that usually played with the speculative use of certain sounds instead of others, thus changing their own significance within the musical context of the piece. For example I tried to recreate a sound resembling thunder using a processed drum roll sound, or a strong crash noise by using short sounds of mandolin or guitar strokes being played in the lower register. In other words most of the gesture sounds used in the tape piece were not only meant to be self-contained ideas, but also highly descriptive thoughts developed according to my own poetic viewpoint.

Thanks to these procedures I could experiment with a series of metaphorical images creating different brief sound landscapes. The final result of such approach showed the ability to create different multidimensional metaphorical sound worlds where context, character, events, story could be all experienced from any viewpoint according to the listener's perception. Michael Rosas Cobian points out: " It is at these levels of 'altered states', of transformation of the consciousness, where the absence of ready-made sets of symbols and meanings makes electroacoustic music particularly powerful to express this

metaphorical worlds of ours. It makes room for the 'magic' of different realities to be expressed and perceived".[7]

Another approach, very simple but very effective, is the one I heard from the Mexican composer Javier Alvarez: " tape electronic music could be experienced as going to an aural cinema in which we have to create and imagine our own story according to the different aural images and emotional feelings".[8]

2.4 New ways of structuring sound material

One of the main considerations in writing these studies lay in the way I had to structure the sound material. Because of my early experience within the medium pre-compositional considerations had to be carefully analysed in order to find a congruent musical discourse. During the process I had to find new answers for traditional questions such as whether pitch aspects of the different études should be tonal, modal, or atonal, whether they should be diatonic or chromatic, the harmonic vocabulary and the extent to which chords should be functional or non-functional, the types of non-harmonic tones used or preferred and so on. Obviously, very few answers were found through the morphological analyses of the sound material, and because of that I was confronted with the problem of composing and formulating musical ideas departing from certain kinds of sound sources of which I had no experience, and new compositional strategies had to be developed in order to achieve new solutions within the sonic realisation of the musical discourse. However, the piece finally contained a few subtly suggested harmonic regions as well as small melodic and rhythmic inflections. The main musical elements developed much closer to specific gestures and improvised textures, avoiding any kind of pre-planned thematic or rhythmic

transformations. In other words, I tried to allow the sounds to dictate their path by following their inner musical tendencies according to their morphological features, but, subject to some manipulation so as to allow me some degree of determination. Although the precise length of a work cannot always be predetermined, one should be aware that short, moderately long, and large-scale compositions demand different characters and ways of using sound material.

Bearing in mind these considerations I decided to structure my tape piece into five different "short works" having each a particular purpose and a complete musical discourse. I used compact phrases and period forms not proceeding far before they began to move towards their conclusions. In other words musical ideas were such as not to lend themselves to extensive development. In conclusion I would said that my "structuring thread" lay in the variety of the texture and gesture transformations and resolutions of the sound material, plus their quality, colour and timbre features evolving continuously different moods and characters according to my artistic outlook .

2.5 First Etude: Timbre and texture transformations, plus percussive attacks and resonances.

The basic idea for this Etude was to create a series of musical events, linked by percussive attacks and resonances, together with timbre and texture transformations of their musical components. This Etude starts with a percussive attack produced by the hit of a metal litter bin and its 'artificial resonance'[9] emerging from two continuous sounds: one coming from vocal sources in combination with the Japanese temple bells and the other one from a mandolin stroke played in the high register. The development of this

first event is heard in the smooth transformation of the continuous vocal sound into a synthetic glissando, and this glissando transforming in the same way into another vocal glissando sound that will culminate the whole process in a second percussive attack.

The second attack is produced from a strong mandolin stroke, played in a lower register, and this is additionally reinforced through the use of a short percussive synthetic sound. Like the first event, the resonance of this attack has been developed in the same way, however, there are subtle variations of the sound material. The result of combining continuous vocal sounds with continuous synthetic sounds produced a different timbre quality within the material. Moreover, I emphasised the last timbre transformation (continuous synthetic and vocal sounds into a longer synthetic glissando) with the help of another percussive attack and its resonance lightly mixed with the glissando.

The third event starts with a more defined rhythmic gesture produced with some electronically manipulated conga sounds mixed together with water sound gestures produced from the manual agitation of a jar full of water. This new texture changes into a low deep breathing gesture combined with another synthetic continuous sound. Finally the fourth event develops with the last new texture combining vocal sounds, synthetic sounds and mandolin sounds continuously moving towards the high register, and intentionally ending with the last strong percussive attack and its artificial resonance created by randomly playing synthetic bell-like short sounds (see Figure 2.1).

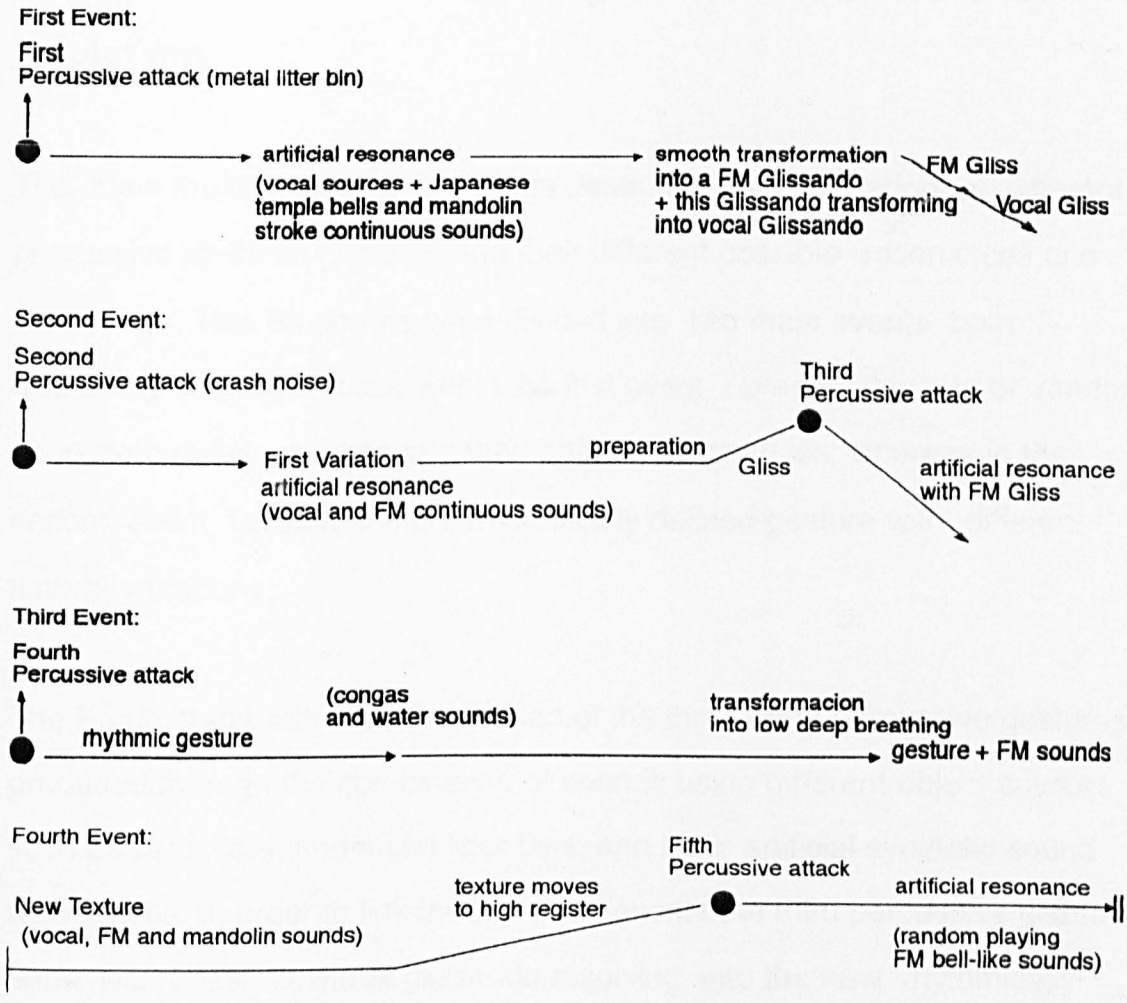


Figure 2.1: *Five Micro-Etudes*: First Etude structure diagram

2.5.1 Second Etude: Percussive gestures, resonances and resolutions

The main musical idea for this Etude deals with the exploration of different percussive rhythmic gestures and their different possible resonances and resolutions. This Etude has been divided into two main events both displaying two main ideas: within the first event I present a series of random short percussive gestures and their artificial resonances, whereas in the second event I create a more rhythmically defined gesture with different timbral variations.

The Etude starts with the presentation of the three short percussive gestures produced through the combination of sounds using different object sources such as cans, jars, and metal litter bins, and their artificial synthetic sound resonances. In order to link the two main events the third percussive gesture ends with a fast upwards glissando resolving into the new rhythmically defined gesture of the second event. This new rhythmic gesture has been produced with the sounds of mbira and conga rhythmic patterns. On the other hand, it is also important to mention that, besides its clarity in terms of rhythm, it also has a specific melodic contour that, although it does not use specific pitches, is easily recognisable to our ears.

Subsequently, this new rhythmic gesture undergoes two different timbral variations: the first one introduces a mixture of mandolin and vocal sounds playing the exact rhythmic gesture but one octave higher, the second one uses the same process but this time combining the original conga and mbira sounds with some new vocal sounds playing in unison but three octaves higher. The Etude concludes with a final percussive attack followed by a texture created from different looped mandolin sounds (see Figure 2.2).

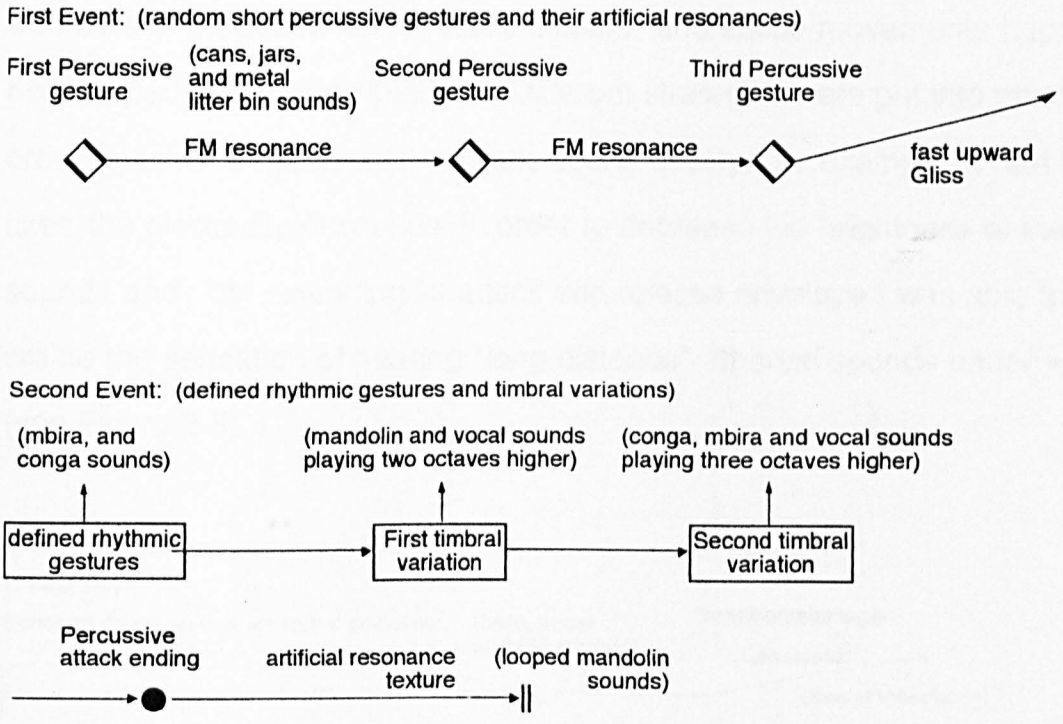


Figure 2.2: *Five Micro-Etudes* : Second Etude structure diagram

2.5.2 Third Etude: timbral and gesture explorations

This Etude is divided into two parts exploring different timbres and colours within new musical contexts. The first part plays with a series of improvised short gestures using all kinds of different cello and vocal sounds as the two main sound sources. The role of the synthetic sounds only serves to emphasise or decorate these musical ideas. Moreover, transformations of cello sounds were made in such a way that we could not easily recognise their acoustic origins; for example, they sound as if they are whales sounds or some strange percussion instrument such as the Brazilian berímbau.[10] In contrast to the first section, the main idea for the second part was to build a kind of gentle aquatic atmosphere by combining glockenspiel glissandi and water sounds along with long synthetic bell-like sounds. Within this mood I

was able to introduce new metallic colours and subtle movements happening over a specific harmonic platform. Different strategies were put into effect in order to achieve the desired aquatic sound quality; for example, I had to filter the glockenspiel sounds in order to decrease the brightness of the sound, and by extending its attack and release envelope I was able to create the sensation of hearing "long distance" ethereal sounds under water (see Figure 2.3).

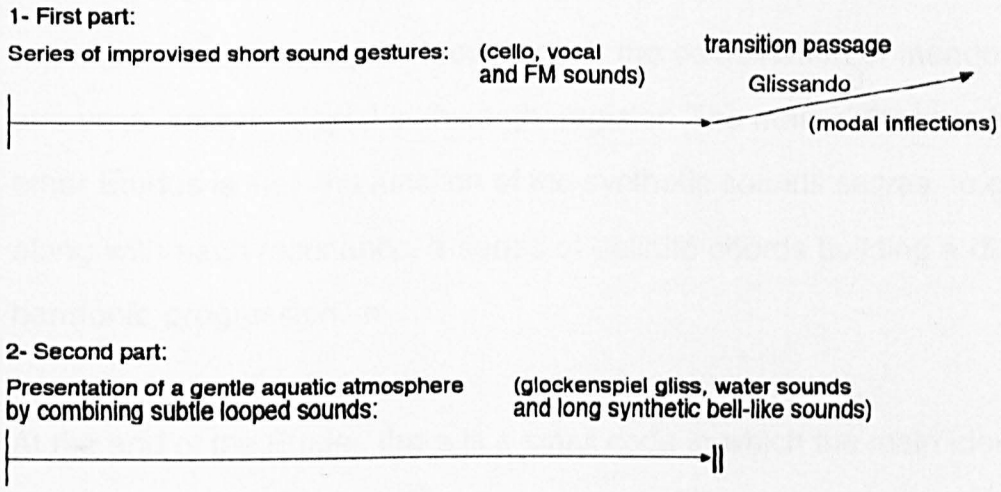


Figure 2.3: *Five Micro-Etudes:* Third Etude structure diagram

2.5.3 Fourth Etude: The musical development of sounds starting from a specific morphology; Attacks and resonances.

The main idea for the first part of the fourth Etude is to develop a series of different sounds starting from the same specific morphology but coming from different sound sources such as: synthetic bass-like and flute-like sounds, metal litter bins, cans, jars, cello pizzicato and vocal sounds. Before I started

working with the sound material I had to experiment with different possible designs of the shape of amplitude and pitch envelopes using different sound sources. By playing and improvising with the distinct possibilities I finally obtained the desired shape of which the main characteristic lay in the small upward glissando at the end. By imposing this envelope shape onto the different synthetic and acoustic sound sources with which I developed a simple single melody I obtained a particular sound-flavour.

In the second part of the Etude I present a series of subtle percussive attacks and their resonances produced through the combination of mandolin loop and vocal sounds played in the high register. The main difference from the other Etudes is that the function of the synthetic sounds serves to create, along with each resonance, a series of definite chords building a distinct harmonic progression.

At the end of the Etude, there is a small coda in which the main idea is to create a specific texture by combining many different kinds of sounds; these includes flute, vocal, Japanese temple bells, guitar and percussion sounds, and give us the idea of watching a parade and hearing a folk band from a long distance gradually approaching towards the listener (see Figure 2.4).

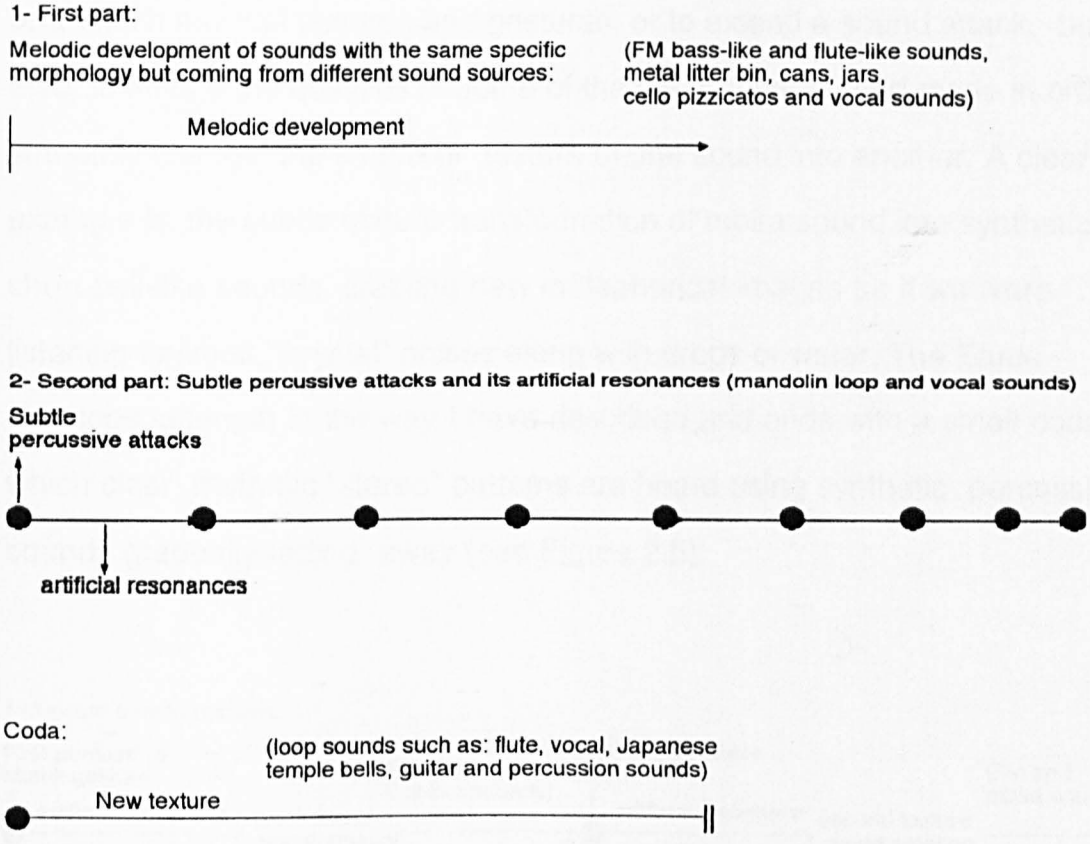


Figure 2.4: Five *Micro-Etudes:* Fourth Etude structure diagram

2.5.4 Fifth Etude: New texture transformations

The fifth Etude recapitulates most of the previous ideas that I had explored in the other four. As in the first one its main basic structural organisation is based on the idea of creating a series of rhythmic gestures and their artificial resonances, linked together by the timbre and texture transformations of their musical components. The same strategies have been used to compose this last sonorous landscape; however it is important to mention that the character of the synthetic sounds has a more predominant role within the overall musical context. Besides, they have not only been used in order to emphasise

and enrich musical textures and gestures, or to extend a sound attack, but also to imitate the qualities of some of the other sounds I had made in order to smoothly change the timbre or texture of one sound into another. A clear example is the subtle texture transformation of mbira sound into synthetic short bell-like sounds, creating new metaphorical images as if we were listening to small "crystal" noises along with drops of water. The Etude develops at length in the way I have described and ends with a small coda in which clear rhythmic "stereo" patterns are heard using synthetic percussive sounds gradually fading away (see Figure 2.5).

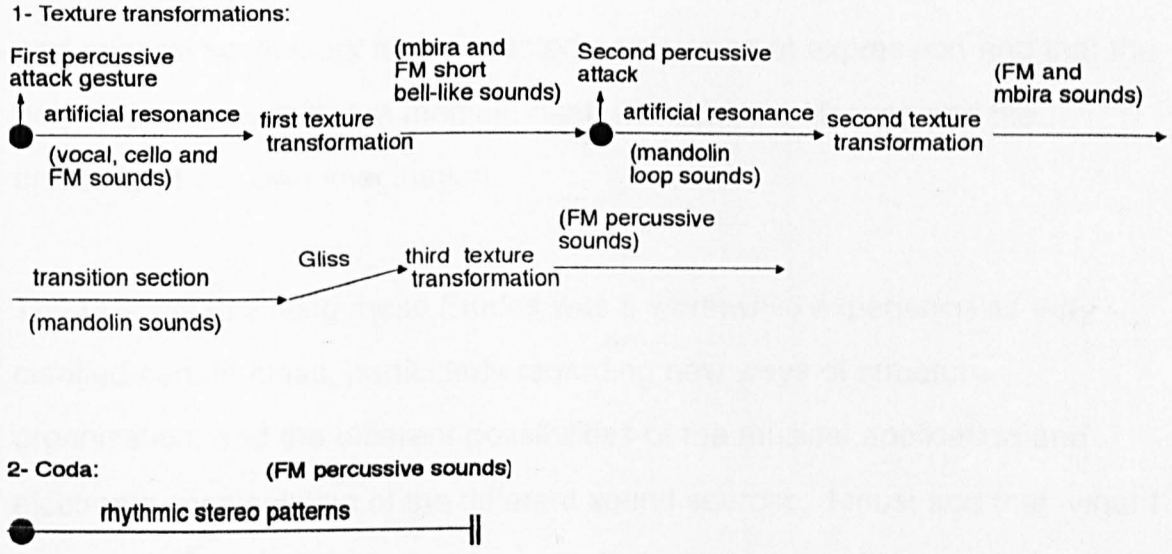


Figure 2.5: *Five Micro-Etudes:* Fifth Etude structure diagram

2.6 Conclusion

One of the most rewarding aspects of writing these Etudes is that I was able to understand that musical textures and gestures could be used as self-contained ideas from which can be developed new means of expression

using different compositional methods. In such a way I tried to experiment with the sound material to extend my capabilities regarding the electronic manipulation of the sound itself.

One positive result of the fact that I had many problems in conceptualising the Etudes, was that their compositional process permitted me to expand my scope as a composer by understanding the different ways in which we can learn how to work with the intrinsic musical character of the different sound objects. The encounter with such thoughts provoked further questions while at the same time it reinforced and stimulated other ideas. However, I came to the conclusion that within the electronic medium we can expand our sound world and musical vocabulary to unexpected new means of expression and that the only limitations within the medium deal with technical issues and the creativity of our own imagination.

The process of writing these Etudes was a worthwhile experience as they clarified certain ideas, particularly regarding new ways of structure organisation, and the different possibilities of the musical application and electronic manipulation of the different sound sources. I must add that what I learned in terms of form, texture and timbral vocabulary, offered me a new world of freedom and experimentation in which I was able to realise some of its enormous potentiality.

Notes and references

[1]Michael Rosas Cobian, *In pursuit of an electroacoustic aesthetic,* MA in Music, City University, London, 1990, page 5.

[2] Igor Stravinsky, *Poetics of music* , Harvard University Press, Cambridge, Massachusetts, 1970, page 122.

[3] The Japanese temple bells consist of set of different sizes of metal bowls each one producing different hypnotic continuous sounds with their own harmonics generated by the friction of a special mallet against the bowl's rim.

[4] The African mbira is a plucked idiophone that has a wood box resonator with multiple plucked metal tongues. Each tongue can be tuned by moving it in or out (making the vibrating area longer or shorter); in addition to this sometimes little jangles or rings are added above the bridge or in other places on the instrument to give it a buzzing or jangling timbre.

[5] The Alchemy program is a sample editor designed for the Macintosh computer that allows on-screen editing of sound parameters.

[6] To edit the electronic (FM) sounds I used the Macintosh computer with the help of Opcode TX editor librarian. The synthesis was (as before) a Yamaha TX802.

[7] Michael Rosas Cobian, *In pursuit of an electroacoustic aesthetic,* MA in Music, City University, London, 1990, page 14.

[8] Javier Alvarez, personal communication 1997.

[9] I use the term 'artificial resonance' when certain kinds of attacks or gestures using a specific sound source could not produce any natural resonance. In that case I decided to artificially create one by using other different sound sources.

[10] The Brazilian berímbau is a gourd bow instrument in which the pitch may be changed by stopping the string with fingers or by addition of a noose which divides the string into two unequal vibrating sections giving two possible notes.

Chapter 3 *En Pares* for chamber ensemble

Perception of sound and its location in space

> *"In most cases, a working procedure useful to the musician is first discovered and retried in practical, do-it - yourself experiments - it may then, in some instances, be verified scientifically. This is also true of the space factor, of which investigation, expressive use, and control are still in the beginning stages."*
>
> *Henry Brant*
> *Contemporary composers on contemporary music, NY: 1967*

3.1 Preliminary considerations

Since I started working in the field of electroacoustic music, one of the main things I found was that the perception of sound and its location in space is a very rich area to be further developed. This image became more familiar to me thanks to the increased interest in stereophonic recordings which similarly depend for their effect on sounds being heard from different directions.

Thanks to electroacoustic music I was fascinated to experiment with sound and its location in space creating different illusions in which the listener experiences a wide variety of directional effects. My personal experience in exploring and working on new means of expression around this basic idea enabled me to apply the same concepts to my acoustic work, significantly enriching it in an original direction.

Bearing in mind that the greater function of stereophony is the illusion of space it can suggest, I had the idea to experiment and write for instrumental groups that could be located in different positions, developing a new musical language around this primary inspiration. This required conducting an analysis of the conception of space within twentieth century music.

En Pares is one of the first acoustic pieces in which I used pairs of instruments located opposite each other in order to create this stereo image. (Please refer to the concert lay-out page at the beginning of the score). In other words I tried to experiment within the field of antiphonal music,[1] that is music in which separate groups of performers are placed at some distance from one another so that the sounds come to the listener from several directions.

The musical ideas were based around this *dialogue* concept although in some cases global textures were used as part of the musical structure of the piece. Furthermore the main harmonic conception was based on the development of a single chord within each of the different sections, so that textural and colourist movements arose from ever changing orchestration and the spatial location of different instruments.

In terms of the structure, I decided that the piece should generate its own form, in that no pre-set patterns or rules were formulated. My only idea was to find logical and easily perceptible solutions instead of enigmatic or ambiguous ones which may have forms so difficult to perceive that to the listener they seem formless. In order to achieve my goal, I constructed contrasting rhythmic sections designed principally to create a fresh musical language that complemented and contrasted with the two other main ideas as well as creating different textures and sections of thematic recall.[2]

3.2 The influence of working in the field of electroacoustic music

Since I started working within the field of electroacoustic music I realised that new technology had made it possible for a composer to be creator,

instrumentalist, conductor and recording technician combined. Technology, musical knowledge and playing skills go hand in hand, and by combining and using them, they can lead to musical creativity. On the other hand I would like to point out that the process of electroacoustic music composition takes a different route from instrumental music composition. In the first case the music comes to life as it is composed, in other words the responsibility for its performance relies only on the technical and artistic capabilities of the composer; in the second case the musical score acts as a representation of what the composer would like to express and then this process has to be understood and interpreted into a performance by the instrumentalists.
It could be argued that there is no significant difference between the two processes. However it is important to mention that although with electronics it is possible to produce a wide range of impressive sounds quickly, high levels of compositional accomplishment in this field are never easily achieved.

After composing *Magna Sin* and *Five Micro-Etudes* I was aware of the vast potential of the electroacoustic medium and especially the notion of working in real time. In such a way I could try different ideas on the spot, developing a new language under the constant stimulus of experimentation. In relation to this Michael Rosas Cobian has written:

> "Like a painter, the composer watches the work taking shape in front of him and, as with painting, needs no interpreters, embodying the creator's ideas all alone. It is here that the freedom also lies, in that the composer is wholly responsible for the final results, no performers being there to misinterpret his or her intentions and also where the danger lies, in that the composer has to practice and develop his or her performing arts".[3]

Having the opportunity to hear in concert halls electroacoustic pieces like *Go* for solo tape by Alejandro Viñao, I realised for the first time the use and function of stereophonic and quadraphonic sound distribution as an important

tool for the spatial conception of any piece. In *Go* I could hear sounds coming from all directions giving an illusion of great space and simulating the acoustic conditions of an entirely new space. Through specific technical processes such as reverberation, time delay, attenuation and changes in tone colour, speakers can be made to give the sounds characteristics of a great cathedral, a cave, or a giant empty open space. Thanks to this enormous experience I wanted to explore some of the same concepts within the context of my acoustic work.

3.3 Creating a true stereo image

Before I started working on the new piece a few questions and some previous ideas arose in my mind from which I wanted to develop and structure all the musical material. During this stage I realised that three main concepts about the use of space in twentieth century music have to be considered before I could develop my own musical statement:

a) There is a previous conceptual space found by the composer that comprises those concepts and tools from which he could develop his own new compositional strategy. In other words: graphical structures, drawings, plastic or architectonic structures, maps, and diagrams arising from several areas such as: medicine, meteorology, electronics and so on. These became fundamental sources for the creative process. One example of this procedure belongs to the Brazilian composer Heitor Villa-Lobos (1887-1959) who drew over the music paper the contour of New York skyscrapers, by selecting some specific points of his drawing he was able to create the musical material of a new piece. John Cage (1912-1992) in his works: *Atlas Eclipticalis (1961)* and

Music for Carilon 4, (1962) transcribed on to the music paper points coming from constellations and astronomic maps; Cage transcribed such points into musical events.

b) There is a musical internal space that refers to a particular quality of distance or nearness depending on loudness, register, orchestration and timbre plus the accumulation and density of the musical texture. Ligeti in his piece *Lontano (1967)* for large orchestra, suggests the musical use of the word to indicate sounds that appear to come from far away or that are actually played by instruments off stage as in Mahler's Second Symphony. However in the case of Ligeti's piece, all the instruments are on the platform creating a sensation of distance on several levels: it begins very quietly and ends with a prolonged fade, giving the impression that it arrives from far away and slowly departs, opening and closing as if in Ligeti's own words it was "a window on long submerged dream-worlds of childhood".[4] Furthermore, there is a feeling of orchestral space, with the use of quiet sustained chords in the background and more definite figures nearer at hand, in which Ligeti's new harmonic practice contributes to such illusions.

c) There is an external musical space that refers to the distribution of the sound sources, in other words where the musical instruments are located. One of the main examples of this procedure belongs to the German composer Stockhausen.[5] He took up and developed the spatial usages of late-renaissance Venetian composers using two or more instrumental groups or choirs, so positioned that the audience could hear music from various directions.

The main idea of *En pares* was based on the third concept: the distribution

of the sound sources within the acoustic space. Although I did not know what kind of instrumentation I wanted to use I was sure I wanted to experiment creating contrapuntal or polyphonic textures[6] as one of the main musical objectives. Harmony, texture, and colour in contrast with special rhythmic ideas became significant elements of the work, but in general I wanted to develop the conception of using the sound and its location in the acoustic space as a dominating factor of the whole piece.

Through the process of putting into effect my goal I realised that the music should have for obvious reasons a rich variety of movement within polyphonic textures articulating a specific harmonic scheme. Consequently a lot of planning and experimentation had to be done in order to obtain the right way to develop a personal and distinct musical language which would make this new piece instantly recognisable as different from my other acoustic works.

I believe that some music has to be recognised through certain factors with highly distinctive meaning within the musical discourse. This is the case in *En Pares* . We can perceive and use movement in many different ways and I had to ask myself what should be the main dynamic feature of movement in *En Pares* . From my point of view movement requires not only something that moves but also positions between which movement takes place. That is how I decided to use pairs of instruments[7] opposite each other like having two small orchestras, in order to create a musical movement within the field of a true stereophonic image.

Lastly, the use of stereophonic resources in *En Pares* was very simple: two small groups of pairs of instruments[8] facing each other across the stage, play the same musical ideas so the audience can experience the music coming from two clear directions.

3.3.1 Musical material around the concept of 'dialogue'[9]

Coming back of the idea of antiphonal music, I had to create melodic shapes with a certain kind of freedom and lightness that could operate within the context of my idea of 'dialogue'. In such a way the material not only had to have emotive contour and expressiveness it would also give to the music the right physical movement and emotional flow in creating stereophonic images. Likewise, distinctive short melodic motifs with clear-cut and decisive shapes had to be used in order to achieve a distinct characteristic which makes them instantly identifiable. In the case of *En Pares* distinctiveness and memorability owe more to rhythmic design than to pitch patterns, as in much twentieth-century music in which pitch structures are so complex that we often hear rhythmic motifs more clearly than pitch motifs.

Besides, irregularities of rhythmic movement within the melodic motifs and phrases were more frequent because they gave more interest and a different impulse to the musical speech. This objective was made possible by avoiding metric units with a uniform length. Instead, they were of variable length corresponding to expansions or contractions of the melodic motifs and phrases. If we listen to the beginning of the piece the different melodic lines between the two flutes we will see that, although the passage is written in 5/4 meter, the phrases never coincide with the first beat. Because these melodic phrases never had a regular length the resulting disruption of metric continuity becomes an essential characteristic of the whole piece (see Figure 3.1).

Example of the different melodic phrases with no regular length:

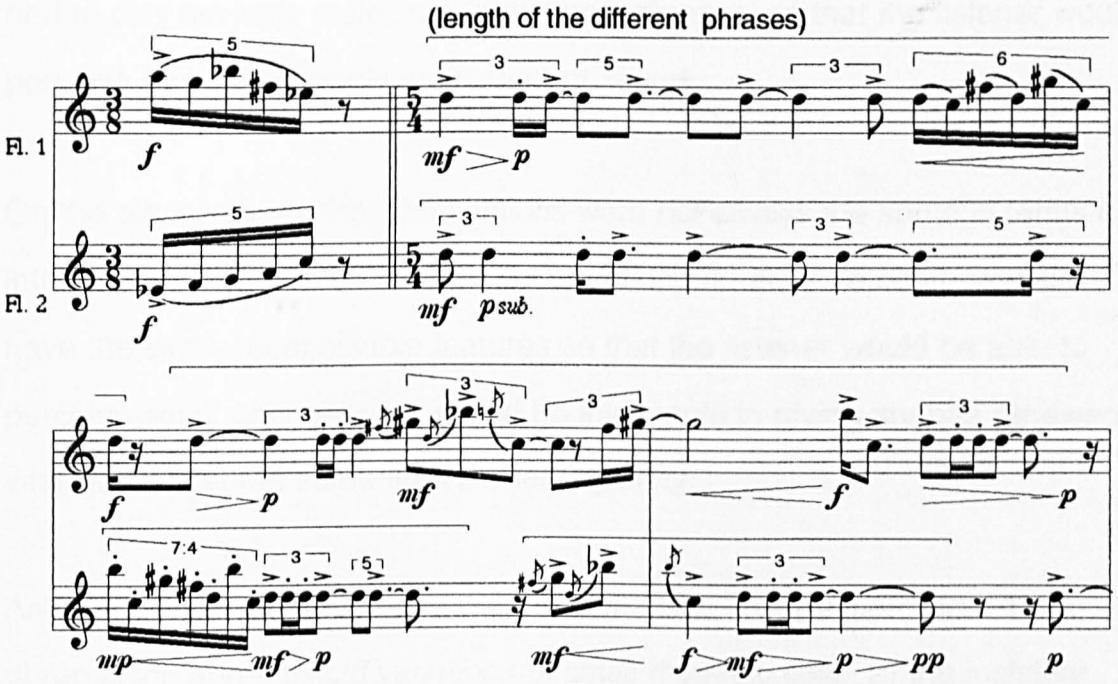


Figure 3.1: *En Pares:* Example of the different melodic phrases with no regular length

I obtained sketches of possible distinguishing melodic phrases by combining them in a free manner: that is voices imitating each other loosely for a time and then taking a free course until imitations begin again. I was able to develop polyphonic textures having the special objective of creating additional interest in music through the spatial movement and orchestration of the different musical phrases.

It is important to say that in Renaissance polyphony, voices were not always closely related and thematic material could give way to unrelated motifs as the work progressed. Similarly in *En Pares* the use and function of imitation had

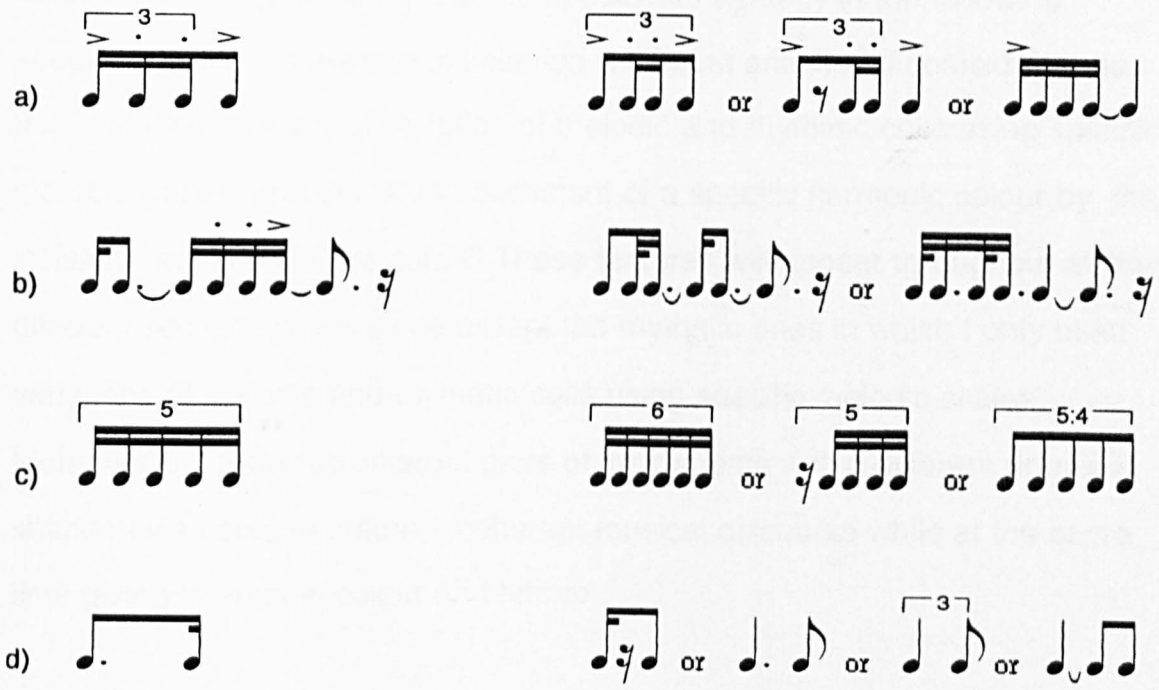
other meanings strictly speaking. One of the main functions of imitation was within the field of antiphonal music. My own compositional strategy was quite simple but very effective: a pair of instruments located opposite each other had to play similarly melodic and rhythmic phrases, so that the listener would perceive the stereophonic movement of sound.

On the other hand although imitations were not always the same in terms of intervals or rhythm, their melodic construction and emotive contour would have the same recognisable features so that the listener would be able to perceive small changes that would be invaluable in giving shapes renewed vitality, while at the same time preserving unity.

Another way to preserve unity within the melodic constructions was 1) the use of repetition and musical variations of small rhythmic cells, 2) the insistent repetition of the note D especially at the beginning and at the end of the piece[10] and 3) the use of closely related melodic scales within the different sections of the piece containig mostly the same intervalic material. With these elements I was able to provide the harmonic colour and right atmosphere with a very strong aural relationship between the different sections[11] (see Figure 3.2).

Main rhythmic cells:

Variation of main rhythmic cell:



Main melodic scales:

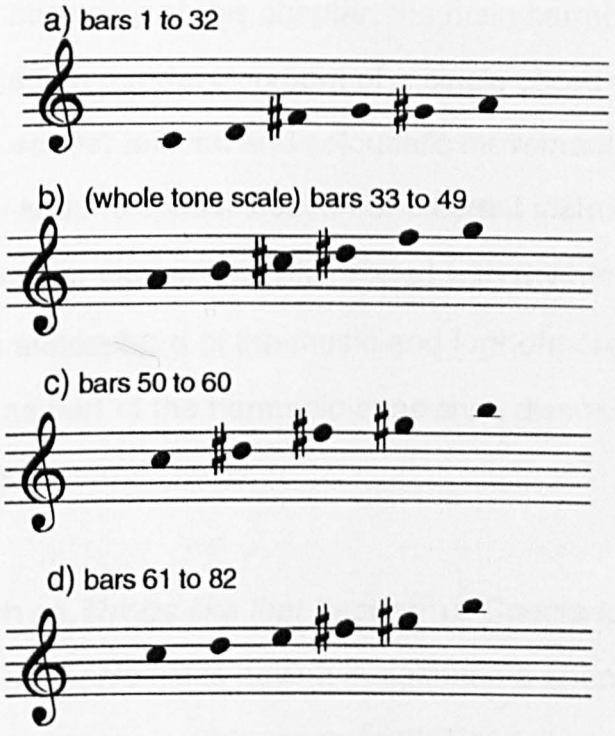


Figure 3.2: *En Pares* : Main rhythmic cells and their variations plus main melodic scales

Analysing the first three pages of the score, we can observe between the two flutes how I established my own compositional strategy in the following specific aspects: a) the use of imitation within the antiphonal context, b) the use and development of variation of melodic and rhythmic cells using specific melodic scales, and c) the establishment of a specific harmonic colour by the insistent repetition of the note D.These features will appear throughout all the different sections of the piece except the rhythmic ones in which I only used variations of melodic and rhythmic cells using specific melodic scales. Moreover by using the different pairs of instruments within different dramatic shapes I was able to create a coherent musical discourse while at the same time giving interest in colour and timbre .

3.3.2 Main harmonic ideas

As I mentioned at the beginning of this chapter, the main harmonic conception of *En Pares* was based on the development of a single chord within each of the different sections, so that textural and colouristic movements arise from transient orchestration and the spatial location of different instruments. In other words, the harmonic colour can well be associated with rhythms which themselves create the atmosphere of the music and furthermore, orchestration has to be understood as part of the harmonic substance dissolving and building up the various harmonic fields.

As in other pieces such as *Things like that happen* or *Concierto Candela* I decided to construct harmonic fields having in common a specific pitch note that could act as a kind of anchor within each section of the work. In such a way I was able to create a kind of tonal framework in which, although the musical discourse could develop in many different ways, a strong sense of a

coherent harmonic region could be felt. On the other hand the main principle from which I decided to construct harmonic fields was based on building up a series of chords using the same notes of the different melodic scales of the sections. In such a way I could concentrate my energy on creating interesting melodic and rhythmic motifs from which I could develop the distinct harmonic regions.

In the case of *En Pares*, we can observe in every section of the piece, including the rhythmic ones or the slow kind of choral development towards the end (see the score page 32), a sense of a global tonal region. This effect was perceived thanks to the use of the note D as the basis of a harmonic and melodic platform. For example through its persistent repetition or its utilisation sometimes as a pedal note linking one section to the next, see the beginning (score page 1), the slow section (score page 32) towards the last section (score page 37) we can clearly identify this strong sense of tonality.

Finally, it is important to mention that orchestration in *En Pares* takes and important role since it works to dissolve and crystallise each new harmonic image with its own spatial movement,[12] sometimes little by little or sometimes as a constant to present the dramatic shape of the piece. Furthermore the used of harmonic colours in *En Pares* can sometimes be reduced to a very simple harmonic working with very little movement, serving as a background for freely ranging melodies, and changing the atmosphere of the sections according to the harmony and tone-colour used.

3.3.3 Texture, timbre and colourist variations

Before we can understand the use of texture, timbre and colour movement in

En Pares it will be necessary to explain the significance of these parameters within my own compositional standpoint.

1 -Texture

Texture refers to the interaction of separate musical components that sound along with one another. Furthermore, although texture is in part the result of the number and relative prominence of individual components, additional factors also play crucial roles in determining the way we hear texture. We could divide these factors in to:

a) Spacing: how close or far apart the musical components are;

b) Register: whether the musical components are predominantly low, medium, or high in range;

c) Rhythm: whether there are equal or unequal levels of activity throughout the texture, whether fast or slow values predominate, and whether changes in different parts of the texture are synchronised or unsynchronised;

d) Timbre or tone colour: whether blended or contrasted through the different ways of using and combining the different instruments.

Within the context of *En pares* these aspects, separately and in combination, were the main factors in creating an extensive range of textural variety. Furthermore, since *En Pares* lacks the clear-cut harmonic functional structure common to many tonal pieces, texture becomes more important, helping to project the exposition, development and structure of the main musical material.

Another important feature was the utilisation of layered textures: that is, several independent layers of sound that produce the entire texture. Often, one or more layers of these textures is formed of the repeated rhythmic

figures between the different instruments. Sometimes these rhythms serve to give spatial movement to a single chord. These are more than a mere harmonic background creating a single ambience notated on the score as an echotone [13]. At other times they use a recurring rhythmic motif or melodic phrase within the antiphonal context establishing the stereophonic effect characteristic of the piece.

First example: if we look carefully the first page of the score we will see two clear textural layers. The first one appears between the antiphonal rhythmic dialogue between the two flutes, and the other refers to the rest of the instruments playing the harmonic background using few rhythmic figures to give spatial movement to a single chord.

Second example: if we move now to page 25 of the score will see two different layers: the first one refers again to instruments (in this case horns, trumpets, clarinets and flutes) playing the harmonic background using the same previous technique, and the second layer (strings, percussion and harp) comprising several repeated rhythmic figures giving special contrast in movement, density and colour for that specific passage of the musical discourse.

By combining these ideas along with changing timbres, dynamics, and articulations, I was able to give rise to new colours and textures, and as you listen to layered textures your ear can travel among the various musical components.

2 -Timbre

a) Blended versus contrasting timbres

Timbre (tone colour) is another important musical element that affects texture. My understanding of blended timbres refers to when a group of instruments emphasise the textural unity of a passage, while contrasting timbres help differentiate the lines in a texture. Within the context of my piece I use blended versus contrasting timbres in the following way. Blended timbres refer to those textural layers with slow harmonic movement sounding along with other textural layers containing the rhythmic motifs and melodic phrases within the antiphonal context (see the textural layer formed by the clarinets, violins and vibraphone on page 1 of the score), and contrasting timbres for the main rhythmic sections located in the middle of the piece in which I deliberately separate the main rhythmic melodic lines from the harmonic accompaniment (see page 10 of the score).

b) Use of percussion

In much twentieth century music percussion instruments play a leading role instead of a supportive role as in much other tonal music of the Romantic and Classic periods. In *En Pares* the melodic percussion instruments such as vibraphone and glockenspiel in most cases were used in order to blend with other instruments enriching the colour palette of a particular texture. If we look at the first page of the score we will see that the main function of the vibraphone is to blend using the same notes as the clarinets and violins following the *echotone* texture effect. The indefinite pitch percussion instruments such as snare drums, bongos, congas, suspended cymbal etc. were used in order to enrich crescendos, change harmonic colours or to play important rhythmic passages such as the rhythmic dialogue between the tom-toms, congas and bongos in page 22 of the score.

c) New instrumental techniques and striking timbral combinations

As we know, composers in the twentieth century have explored new registers, new timbres and new playing techniques for many instruments[14]. These new techniques, along with new combinations of instruments create imaginative musical colours that would have been unimaginable in earlier eras. The main interest in using new instrumental techniques within *En Pares* is the utilisation of new combinations of instruments and the employment of 'unorthodox' methods of orchestration[15]. By using new techniques such as flutter-tongue on the flutes, glissandos, sul-ponticello and harmonics on the strings, placement of instruments in their extreme high or low registers, rarely used chord voicings plus the utilisation of percussion instruments with a leading role, I was able to build a series of continuous changing colour textures within the different dramatic moods of the musical structure.

3 - Colourist variations

In *En Pares* texture becomes one of the main factors in helping to project the exposition, development and structure of the main musical material. In order to understand this process it is necessary to explain the utilisation and functions of the layered textures and their construction from the point of view of timbre. It is necessary to understand the use of colour movement in texture as a main factor in designing variation within the context of structuring the main musical material.

As in my previous piece *Five Micro-Etudes* for tape I worked on timbre transformations: that is a single sustained sound or texture shifting from one timbre into another. In the context of *En Pares* I tried to vary the colour palette of a layer texture into another by assigning distinct dramatic and colour roles to the different instrumental groups.

If we analyse the first and second sections of the score (first section score page 1 to page 6, letter B and second section page 6, letter B to page 8) we can observe two different colours articulated with the same musical idea of layered textures. In the first section I present two layered textures: the first one is the stereophonic dialogue between the two flutes, and later on between the clarinets and trumpets; the second one refers to the harmonic platform formed by the clarinets, violins, cellos, percussion and harp. In section two, letter B, colour has changed in many different ways: now, the stereophonic dialogue starts with the violins, moving to the flutes and trumpets along with the harmonic background of the cellos, clarinets, horns, double bass and harp.

In this case the main interest lies not only in the fact of using other instruments but more the way those instruments play the musical material. For example the harmonic background changes its colour by using the cellos playing glissandos between harmonics, plus the double bass playing pizzicatos blending with the harp, along with the clarinets and muted horns. In such a way texture changes in a different dramatic way: firstly the timbre changes by using different groups of instruments and secondly, the musical density increases preparing for the arrival of the first rhythmic section. Similar processes are used in the rhythmic sections of the work for example the first rhythmic section from letter C until letter D (score page 10 to page 13).

In this section we can observe three different colour variations:
a) First variation: the first rhythmic phrase (bars 32 to 36) has been played by the piccolo, second flute and vibraphone against the harmonic accompaniment consisting of the clarinets, trumpets, horns and strings.
b) Second variation: the second rhythmic phrase (bars 37 to 49) changes its

colour by using one flute, vibraphone and one violin while the harmonic accompaniment only stresses certain notes of the rhythmic phrases with two different groups of instruments: trumpets, horns and percussion stress the F sharp and the F natural, and the clarinets, strings and harp stress the G natural along with a G natural pedal note on the second violin.

c) Third variation: the third rhythmic phrase (bars 50 to 57) changes its colour by using the piccolo, one clarinet, vibraphone plus a new colour with the bongos and congas, and the harmonic accompaniment stresses the first and last note of the rhythmic phrases using the horns and muted trumpets, cellos and double bass playing pizzicato plus the harmonic pedal notes between the two violins.

3.3.4 Creating a light orchestration[16]

In order to understand the use and meaning of a 'light orchestration' within the context of *En Pares* we have to go back again to the idea of 'dialogue'. Most of the musical parameters that we have discussed before such as short melodic shapes within the context of creating stereophonic images, harmonic ideas with their own spatial movement and tone-colour, and layered textures with different functions and colour movements, allowed me to experiment and develop new orchestral techniques. In other words the concept of creating a light orchestration is fully related to the idea of developing musical material within the antiphonal context.

Through the process of sketching and playing with musical ideas I realised that the use of a light orchestration in terms of timbre, colour movement and texture was essential in order to be able to distinguish the different stereophonic images within the musical discourse. Therefore by combining

certain groups of instruments, plus the dynamic, articulation and timbre used in the different layered textures, the light emotive contour of the melodic lines and the harmonic colour movement, helped me to develop new orchestral techniques within my own compositional process.

Probably one of the most common examples that reflects this idea is the use of the *echotone* texture. The orchestral technique was very simple but very effective: quiet sustained harmonic chords in the background have been distributed between pairs of instruments one located in front of the other, playing and interchanging the same notes of the same chord in order to perceive a certain kind of spatial movement as well as a new sense of *echo* distance at a different metaphoric level.

In relation to this, another example is the used of a *lontano* and *pianissimo* effect (see score page 32 Letter I: *Tranquillo e delicato, Sempre lontano e pianissimo* ♩= ca.72). In this section the main idea is to create a harmonic slow choral texture in which we can hear a 'great distance' effect thanks to the use of different instrumental techniques and not only due to the extremely soft dynamic. In order to create this effect I used harmonics, non vibrato playing and mute on the strings obtaining a kind of organ effect, along with the vibraphone, harp and triangle enriching the colour palette and emphasising the different harmonic chords. Finally, the entrance of the horns, trumpets (both with mute), clarinets and flutes serve to build, crystallise and dissolve the harmonic progression of the whole section.

3.4 The rhythmic sections

The contrasting rhythmic sections have been designed principally to create

fresh musical material that complements and contrasts with the two other main ideas (stereophonic melodic dialogues and layered textures) as well as creating different textures and sections of thematic recall. One of the main features that constantly appears within the diverse contrasting rhythmic sections is the utilisation of unison in the main melodic and rhythmic themes. In such a way, the development and variation of the material refers to the constant change of colour and timbre plus the permanent variation of the different melodic scales from which all the melodic and rhythmic phrases have been created. In some of the rhythmic sections layered textures have been used: one texture developing the rhythmic melodic themes while the other texture articulates the harmonic support. But other sections become one unified texture in which all the instruments participate in the same way: developing the different themes in unison (see score page 14, bar 61, *Ben marcato*).

3.5 The overall structure

Before I started writing *En Pares* I decided that the musical material must generate the way in which I should develop the musical structure, so no pre-set patterns or rules could be formulated. Moreover I did not want to have a kind of structure in which the listener could not easily perceive the different sections. I found logical and easily perceptible solutions which I explored with texture and timbre variations as main determinant factors of structuring the whole work. I structured the piece into five different sections each one comprising development of the different kinds of texture, timbre and rhythmic variations of the musical material.

General structure plan:

First section: musical material around the concept of dialogue

a) Presentation of the main musical material (score page 1)

b) First variation (Letter A, score page 4)

c) Second variation (Letter B, score page 6)

Second section: presentation and variation of the rhythmical material

d) Presentation of the rhythmical material (Letter C, score page 10)

e) First variation (bar 37, score page 10)

f) Second variation (bar 50, score page 12)

g) Transitional section (Letter D, score page 13)

h) Fourth variation (bar 61, score page 14)

i) Second transitional section (Letter E, score page 18)

j) Fifth variation (bar 96, score page 20)

k) Third transitional section (Letter F, score page 24)

l) Sixth variation (letter G, score page 27)

m) Seventh variation (Letter H, score page 30)

Third section: slow harmonic chorale

n) Development and presentation of the slow harmonic chorale

Fourth section: recapitulation of dialogue musical material

o) Presentation and recapitulation of dialogue musical material (Letter J, score page 37)

p) Transitional section (Letter K, score page 40)

Fifth section: Coda

q) First rhythmic coda and climax of the piece (Letter L, score page 43)

r) Second slow coda and last recapitulation of dialogue musical material (Letter M, score page 48)

If we observe carefully the configuration plan of *En pares* we find that the whole piece can be divided into three different large constructional ideas: In the first one, including the first and second sections, I present and develop the distinct compositional strategies of the whole work. In other words we can see the use of layered textures, the development of the material within the antiphonal context, the presentation and development of the rhythmic ideas plus the use of variation of texture and timbre as main factors in structuring the whole piece. The second idea includes the third section in which I present a slow harmonic quiet chorale in order to entirely change the atmosphere of the work giving interest, rest and contrast to the listener. The last idea comprising the fourth and fifth sections summarises all the previous musical material and serves to announce the end by introducing the first coda in which I gradually build the climax of the work. The piece ends with a second coda that reminds us in a very sweet and dreaming way of the beginning of the whole work.

3.6 Conclusion

By composing *En Pares* I was able to open my personal musical language and compositional process and experience to an entire new spectrum of freedom in the exploration of the following two main aspects: sound and its location in space and sound colour and texture as focal elements structuring and creating the musical material.

In relation to sound and its location in space I could say that a musical performance takes place not in abstract but in a physical, architectural, and acoustical setting. Meanwhile, different acoustic spaces not only cause sound to reverberate and resonate in a unique way, but also offer special architectural challenges, visual reference points, and built-in cultural associations. Composers have always made use of these, just to mention a few examples: Gregorian chant was created with the resonances and reverberation of a catacomb, church or monastery in mind. Giovanni Gabrieli developed his antiphonal music for the vast interior of San Marco in Venice (with brass groups or choirs situated in distant places or balconies or alcoves).

In my personal case *En pares* was conceived using the spatial separation of players for antiphonal effects. Although I was not experienced in the possibilities of using the acoustic space for certain kinds of *spatial effects* as in the previous examples, the idea of having two different groups of pairs of instruments one in front of the other made me reflect and think about how to develop a new musical language that would reflect acoustically speaking this stereophonic effect.

During the process of organising the musical material I realised that texture, sound colour, and the use of specific melodic motifs around the concept of dialogue became the essential structural elements in achieving my goal . As a result of this, it was the first time I used unique layered textures in terms of colour, function, and variation that become crucial structural elements during the compositional process. Furthermore I enjoyed the freedom to select and combine instruments purely according to my own imagination; from this departure I found new ways of orchestration in which I established different timbral and textural functional roles for musical speech.

Notes and References

[1] The concept of antiphonal music was much developed by the Venetian School during the late Renaissance period. By locating separate choruses in different places they opened up acoustic space in such a way that they could achieve, musically speaking, new sensory impressions due to directional effects.

[2] It is important to point out that *En pares* was set up to be heard live within a concert hall in order to perceive the stereo sound. However for obvious reasons the recording submitted in part II does not bring out this effect as ideally it should.

[3] Michael Rosas Cobian, *In pursuit of an electroacoustic aesthetic,* MA in Music, City University, London,1990, page 6.

[4] Paul Griffiths, *György Ligeti* Robson Books, London,1983, page 58.

[5] Stockhausen's famous acoustic spatial works are: *Gruppen* (1955-1957) for 3 orchestras requiring 3 conductors beating 3 different tempi, and *Carré* (1959-960) for 4 orchestras, 4 choruses, requires 4 conductors.

[6] In this specific case what I mean by polyphonic textures is the special function of creating interest in music through the internal movement of the different voices within the space, having an inherent aesthetic value of its own.

[7] The use of pairs of instruments, is the inspiration that lies behind the title of the piece.

[8] The following instrumentation of *En pares* includes: two flutes, two clarinets, two trumpets, two horns, two percussion players, two violins, two cellos and the only two single instruments: one double bass and one harp. Although they were the only single ones within the piece they were used as the others pair of instruments having the same musical function.

[9] Refer to full score and tape in order to follow the discussion in section 3.31. All page numbers in this chapter refer to the score.

[10] Although D is a focal pitch within the melodic and harmonic material, it is by no means a "tonic" in the tonal sense. The melody and harmonic chords may be centered around D, but it is not in "D major" or "D minor". However we could feel a kind of tonal flavour at the opening and at the end of the piece.

[11] Refer to section 3.32 for further explanation of these procedures.

[12] Refer to sections 3.33 and 3.34 for further explanation of harmonic movement techniques.

[13] I use the word *echotone* in order to create a sensation or illusion of *echo* distance on two levels: using quiet sustained chords in the background with their own internal movement of the different voices within the space, sounding along with definite melodic dialogue figures nearer at hand (see first page of the score).

[14] These new instrumental techniques include the use of extreme high or low registers, new timbral possibilities such as: *ponticello* (bowing near or on the bridge), various types of *pizzicato* and *col legno* (bowing with the wood of the bow on the strings) plus the use of *flutter-tongue, multiphonics* (two or more notes at once), and *key clicks* for wood winds and brass instruments among many others timbral effects.

[15] Refer to section 3.34 for further explanation about these procedures.

[16] The use of a 'light orchestration' refers to the idea of creating a transparent and clear orchestration in which we can identify the different textural layers, the colour variations, the *echotone* and *lontano* effects, and the stereophonic dialogues of the musical material.

Chapter 4 *Things like that happen* for cello and tape
Unexpected worlds of new cello sounds

I long for instruments obedient to my thought and which, with their contribution of a whole new world of unsuspected sounds, will lend themselves to the exigencies of my inner rhythm.

Edgard Varèse, in the periodical "391" June 1917

4.1 Introduction

In the Summer of 1992 I attended an electroacoustic composition course directed by Jonathan Harvey at the Dartington International Summer School where I had to write a piece for cello and tape in collaboration with students from the cello course of Frances Marie Uitti[1]. In order to gather sound material for the tape part we recorded live examples of Frances Marie Uitti playing and improvising different sounds often found with new cello techniques such as: harmonic glissandi on different strings, irregular sul-ponticello harmonics and non-harmonic glissandi, harmonic pizzicatos, glissandi pizzicatos, etc.

From that moment I became fascinated by the fact that she was playing not merely a catalogue of new sounds, but more important to me she was able to empower an abstract new cello sound with a highly human and dramatic shape. In other words every physical action of the performer became a choreographic gesture from which the sound took its own particular musical meaning within the infinite and vast sonorous resources of the instrument. She also established such a powerful physiological approach to the instrument that we could perceive an enchanted unity and balance between movement, sound, thought and language.

Perceiving this relationship between sound and drama with a deeply musical character, gave me a new musical experience that I had never had before. I encountered completely unexpected and novel notions about new combinations of texture, colour and nuance.

However, the most important fact I discovered was that she made the interpretative process equal in importance to the creative process.
When the limited amount of time came to work on these cello sounds, I realised that Frances' voice was present in most of the recordings, overlapping each musical example. It was then I came up with the possibility of integrating her voice into the piece by choosing specific phrases as part of the compositional material. Furthermore, these cello sounds were all electronically manipulated and transformed in such a way that they created a new magical and colourist sound world born in the cello, but not being it, thus giving the music a very particular nuance.

This sketch version of the work was presented at the Summer School but withdrawn subsequently. I always found that experience extremely rich and inspiring, to be further developed. A few months later when the opportunity arose, I decided to write a new cello and tape piece, extending and developing some of the sound material previously obtained plus new recordings that I had made of the cello playing of my Mexican friend Ina Velasco who was studing for a Masters Degree at the London College of Music.

While working on my solo tape piece *Five Micro-Etudes*, I had experimented with timbre and texture transformations on the one hand, and attacks and resonances on the other[2]. From then onwards, I realised that a great number

of the cello recordings used in my earlier version of the piece were perfectly suitable to help express these concepts, now found within the relationship between an acoustic instrument and the tape part. *Things like that happen* is the result of this experiment. The title is the last surviving memory of the recordings which included Frances Marie Uitti's voice, all others were eliminated.

Although this piece is the musical consolidation of all the ideas I had been exploring in my previous pieces, particularly in the tape piece, it is also the result of the compositional experience at Dartington, as it not only explores technical problems, but also shows new aesthetic means of expression within my own development as a composer. It is dedicated to Judith Mitchell who demonstrated further new cello techniques which proved to be invaluable during the compositional process.

Having the time to rehearse and discuss with Judith Mitchell those sections where I had sketched extended cello techniques using new combinations of sounds and textures, enriched enormously the developing process of the work. We both learned by exploring together some interesting possibilities for the instrument, also exploiting a great many wonderfully fruitful mistakes. In relation to this Robert Erickson says: "Much of the modern extended techniques of today's instrumental virtuosi is no more than the bringing of yesterday's mistakes under smooth, conscious, "on demand" control."[3]

Now I am convinced that if I compose solo pieces I have to work accounting for the talent and idiosyncrasies of the performer; moreover, the ideal situation for all composers is to pre-test the result , in that way we can learn from our errors improving immeasurably our work.

4.2 The relation of cello to tape

The main thrust of *Things like that happen* aims to delve into the expressive potential of the cello, interacting with a tape part that, though functioning in many different ways and as an unexpected new world, nevertheless emerges from the same musical material as the cello and, furthermore, acts as an extension of this instrument which throughout it all drives the work.

In contrast with the sound material of the tape part, the role of the live cello has been designed to express the main musical ideas proposed by the composer which most of the time do not make use of new cello techniques. In other words, the live cello represents the expressive, passionate, powerful and virtuosic side of the musical thought, whereas the tape part represents the magical, sonorous and unexpected world of new cello sounds. However, it is important to mention that there are two sections in which the cello plays using new techniques, where I specifically intend to create textures and timbral transformations in which the boundaries between the partnership would be freely crossed.

Throughout different sections of *Things like that happen* we can observe two main musical relationships between the tape part and the live instrument:
1 - Creating textures: in this first relationship the main idea is that the live cello part creates a similar texture to the tape part, by improvising with certain musical ideas suggested by the composer. The interesting combination and balance of the two parts creates a third new texture in which, though musical components depart from the same sound source, the final result is quite different thus enriching the listener's perspective.
2 - Rhythmic Sections: in this second relationship both the live cello and the

tape play with a very strict pulse, creating an instrumental dialogue of which the interaction makes the tape part work as an 'orchestral complement' while the live cello articulates the main musical discourse.

4.3 Principal electroacoustic material

For the tape part, I decided to use a great number of cello sounds, particularly those using new cello techniques. Because of their wide variety and richness I deliberately determined not to use other acoustic sound sources apart from the cello.

The following list shows the different cello sounds I recorded from Ina Velasco and Frances Marie Uitti:

1. Harmonic glissandi on different strings using regular and irregular motion.
2. Regular and irregular *sul-ponticello* harmonics (as in (1) but with changing colour).
3. Pizzicatos and pizzicato glissandi.
4. Harmonic pizzicatos and harmonic pizzicato glissandi.
5. Rhythmic patterns across the strings upwards and downwards using arco and pizzicato sounds freely improvised by the cellist.

When I started editing these cello sounds I realised that most of them were suitable for building complex textures, rhythmic functions using different loop points in the Akai S1000, and texture transformations (using the same acoustic source), etc. However this new challenge brought me new problems especially in certain sections throughout the piece where I wanted to use 'simple'[4] sounds on the tape to extend and reinforce the live cello part.

To clarify this problem such sounds were used to enhance melodic lines, to extend specific resonances of the live instrument or, as in the last rhythmic

section where they build a melodic counterpoint with the live cello part, creating the necessary tension towards the end of the piece.[5]

4.3.1 Sound material for specific textures

I decided while I was experimenting with the sound material that I wanted to build specific textures in which the listener would not be able to recognise the individual role of the live cello or the tape part but hear both together as the overall result. Cello sounds such as harmonic glissandi on different strings, regular and irregular glissandi, *sul-ponticello* harmonics, many kinds of different glissandi, changing the sound colour by being played across the strings in many kinds of different motions, were used specifically to create these complex textures.

During the recording session I asked Ina Velasco to start playing a harmonic glissando on the lower string and gradually change the sound. Subsequently I asked her to play simultaneously two notes in a different harmonic glissando and gradually move to another two notes independently, and not in parallel. In order to obtain a variety of colours she played the same effect with different colours (*sul-tasto* and *sul-ponticello*). In addition to experimenting and playing with different possibilities of timbre and pitch, we also tried experiments recording instrumental gestures. Within these sounds I found different loop points for specific rhythmic or melodic objects. This was meant to create different kinds of textures having their own particular flavour, inner rhythm and harmonic field.

The new result brought spectacular nuances in timbre, inner movement and colour. However, I heard physical limitations of range, polyphony and

loudness for which electroacoustic editing processes were ideally suited to extend and reinforce these parameters, creating new astonishingly beautiful soundscapes departing from the same acoustic sound source. In other words, some non-conventional cello sounds which could not be played with any certain degree of dexterity by a human performer were transformed and developed with the help of the sampler, creating an extended cello sound world within a new context . For example, we can imagine a giant orchestra of harmonic glissandi sounds being produced on every note of the chromatic scale. For this: a single harmonic glissandi sound was mixed with other harmonic glissandi sounds with different pitches producing a kind of choral effect, then by changing frequency, amplitude and pitch envelopes we can create a new sound even more rich and interesting in terms of timbre, shape and colour.

Resuming this concept, the basic strategy for composing both the live and tape parts of *Things like that happen*, was based on the idea of extending the acoustic properties and the possibilities of articulation and timbre of those sounds played by the performer using new cello techniques.

4.3.2 Sound material for timbre and texture transformations

In *Things like that happen* we can observe two different compositional strategies based upon timbre and texture transformations: the first one is produced by changing the timbre of a single sound through crossfading to another sound. In other words I change the timbre of a certain sound to a new one that, although in some cases coming from a different sound source, possesses a similar shape and behaviour to the first one. In the second one a whole texture is changed by introducing a new texture from a different

sound source but in which the musical behaviour is exactly the same as the previous one. For example in bars 33 to 37, page 4 of the score, while the live cello part fades out playing a series of demisemiquavers alternating two different notes, the tape part fades in changing the timbre by playing the exact pitches and rhythm, but using a different sound source (in this case synthesised sounds mixed together with cello pizzicato sounds) and with a different kind of articulation (non legato).

In most cases timbre and texture transformations are produced between the live cello part and the tape. In one way the synthesised sounds are the only ones that are used to extend specific resonances of the live instrument, but in another significant way they have been used to change subtly the timbre of single sounds with a definite pitch performed by the live instrument into new ones.

In another example (see the first entrance of the tape part, page 2 of the score) we can observe, firstly, how the tape part enhances the first attack of the D harmonic cello sound with a synthetic bell-like sound which has the same pitch as the cello, secondly how this bell-like sound acts as an acoustic extension of the live instrument and finally how this sound subtly transforms the timbre of the cello harmonic when this fades out while the synthesised sound gradually fades in.

Thanks to digital technology, we can understand and manipulate the inner substance of certain sounds that allow various possibilities of combination to create a number of transformations affecting their timbre and textural features. During this process, the combination of similar recognisable archetypes make the resulting sounds work with great subtlety and effectiveness.

The previous example shows us how I changed the timbre of a cello harmonic sound in the live part into a new cello sound on the tape having a specific internal loop and panning, and a very high transposition.

4.3.3 Sound material for rhythmic and melodic sections

One of the main aims in *Things like that happen* was to establish an instrumental emphasis on pitch and rhythmic relationships between the live cello and the tape part. For this purpose a great many synthesised sounds were used (sometimes in combination with cello sounds) to extend specific resonances, reinforce and enhance the melodic and rhythmic lines of the live instrument. In other words, the live cello and tape part create a dialogue of which the interaction makes the tape part work as an "electric orchestra" whereas the live cello articulates the main musical discourse.

The synthetic sounds used in this process re-create apparently real sounds, such as a wide variety of bell-like sounds, string pizzicato-like sounds, string orchestra-like sounds, and many different kinds of percussion-like sounds. A very clear example of this process appears in the last rhythmic section (score pages 14 to 16) where we can observe how the tape part builds a melodic counterpoint with the live cello part using bell-like sounds creating the necessary tension towards the end of the piece. In various cases the combination of synthetic sounds with pre-recorded cello sounds blends well creating the right sound quality for harmonic platforms or for those melodic and rhythmic sections where both the live cello and the tape part share the main musical material.

The next example (see bars 40 to 46, pages 5 to 6 of the score) illustrates how

the tape part has been designed to enrich every accented note of the live cello blending it with some pre-recorded cello strokes, some synthetic percussion-like sounds plus some synthetic string pizzicato-like sounds. In addition to this process the tape part also "imitates" the live cello part by playing in rhythmic and melodic unison.

Ultimately, It is important to mention that sound material for rhythmic and melodic sections also plays a significant role in terms of its location in space. As in my acoustic piece *En Pares* [6] where I used pairs of instruments located opposite each other in order to create a true antiphonal ('stereo') image using musical ideas based around this dialogue concept, in *Things like that happen* a similar effect is created with the tape part. Those melodic and rhythmic imitations of the live cello using bell-like sounds have been played between the two speakers creating a stereo dialogue in which we can perceive an inner movement of the musical material and a different perception of sound through its location in space.

4.4 Speculation: new aesthetic means of expression

Since I heard Frances Marie Uitti playing and improvising using new cello techniques my mind immediately began to generate musical ideas based upon new colours, timbre and texture transformations. When I started working on *Things like that happen* although I did not have a concrete idea about the kind of music I wanted to write, I was impatient to move forward and start experimenting using all the new cello sounds that I obtained from Ina Velasco and Frances Marie Uitti.

I spent many hours in the studio working towards a personal vocabulary of

musical gestures using those sounds that had attracted my attention. After a few weeks I came to the conclusion that the more I analysed the sound material for the tape the more I felt I had to write something different for the live cello: a fresh musical language based upon clear melodies and rhythmic patterns. To differentiate the role of each part I started the piece with an introduction for the live cello playing the main musical material to be further developed. The musical language designed for this section was based on the natural expressiveness of the instrument and with a flow of emotion carefully controlled in order to keep the listener dramatically oriented.

After composing the introduction a new problem arose in terms of the overall shape of the piece: how to integrate and get musical unity between two different worlds, one based on the development of musical material within a more conventional field but with enough personal idiosyncrasies to give it a special character, and the other more abstract and based upon new colours, and timbre and texture transformations.

Music conveys emotion and musical forms must reflect a logical development of these emotive communications within a gamut of different intensities, tensions and relaxations. However one of the cardinal problems remains to create formal unity . In the case of *Things like that happen* I had to find a common musical element between the two different worlds in order to get a real concept of synthesis and balance. For this purpose I used harmonic fields having in common the pitch note D which acts as a kind of anchor within each section of the work. I created a kind of tonal framework in which although the musical discourse develops in many different ways, a strong sense of a coherent harmonic region can, I believe, be felt. Even those sections in which I used texture transformations or a certain kind of musical material in which

conventional scalic movements were avoided, we can still identify this sense of tonality.

Things like that happen gravitates within the following main general harmonic field (see Figure 4.1).

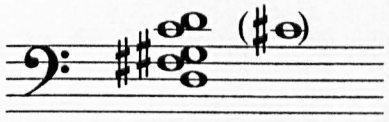


Figure 4.1: *Things like that happen*: Main harmonic field

I have always found it extremely difficult to separate technical issues from aesthetic goals. Within the process of writing music my own experience confirms that both aspects have to be developed simultaneously and interactively from the moment of genesis to the end. When I started *Things like that happen* two main aesthetic goals were in mind: on the one hand I had the idea of writing a kind of cello concerto with tape in which the live instrument would maintain the traditional role of the soloist interacting with the electronic part playing the role of the orchestra.

On the other hand, I was fascinated with the thought of exploring new means of expression through using the tape part to build exciting colours and textures, combined with spontaneous improvisations from the live cello aiming to create distinct waves of emotion. During the creative process these two main aspects were reflected in the overall shape of the piece giving it a unique kind of structural organisation sometimes closer to a *concerto grosso* form (I will explain this idea later on this chapter).

Moreover, I believe that a work using non-conventional musical material must

avoid conventional structures otherwise the final result will have a conflicting character. For example take the case of Julian Carrillo[7]. He found new ways of expression through the use of microtonal instruments playing microtonal intervals but within conventional structures, like *sonata* form, *minueto* form and so on. However, his musical language was not congruent with his musical structure organisation and the final product does not present a coherent musical discourse. Within my own experience as a composer all musical parameters such as: melody, harmony, rhythm and orchestration must reflect adequately the musical structure and the musical ideas developed in every piece.

4.5 Overall structure and its component sections[8]

I did not have a pre-conceived plan for the overall structure of the piece. The larger structural organisation came about as a result of experimenting and playing with the sound material, and developing different strategies in order to find possible links between the different sections of the work. I structured the piece into six different sections linked together by different kinds of texture or timbre transformations.

4.5.1 First Section: cello introduction (score page 1)

The piece starts with the cello introducing the main musical material to be further developed, it is divided into three parts (A, A', A") each having its own tempo and harmonic field (see Figure 4.2).

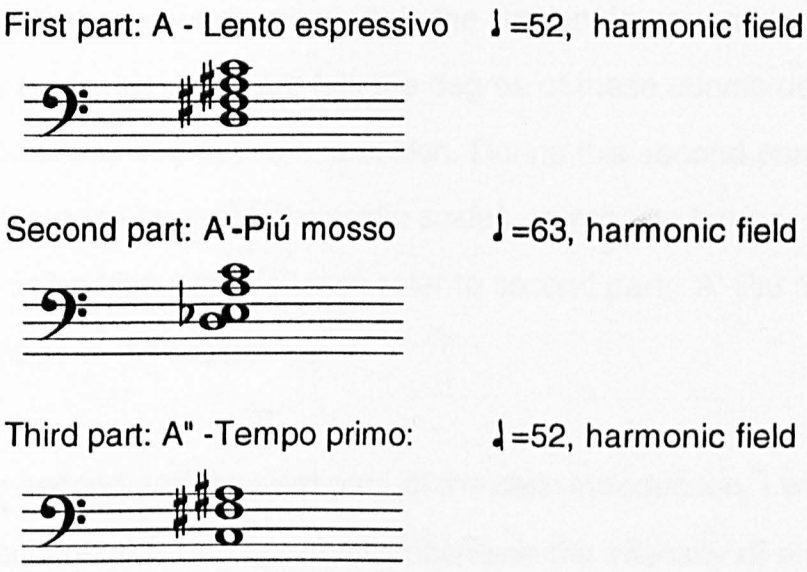


Figure 4.2: *Things like that happen*: Cello introduction's main tempi and harmonic fields

Although texture, colour and rhythm may be the main elements in other sections of the piece, the main factor in this cello introduction is the melodic line. Referring to the first page of the score we find that the basic melodic motif is rather simple but intended to be very effective in terms of the natural expressiveness of the instrument. The main idea for this section is based on the development of a series of melismatic melodies, growing out of the first motif which is built from the hesitant semitone movement Bb-A. After we hear this semitone movement, it expands to include a series of small chromatic scales, plus other different intervals having their own rhythmic propulsion, so that the whole first section has a complete unity growing from the small seed of the first two notes. My only reason for using quarter-tones is that I wanted to subtly change the colour of certain notes.

The same technique is applied to the second part of the cello introduction but this time the character (and the tempo) becomes one of strong emotive intensity that gradually increase the velocity, the dynamic and the register

achieving the first peak of emotion within the section. In general the music has emotive contours which rise and fall, the degree of these curves depends on the relative intensity of emotive expression. During this second part emotive intensity is achieved by rapid chromatic scales, increasing tempo, increasing volume and using high notes. Please refer to second part: A'-Piú mosso ♩ =63, first page of the score.

Between the second and the third part of the cello introduction, I wrote a transitional section in which I gradually decrease the intensity of emotive expression by introducing less melodic movement and decreasing the volume, speed and the register arriving at the same emotional character as at the beginning. Finally, the third part works as a kind of re-exposition of the main musical material and also prepares the right tension before the entrance of the tape part.

4.5.2 Second Section (second system of score page 2)

This section starts with the tape part presenting two different sounds within the same harmonic field as the live cello: the first is a synthetic sound which is combined with the live cello on the same pitch preparing the first timbre transformation,[9] by gradually fading in the second sound, a particular looped cello sound. In addition, the point of contact between the two sections forms the harmonic resolution of the last phrase of the solo cello introduction.

Following the first timbre transformation between the tape part and the live instrument, I introduce a new texture created with different harmonic glissandi on the cello plus the repetition of a small melodic pattern using bell-like sounds in the tape part. The main idea for the live cello is to create a texture

that should blend with the tape part using complex irrational and rational movements according to the creativity of the performer. Again, the second section has its own harmonic field and it links with the following one through another timbre transformation (score page 3).

4.5.3 Third Section: Energico (♩=60) (pages 3 to 7)

A perhaps surprising element which appears in the third section, is the incorporation of material with a very strict pulse. As in the final rhythmic section (bar 137) towards the end of the piece, rhythmic pulse becomes an important component of the musical discourse, whereas in other parts it is subdued and remains as a secondary feature. Indeed, the reason that I did not write bar lines in the cello introduction, was to leave the performer free to interpret the music with a sense of complete metrical freedom although duration values have been indicated. On the other hand, places in which the exact interaction between the tape part and the live part become essential for the whole musical discourse, a very strict regular pulse has to be used in order to synchronise rhythm and melody accurately.

The section is divided into three parts, linked together with new texture and timbre transformations:

1 - Development of the cello introduction material: first texture transformation.

2 - Development of first texture sound material: transition, pizzicato sound texture.

3 - Third new texture using sulponticello, harmonic glissandi and cello sounds: timbre transformation.

The material used in the first part was based on the continuous development of A' from the cello introduction. Some of the same chords, as well as rhythmic and melismatic melodic gestures, were used to create the same emotive context but with the addition of new melodic and rhythmic phrases keeping the same musical principles .

Moreover, I realised that the idea of alternating something familiar with something new serves to build small paragraphs or longer sections on the one hand, and renewing fresh interest and preserving unity on the other. In the old *concerto grosso* form this principle of statement and change is represented with the main orchestra or *tutti* playing the same musical substance, alternating with the solo *concertino* group playing something different, usually of a virtuoso character.

Although every piece of music is different and poses its own questions *Things like that happen* has something in common with the *concerto grosso* form. Firstly, those sections in which the tape part and the live cello build different kinds of textures can be related to the role of the orchestra or *tutti,* while secondly, the live cello part articulates a more conventional musical discourse similar to the solo *concertino* group although in this work both usually display a virtuoso character. Such alternations of musical sections establish the basis of the final structural organisation of the whole work.

First texture transformation (score page 4): the function of this texture transformation not only prepares the entrance of the tape part but also links the two sections by introducing one of the main rhythmic motifs to be further developed (see bars 33 to 36, page 4 of the score). Notice that the hesitant semitone movement appears again but within a different context, working as

one of the main unifying factors of the entire musical material.

Subsequently, part two departs from the simple development of the musical material of the previous texture transformation, in which the most important factor is the continuous repetition of the same rhythmic motif and the growing emotive intensity achieved by the increasing volume, and the increasing impetus created by expanding the hesitant semitone movement into leaps over 4ths, 5ths, 7ths and 9ths, etc. The role of the electronic part has been designed to enhance the different accented notes of the live cello, as well as reinforcing the same rhythmic motion by playing in unison using different kinds of percussion sounds (see bars 38 to 46, pages 5 to 6 of the score).

In conclusion this rhythmic driving force is interrupted by introducing a new timbral exploration produced with different looped pizzicato sounds on the tape, along with a new pizzicato melody played by the live cello. Moreover, this timbral exploration acts as a transition part towards the last looped sul-ponticello harmonics sound texture, which ends with the same timbre transformation as in the first section.

4.5.4 Fourth Section Molto espressivo ♩=55 (score pages 7-9)

In every piece the ebb and flow of emotion should be carefully controlled by changing and organising the character of the musical material into a convincing emotive path. Therefore the emotion of each section of the work must have its proper place and be allied to what has gone before and what follows.

The function of the fourth section is to create a new mood within a more

romantic and intimate atmosphere. In this way the new melodic development of the cello introduction as well as the tape part which creates the subtle and poetic harmonic background murmurs, offers to the listener a new musical landscape.Thanks to the static and sometimes slow-moving harmonies which create subtle tone-colours, the live cello interprets its own melismatic melodies with a complete sense of freedom without being worried about perfect synchronisation with the tape part (see Figure 4.3).

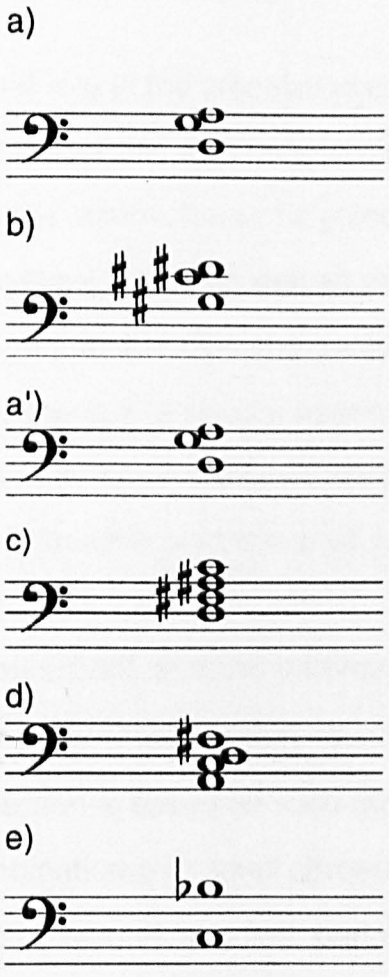


Figure 4.3: *Things like that happen*: Fourth section's main harmonic fields

Although this new development of material from the cello introduction keeps the essence of the same melismatic style, it has been developed mainly within the whole tone scale, giving it a new harmonic flavour. Besides, the electronic part paints the background mood and the harmonic platform, creating a translucent orchestral sound-world derived from the cello and the synthetic sounds.

4.5.5 Fifth Section Piú mosso ♩=60 (score pages 9-11)

Rhythm plays a fundamental role in the articulation of tension and relaxation, at the same time harmonic colour can also be associated with rhythms which themselves create the general atmosphere of a piece. In the case of *Things like that happen* simple rhythmic motifs as well as chords containing intervals of major 7ths, major 2nds, augmented 4ths and perfect 5ths persist almost throughout the whole work, giving it a special harmonic colour. These are often based upon a great variety of percussive cello sounds as well as other percussion sounds of indefinite pitch both sampled and synthesised.

Through the use of these persistent rhythmic and melodic motifs we can unify a long composition which moves through many moods and situations.
The character of the fifth section is based on such repetitive rhythmic and percussive patterns in combination with small chromatic scales derived from the same musical source (the second and first part of the cello introduction), in contrast to the fourth section the relationship between the tape part and the live cello is much more complex. This time the tape part plays with the same rhythmic musical material as the live cello, articulating a kind of orchestral dialogue using percussion sounds in which the performer has to follow the score strictly in order to remain accurately synchronised with the tape.

In conclusion, the real interest in this section lies in the rhythmic development through percussive treatment of the musical material of the live cello and its interaction with the tape part, which is also derived from the same musical principles creating consistent textures and colours. For example, the tape sometimes reinforces the top notes of the accented cello chords in order to emphasise those melodic contours within a consistent dialogue of different percussion sound-objects (see bars 99 to 107, pages 10 to 11 of the score). At the end of this section a new variation of the previous texture transformation serves to introduce the last new rhythmic -melodic motif of the work.

4.5.6 Sixth Section and Coda[10]

The new thematic material of this section comprises in summary form all the musical elements developed throughout the piece, such as the hesitant semitone movement, melismatic melodic phrases, short chromatic scales, rhythmic patterns and the same rhythmic driving force of the third and fifth sections which will culminate in a virtuosic coda, containing the highest peak of emotion within the whole work.

The following example illustrates how I have used those features within the new rhythmic-melodic motif. Firstly, we can observe the persistent semitone movement D-Eb; secondly, thanks to the repetition of the D note in the live cello in combination with the tape part playing a series of demisemiquavers alternating the same two notes (D-Eb), I was able to maintain the driving motion required and, finally, the alternation of rapid scalic movements with the tape part stressing certain notes of the live cello, gave to the section its own musical identity and a great sense of unity (see bars117 to 123, page 12 of the score).

Harmonically speaking, the last section gravitates within the same harmonic field as the previous, although some passages were built using certain modal inflections (see bars 124 to 127, pages 12 to 13 of the score). It is important to mention that the melodic development of the new motif and the coda has been constructed on the following harmonic scale (see Figure 4.4).

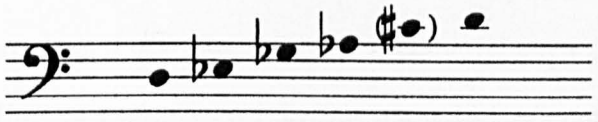


Figure 4.4: *Things like that happen*: Coda's new motif harmonic scale

I want to conclude this point by saying that thanks to the following elements, the last section plus the Coda develop in a more dramatic style reaching the highest climax towards the end of the piece:

1 - More elaborated interaction between the live cello and the tape part, in which both create an instrumental dialogue full of melodic and rhythmic imitation and counterpoint.

2 - Continuously increasing volume.

3 -The growth of rapid scalic movements.

4 - Increasing movement towards the high register.

4.6 Conclusion

Composing *Things like that happen* represents a new step within my development as a composer, especially because it was the first time I had been obliged to deal with two different aesthetic approaches within a single piece. In this way one of the most rewarding aspects of the compositional process was being able to find new strategies for linking the two different musical approaches without loosing the interest of the listener on the one

hand and preserving unity on the other. I used different strategies in order to achieve a coherent musical discourse. Likewise, I restricted myself to the minimum of sound sources (in this case the cello plus a limited number of synthetic sounds) to obtain the sound material for the tape part. Thanks to this procedure and its combination with the live cello I was able to give to the piece the sense of a strong unified timbre world encapsulating a main harmonic field. Moreover, I discovered new means of expression by writing and discovering different texture and timbre transformations within the relationship of an acoustic instrument and tape, but always within a personal vocabulary of musical gestures.

Things like that happen was a good opportunity to compose a score which, more than any other of my works, embodies the idea of achieving unity from the minimum of material as an essential element of musical discourse, but enriching it by composing a series of sections developing both structural elements in their own characteristic ways and different moods, and evolving the musical language to be rich and diversified. However, from my point of view, in musical evolution there always exists constant elements which remain immutable, in spite of the fluctuations and metamorphoses of musical language from one period to the next. Thanks to these transcendent principles we can achieve coherence in our musical speech.

Notes and References

[1] Frances Marie Uitti is one of the most outstanding cellists to have been working and developing new instrumental techniques for the cello, for example creating a new technique using two bows.

[2] Refer to Chapter 2 for a detailed explanation of these procedures.

[3]Robert Erickson: *Composing music* in:*Perspectives on musical aesthetics*, edited by Jhon Rahn London: W.W. Norton & Company 1994, page 171.

[4] I use the term 'simple' for those sounds that only have one specific pitch and one specific timbre. In the case of *Things like that happen* those sounds were produced with the help of a Yamaha TX802 synthesiser.

[5] For further explanation please refer to section 4.33.

[6] Refer to Chapter 3 for a detailed explanation of these procedures.

[7]Julian Carrilllo was born in Ahualulco, San Luis Potosi, Mexico, in 1875; he died in Mexico City in 1965. In 1902 he began experimenting with fractional tones developing a theory which he named *Sonido 13,* symbolically indicating divisions beyond the 12 notes of the chromatic scale. He further devised a special number notation for quarter-tones, eighth-tones, and sixteenth-tones, and constructed special instruments for performance of his music using these intervals, such as a harpzither with 97 strings to the octave. Carrrillo also published several books dealing with music of fractional tones, and edited a monthly magazine, *El Sonido 13,* in 1924-25.

[8] Refer to full score and tape in order to follow the discussion on general structure and its different sections. All page numbers in this chapter refer to the score.

[9] For further explanation about compositional strategies for timbre and texture transformations refer to section 4.32.

[10] Sixth Section and Coda starts on the third bar of the top system (see page 12 of the score).

Chapter 5 *Concierto Candela* for solo percussion player and orchestra

Inverting roles

We are composed of rhythms and surrounded by rhythms

Mickey Hart, "Drumming at the edge of magic"
Harper Collins, 1990, New York, NY.

5.1 Introduction

Concierto Candela, for solo percussion player and orchestra was composed in 1993 for a commission from the International Cervantino Festival and is dedicated to Ricardo Gallardo (Mexican percussionist) who gave its first performance in October of the same year.

When I accepted the invitation to write the piece I realised that I was confronted with the problem of composing for percussion instruments of which I had little compositional experience, and of having to consider these instruments within the context of a *concerto*. This refers to the idea of speculating how a solo role should develop and how to establish a relationship with the orchestra.

During the process of formulating musical ideas while trying to find various compositional strategies, the following thought came to my mind: for a very long time, within the historical Western music perspective, percussion instruments have been used to reinforce rhythmically a musical language based mainly on the development of melody and harmony in which rhythm was a secondary element. During the genesis of this concerto, I asked myself

whether I could invert the role models. I came up with the solution of using the orchestra as a rhythmic and colouristic platform upon which the solo percussion could develop its own musical discourse.

In terms of the wide variety of percussion instruments I decided to use only those which would give me the right sonorous balance between the soloist and the orchestra. Moreover, to create a rhythmic musical dialogue, I decided to use the orchestra as a giant percussion instrument. On the other hand, the percussion instruments assigned to the soloist in *Concierto Candela* showed different features: the wide rhythmic and dynamic range of the marimba, the sparsely used tuned cow bells, the impressive sonorous projection of nine different drums played closely together (congas, bongos and tom-toms), as well as the expressive range of Mexican pre-Hispanic instruments such as teponaxtlis.[1]

Finally, the main cohesive characteristic of the concerto is its expressive strength and relentless vigorous performance and adding to this piece those expression marks the Italians refer to as *con fuoco,* the Latin-Americans say *Candela!*

5.2 The role of percussion instruments and the orchestra as a rhythmic and colouristic platform

Previously in Western music percussion instruments were regarded as the 'noise-makers' of the orchestra, or were introduced occasionally for some special exotic or colouristic effect, but by the late twentieth century percussion has not only become an essential instrumental group equal in status to strings, woodwind, and brass, but frequently plays the major role in orchestral and ensemble music.

Besides, a rich colour spectrum has been one of the composer's most vital means of making music, and to him the vast variety of percussion sounds has been like a present from heaven. Percussion instruments are a rich source of fresh, new sounds of tremendous variety and emotive potential. So inevitably the last two decades have witnessed a big development .The percussion group has moved to a more prominent presence in the concert music context, and performers have made a tremendous change from being the worst musicians of the orchestra to playing the role of virtuosos.

In an unforeseen way, the percussion medium seems not only to have stimulated its own growth but has also had considerable influence on the development of some musical styles. In some concert music and especially in various brands of popular music, the previous dominant role of melody and harmony has declined. As never before rhythm has become one of the main structural elements of making music and percussion has also become the main protagonist. This concentration on percussive sonorities and the development of rhythmic structures was the central item of musical principle in writing *Concierto Candela.*

The roles of percussion so far discussed have to some extent been secondary ones, they have been mostly in support of the other three main orchestral groups: strings, woodwind, and brass. In *Concierto Candela* I decided that percussion instruments should function as an orchestral group on equal terms with strings, wood wind and brass. As a group they should not longer have a secondary role, but form a fourth orchestral dimension which could have just as many expressive potentialities as the other three. From that point of view I was able to extend and enrich my idea of using the orchestra as a colourist rhythmic platform in which we could perceive a whole dimension of unusual

richness and variety,[2] and upon which the solo percussionist could develop its own musical discourse.

The orchestra's role should function as a rhythmic body alone, or as a colourist textural platform, or merge with the soloist in many complex ways, building up changing orchestral textures. In other words, the orchestra's function has two main roles: to provide atmosphere and to complete the essence of the music.

5.3 The role of the soloist

The history of music is a history of performers continuously transcending what was thought to be the limits of performance practice. Just the simple existence of challenging scores, especially in twentieth century music, was enough to encourage a new breed of modern virtuosos who aim to extend the possibilities of performance. Music is now in an extreme situation: new music is often a music of extreme and unprecedented technical demands.

The rapid turnover in compositional technique was paralleled by rapid extensions of what could be expected from traditional instruments.
The revolution in performance practice has found vastly wider scope with percussionists in terms of their instruments, their techniques, and their musical importance. It is enough to note that a virtuoso percussionist could hardly have existed in Western music before the 1950s, whereas percussion ensembles and soloist are now a normal part of musical life.

A *concerto* is supposed to be a virtuoso piece. Particularly in the nineteenth century virtuosity has often been understood as the mastering of physical

technique required to control dextrously an instrument. I was interested in a different kind of virtuosity. In the case of *Concierto Candela* virtuosity consisted of being able to listen to a whole piece of music balancing the soloist and the orchestra. A sort of virtuosity of the ear and the brain, and not the mechanicity of muscles. In other words, technical performance practice has to be deeply related and developed according to the composer's musical creativity.

Besides the technical performing demands for the soloist in playing *Concierto Candela* (see the first movement *Marimba Candela*) one of the main difficulties is to convey a structure which relies, firstly, on exact rhythmic synchronicity between the soloist and the orchestra (see first and third movements) and secondly in understanding that the role of the percussionist is no longer primarily dynamic, rhythmic or melodic, (see second movement) but is essentially and often exclusively colouristic. Finally, the soloist role turns out to be occasionally virtuosic in the traditional way: the percussionist usually keeps the main musical discourse while the orchestra reinforces and interacts with it.

5.3.1 Choosing the solo percussion instruments

Percussion instruments can be rather dangerous. In some kind of music they could be out of place, in others they can be used with discretion. Elsewhere they may form the very core of the music. However, we must bear in mind that percussion must be employed in a way which is completely apt to each particular musical situation. This may seem obvious, but if we do not consider the exact role percussion should play in our music, the effect can be incongruous.

In *Concierto Candela* I wanted to explore and experiment with the following three main aspects:

1 - The emotive melodic-rhythmic potentiality of the marimba since this instrument has only entered into Western concert music comparatively recently, so the repertoire is still fairly limited.

2 - The use of characteristics of non common Western instruments, such as the expressive range of Mexican pre-Hispanic teponaxtlis,[3] plus the dynamic expressive particular sound of the Chinese cymbals and Chinese opera gongs.

3 - The impressive sonorous projection of nine different drums played closely together (congas, bongos, tom-toms and a pedal bass drum) plus the metallic quality of tuned cow bells and four tuned iron pipes.[4]

No less important than deciding what percussion instruments are most appropriate is the decision of how those instruments should be used. Each instrument suits a particular atmosphere. It can add something to music of that same atmosphere, but elsewhere it can be catastrophic. For example: in the third movement, *Toccata Candela,* I decided to use the wide dynamic and rhythmic projection of nine different drums, in order to express the rhythmical strength of the musical discourse. This idea was also reinforced with the brilliant sounds of the Chinese cymbals and opera gongs interacting with the brass section of the orchestra. In the second movement, *Candela Nocturna,* the Mexican teponaxtlis were used in order to obtain a mystic, pre-Hispanic sound colour for the kind of atmosphere desired. Moreover, all these possibilities then have made sound colour one of the most important frontiers to be explored by the modern composer.

5.3.2 Organising the stage layout

Not infrequently one sees percussion players looking over their shoulders to see the conductor, carrying sheets of music from one place to another, struggling round the back of the tubular bells to get a bass drum and so on. These inconveniences could be avoided by careful planning and thought on the composer's part. If the instruments are already located in the composer's mind when he writes the music, and the plan of this location is given to the percussionist by being reproduced in the score, the performer's movement problems might be solved.[5]

Before I wrote the piece, different aspects of the stage layout had to be considered:

1 - I had to bear in mind what kind of percussion instruments were chosen for the piece and the formal musical planning of how to use them.[6]

2 - Instruments had to be disposed so that the soloist has a minimum distance to move from one instrument to another.

3 - The soloist should not have to turn his back on the conductor while moving to an instrument or while playing it.

4 - I have been concerned with acoustical phenomena. This concept refers to getting the best physical acoustic balance between the soloist and the orchestra, besides the orchestration techniques,[7] and for which I had to plan and take into consideration the amount of space designed for the soloist, and its location along with the orchestra's layout.

Naturally, these remarks only apply to situations where a performer has to play a fair number of instruments. Otherwise problems are easily solved by the players themselves. In the case of *Concierto Candela* the stage layout has

been designed in the following way: multipercussion instruments for the second and third movements were located together on one side of the stage whereas the marimba for the first movement was located at the opposite side of the stage. (See page four of the score for the diagram of the stage layout for *Concierto Candela*).

5.3.3 Genesis of the Concierto's form

Concierto Candela is divided into three movements. The main idea is that each one explores different musical aspects of the selected percussion instruments, and from that point musical discourse takes its own formal development. (See page two of the score for the names and description of the three movements).

In general, at a very early stage I wanted to keep the role of the soloist the same as in traditional concertos: the soloist mostly plays the main musical substance. At the end of the piece he should show his virtuosity by playing a cadenza of his own. *Concierto Candela* differs from other Concertos in two different structural aspects. Firstly, the piece begins with a long virtuoso solo cadenza on the marimba presenting the musical material to be further developed. Secondly, the role of the soloist does not always develop the main musical discourse but in some cases should blend with the orchestra creating different colour textures affecting the structural principle in a different direction (see the second movement).

Furthermore every movement has its own internal structure and each one explores different emotional situations. For example, *Marimba Candela* comprises a musical discourse based on the expressiveness and

development of the technical resources of the marimba, like a *Concerto* within a *Concerto* '. In other words; it can be regarded as a small marimba concerto with its solo cadenza and developing a substantial virtuosic musical discourse. On the contrary, *Candela Nocturna* explores different sound colour textures within a 'magic nocturne' atmosphere. Lastly, *Toccata Candela* shows the virtuosic and vigorous rhythmic discourse of the soloist, interacting with the orchestra.

Ultimately form allows a sense of completeness in a work, one which can be grasped by the listener and held in memory. The fact that some modern music is quite unmemorable is sometimes a result of formal weakness. For me, the real importance of musical form is to make the listener understand that music is an emotive message; and good form ensures that the message is convincing, unified and complete. Furthermore, between our sense of beginning and of concluding we should be led on a journey which is not only logical but is also of continuous emotional interest.

5.4 First movement: *Marimba Candela.* A'*Concerto* within a *Concerto'*

The first movement can be regarded as a 'condensed' small *concerto* for marimba and orchestra. This is because it contains extensive development of the main musical material and it has, at the same time, the virtuoso characteristic of any other traditional concerto: brilliant contrasting themes exploiting different technical possibilities of the marimba, rapid scale passages, and a full solo cadenza.

5.4.1 Introduction

In *Concierto Candela* the Introduction uses material which will be developed in the main body of the music and the essential point is that it prepares for what is to come and is a unified part of it. The Introduction is divided in two main sections: the solo marimba cadenza and the orchestra's appearance.

The solo marimba cadenza contains the basic material from which the whole movement will be further developed. It also serves to establish the emotional character that will be present throughout the whole movement. It is divided into two parts and the first one is divided into two subsections.

a) Molto energico ♩=72 ca

First subsection:

The piece starts with the energetic development of the following motif (see Figure 5.1).

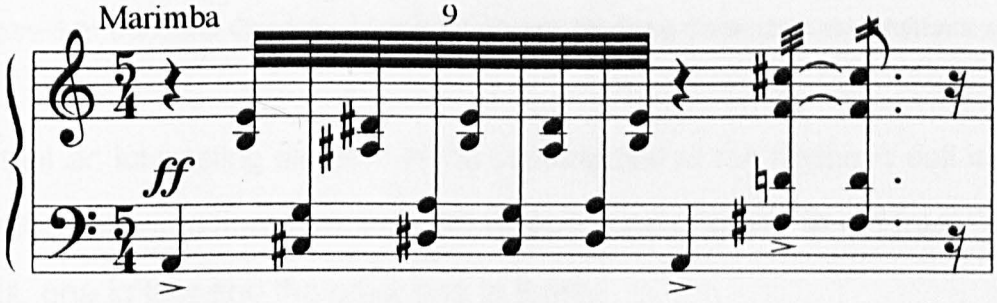


Figure 5.1: *Concierto Candela: Marimba Candela:* Main motif of the solo marimba Cadenza

This motif will be repeated several times, each time changing its pitch content and moving towards the high register. It is important to say that the bass line also works in the same way and moves chromatically until this motion breaks

into the highest register of the marimba (bar 11, page 2 of the score).

The overall harmonic colour in this passage is chromatic for various reasons: the main motif is constructed from the alternation of perfect 4ths and augmented 4ths moving in semitones, as well as the utilisation of various chords comprising different combinations of minor 3ths, major 6ths, minor 6ths, perfect 4ths and augmented 4ths that also move chromatically towards the high register. Finally the first subsection ends with the rapid descent of the material towards the lower register. When it comes to the lower register, a new rhythmic cell is repeated and transformed, slowing down, introducing the second part of the cadenza (see Figure 5.2).

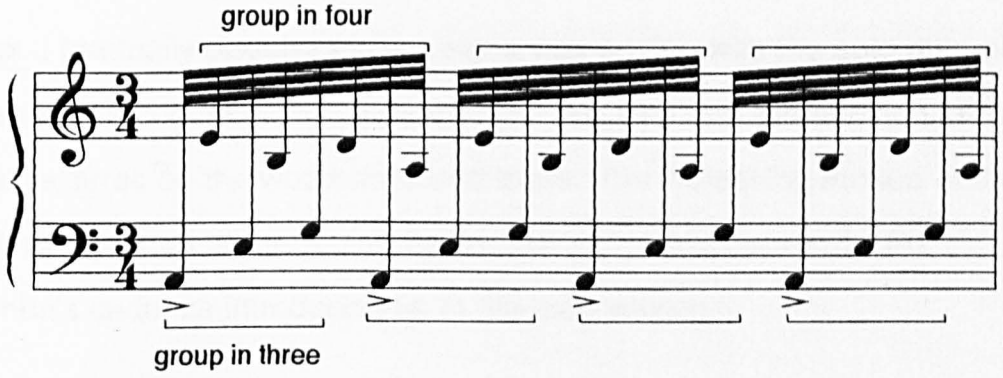


Figure 5.2: *Concierto Candela: Marimba Candela:* Marimba Cadenza's new rhythmic cell.

Note that an interesting element in the construction of the rhythmic cell is the alternation of two different melodic lines, each one phrased in different groups, one in four and the other one in three.

Second subsection: Tranquillo, Lisstesso tempo ♩=72

This subsection uses the same material as the first one except that this time the mood, the dynamic and the tempo have changed. The general atmosphere feels quieter and more relaxed. Rapid figures are avoided and

sustained chords take a leading role until the entrance of the orchestra. It is important to explain in detail the construction of the marimba's cadenza, as it introduces most of the material to be further developed.

b) The orchestra's appearance: Letter A lento ♩=80, bar 24, score page 2.

The smooth entrance of the strings blending with the marimba serves as a harmonic colour platform from which a big orchestral crescendo is constructed. The way in which this big crescendo builds, is through extending the harmonic chord with the gradual entrance of the different instruments, and by increasing the dynamic at the same time. When the crescendo reaches its climax it gradually dissolves in the same way ending with the solo marimba. The same procedure is then repeated but this time with the addition of new colour textures on the woodwinds and brass. The increasing motion of the whole new texture is interrupted by the same rhythmic pattern as the marimba's cadenza introducing us to the next section.

5.4.2 Allegro ♩=120, Letter B, bar 49, score page 8.

The section is divided into two parts, each one developing its own musical material.

a) First part in 2/4 (Letter B, score page 8)
This starts with the marimba playing the main musical material while the orchestra's function is to reinforce the harmony and some of the melodic and rhythmic passages. The organic rhythmic motif from which all the musical material comes, has been constructed with the repetition and variation of a series of rhythmic semiquaver melodic cells, moving in constant

motion through the different registers of the marimba (see Figure 5.3).

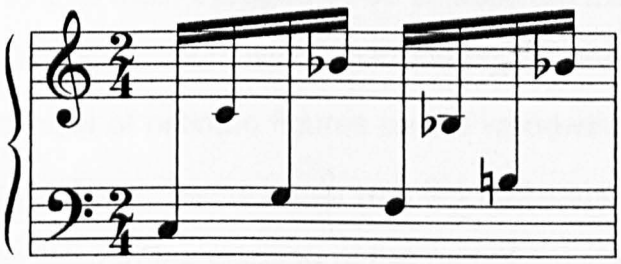


Figure 5.3: *Concierto Candela: Marimba Candela:* First part's main rhythmic-melodic motif.

In general the characteristic tone of the marimba is mellow and soft, yet with a a certain rich firmness. The lower register of the instrument in particular has a deep 'boom', which builds up when it is played in tremolos for example, creating a beautiful sustained tone colour. The upper register of the marimba has a less characteristic timbre, and lacks the firm full tone of the lower register. The possible changing colours of the marimba serve as the basis from which I developed as well the various orchestral colour changes.

One example refers to textural changes: as the marimba rhythmic texture changes with the use of the perfect 4th and the increasing movement of pitch content, the orchestral colour moves taking the same route with the addition of the brass and woodwind instruments, as well as some other timbral changes such as the use of pizzicato sound in the strings (see page 10 of the score). The piano, harp and percussion instruments were used in order to add special colours to the orchestra's textures. This passage concludes with the arrival of a big cadential climax between the orchestra and the marimba preparing the transitional section (see beginning of page 14 to page 17 for this passage).

The transitional section has been constructed through the development of different textural layers with the orchestra that could serve as a harmonic and rhythmic platform for the main dialogue to be established between the marimba and the orchestra's percussion instruments section. The two orchestral layers consist of ostinato figures on the woodwinds and sustained chords on the strings. These layers begin with the flutes and the first violins and gradually grow through the addition of the rest of the sectional instruments. At the same time the marimba interacts with percussive rhythmic ideas establishing a musical dialogue with the percussion instruments of the orchestra. By the end of this passage brass instruments begin reinforcing certain rhythmic attacks of this dialogue, whereas the other layers become more rich and complex thanks to the increasing internal musical activity (see letter D pages 17 to 22).

b) Second part in 7/8: Letter E, poco piu mosso ♩=132, score page 22.
One of the main features of the second part is the use of 7/8 metre in contrast to the previous 4/4, plus the use of a pentatonic scale for building the main musical material played with the soloist and the tutti of the orchestra (see Figure 5.4).

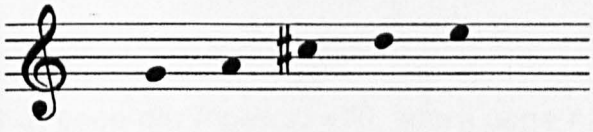


Figure 5.4: *Concierto Candela* : *Marimba Candela:* Pentatonic scale used for the second part

The whole tutti section serves to present in a brilliant way the first exposition of the main musical material: the marimba and the woodwind play the main

melodic line, whereas the bass clarinet, bassoons, timpani, cellos and double bass compliment with the bass harmonic line. Meanwhile, trumpets, percussion and the rest of the strings enhance the rhythmic accents along with the sustained harmonic platform formed from horns, trombones and tuba. When the section is finished the main musical material is presented again but in a softly different way: the marimba plays the melodic line alternating with the three notes of the bass line, and the orchestra's colour changes as well by reducing the instruments and the musical roles (see letter F, page 26).

The entrance of the brass instruments (bar 144, score page 28) serves as a transition passage for the next variation of the main musical material. The main feature for the next variation is the harmonic movement of the main musical material played on the marimba. At first it is presented using a whole-tone scale but little by little starts moving chromatically until the highest register of the instrument. The orchestra's role in this section serves to change the sound colour and reinforce and enrich the forward movement of the marimba. The tutti section of the orchestra serves to build the emotional tension that will lead us to the big cadential climax of the whole movement. This cadential passage finally resolves into the last tutti sustained chord that gradually dissolves into the solo marimba's transition section introducing us to the Coda (see letter H, page 34 to page 42).

5.4.3 Coda Letter J, poco piu mosso ♩=76, score page 42

The whole Coda is constructed around the repetition of a short rhythmic -melodic ostinato played on the marimba which is based on the whole tone scale. Although this ostinato does not use notes that are completely constant, as they change for melodic reasons, one has a general impression of

constancy through the unchanging movement and similarity in the overall shape, giving to the music a kind of hypnotic atmosphere. Finally, as the music progress the ostinato becomes smaller. The last ostinato note is taken away on each repetition until the marimba ends up playing only one single note. My aim was to bring the music to an end by shaping a long fade out and dying of the musical material.

5.5 Second movement: *Candela Nocturna.* Using a non-melodic percussion instrument within a slow movement

Tuned percussion instruments have established a leading position among percussion instruments because of their dual (melodic and colouristic) character. In this direction many composers have preferred to use keyboard percussion instruments to develop expressive melodic themes within peaceful slow music contexts.

In contrast with this idea, in *Candela Nocturna* I decided to treat 'melodically' a non-melodic percussion instrument. For this purpose, I chose two Mexican teponaxtlis each one with two different indefinite pitches, (four in total) which can nonetheless be clearly ordered, developing different ornamental melodic lines. But on the other hand, I chose the Mexican teponaxtlis because they offered a wide expressive timbral range from a very deep and dark soft sound, into a more brilliant and percussive one, depending on the mallets and the striking area.

I treated the soloist's different onrnamental-melodic lines in two different ways: sometimes having a solo role, appearing like small spots within the musical discourse (see score page 47, beginning of the second movement) but

sometimes blending with the percussion section of the orchestra creating interesting layered textures (see Letter A, page 50). In the middle section of the second movement, the soloist develops a kind of a chorale musical discourse by playing tremolo the two teponaxtlis alternating with the three Chinese cymbals, creating along with the orchestra a dark and mysterious ambience.

Finally, it is important to explain that although the two teponaxtlis were treated melodically in terms of their four notes, because of the design and development of the different short ornamental-melodic lines[8] and their interaction with the orchestra in creating different timbral textures, this made the final product essentially, and often exclusively, colouristic rather than dynamic, rhythmic or melodic. In other words, the musical material has no distinct melody and no thematic functions to perform.

5.5.1 The role of the orchestra

In relation to the previous idea, the orchestra's role is essentially colouristic. It creates and dissolves different ambiences, colour textures, harmonic colours and dynamic contours. In some passages of the movement the orchestra's function was to provide textural layers of melodically and rhythmically instrumental lines. One example is the passage following Letter A, score page 50, in which we can hear two main different colour textures: the first one comprises the soloist playing irregular phrases interacting with similar musical material from the timpani, 5 temple blocks and the xylophone sounding in the high register. All together these build a complex rhythmic texture with different wood sounds. The second one belongs to the brass section playing different pitches with their own irregular rhythms, providing the harmonic colour of the whole passage.

For the first part of *Candela Nocturna* (score page 47 to 57) colour texture becomes a focal element in the structure of the whole music, but in the next two sections the orchestra's role takes a different direction. Some times it plays the main musical material but at other times it enriches the timbre and plays the accompaniment to the soloist's main musical material.[9]

5.5.2 The structure

The second movement is divided into three main sections, each one developing different musical material, and a small coda that links the second movement with the third one.

a) First section: Lento espressivo ♩= 52 , score pages 47 to 57.
Colour texture has the leading role for structuring the first section.
Through the process of achieving my goal I had to bear in mind the following compositional strategies:
1 - I decided to use short irregular rhythmic-melodic phrases in order to develop a musical discourse in which we could concentrate our attention and memorability on timbre and textural changes rather than rhythmic or melodic ones.
2 - In relation to the previous point I designed different note-combinations of 'free chromaticism' avoiding any tonal suggestions.
3 - I wanted the musical movement to take the form of different colour and textural waves, developing logical emotive communications holding the listener and then releasing him.[10]
4 - I tried to evolve distinctive and evocative musical textures for which unorthodox methods of orchestration had to be considered. These departures involved: imaginative instrumental combinations of the different instrumental

sections of the orchestra, plus the use of extended instrumental techniques such as glissandos, timbre changes in the strings (pizzicato, col legno, sul tasto), different mutings, strings harmonics and so on. Using these procedures I was able to give the listener the nocturnal and magic atmosphere needed.

b) Second section: Letter C, Misterioso, score pages 57 to 66.
My aim was to start this section with a theme played on the timpani that could be perceived as a mysterious background, from which the soloist would freely develop a kind of a chorale musical discourse with the help of the four notes played on the two teponaxtlis. As the music progresses the theme on the timpani gradually becomes prominent rising through the combination of different instruments of the orchestra, from the lower register, an obscured and mysterious ambience, to the energetic and brilliant tutti unison in Piú mosso (♩=63), bar 64, page 65, of the score. Moreover, through the development of the second section, I wanted the theme to be transformed increasing the rhythmic activity and the tempo, along with the big orchestral crescendo. Because the theme starts with the four timpani it has been constructed using the following four notes that bring us the harmonic colour of the whole tone scale (see Figure 5.5).

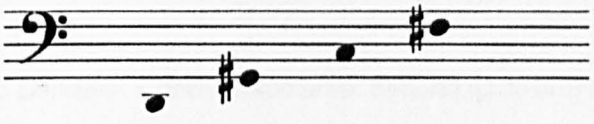


Figure 5.5: *Concierto Candela: Candela Nocturna:* Placement of the four notes for the Misterioso's theme.

Please note that at Letter D, Piu mosso (♩=58), score page 64, the soloist becomes part of the orchestra's unison theme, introducing a new metallic sound colour with the use of the 4 tuned iron pipes that contain the same four

notes . From my point of view, this new metallic sound serves as a colour link to the next part in which the soloist plays the tuned cow bells.

When the big orchestra's unison has been interrupted with the rapid ascendant scale's figure, the soloist changes the whole musical character by playing a new four bar rhythmic-melodic theme on the cow bells, using the following modal scale (see Figure 5.6).

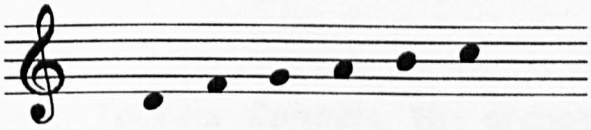


Figure 5.6: *Concierto Candela: Candela Nocturna:* First modal scale

This theme will be repeated three times, each one with new instrumental colours, until the arrival of a new variation of the rhythmic-melodic theme, now using the following jazz-like modal scale (see Figure 5.7).

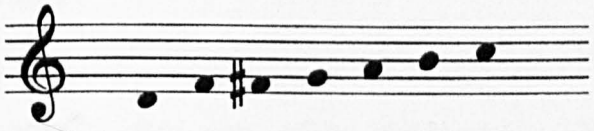


Figure 5.7:*Concierto Candela: Candela Nocturna:* Second (jazz-like) modal scale

This time, the theme is accompanied with a Latin-like ostinato on the strings. My idea was to superimpose two different things: the imaginary sound colour of a Gamelan orchestra[11] (thanks to the use of the rhythmic regular periodicity of the musical material as well as the metal sound colour of the cow bells), and the sound world of Latin 'salsa music'[12] using a similar rhythmic structure accompaniment.

As the music progresses new instruments become part of the musical discourse gradually expanding the orchestra's mass texture until Letter F (bar 101, score page 75). Within this passage the Latin-like ostinato accompaniment disappears and a few instruments such as flutes, oboes and clarinets along with glockenspiel, harp and piano play the rhythmic pulse whereas the rest of the orchestra play sustained notes. In the opposite way the orchestra's texture gradually becomes thinner until the last reexposition of the first ornamental-melodic line of the soloist playing the two teponaxtlis.

5.6 Third movement: *Toccata Candela.* The orchestra as a giant percussion instrument.

Naturally, not all music is based on a constant atmosphere. The very essence of many pieces is rapidly contrasting moods, contrasts which can be vivid and dramatic. Where strong colour contrasts are needed, it is rather important to preserve the element of surprise. In such a way percussion instruments have a magic power of allowing one kind of orchestral expression to merge smoothly into another.[13]

In the case of *Toccata Candela,* percussion instruments with their wide colour and dynamic spectrum, along with the orchestra, develop a musical discourse in which the essential feature is the rhythmic force and the insistent percussive metre that is always well to the fore, while melody and harmony, if present at all, have no notable role. In such a way, I conceived the orchestra as a giant percussion instrument providing a colourful rhythmic platform for the soloist to develop his own musical discourse. In order to achieve my goal, the orchestra took two main roles: to provide the expressive rhythmic strength of the music and to complete the essence of the soloist's role.

In relation to this it develops the following features:

a) It serves to provide the incisive rhythmic percussive pulse through the constant repetition of the quaver notes throughout the whole movement. This is a very prominent and essential feature of the musical statement and, without it , all the significance would disappear.

b) It helps to bring to the fore all the different percussive accents of the rhythmic platform, or the soloist's musical part.

c) It helps in building the different rhythmic-colour textures and the emotive intensity and dynamic of the strong rhythmic characteristic of the musical discourse.

5.6.1 Expressive strength and vigorous performance as the main cohesion characteristics.

As rhythm and rhythmic pulse recur in almost every bar they serve also as a unifying factor of the music which otherwise could be somewhat fragmentary. Furthermore, the orchestra's role, instead of developing contrasted musical passages of dramatic content which help to separate the sections played by the soloist, shares the essential rhythmic motion and expressive strength and vigorous performance of the overall musical material. This build a whole movement full of brilliant sound colour textures, as well as the brutal rhythmic strength of the musical development. However, it is important to mention that, within this movement, we find the traditional role of the orchestra in a solo concerto which consists of accompaniment, dialogue or orchestral tutti passages that help to structure the whole musical discourse.

Another important feature of *Toccata Candela* is that in both parts, the orchestra and the soloist, I tried to develop *virtuoso* musical ideas that also

contribute significantly to unifying the whole musical material. These compositional strategies comprise in the case of the orchestra two rapid energetic and rhythmic-melodic motifs which contain different intervalic movements such as augmented 4ths, major 7ths, minor 6ths etc. that in many ways make the music more difficult to perform. Moreover, by combining these motifs with various voices each one using the same rhythmic-melodic outline, I was able to construct rich and interesting complex polyphonic textures (see the orchestra's introduction; pages 80 to 89 of the score).

In the case of the soloist's part, the rhythmic main theme has been designed and distributed in such a way that the percussionist can show us the impressive sonorous projection of nine different drums played closely together (congas, bongos and tom-toms), developing various virtuosic rapid rhythmic figures.

5.6.2 The structure

Toccata Candela is divided into six sections including the solo Cadenza and the Coda.

a) First section: Orchestra solo introduction: Vivo 𝅗𝅥=240, Molto Energico, score page 80.

Toccata Candela starts with a virtuoso solo introduction with the orchestra establishing the strong rhythmic musical motion that will be present throughout the whole movement and from which most of the musical material will be further developed.

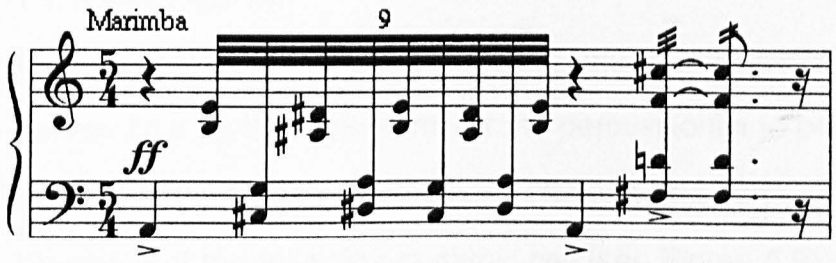
The organic seed of the introduction's musical material is presented in the first four bars of the Vivo (♩=240), Molto Energico, page 80 of the score. If we

analyse this carefully, the main introduction's motif has been constructed from two simple fundamental ideas: the first one is based on the rapid and virtuoso development of a series of quaver rhythmic-melodic cells built largely of augmented 4ths, major 7ths, major 3ths, and minor 6ths. The second one serves as a kind of harmonic 'instant repose' and resolution of those rhythmic-melodic cells. Furthermore it also gives the music dissonant harmonic colour and dramatic tension, thanks to the superimposition of the minor 2nds, minor 6ths, and minor 3rds.

The theme after its first presentation reaches its full potential by being transformed and developed taking the same initial route (that is by using similar quaver intervalic movements and different dissonant chords) developing the musical discourse to a toccata-like dramatic passage full of virtuosic tension and furious rhythmic strength.

After I composed the main introduction's theme I realised that its musical drawing shared the same construction principle with the one presented in the *Marimba Candela* solo introduction: both use the same harmonic instant repose and resolution after rapid virtuoso movement (see Figure 5.8).

a) *Marimba Candela* solo introduction's main rhythmic-melodic motif:



b) *Toccata Candela* introduction's main rhythmic-melodic motif:

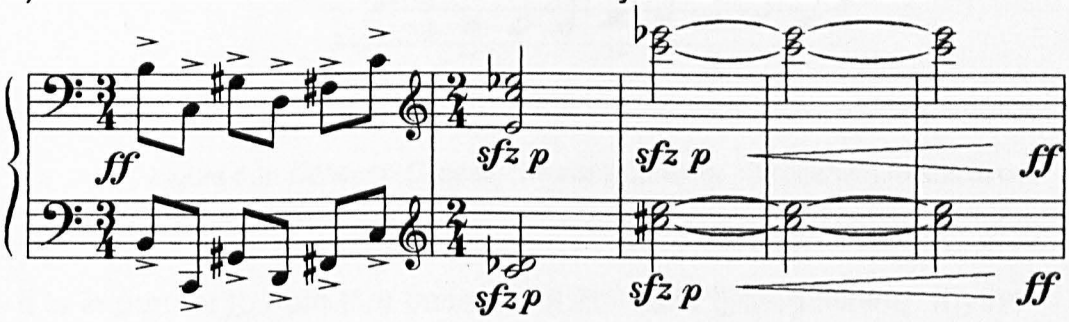


Figure 5.8: *Concierto Candela: Toccata Candela:* Similarities of the construction principles between the *Marimba Candela* solo introduction's main rhythmic-melodic motif and *Toccata Candela* introduction's main rhythmic-melodic motif

I think that this compositional process was a happy coincidence since I believe that although I started writing the third movement in a very spontaneous way, my mind at the same time was already processing and keeping musical information that was giving to the piece a unity in terms of its harmonic construction and rhythmic-melodic development.

Lastly, the introduction's main musical material develops by transforming and combining the main rhythmic-melodic cells through the various sections of the orchestra, keeping the same rhythmic-melodic outline, and constructing rich polyphonic textures.

b) Second section: Letter A, Meno mosso (♩ =184) Sempre ben marcato, bar 74, score page 89.

In this section the orchestra takes the role of giant percussion instrument that serves as a rhythmic platform for the percussionist to present his first musical material. The orchestra's rhythmic platform has been constructed around the repetition of the following rhythmic cell (see Figure 5.9).

Figure 5.9: *Concerto Candela* :*Toccata Candela:* Orchestra's rhythmic cell

It is important to note that because of the cell's distinguishing rhythmic design I was able to paint the general rhythmic background mood, persisting over the first solo presentation until it breaks off for the next definite colour change and mood. Furthermore, as the soloist's musical discourse becomes more complex and more intense, the orchestra's rhythmic platform develops in the same way enriching its colour texture and dramatic intensity until it breaks into a virtuoso rhythmic unison with the soloist (see Letter A, bar 74, page 89 to letter B, bar 103, page 94 of the score).

The soloist's main musical material consists of a virtuoso and distinctive rhythmic theme that gradually evolves a strong emotive expression contour by increasing musical activity, rhythm, and volume, achieving the first peak of emotion when it plays along with the orchestra the previous first rhythmic-melodic cell of the orchestra's introduction (see bar 95, page 92 of the score). Following the next few bars, the soloist and the orchestra develop a rhythmic dialogue in which they both interact by combining the two main motifs until the

virtuoso passage appears.

This rhythmic unison works in the following way: the string's role generates the intense and strong rhythmic platform, while the soloist develops the main rhythmic musical discourse. At the same time the rest of the orchestra (brass instruments, percussion and the piano) enhance the rhythmic accents creating a brutal emotional colour texture. After a couple of bars the rhythmic unison in suddenly dissolved by the decreasing dynamic and the disappearance of the brass and percussion instruments developing a transition passage into the third section.

c) Third section: Letter C, bar 145, score page 101.

The main feature of this section is that it is divided in to three structural layers. The first one belongs to the brass instruments and begins with the entrance and development of the following main rhythmic motif presented on the three trumpets (see Figure 5.10).

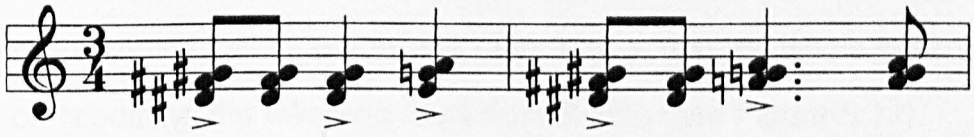


Figure 5.10: *Concierto Candela: Toccata Candela:* Main trumpet's rhythmic motif

This motif will be developed presenting various rhythmic variations but never loosing its vitality and rhythmic unity. At a later time, the trombones start playing and develop in the same way the same rhythmic motif, creating a complex polyphonic texture. Lastly, the four horns enrich the whole texture by reinforcing the harmonic colour and the various accents of the trumpets and trombones main musical material.

The second layer is developed through the soloist's rhythmic musical material along with the percussion section whose main function is to add to the whole passage a new rhythmic polyphonic texture with a distinctive brilliant metal sound colour, thanks to the unique sound of the Chinese opera gongs and cymbals along with the tam-tams played with metal beaters.

The third layer consists in reinforcing certain rhythmic accents of the other two, by using the woodwind instruments or the strings playing different colour sounds using various techniques such as pizzicato, sul-pont or col legno. The whole passage gradually becomes more rich and complex in terms of musical activity until the arrival of a new climax in which again both materials (third and first introduction's main motifs) interact together taking us to the last section before the solo Cadenza.

d) Fourth section, letter D, bar 186, page 109.
Like previous sections in which we observe the gradual process of building a climax within the orchestra's role, this new one works in the same way. However the main difference from the other two, is that the whole passage is based on repeating the following rhythmic ostinato (see Figure 5.11).

Figure 5.11: *Concierto Candela*: *Toccata Candela:* Fourth section's rhythmic ostinato

My idea was to focus attention on the process of growing and transforming the harmonic aspects and sound colours of a texture from the minimum musical

material, and always within a steady repetitive simple rhythmic ostinato fabric. This texture construction technique was very simple: the ostinato fabric of multiple voices gradually grows more complex as different instruments of the orchestra enter during the repetitions. Moreover these repetitions happen on a canonic texture, in other words the second entrance of the rhythmic ostinato happen on the third beat of the first one. In a similar way texture gradually dissolves as the instruments leave during repetitions until the rhythmic ostinato returns to its original state. Lastly the whole process serves as a rhythmic and colour platform from which the soloist freely develops some of the musical material presented at his first appearance (see pages 109 to 115).

e) Fifth section: solo Cadenza, Senza misura, Libre, score page 116.
The idea of the solo Cadenza as in many traditional concertos consist of the soloist summarising and playing the main musical material previously developed and showing at the same time the virtuosic aspect of the performance technique of the instrument. If we look at the solo Cadenza (page 116 of the score) we can observe that indeterminacy[14] has been considered a half-way stage to improvisation, in which the soloist has definite information on which to work with spontaneous free invention, confining the music's shape and duration within bounds determined by myself. The musical result therefore benefits the soloist's free inventiveness and spontaneity in performance, and maintains my own idea of the overall definition of the whole Cadenza.[15]

5.6.3 Coda Letter E, Tempo primo ♩=200, bar 233, score pages 117 to 121

In the opposite way to that of *Marimba Candela's* Coda, in this case the final Coda has been constructed on the idea of gradually building up a rhythmic pattern played on the nine different drums of the soloist. This additive process begins with the soloist playing the first beat of a bar and after some repetitions of the measure (repetitions vary between three to four times) a new note has been added affecting the rhythmic contour until the whole rhythmic pattern is completed. Meanwhile the orchestra's function is to provide the harmonic platform that gradually grows according to the incremental changes of the soloist rhythmic pattern. The intense and dramatic emotional crescendo of the whole texture ends with the tutti unison of the first motif of the *Toccata Candela's* introduction.

5.7 Conclusion

Through the process of writing *Concierto Candela* I realised that form in the final product developed under emotive communication 'waves' holding and then releasing the listener. The question I asked myself when I had finished the Concerto was how I had been able to create a long formal structure with this natural sense of a logical and flowing communication.

It is perhaps strange to understand that movement in the universe takes the form of waves, from the tiny vibrations within the atom and microscopic organisms to the electric pulses in the brain, the waves of the sea and so on. Musical form is not an exception to this natural law. Music is emotion and musical forms must move in waves of emotion. That was the point of departure in *Concierto Candela,* in which my own conception was to build different

emotional situations moving forward, holding a peak of tension, and then declining into relaxation ready to begin the next cycle. Although I did not have a complete plan of the emotive path of the whole work, the tranquil periods and emotive peaks found their right place, thanks to the logic and unity of the musical material development. A clear example of this happens if we just look at the structural musical organisation of the first and third movements:

1 - They both were developed departing from musical material presented at the beginning of the movement.

2 - They share similar features in their main motifs construction principle . (See Figure 5.9).

3 - They both use in their codas (although each one in the opposite way) growing or dissolving construction processes.

In the overall result and from an extended point of view, the first and third movements represent periods of a more complex tension while the second movement was conceived as a more introspective and long-breathed section. Lastly, it is important to understand how vital it is to trust and leave the music to grow through our own ears, in such a way that we can find the internal logical process of writing.

Furthermore, in *Concierto Candela* I did not want to try to develop compositional processes which the listener's ear could not follow. I preferred to work with processes that were audible. These involved extended repetition of deliberately limited material, within which a series of changes and variations evolve. If there is no repeated musical material we could find ourselves with something which, however distinguished, is not distinguishable, and which is therefore of questionable value. Perhaps the great tragedy of modern music is that, despite an evolution of the musical language to a state of extreme refinement and complexity, the results are less significant from a human point of view.

Notes and References

[1] One of the two most important instruments used in prehispanic Mexico is the teponaxtli. The teponaxtli is a section of tree trunk which has been hollowed out in its lower part with one or two tongues of an 'H' shaped incision cut into the wood. Both ends of the instrument are often carved with ornamental motifs. The length of the teponaxtli may vary from 25cm to one metre. The shape of the tongues is generally rectangular, with sections of altering thickness. For instance, the tongues are thicker toward the open end in order to obtain a deeper sonority, and thinner at the opposite, or fixed end, which gives elasticity and allows for an easier vibration of the tongue when struck. The prehispanic teponaxtlis were usually tuned to intervals that ranged from a major third to a perfect fifth. Many of the terms used by prehispanic cultures to name this instrument refer to the kind of wood used in its construction. A great variety of woods have been used to make teponaxtlis. Amongst them, walnut, oak, and rosewood, plus some other types of wood that varied according to regional availability.
Playing technique: Pictorial representation and documentary evidence show that the performance of these instruments consisted in the striking of the two tongues with a pair of wooden mallets. These were generally wrapped with rubber at the striking ends. The type of grip of the sticks can be observed both in codices and in present day performances by indigenous players.

[2] Neither the string, woodwind nor brass groups have such varied colour resources and sound effects as the percussion does. Percussion groups are so rich and have so many different potentialities that can be sub-divided into metals, woods and membranes each either tuned or of indefinite pitch that can be used alone or in various combinations.

[3] Some percussion instruments are closely identified with certain regions or peoples. Their sounds certainly evoke suggestions of their origins. Although in most cases these regional instruments are used in concert music in such a way that their sounds have no suggestion whatsoever of local colour, it is nevertheless true that in the right circumstances they can be the most powerful means of evoking atmospheres associated with the lands where they originated. This is exactly the case in using prehispanic teponaxtlis in *Concierto Candela*.

[4] See the soloist performance notes on page three of the score for the distribution of the different percussion instruments.

[5] Early examples of this procedure belong to Luciano Berio with his piece *Circles* for two percussionists, harp and soprano. By evolving an original instrumental layout, he was able to write some ingenious percussion music which could hardly be played in any other way.

[6] For further explanation please refer to section 5.2.

[7] In the first movement: *Marimba Candela*, what I did to obtain a good balance between the marimba and the orchestra was to use wind instruments of the orchestra to reinforce melodically and rhythmically the main musical discourse of the marimba. This involved two different rhythmic relationships-homophonic (see letter E page 22 of the score) and more contrapuntal (see page 33 of the score).

[8] The main characteristic of the various ornamental-melodic lines, is their irregular complex rhythmic construction. They are composed in such a way that they could be heard in most cases, as a part of a colour texture, more than developing a leading musical discourse in a traditional way.

[9] For further explanation please refer to section 5.5.2

[10] Music evokes emotion, and musical forms, however free, must move in waves of emotion. The composer's conception moves forward, hold a peak of tension, and decline into relaxation, ready to begin the next cycle.

[11] The Gamelan orchestra's metal instruments comprise suspended gongs, gongs set pot like in a rack, the bonang family, along with two different kinds of metallophones: *saron* family (metallophones of up to seven metal bars, or keys) and *gender* family (metallophones of metal bars with tubular resonators under them).

[12] Since the1940s, modern Cuban dance music, especially the *son,* provided the basis for the *mambo* and *rumba* crazes in the USA and Africa, and continues to constitute the backbone of the music called *salsa.* The *son* 's vitality and importance, indeed, stemmed from its dynamic synthesis of European and Afro-Cuban elements, to the extent that it eventually became recognised as the preeminent national genre of Cuba.

[13] On the last score page (79) of *Candela Nocturna* we can observe how the percussion section of the orchestra serves as a link between the second and third movements, and emerges from the very soft dynamic blending with the soloist's last chord, into a violent crescendo that will be resolved in the first beat of the third movement.

[14] Indeterminacy within a contemporary music context usually entails leaving some aspect of music in an undefined state, to be resolved through the player's own invention.

[15] Being more specific I used conventional notation on the understanding that note-values functioned as an approximate suggestion of duration. The soloist has to play freely, and interpret the notation according to the music's context and his own point of view.

Chapter 6 *Altar de Muertos,* a staged piece for string quartet

The internal search between the real and the magical

"To talk about death in Mexico is to refer to something we live with every moment of our existence: it is something that is with us all the time; in our music, in our poetry and in all our attitudes towards life"

Eduardo Matos Moctezuma
Artes de Mexico no. 145 1971, Mexico D.F.

6.1 Genesis of the piece

Altar de Muertos, a staged piece for string quartet, was commissioned for the Kronos Quartet by Inroads, a program of Arts International with funds from The Ford Foundation, The Multi-Arts Production Fund of The Rockefeller Foundation, and the Festival Cervantino in Mexico.

The genesis for the work arose from a meeting in Mexico City with the Kronos Quartet's first violin player David Harrington, who is its artistic director. During the conversation David mentioned to me that his son Adam Harrington, had just passed away a few months previously. Since such a painful experience he has been obsessed with the concept of death in many different cultures and especially the *Day of the Dead* in Mexico,[1] in which we observe how Mexicans consider death to be a natural part of life and view it with resignation, humour and even affection. Because the predominant atmosphere is that of a festival, with music and dancing playing an important part, he asked me if I would be interested in writing a multimedia piece[2] about the *Day of the Dead* in Mexico, since the Kronos Quartet specialised in incorporating extra-musical elements into their performances[3] .

To enrich the whole idea he mentioned to me two musical examples to illustrate the kind of work he had in mind.

In his first example he talked about the Kronos' staged version of George Crumb's *Black Angels* for electric string quartet.[4] Within the context of the piece they experimented with visual stimuli such as lighting, performance of the instruments (in certain passages) hanging from a rope, and the creative use of the physical space (playing and moving in different places on the stage) to achieve a unique and dramatic version.

His second example was the successful Kronos collaboration with Tan Dun for his *Ghost Opera* for string quartet with water, stones, paper and metal. This multimedia work is considered as a reflection of human spirituality, combining elements from the past, present, future and the eternal elements from Chinese, Tibetan, English and American cultures, as well as the performance tradition of the European classical concert, Chinese shadow puppet theatre, visual art installations, folk music, dramatic theatre and shamanistic ritual. The Kronos version of *Ghost Opera* involves a creative art installation that employs paper, shadow and watergong basins placed around the theatre, as well as a creative use of the physical space.

The idea of writing a piece about the *Day of the Dead* in Mexico sounded very attractive and interesting, but at the same time I felt apprehensive at working on a multimedia project since such concepts and technical issues were totally new to my own compositional work. However I took this opportunity to enrich my professional experience and extend my own concept of "ritual performance" understanding how important it could be when non-aural stimuli become powerful tools of the dramatic musical discourse.

Altar de Muertos is a piece that uses visual stimuli in order to enrich the understanding of its dramatic content, the purely musical substance was always maintained at a high level of interest with full relevant meaning. I wanted to write a composition that would work both as an intrinsic part of a dramatic concept - in this case the concept of death in Mexico - fully integrated into its structure, and as music that could also be listened to and understood on its own. *Altar de Muertos* is submitted here as pure music although dramatic concepts and extra-musical elements are fully explained in order to understand the creative essence of the work. In that way it may be solely assessed from this point of view.

6.2 Introduction

> *... death revenges us against life, stripping it of all its vanities and pretensions and showing it for what it is: some bare bones and dreadful grimace....*
> *Skulls made of sugar or tissue paper, painted skeletons hung with fireworks, our popular representations of death always mock at life: they are the affirmation of the nothingness and insignificance of human existence. We decorate our houses with skulls and on the Day of the Dead we eat bread in the form of bones and enjoy the songs and jokes in which bald death has the laughs; but all this swaggering familiarity does nothing to rid us of the question we all have to ask: 'What is death?'*
>
> *Octavio Paz .*
> *El laberinto de la soledad (1959)*

Mexican culture developed principally under two major influences: the heritage of European culture brought by the Spanish, and pre-Hispanic culture inherited from the nations who lived on Mexican territory for thousands of years before the arrival of the Spanish. Contemporary Mexican culture still shows the strong influence of customs and traditions of pre-Hispanic origin. One of the strongest manifestations of this influence is found in the concept of death. To talk about death in Mexico is to refer to something we live with at every moment of our existence; it is something that is with us all the time; in

our music, in our poetry, in our fiestas, our games, our loves, our thoughts and all our attitudes towards life. Death is present everywhere; we are fascinated by death.

Unlike European culture, death for the Mexican people is approached in such a way that is not considered as only a tragic event. The passing away of a relative or friend is sad indeed, but sadness is only one of the many feelings experienced during this occasion. When someone dies there is celebration, which is in fact a celebration of life, the life that the deceased one is about to start and the life still present in all those who shared his/her company previously.

In order to celebrate the 'departure' of relatives, Mexicans have an important celebration called *Día de Muertos* (the Day of the Dead). This important date could be considered as the 'birthday' of dead people, and with such an occasion (as in any birthday) there is a celebration in which friends gather in the graveyards where their relatives are buried. There are flowers of *cempoalxochitl* [5] which means 'flower of the dead', food, music; a kind of incense named *copal*,[6] which has come down from pre-Hispanic culture is burnt, the company are brought together and the spirit of the absent person is felt by everyone attending the party.

Mexicans assume a number of different attitudes in relation to death and celebrate it in many different ways. For example during this time (November 1st and 2nd) there is second way of remembering and celebrating deceased people. In private homes families set up beautiful offerings made of flowers, fruits, candles, special foods and drinks, all of them displayed on a table resembling an altar. The purpose of this offering, called *Altar de Muertos* ,

(Altar of the dead) allows the spirits of deceased relatives and friends to pay a visit and help themselves to their favourite food, drinks and anything that they like and enjoyed in their previous life. In order for the dead to find their way to the altar, a path of *cempoalxochitl* petals is traced from the entrance of the house to the altar. Moreover, during the festival, associated artefacts are produced by artists and craftsmen. These may be as ephemeral as tiny toys or sugar skulls eaten by children, or as monumental as huge papier mâché skeletons and brilliantly coloured pottery trees of life.

The tradition described above gave me strong musical ideas to develop a piece which shared many of the elements (both real and surreal) found in the celebration of the *Day of the Dead.* Just as with the altar of the dead, when we remember our people by offering them goods that they symbolically share with us, the piece *Altar de Muertos,* is also an offering with much symbolic meaning. It is a journey of exploration seeking the roots of the conception of death in Mexico from past to the present. Its ideas could reflect the internal search between the real and the magical, a duality always present in Mexican culture, from the past to the present.

6.3 Theatre and multimedia

Before I decided to start work on the piece it was necessary to understand better the meaning of multimedia and theatre within the context of contemporary concert music. Every live musical performance, whether avant-garde or traditional, is to some extent both a theatrical and multimedia event. This is obviously true of such genres as opera or ballet, but even an orchestral or chamber music performance involves movement, physical space, singing or speaking and so on. We could say that all music is by nature theatre, that all performance is drama.

Nevertheless, within the development of the context of concert music, music has been isolated from extraneous visual and aural stimuli and from any outward physical expression not required to perform it. If we go back, we realise that the visual dimension of music is no new phenomenon. Since early civilisations, music has been a part of ritual in religious celebrations and pageantry, music, action, and audience reaction have been closely bound together. It is therefore logical to extend modern music through visual interest, and try to evoke audience response of a more direct nature.

This raises questions such as: how vital are the non-aural stimuli (visual and social) that once were embedded in musical discourse (and still are in many cultures)? How important are human factors and other predictable aspects of live performance? Should a musical composition be a permanent object, exactly the same every time one encounters it?

Such questions have led many composers to focus attention on theatrical dimension inherent in all music. In other words, the dynamics of recent musical evolution have led composers to consciously explore those performance elements which extend beyond the realm of 'pure music' and sound. These performance elements can be included in the category of theatre and multimedia and they include:

a) Visual stimuli, such as lighting, film, slides, or video.

b) Motion or speech on the part of the musical performers themselves.

c) Physical objects ranging from everyday items to sculpture, painting, and other forms of visual art.

d) The creative use of physical space, such as the unusual placement or movement of sound sources - performers or loudspeakers - throughout a performance area.

e) Audience participation in the performance and /or composition of a work.

My idea when writing *Altar de Muertos* was very clear from the very beginning: I wanted to have the musical substance maintained at a high level with relevant meaning. My own concept of the extra musical dimension (music as vision, as well as sound) was subordinated to the dramatic forces of the music itself. In other words, the exploration of new sonorities within a personal musical language becomes the first priority and it develops through a deep association with a subject or ideal in this specific case - the concept of death in Mexico from the past to the present. Then the visual and theatrical ingredient is a welcome and inevitable outgrowth. The quality of theatre such as visual lighting effects, physical objects such as candles, flowers, masks, etc. as well as the development of a special staged design, added to the music much more communication of intended meaning. However I always tried to be careful that if the music was allowed to expand too much in its 'visual dimension', if its substance in sound falls into superficiality, its quality may be highly questionable.

6.3.1 Structural dramatic concepts

The way in which I conceived the whole work dramatically speaking, was that the music becomes the offering itself and the stage becomes the altar. Visual stimuli within a formal concert setting help the audience to perceive and understand the musical meaning with an extraordinary impact.
I decided to divide the piece into four parts, each one describing diverse moods, traditions and the spiritual worlds which shape the global concept of death in Mexico, plus my own personal concept of death. Let us examine the dramatic concepts from which I developed the four different movements:

1 - First movement: *Ofrenda* (offering)

This part describes the entrance of four musicians one by one to the stage, representing the arrival of four spirits to an altar. Their way is guided by paths of petals displayed on the stage floor. Each one lights a candle (the altar is decorated with candles) and sings his/her own *Ofrenda,* a solo part with his/her instrument, while the others accompany these chants playing the *Baa-Wehai* (Mexican dried water gourds)[7] giving the idea of a funeral procession. Towards the end of this movement, the four spirits converge in a single chant to end the funeral procession. The whole idea is to capture the intimate, dramatic and ritual atmosphere existing around death in Mexican culture.

2 - Second movement: *Mictlan* (the place of the dead)

The 'Legend of the Suns' tell us about those cycles which are merely a small part of the eternal struggle between night and day, that is, between the god Tezcatlipoca and the god Quetzalcoatl. That is, how the sun is fed so that it will always give us its energy in which blood is the essential element, the generator of movement. Death becomes the germ of life. Friar Sahagún presents another story: he tells us that upon dying, individuals could go to different places; hence warriors would go to join the sun and after four years turn into beautiful birds with fine feathers. It also seems that women dying during birth accompanied the sun in part of their voyage through eternity. They disappeared at the end of a certain period, to return to the undifferentiated country of shadows, to be melted into the air, the earth, the fire, the animating substance of the universe. On the other hand, when going to Mictlan, it was necessary to take a long road full of dangers and menaces. However the appearance of humanity on earth is precisely as a result of the visit of Quetzalcoatl to Mictlan where he pleads to the Mictlantehcutli for bones of his ancestors. Quetzatcoatl picks up the bones and leaves tripping and

falling to the ground where the bones are all dispersed. He finally manages to emerge from Mictlan and pours his blood on them; meanwhile, the gods waited in penitence, and thus was humanity created.

As we can see, pre-Hispanic culture conceived death as a cycle in constant movement; a cycle where life is extended towards death and vice versa when death becomes the essence of life itself. The passage of death, and the eternal struggle between night and day recreate an obsessive ritual music always in continuous movement in which starting and ending points are always bonded. In order to enhance the rhythmic strength of the obsessive ritual conception of the music, performers attach an instrument called *Huesos de fraile* (Friar's bones)[8] to one of their ankles and play them every time an accent is marked on the score.

3 -Third movement: *Danza Macabra* (danse macabre)

One central theme of different arts expressions during the XIV through the XVI centuries in all Europe was the *danse macabre* ; that is, the remembrance of the constant alternative between glory or hell. Death, in this conception is not dynamic. It is static, without movement. With the Spanish conquest Mexicans discovered this entirely different situation: a people filled with a dread of hellfire and consequently a fear of death: angels and devils fought tenaciously for the possession of souls. In this last spectacle people dance with skeletons as a reminder to those dedicated to a carefree pursuit of earthly passions that death may come unexpectedly at any moment and that they should give thought to their salvation.

Musically speaking, I tried to represent the advent of European culture into Mexico and Mesoamerica, that brought an image of death which is static,

motionless, where there is only place for a constant alternative between glory and hell. Therefore the music is nourished from fantastic images taking place one after another. Phantasmagoria and magic are always present.To visually enrich the previous idea, shadow lighting of the performers' movements have to be projected around the walls of the stage creating strange phantasmagoric figures.

4 -Fourth movement: *La Calaca* (the skeleton)

Mexicans today are still tormented with the thought of dying, just as all humanity from the beginning of the world; but, unlike most other peoples, Mexicans face death; they make fun of it, play with it to try to forget about it. Octavio Paz says:

> "In certain fiestas the very notion of order disappears. Respectable people put away the dignified expressions and conservative clothes that isolate them, dress up in gaudy colours, hide behind a mask, and escape from themselves. Everything is united; good and evil, day and night, the sacred and the profane.
> The fiesta is a cosmic experiment, an experiment in disorder, reuniting contradictory elements and principles in order to bring about a renaissance of life. Ritual death promotes a rebirth. Our fiestas are explosions. Life and death, joy and sorrow, music and mere noise are united, not to re-create or recognise themselves, but to swallow each other up. Everything - music, love, friendship - ends in tumult and violence".[9]

The idea of syncretism and the concept of death in modern Mexico, chaos and the richness of multiple symbols, where the duality of life is always present, sacred and profane, good and evil, night and day, joy and sorrow all these inspired me to write a movement in which I could reflect a musical world full of joy, vitality and a great expressive force. In order to represent the syncretism and the surreal concept of death in modern Mexico, each musician has to put a Mexican mask on.

6.3.2 Stage and lighting design

As I mentioned above, I wanted to transform the concert stage into an altar, and the music and the musicians becoming the *ofrenda*. After many conversations with the Mexican artist Leonor Salazar[10] she came up with the visual idea of picking up one of the main elements of the traditional *ofrenda* of the day of the dead in Mexico. These traditional altars are decorated with flowers of *cempoalxochitl* and with tissue paper cutouts called *papel picado*. These last are cut in ornate and allusive designs and are sometimes backed up with foil or tissue paper of a contrasting colour.

Leonor's visual solution was to design a large sheet of *papel picado* set up as a carpet, so that the staging would become the altar and the music plus the musicians performing on their own instruments, the *ofrenda*. The idea was that the musicians should be placed on top of the carpet with a small platform underneath to mark their positions. The large carpet of *papel picado* had been done in a thin linoleum to keep its form flat. Its colour should be a very bright and light violet often used during the day of the dead in Mexico. The violet colour was also chosen because it is generally related to a strong and mysterious religious feeling, and it is also a colour that could be changed easily with lighting (see Figure 6.1).

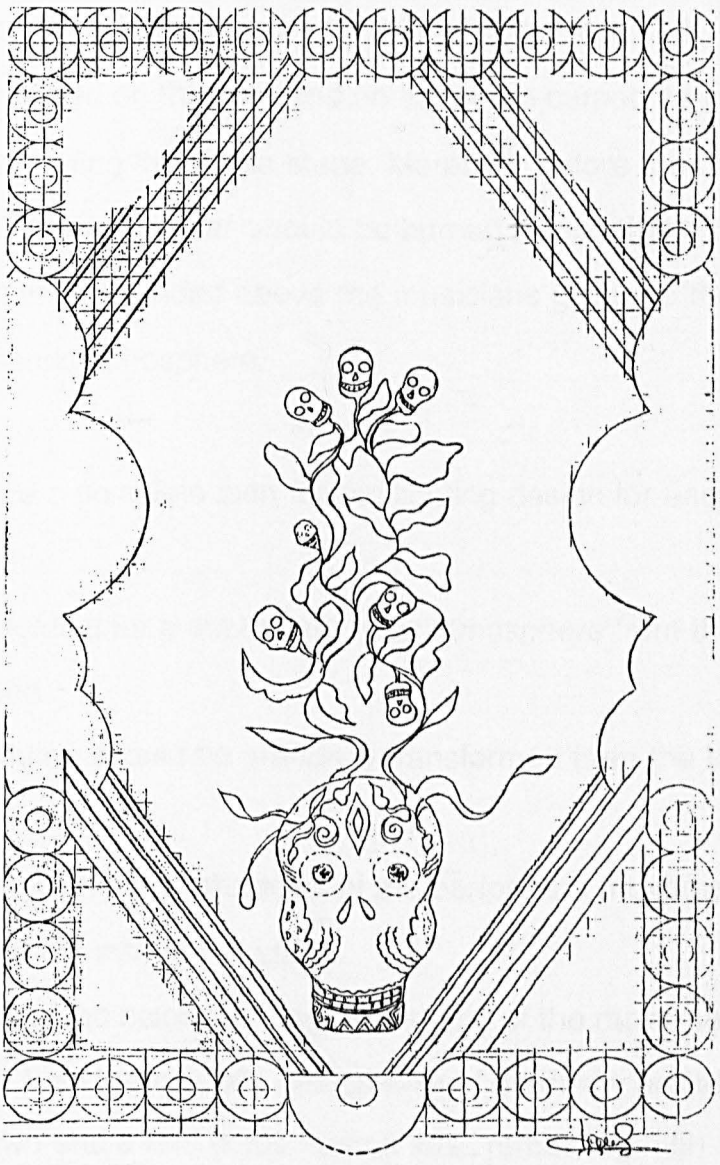


Figure 6.1: *Altar de Muertos:* design of the large carpet of *papel picado* by Leonor Salazar

In order to enhance the stage altar some petals of *cempoalxochitl* of a deep bright yellow were added on the floor and on top of the carpet, as well as fifty lighted candles decorating the whole stage. Moreover before the music gets started a couple of vases of *copal* should be burned just so that a haze of the incense could remain suspended above the musicians giving to the audience a much more authentic atmosphere.

The artist also made a complete plan for the lighting design for each of the four movements:

1 - *Ofrenda:* Blue lighting for a subtle and quiet atmosphere from the beginning to the end.

2 - *Mictlan:* The lighting should be gradually transformed from the blue into a bright red.

3 - *Danza Macabra:* Lights and shadows of the performers movements have to be projected around the wall of the stage.

4 - *La Calaca:* Mostly red colour lighting. At the end of the movement a curtain that runs up, taken from the carpet's design should gradually project an image of a smiling scull two-and a half times human size, remaining high up above the four musicians.

Lastly, in order to represent the syncretism and the surreal sense of death within Mexican culture today, during *La Calaca* performers have to put on a specially designed mask. The first one representing the Aztec god image of *Coatlicue,* the second one representing the vision of dualism within pre-Hispanic cultures, the third one being inspired by the popular Mexican masks of death nowadays, and the fourth one, a mask of a wrestler (see Figure 6.2).

Photo by Ernesto Lan
Archive: Festival Internacional Cervantino

Figure 6.2: *Altar de Muertos*: the Kronos Quartet playing *Altar de Muertos* at the Teatro de Minas, Guanajuato, Mexico, 1997

6.4 *Ofrenda*

"When we die,
We really never do,
because we live, we resurrect,
we continue living, then we awaken,
This fills us with joy".

(Chronicles of Indians who told us about the creation of the Sun in Teotihuacan).

The *Ofrenda* movement is divided into two sections:

1 - *Offering chants* (from page 1 of the score) and 2 - Sempre delicato e dolce ♩=60 , Letter A, score page 6.

1 - *Offering chants* Sempre libre e molto espressivo con melancolia (♩=ca.52)

The piece starts with the funeral procession-like rhythmic background[11] played with the *Baa-Wehai* (Mexican dried water gourds) from which the first violin will evolve and develop a melancholic and expressive offering *chant* mainly based on the following melodic scale (see Figure 6.3).

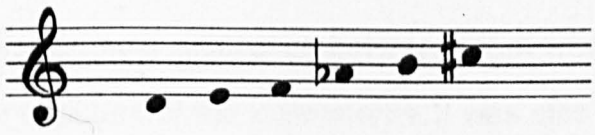


Figure 6.3: *Altar de Muertos*: *Ofrenda:* First violin melodic-*chant* scale

I was interested in developing an intimate expressive melodic line that would explore my own intuition and creativity within a complete sense of freedom and a sense of adventure, towards what expresses my own aesthetic and musical conception about death more closely. (This idea also applies to the whole quartet). The result of using specific sound material came after a deep analysis of the main melodic motifs used in the first violin melodic phrase.

I wanted to have a clear vision of the sound material suitable for my own formal and aesthetic intention before continuing writing the different *offering chants*. The melodic scale used as well as the main intervalic material (augmented 4ths, semitones and minor 3rds), help to develop a kind of soft melancholic and intimate atmosphere. At times some tonal colour inflections were clearly identified although the overall result becomes truly 'atonal' in the sense that tonal suggestions were avoided.

The melismatic development and the avoiding of any traditional tonal triads within the different *chants*, gave to the *ofrenda* a profound 'singing' character. I wanted to give an opportunity to the performers to play their own personal *ofrenda* dedicated to the memory of those close to them. Moreover, score indications such as *Sempre libre e molto espressivo, con melancolia* help the performers to interpret the music according to their own feelings and spontaneity. Free durations and tempi therefore aim at encouraging a creative and vivid performance.

The following *offering chants* developed under the same musical circumstances.The only major difference between them was the use of the different expressive registers of the instruments. It was also indicated that after playing their own *chant* they should continue on with the funeral procession-like rhythmic background accompanying the *chant* in turn. The next example gives an outline of the following main melodic motifs used for the *offering chants* (see figure 6.4).

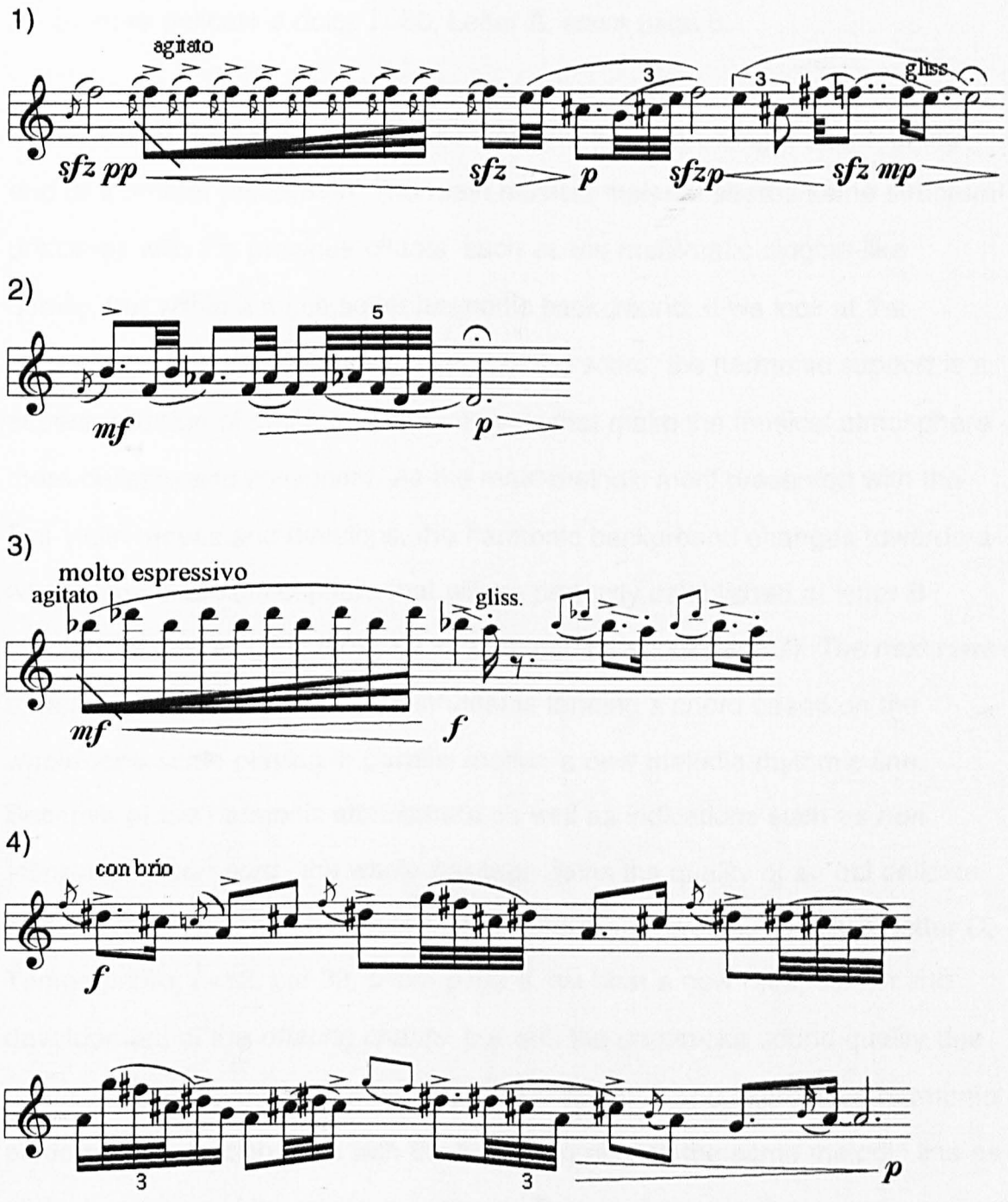


Figure 6.4: *Altar de Muertos*: *Ofrenda:* Main melodic motifs of the *offering chants*

2 - Sempre delicato e dolce ♩=60, Letter A, score page 6.

Within this section the four spirits converge in a delicate single *chant* to the end of a funeral procession. The main musical material shares some structural principles with the previous *chants* such as the melismatic singing-like quality, but within a much softer harmonic background. If we look at the beginning of the section, bar 1, page 6 of the score, the harmonic support is a superimposition of fourth and fifth intervals that make the musical atmosphere more delicate and consonant. As the main melodic motif presented with the first violin moves and develops, the harmonic background changes towards a whole-tone scale atmosphere that will be perfectly established at letter B (Lontano e delicato, Piú mosso, ♩=ca.69, bar 17, score page 7). The next new material comprises of the four instruments forming a chord based on the whole-tone scale playing in parallel motion a new melodic-rhythmic line. Because of the harmonic atmosphere as well as indications such as *non vibrato* and *con sord*, the whole passage gains the quality of an old delicate and unique *chant* that emerges from a deep magic dream. Finally at letter C, Tempo primo, ♩=52, bar 32, score page 8, we hear a new reexposition and development of the *offering chants* but with the dream-like sound quality due to the harmonics and long notes building a colourful and expressive harmonic platform. The section ends with the first violin playing the same melodic line as at the beginning of the whole movement. The resolution on D serves as a harmonic link to the next new musical material.

6.5 *Mictlan*

" Where shall I go?
Where shall I go?
The road of the Double God.
Is by fortune your house the place of dead?
Is it, by chance, the interior of heaven?
Or is earth the only place for those who are killed or sacrificed?"

(Text from the region of Chalco, near by Mexico City)

Everything in life and music moves through time. To most of us time is measured in seconds, minutes, hours, days, months, and years. We think of time as progressing in many different ways: standing at the edge of the present, a present of successive moments moving to the future, into hopes, dreams, expectations, and at the same time receding into the past, into memories cherished or forgotten.

But time can also be viewed cyclically. Each day the sun rises and sets, the phases of the moon, like the tides, come and go, or individuals move through stages of life birth and death. Just as the pre-Hispanic cultures understood death as a cycle in constant movement; a cycle where life is extended towards death and vice versa when death becomes the essence of life itself.

In a similar way music all over the earth is shaped by a complex of ideas concerning time; in some cultures time is a two dimensional phenomenon with a long past, a present but with virtually no future. A great deal of music within the pre-Hispanic cultures does not have beginnings, developments, climaxes and endings as in Western music (and life!); it simply begins, continues and then it stops. This musical time proceeds in what I could call 'accumulative but non directional time': rhythmic and melodic textures happen in a kaleidoscopic circular way, therefore the piece can last several minutes or several hours depending on the situation.

The discussion above describes the starting point of departure in order to develop a personal musical language in which we can perceive the idea of cyclic circular motion of time development . Although *Mictlan* has been divided into four sections, each one never loses the rhythmic and obsessive forward motion of the musical content, achieving a unique powerful and ritual music; this links with my own interpretation of the cyclic concept of death within pre-Hispanic cultures.

Finally I would like to mention that the music of the *Conchero dancers* in Mexico[12] develops using such characteristics, creating a ritual musical discourse rhythmically obsessive and repetitive, in which dancers attach *huesos de fraile* onto their ankles in order to emphasise the rhythmic pulse inherent in the musical discourse. In *Mictlan* I did something similar, as the performers have to play the same instrument every time an accent is marked in the score. However the music I wrote is completely different and only shares with the *Concheros* the rhythmic obsessive pulse and intensity of the musical motion.

1 - First section: Letter D Always rhythmic and obsessive ♩ =ca.88, bar 41, score page 10.

The main element that becomes very prominent and an essential feature of the music through the whole movement is the obsessive beat or rhythmic pulse. Although the beat remains almost the same (except the first accelerando on page 10 and the tempo change at Letter E, bar 140, score page 17) we hear complex rhythmic textures thanks to the different accents and metre changes that happen throughout all the musical discourse. Furthermore, a specific repeated rhythmic pattern is used but always interacting with other percussive rhythmic motifs enriching the musical texture

as happens with the development of the introductory material in *Mictlan*.
At the beginning of the movement the following rhythmic pattern commences slowly and gradually accelerates towards the main tempo (Allegro ♩.=ca.112) and then remains constant for a long time while other rhythmic figures are introduced and gradually develop until they reach the first significant metric change (see Figure 6.5).

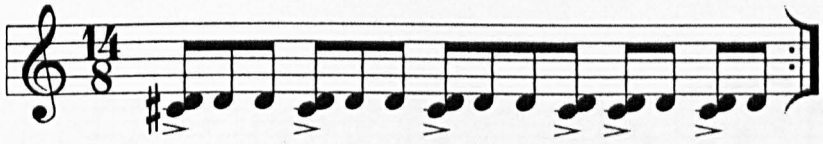


Figure 6.5: *Altar de Muertos*: *Mictlan:* Introduction's main rhythmic pattern

Within this evolving and continuous development instrumentation plays an important role since it serves to transform and enhance the sound colour of a texture. Moreover it helps the listener to perceive how rhythmic layers interact with each other while the main rhythmic pattern remains the same but moves between the different instruments and changes as well its intervalic content.

The insistent repetition of the minor 2nd interval (D natural and C sharp) within this passage gives to the music a sense of unity and harmonic colour. Lastly, in the case of *Mictlan* where rhythmic pulse becomes essential for the musical discourse and without it, much of its significance would disappear, the harmonic and rhythmic movements have to be fused together so that one gives support to the other.

Since the atmosphere of the music's content is well established the main rhythmic pattern starts to develop, changing its rhythmic subdivision and

metric content in a much more complex way. Now, one of the main music characteristics becomes the constant metric change and the dramatic motion of the musical discourse. In bar 76, page 12 of the score, second beat of the first and second violins, a new melodic motif is introduced. I consider that moment very important since this is the first main melodic motif appearing in the movement (see Figure 6.6) and it is further developed in the next passage bar 81, score page 13.

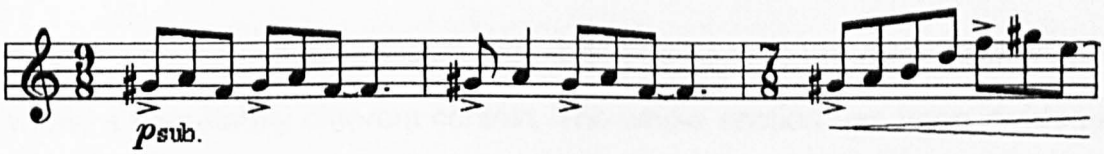


Figure 6.6: *Altar de Muertos*: *Mictlan:* Main melodic motif

The next passage is based fully on the previous melodic motif development. For the clarity of its understanding rhythmic accents were avoided as well as the foot playing of the *huesos de fraile*. The whole passage ends with a new appearance of the main rhythmic pattern in bar 92, score page 14, that serves as transition for the next presentation of new melodic material. Within this passage the cello introduces the main new melodic material (see bar 106, score page 15) that will be further developed between the other instruments using techniques such as imitation and melodic variation creating a rich polyphonic texture.

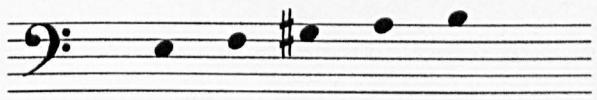
2 - Second section: Letter E, Pesante always hypnotic, Ben marcato, ♩=ca.76, score page 17.

This next section displays the following main characteristics; the texture has been constructed with two different elements:

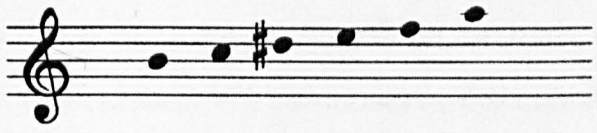
a) The rhythmic accompaniment is based on the combination of an accented and non-accented series of quaver notes with their respective quaver silences. In this respect the silences (in other words the small gaps to 'breathe') become a very substantial element since they give to the rhythmic musical motion a completely different sense of feeling. Now, thanks to the use of quaver silences and the slower tempo, the accented notes sound stronger and heavier (in relation to the previous ones) giving to the whole section a more hypnotic and obsessive ritualistic feel.

b) The solo melismatic melodic lines bring us back to the *offering chants* but within a completely different context. The whole section has been divided into three different harmonic regions based on the following three harmonic scales (see Figure 6.7).

a) First harmonic scale: (bars 140 to 150)



b)Second harmonic scale: (bars 150 to 162)



c) Third harmonic scale: (bars 163 to 180

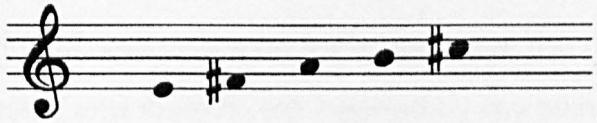


Figure 6.7: *Altar de Muertos*: *Mictlan:* Second section's three harmonic scales

Finally, it is important to notice that within this whole section there is a dramatic emotional growth as the melismatic melodic lines move towards high registers and interact more and more achieving a climax during the second harmonic region. The emotional content gradually decreases thanks to the third harmonic region that sounds more subtle because of the use of the pentatonic scale.

3 -Third section: Letter F, Tempo primo, ♩=ca.112 Rhythmic and obsessive, bar 181, score page 21.
I consider this section as a much more condensed and complex reexposition of the rhythmic material presented at the beginning of the movement. The texture becomes complex and rich thanks to internal irregular imitations plus constant metric changes and the superimposition of rhythmic layers as the essential architectonic principles for the development of the musical discourse.

This irregularity in structural ryththmic principles ends with the rhythmic unison in bar 194, in which, in contrast with the previous passage the virtuosic element lies precisely in the exact synchronisation of the musical performance. From this point onwards this will be the main characteristic for the whole musical development. We can observe the culmination and climax of the use of the rhythmic unison as the main musical feature at letter G, Presstisimo possible, sempre brutal (𝅗𝅥=ca.120) bar 217, score page 25.
The strong dynamic, plus the perfect synchronisation of the rhythmic accents along with the playing of the*huesos de fraile* resumes the musical statement of the totally obsessive and ritual music inspired by my own interpretation of *Conchero* music, as well as my own perception of a music which shares with other pre-Hispanic culture, the evolutive and continuous development of

rhythmic patterns in which our perception of musical time happens in a kind of hypnotic, kaleidoscopic and circular way.

6.6 *Danza Macabra*

"Human life is like a shadow"

(From the anonymous painting of the collection belonging to the National Viceroyalty Museum in Tepotzotlan, state of Mexico, and in which its main theme is death)

This movement is divided into four sections each one developing its own specific musical themes. Because of the rich variety of the musical material, I consider *Danza Macabra* to be a piece of music that could be played on its own. For example: 1 - each section comprises at least two different themes, 2 - between the various sections there is a clear change of emotional moods and colours, 3 - the overall movement's shape shows a clear dramatic structure that reaches its climax in the final section and 4 - in the third section we hear the reexposition of the musical material presented at the beginning adding to the whole movement a clear sense of balance and unity similar to any 'traditional' musical structure.

Overall structure of *Danza Macabra* :[13]

1 - First section: Theme A + first transition section - Theme B

2 - Second section: Themes C -D-C'

3 - Third section: reexposition of first transition and Theme A' + second transition.

4 - Fourth section: Themes E-D + coda

1 - First section: Letter I, Magico e leggiero, ♩.=ca.108, score page 29.

As mentioned above, the poetic content of *Danza Macabra* is such that the

music should be nourished from fantastic images taking place one after another. Phantasmagoria and magic concepts have to be always present and visually enriched thanks to the strange phantasmagoric figures of shadow lightings of the performers movements, projected onto different walls around the stage. In order to transform that metaphor into music I decided to construct a rich polyphonic texture in which imitations and variations of theme A would magically appear and disappear between the instruments. That is, sometimes theme A can clearly be heard and identified by the listener but at some other times it is hidden between the other voices depending on the kind of texture. Moreover, thanks to the lightness of its construction characteristics along with performance indications such as: *sul pont, con sord, sul tasto, tremolo and legato* marks, the music creates a much more magic atmosphere (see Figure 6.8).

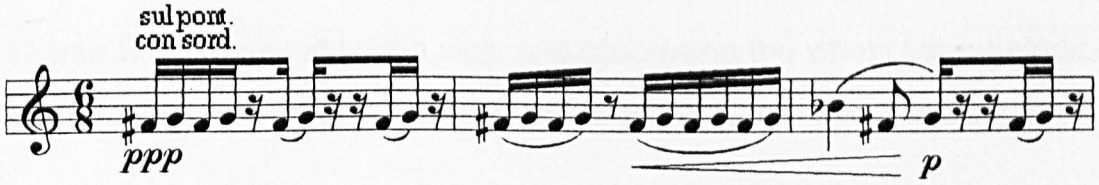


Figure 6.8: *Altar de Muertos*: *Danza Macabra:* theme A

My compositional strategy for the development of theme A was to choose a series of notes (in this case the insistent semitone movement that expands at the end of the phrase into a minor and major third) and then, to present them in different orders, registers, transpositions and rhythmic shapes, creating a melody which proliferates from what may be only a very limited stock of initial material.

In terms of the intervalic and harmonic sources, I started from the same poetic point of departure. Harmonic ambiguity was created due to the constant chromatic development of theme A, which smoothly changes into a clear modal/ tonal region. A clear example is found at the beginning of the piece in which theme A develops using a clear chromatic texture. As the music progresses it smoothly changes into a mixolidyan modal region on E natural (bars 285 to 307, pages 30 to 31 of the score) until it ends with the entrance of the transition section (bars 308 to 315, score pages 31 to 32).

The main characteristic of this passage is that it combines three different components: the chromatic melodic development in 6/8 of the second violin, along with the *tremolo* accompaniment of major thirds between the viola and cello, and the subtle and background presence of theme A played by the first violin. Towards the end of the transition section first violin, viola and cello join the musical discourse of the second violin until the arrival of theme B. Theme B is presented by the viola and cello using the whole tone melodic-scale while the two violins have an accompanying role (see Figure 6.9).

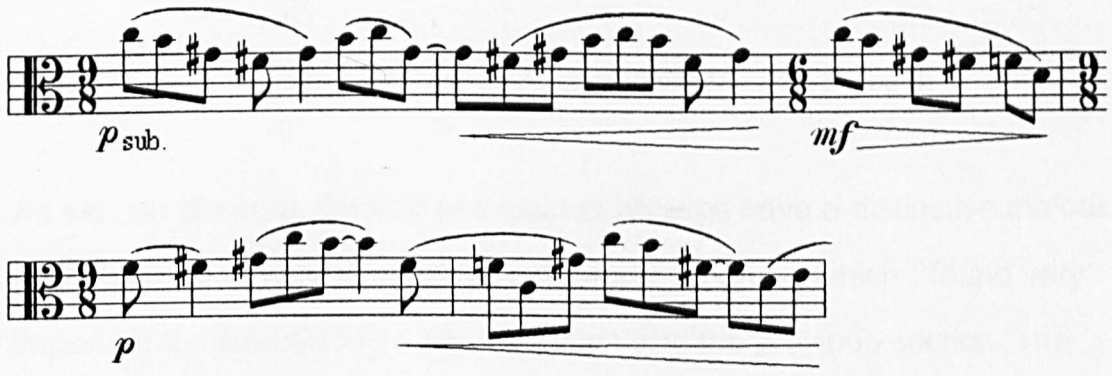
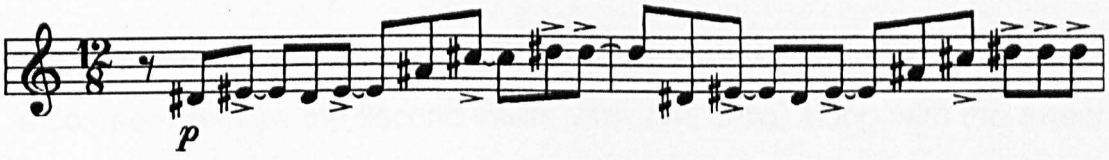


Figure 6.9: *Altar de Muertos*: *Danza Macabra:* theme B

As the first transition section develops it incorporates as well elements of theme A taking us to the next section of the movement.

2 -Second section: Letter J, Meno mosso ♩.=ca.92, bar 336, score page 33. Theme C is constructed using two different phrases each one proposing different elements see Figure 6.10.

Phrase one:



Phrase two:

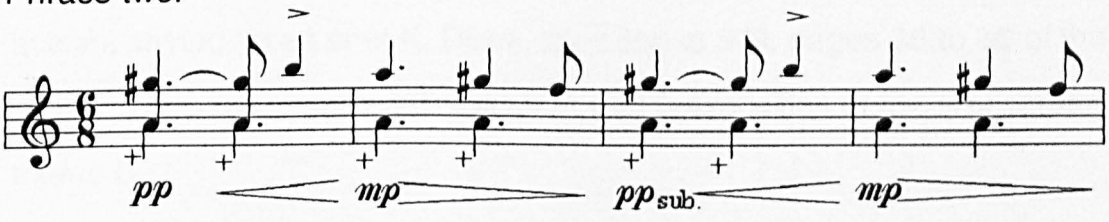


Figure 6.10: *Altar de Muertos*: *Danza Macabra:* theme C

As we can observe, the first and second phrases have a distinctive melodic and rhythmic scheme of eminently memorable nature, which I found very important for establishing a clear contrast with the previous section. The reason for choosing such material lay in my own intuition and aesthetic judgement, however the recurring use of augmented chords, chromatic melodic movements, the use of the whole tone scale, gave to the musical discourse a a feeling of unity. Theme C is constructed from a first phrase comprising a

musical proposition finding a response or reply with the second phrase making up a complete 'sentence'. The development of theme C comprises the subtle harmonic and melodic variations of the two phrases interacting one after another (please refer for theme C development bars 336 to 355, pages 33 to 35 of the score).

Theme D (Letter K, Dolce, bar 356, page 35) presents a new distinctive melodic material that gives to the music an instant of repose and tenderness, thanks to the*non vibrato* perfect fourth chords used as harmonic accompaniment on the second violin, viola and cello, along with the sweet melodic line having the colour of a pentatonic scale played on the first violin. The development of such material lies in the harmonic changes of the melodic line into a whole tone scale colour with its own augmented fourth chords accompanying (see Letter K, Dolce, bars 356 to 379, pages 35 to 36 of the score). The section ends with the short new reexposition of the first phrase of theme C.

3 - Third section: Letter L, Magico leggiero, ♩.=ca.108, bar 384, score page 37. After a contrasting period I wanted to return to the original material but in a distinctive order of appearance and with very subtle colour and harmonic variations. I felt that new thematic material at this point would lead to confusion in terms of the overall shape of the movement. The unity of the theme is at stake, so that after a period of change it is inevitable that we return to our original discourse. My own approach to using previous material is that, although It may be changed to some small degree, its new presentation helps us to perceive new distinctive material when it is presented and a new sense of direction will be further developed within the musical discourse. This is more clear when we look at the introduction to the second transition section

(see bars 432 to 448, score pages 40 to 41) in which dramatic tension has been built by the development of the first violin's melodic line.

4 - Fourth section: Letter M, Piú mosso, ♩.=ca.132, Sempre ritmico, ben marcato, bar 449, score page 41.

The contrast of the first brilliant appearance of theme D was achieved due to the use of the following elements: 1- this is the first time that the players do not use *sordini,* so that the sound colour as well as the atmosphere dramatically changes; 2 - the main characteristic of this passage lies in the rhythmic motion and texture more than the pitch content (the whole passage only uses a limited number of pitches) and 3 - the irregularity of the different accented notes and the non legato articulation gives to the music a much more brutal sound characteristic. I consider this passage the dramatic climax of the whole musical discourse (see bars 449 to 476, pages 41 to 43 of the score).

Theme E, letter N, Molto Allegro ♪. =ca.152. With Latin feel, score page 43, presents the last new material of the whole movement. It has been constructed around different rhythmic- melodic ostinatos having their own specific accompaniment. The main idea is that these ostinatos constantly change their colour accompaniment and rhythmic subdivisions so that the listener always discovers new surprises within the musical discourse. If we carefully look at the score (see bars 477 to 487, page 43) we can observe that the first appearance of the rhythmic -melodic ostinatos belongs to the first violin. After two bars the rhythmic pizzicatto accompaniment starts with the cello's entrance. In bar 581, the rhythmic accompaniment enriches its sound colour with the *ricochet* small rhythmic figures between the second violin and the viola. In bar 583 the rhythmic -melodic ostinato changes its pitch content and appears now within the second violin. Meanwhile the pizzicato

accompaniment also changes along with the introduction of the small glissandos on the viola and the accented major 7th interval on the first violin. In bar 487 the rhythmic- melodic ostinato returns to the first violin but this time the rhythmic subdivision is different, as well as its pitch content. Logically the accompaniment also changes its rhythmic subdivision and colour. As the music progresses the same procedure is applied until the inner motion stops with the sustain chords and the last appearance of theme A on the first violin (see bars 507 to 512, score page 45) introducing us to the Coda (score page 46, Ad Lib. ♪. =ca.152).

The Coda's main idea is that we can hear the first and last materials of the movement, such as themes A and E played together but in a magic and dream-like atmosphere, due to the harmonic glissandos in the viola, along with the freely moving changes from *sul tasto-ord-pont* on the second violin, and the very high register of the first violin passage.

6.7 *La Calaca*

"Were shall the dead go?
who knows where they shall go!"
(Popular song)

The use of various string instrumental timbres, violent and extremely differentiated dramatic passages, extreme dynamics and tempo changes aggressively define articulation of the sound which, filled with vigour, announces its presence in *La Calaca.* Within this compositional process I decided not to eliminate clashes or friction, even in certain emotional sections, my aim was to produce various particularly sharp sonorities. To a large extent I could say that this has determined the nature and identity of *La Calaca.*

The sense of death within Mexican culture today, the pluralism, the chaos and richness of multiple symbols, the dual view of life in which everything is united - good and evil, day and night, the sacred and the profane - became the main elements for inspiration in writing *La Calaca.* Lastly, I consider this movement much more eclectic than the others in terms of the material used . In a way this situation did not concern me since it reflected my own perception of the many feelings, the confused and surreal situations that we might experience during *The Day of the Dead* and especially in Mexico city. Nevertheless the recurrent repetition and variation of the musical material gave to the piece an overall sense of unity. The piece is divided into seven short sections each developing some of the ideas mentioned above.

1 - First section , Letter O, Molto energico (♩. =ca.104), score page 47.
The unison passage at the very beginning represents in my own personal way, a deep homage to the great Mexican composer Silvestre Revueltas with whom I felt myself truly identified especially in this particular context. [14]
It has been constructed around the development of the following rhythmic-melodic motif (see Figure 6.11).

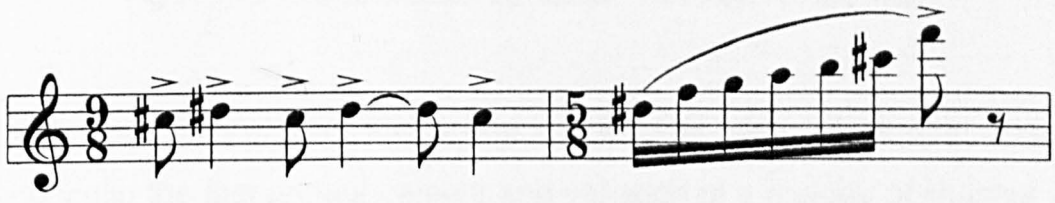


Figure 6.11: *Altar de Muertos*: *La Calaca:* Main rhythmic-melodic motif

The evolution in parallel motion of the harmonic chords is based on the superimposition of augmented 4ths, and perfect 4th and 5th intervals. At the same time the melodic movement develops using a whole tone scale. The appearance and development of the motif is violently interrupted with the

introduction of the short pizzicato passage using the following new motif on the viola in bar 531, score page 48 (see Figure 6.12).

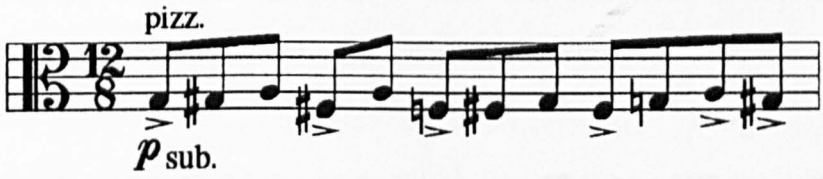


Figure 6.12: *Altar de Muertos*: *La Calaca:* Second main pizzicato motif

Subsequently these two motifs will interact with each other until the arrival of the third main melodic motif played on the first violin in bar 541 page 49 (see figure 6.13).

Figure 6.13: *Altar de Muertos*: *La Calaca:* Third main melodic motif

This new motif is developed interacting with the first one until we hear on the second violin the first announcement and variation of a melody of Huichol origin[15] that appears and develops in its original singing-like version at the very end of the whole movement (see bar 560, score page 50).

2 -Second section, Letter P, L'istesso tempo ♩. =ca.104, bar 582, score page 51.

I consider this section a timbral and melodic variation of the second pizzicato

motif but (see Figure 6.12) this time developing in a kind of imitative way, creating a polyphonic texture with the changing colour of *sul pont -ord.* In the second part of the section (Dolce Tranquilo ♩. =ca.63, bar 577, score page 51), we hear the second simple variation of the Huichol melody presented in an expressive melodic dialogue between the two violins.

3 -Third section, Letter Q, Molto energico ♩. =ca.104, bar 585, score page 52. This short section has also been divided into two parts: the first developing a small portion of the first motif but not exactly in a unison way, and the second part introducing us to new musical material (see bars 591 to 598, score page 53 for the new musical material).

4 - Fourth section, Letter R, Meno mosso ♩. =ca.92, bar 599, score page 53. This section comprises a much more intense and longer variation of the pizzicato motif within a rich polyphonic texture. Furthermore the new development of the whole section has been build on the following melodic scale (see Figure 6.14).

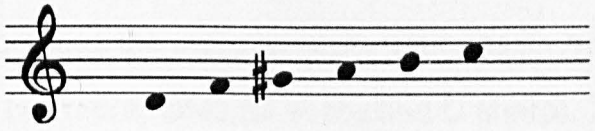


Figure 6.14: *Altar de Muertos*: *La Calaca:* Fourth section's melodic scale

As the music progresses we hear the interaction of some small portions of the the unison first motif but played pizzicato, until this motif is clearly established preparing the arrival of the fifth section.

5 - Fifth section, letter S, Molto energico, ♩. =ca.104, bar 629, score page 56.
This section returns again to the reexposition of the first section's main musical material, the only difference being that this time its duration is shorter. My idea of going back to the beginning is that the listener should be able to recognise the initial musical material and use of the unison development. Moreover it helped me to prepare the dramatic direction line towards the end of the whole quartet.

6 - Sixth section, Letter T, Prestissimo possible, ♩. =ca.144, bar 642, score page 57.
This virtuoso passage is based on the imitative development of various rhythmic-melodic lines based on the following melodic scale (see figure 6.15).

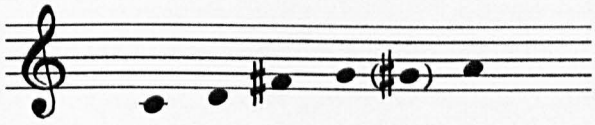


Figure 6.15: *Altar de Muertos*: *La Calaca:* Sixth section's melodic scale

As this section progresses the melodic scale changes its harmonic colour with the addition of two more notes (G sharp and C sharp). The texture also becomes thicker and more complex because of the interaction of the different accented notes, as well as the dynamic changes, until the arrival of the last transitional passage preparing the last section.

7 -Seventh section, Letter U, bar 708, score page 62.
This last section is based on the development of a melody of Huichol origin sung by Familia de la Cruz. In its first presentation[16] the melody is played on

the second violin while the viola and cello play the austere harmonic accompaniment. Every time the melodic line appears the harmonic accompaniment gradually changes its timbre and harmonic colour, as well as the rhythmic motion becoming more complex. In bar 747, score page 64, the melodic line is presented in such way that we have the impression that it has been broken up thanks to the introduction of silences as well as its melodic variation. At the same time the harmonic accompaniment does something similar (for example avoiding the first beat in the cello part) enriching rhythmically the whole texture. As the music progresses the same procedure each time becomes more rich and complex until we stop recognising the Huichol melody. From this point onwards the percussive harmonic accompaniment becomes predominant, and more insistent and louder until the end of the whole movement.

6.8 Conclusion

In *Altar de Muertos* one of the greatest challenges was to compose a multimedia piece about the *Day of the Dead* in Mexico. From such a demanding and complex point of departure I had to learn and experiment with concepts and technical issues totally new in my own compositional work. In other words, I tried to compose a piece of music that could reflect in its own dramatic structure my own interpretation of the different aesthetic ideas representing the development of the concept of death within Mexican culture.

In its structural dramatic organisation each of the movements shows a unique inner exploration of a wide palette of 'magic sound worlds' in which the poetic content sets the rules for the musical development. The *Ofrenda's* melancholic and expressive *offering chants* represent a deep experimentation and search

towards what expresses my own aesthetic and musical conception about death more closely, always leaving my own intuition and creativity with a complete sense of freedom and adventure.

Mictlan on the other hand, includes a constant rhythmic drive based on rhythmic cells that are obstinately repeated. In this case, this feature is intimately related with the origins of the music: the concept of death within the pre-Hispanic cultures; magic and kaleidoscopic music, "tribal" invocations repetitive in essence, cycles of nature, circular motion to comply with its hypnotic functions established in the remote past.

Danza Macabra is constructed around rich polyphonic textures in which phantasmagoria and concepts expressive of magic are always present. In such a way subtle musical images take place one after another much as shadow lights instantly appear and desappear.

Lastly, in *La Calaca* I tried to develop a musical language deeply rooted in popular tradition and, at the same time, highly knowledgeable in the Western contemporary music development. Throughout this compositional process I discovered how to utilise the authentic expressions of Mexican popular music but within my own aesthetic outlook. In this regard Bèla Bartok has said:

> " And thus we may say: folk music will become a source of inspiration for a country's music only if the transplantation of its motifs is the work of creative talent. In the hands of incompetent composers neither folk-music nor any other musical material will ever attain significance. If a composer has no talent it will be of no use to him to base his music on folk-music or any other music. The result will in every case be nothing." [17]

Ultimately, one of the main goals in *Altar de Muertos* was to integrate its

poetic content within the actual practical process of writing the music (at least that was my feeling and desire), in such a way that extra-musical elements such as visual stimuli, lighting design and so on, serve to reinforce such artistic concepts. Within this particular context it is towards the expressive compositional potentialities and multimedia performance that *Altar de Muertos* points. What I consider as an achievement is that this piece is music about music, past, present and future. It is an attempt to confront the rift between the traditions deep within us and the inexorable forces of change.

Notes and References

[1] For the first two days of November, the *"Day of the dead "* is celebrated in Mexico as now elsewhere in the Catholic world, and it is the most important celebration in the year cycle. It is a time of family reunion not only for the living but also for the dead who, for a few brief hours each year, return to be with their relatives in this world, accepting offerings of special foods, fruits, flowers, incense and candles. As a time of reunion, there is nothing sombre or macabre about the event: the returning souls do not bring the odour of death and the grave with them, but come as spirits who have returned from another world, which for many Mexicans is very like this one. These worlds of the living and the dead exist in a state of permanent interaction.

[2] The terms "theatre" and "multimedia" in this chapter apply to any composition that in an innovative or experimental way involves more that sonic material itself to achieve its artistic goals.

[3] The Kronos Quartet have often gone radically beyond the experience and expectations of the average concert goer, exploring more flexible relationships between music, its physical surroundings, visual stimuli, creative use of physical space, costume and so on.

[4] *Black Angels* for electric string quartet (1970), is probably the only quartet to have been inspired by the Vietnam war. The work draws from an arsenal of sounds including shouting, chatting, whistling, whispering, gongs, maracas, and crystal glasses. It was conceived as a kind of parable on our troubled contemporary world. The work portrays a voyage of the soul. The three stages of this voyage are Departure (all from grace), Absence (spiritual annihilation) and Return (redemption).

[5] *Cempoalxochit:* In the Náhuatl (Aztec) language refers to the marigold flower of the species *Tagetes Lucida,* or *Tegetes erecta,* several of which are native to Mexico. This is the 'flower of the dead' grown for use on the *Day of the dead* either in the yards close to houses for personal use or on a commercial scale sent to market.

[6] *Copal:* is a term applied to many scented resins used as incense in pre-Hispanic Mesoamerica. It comes from several trees of the *Burseraceae* family. From the Náhuatl *copalli.*

[7] Another idiophone of likely African origin is the *Baa-Wehai* , or water gourd. There is no evidence of the use of this instrument before the Conquista and the moment of its introduction in to Mexico has not been ascertained. The *Baa-Wehai* is made with a semi-spheric gourd, which is placed (open side down) in a container of greater dimensions which is filled with water. Once the gourd is floating, it is struck with a stick wrapped with corn leaves. The same instrument can be found in the Yucatán peninsula, the only difference being the type of stick which in this instance is covered with rubber at the striking end.

[8] Strung rattles: These consisted of a number of small objects such as teeth, beads, shells or cocoons which where laced or bunched together. However, due to their organic origin, most of these instruments have been destroyed. Nonetheless, thanks to several archaeological excavations, strung rattles of pebbles, snail shells and other similar objects, have been found. The variety of materials used in the making of these rattles suggests an incessant and insatiable search for new sonorities amongst preclassical peoples. Cultures of Náhuatl origin in central Mexico have inherited the *Conchero* music and dance tradition where dancers use the instrument called *Huesos de Fraile* or *Friars Bones* (dried seeds attached to a string) which they attach to their ankles for dancing.

[9] Octavio Paz, *El Laberinto de la Soledad,* Mexico: Fondo de Cultura Económica, 1960, pages 55-57.

[10] Leonor Salazar was born in Mexico City and has been exhibiting her work since 1973 in Mexico, Poland, Canada, France and United States. She has been involved extensively with Mexican popular culture working with ephemeral materials such as paper, reeds, and fireworks creating monumental sculptures and installations for theatre, public festivals, and galleries. She has studied music at the National Conservatory of Music in Mexico city before going to Poland for three years (1976-1979) to pursue a postgraduate course in Art Graphics and Painting at the Akademia Sztuk Pieknich W Krakawie.

[11] The final performance version submitted in this thesis includes direction on how to play the rhythmic funeral procession-like background. However only a few indications about the tempi and atmosphere desired were told to the performers prior to the recording submitted. The recording is therefore not entirely definitive.

[12] During the Spanish Conquest and the colonial period (1521-1821) the "*mestizaje* " or crossbreeding provoked significant cultural changes as happened in musical evolution. Nowadays, Mexican folk music derives from three major sources: the indigenous, the colonising Hispanic, and the transported African. Elements from all three are found in many combinations within musical form, structure, genre, instrumentation, vocal, performing style and practice, melody, rhythm, metre and so on. In most places there is fusion into culturally mixed forms areas where archaic features, traced to a particular source, have been retained, revealing the crucial role of the type of contact between peoples, local and national, political and cultural history, the use and function of music and people's aesthetic. In the case of the *Conchero* music or *Danzas de la Conquista* from the Náhuatl cultures in central Mexico, the result of these influences is very mixed. The Spanish used music in their efforts to christianise the indigenous population and the result was far from uniform. The result is a whole cycle of religious catholic festivals, but with many native elements in music, dance and instrumentation. A very clear example is that we can find Spanish elements such as the use for example of the Spanish mandolins along with indigenous elements that refer to the use of the *Huesos the Fraile* (Friars Bones) attached to the dancers ankles.

[13] The use of the term 'Theme' within the context of the *Danza Macabra* does not mean what we could consider the 'traditional ' melodic construction of certain phrases, it is only used in order to differentiate the distinctive musical material used through the whole movement.

[14] One problem facing anybody assembling a Revueltas compilation is that of finding some way to break the abiding, near-excruciating intensity of his work; the visceral effect of his music is brutal and thrilling, and totally obliterates the boundaries of classical and popular musics. The coincidence here between Revueltas and myself is that we both consider the 'traditional' grouping as usually homophonic, that is clearly evidenced by the frequent use of unison passages which, in both cases, play an expressive role and function of a dramatic nature.

[15] At the end of *La Calaca* I decided to quote a melody of Huichol origin, which attracted me when I first heard it sung by Familia de la Cruz. The Huichol tribe inhabit the Sierra Madre Occidental of the Mexican states of Jalisco and Nayarit.Their territory is abrupt and unapproachable since it is covered by canyons, plateaus, hills and rivers. The Huichol people are the most traditionalistic indigenous community in Mexico. The scarce contact with the rest of Mexican society has allowed them to preserve their culture and traditions. Their musical art is always found in festivities, ceremonial and ritual life. It is almost pentatonic; it seldom uses more than a five-note scale. It seem endless and repetitive but Huichol music is highly evocative and has overtones of oriental mysticism.

[16] It is important to say that the reason for using a Huichol melody was only aesthetic. Moreover, when I first heard it I made the decision to transcribe it in my own personal way , in other words the melodic line in its original version was performed using a clear pentatonic scale while in my own version in *La Calaca* it has been constructed using a mixolydian scale on F.

[17] Bèla Bartok, *The Influence of Peasant Music on Modern Music* , Contemporary Composers on Contemporary Music, New York: Da Capo Press,1998, page 78.

Chapter 7 *Final Considerations*

In our century, the category of musical sounds has seen a real expansion, and composers have become conscious of the need to include in their pre-compositional processes a new step: and option on the musical sounds to be used.

Jô Kondo, New world music magazine number 8,1998.

7.1 Composing electroacoustic and acoustic music

For some time now, I have been very interested in writing pieces that would involve two contrasting sides of my own musical background: as a composer working with computers and electronics I have experienced a considerable change in the way I approach musical creation especially in concepts related to new sound sources, texture and timbre, new ways of structural organisation, the value of improvisation versus complexity, calculation, control and so on; on the other hand, the fact of being born in a country with an enormous cultural heritage of ethnic music (much of which has been nearly lost or considered an endangered species) as well as the ethnic music from other cultures, has motivated me to try to be fair to both worlds existing inside myself.

The obvious answer to this is the creation of a series of works where I explore the great number of possibilities and expressive capabilities of the two sides. Some of the compositional works presented in previous chapters reflect such concepts. I used percussion instruments (in some of them) from many different countries in conjunction with Western instruments, and computer generated tape sounds using different kinds of Western and non western sources.

Within this approach my idea has always been focused towards being able to build a personal musical language that could be based on musical tradition and the avant-garde; that could combine high art, folk music or jazz in novel, sometimes precious and especially personal ways; and that it could be both entertaining and immediate as well as profound and sophisticated; in my music I have tried to achieve a balance of highly organised structure and improvisatory spontaneity .

The results of this thesis describe and reflect the creative process I experienced in writing these works. Furthermore, its intention is not to write a new opinion on the subject of the development of electroacoustic and acoustic music history, the concepts or technological issues but to explain what I have learned so far to enrich my work significantly, hopefully trying to define this experience in relation to how it affects me within my own compositional process.

Working within the electroacoustic music medium has extended not only my experience of exploring technical aspects of instrumental acoustic music, but also, and much more important by the formulation of new ideas for making music. These ideas, which deal ultimately with concepts of interaction, challenge the very nature of the way I had traditionally thought about music and musical instruments. That is to say, their effect has been deeply tied to new compositional methods themselves and to the formation of new musical thought. Furthermore, after writing these works I have come to the conclusion that being able to work in both fields, has brought a new approach to my music since both influences evolve reciprocally and transform each other in a very particular way.

In this sense I find it important to summarise some of the concepts that have affected my work in both fields significantly:

1 - Unlimited sound sources.

Composers are now able, as never before, to satisfy the dictates of that inner ear of imagination. Furthermore, the ability to compose a sound departing from any acoustic sound source available only limited by the imagination of a composer was, for me, the fundamental reason to engage in electroacoustic music. Moreover the vast technical resources available in the medium to transform a sound into unexpected new sound worlds, which real acoustic instruments could not play and reproduce, became one of the main points of departure when I decided to start working within the field. Furthermore, within the search and experimentation with new sound sources, I was able to recognise the great potentiality of new timbres and textures as new building blocks of structural organisation.

After writing the *Five Micro-Etudes* for tape, I decided to explore in a much more conscious way some of these new influences but in the context of my acoustic work. *Things like that happen* for cello and tape is an example of this idea: on the one hand I extensively explored new timbral effects on the cello in close collaboration with the instrumentalist. Thanks to my experience in electronic music the process of searching and experimentation with new cello sounds became much easier since I already knew the type and classification of sound material I was looking for and how it could be manipulated and transformed into new unexpected cello sound worlds. What I wanted to achieve was the illusion of a real instrument and an extension of it towards something it cannot do.

2 - Texture and timbre as new determinants of structural organisation.

My main point here is that the experience of electroacoustic music generated a view of form, of musical structure, different from instrumental music. In the absence of tonal and thematic forces, for example, other elements have to be employed to shape a composition, to give it form. This idea has been reflected in my music in both fields, acoustic and electroacoustic; in the *Five Micro-Etudes* for solo tape and *En pares* for chamber ensemble or some passages of the second movement of *Concierto Candela* the primary form-determining element is texture variation, usually with a good deal of assistance from dynamics, timbre, and register.

3 - The value of improvisation and freedom within electroacoustic music versus pre-calculation and total control of the musical material.

One real advantage of working with electroacoustic music is that a composer can experiment and hear the music before any score has been finalised. Sometimes by mistake and sometimes by exploration, I found inspiration in the failure at finding one thing leading to a success at finding something else usually surprising. In many ways my musical ideas came out of the sounds themselves. By exploring their characteristics, playing and improvising with them I discovered ideas and surprising elements to be further developed. The spontaneity of this process and the total freedom I felt in working with such sound material, lead my work to take a different route than it had done before.

This new experience also took place in my acoustic work since for example I decided on the creation of specific colour textures to lead my intuition and my approach to experimentation in organising the sound material. One example of this is when you know the range of pitches that you want, but it is not so important which one of these pitches is used because the overall result is a

complex texture in which timbre, rhythm and other musical parameters determine its real definition and musical structure. After several works I came to the conclusion that such freely constructed textures had the same effect as those resulting from some other complex and technical procedures, and furthermore they offered to the listener a new sense of natural freshness and evocative warm sound colour.

4 - Sound and its location in space as an essential aspect of musical composition.

As I explained in detail in chapter three, the idea of using sound and its location in space as a substantial element for musical development, came from my experience in working within the field of electroacoustic music. I was fascinated to experiment with sound and its location in space creating different illusions in which the listener experiences a wide variety of directional effects. Such personal experience in exploring and working on new means of expression around this basic idea enabled me to apply the same concepts to my acoustic work, significantly enriching it in an original direction. In my recent acoustic works I have been experimenting with many different techniques that involved sound movement , not only those that imply the location of the different instruments within the acoustic space, but much more interestingly those that affect significantly the development of the musical language in terms of its timbre, harmony, rhythm and dynamics as the analysis of my piece *En pares* showed.

So far, I have given examples of aspects of electroacoustic music I have found interesting mainly from the technical point of view, and how they have influenced and been reflected in my acoustic work. However, such techniques discovered in the process of examining the nature of electroacoustic music

and through learning to work effectively in the medium, brought an influence to bear upon expression and thought processes of music in both fields (acoustic and electroacoustic) so that new directions appeared.

If I try to understand the transformation of my acoustic music from the standpoint of new structural organisation and of new sounds (sometimes new performance techniques applied to traditional instruments), then I have to refer to the fact that the musical perspectives and techniques formulated during the process of composing with electronics opened up and enriched significantly new aspects of my acoustic work. Joji Juasa points out: " Here again, the relationship between music and the environment is in the process of being changed by mutual interaction: to act, to be acted upon".[1]

7.2 Concluding thoughts

It is clear that the idea of a single good way to compose music is completely wrong if we analyse the musical development of recent decades. It is obvious that composers such as Shostakovich, Britten, Webern, or Stravinsky wrote masterpieces although they were completely different. In the same way John Adams, Tan Dun, or Alejandro Viñao also represent the music of the end of century though their aesthetic lines are so far apart .

For me, this is one of the most important qualities of this time, its richness and diversity. A period of exhaustion in Western concert music has brought some confusion, in which its future looks unclear, however the freedom of working with the help of technology as well as being able to access a huge amount of musical information all over the world, has contributed to enriching and understanding in a much deeper sense my artistic work. Music is not isolated

from the rest of life, it also reflects the historical moment and its place. In other words: music is of immense use to society. It is a mirror of society, of a time, of a period. The culture of a country is perhaps its most important aspect, and it is in this sense that I do not feel worried if the way ahead is still unclear.

My compositional work reflects some of the different ways a Latin American composer has to face today. I believe that we have to be honest with ourselves , and compose the music we like and do it well but without forgetting that it is extremely difficult to separate technical from aesthetic matters. Furthermore, it is no longer important if musical material be new or original, only that if be used creatively and effectively. I do not think it matters if it reflects the eclectic and complex language of the end of century.

Notes and References

[1] Joji Juasa, The *shadow of tape music on instrumental music,* Contemporary Music Review, Volume 1, Part 2, 1987, page 74.

Reference and Bibliography

ALVAREZ, JAVIER. Compositional strategies in music for solo instruments and electroacoustic sounds. Ph.D., City University, (London:1993)

ARETZ, ISABEL. Relatora. America Latina en su música. (México: Siglo Veintiuno Editores, SA de CV.)

BARRY, BARBARA R. Musical time, the sense of order. (New York: Pendragon Press, 1990)

BOULEZ, PIERRE. Puntos de referencia. (Barcelona: Editorial Gedisa, 1981)

BUDD, MALCON. Music and the emotions - The philosophical theories. (London, New York: International Library of Philosophy, 1985)

CAGE, JOHN. Experimental music in Silence. (London: Marion Boyars, 1968)

CARMICHAEL, ELIZABETH & SAYER, CHLOE. The skeleton at the feast: the day of the dead in Mexico. (Great Britain: British Museum Press, 1991)

CARPENTIER, ALEJO. Ese músico que llevo dentro. (La Habana Cuba: Editorial Letras Cubanas, 1981)

CHADABE, JOEL. Electric Sound: The past and promise of electronic music. (New Jersey: Prentice Hall, 1997)

CHAVEZ, CARLOS. El pensamiento musical. (México: Fondo de Cultura Económica, 1964)

CONTRERAS ARIAS, JUAN GUILLERMO. Atlas cultural de México. (México: SEP. INAH. Ed. Planeta, 1988)

COOK, NICHOLAS. Music, imagination & culture. (Oxford: Oxford University Press, 1992)

COPE, DAVID. Computers and musical style. (Oxford: Oxford University Press, 1991)

EMMERSON, SIMON. The language of electroacoustic music. (London: The Macmillan Press Ltd, 1986)

DAHLHAUS, CARL. Esthetics of music. (Cambridge: Cambridge University Press, 1982)

FORD, ANDREW. Composer to composer - conversations about contemporary music. (Great Britain: Quartet Books, 1993)

GALLARDO, RICARDO. Percussion instruments in México: History, evolution and classification. MA in Music, City University, (London:1993)

GARCIA MORILLO, ROBERTO. Carlos Chavez vida y obra. (México: Fondo de Cultura Económica, 1960)

GLASS, PHILIP. On his new world of music theatre - opera on the beach. (London: Faber and Faber Limited, 1988)

GRIFFITHS, PAUL. György Ligeti - (London: Robson Books Ltd.,1983)

GRIFFITHS, PAUL. Modern music and after: Directions since 1945. (Oxford: Oxford University Press, 1995)

GUTIERREZ, TONATIUTH. La muerte en el arte popular Mexicano. *Artes de México* No. 145, 1971: 75-77

HART, MICKEY. Drumming at the edge of magic: A journey into the spirit of percussion. (San Francisco: Harper Collins,1990)

JACOBS, GABRIEL& GEORGHIADES, PANICOS. Music and new technology - The MIDI connection. (Wilmslow, England: Sigma Press, 1991)

KACZYNSKY, TADEUSZ. Conversations with Witold Lutoslawski. (London: Chester Music, 1984)

KEANE, DAVID. Tape music composition. (London: Oxford University Press, 1980)

KELLER, HANS. Music, closed societies and football. (London: Toccata Press, 1986)

KONDO, JO. Unambiguously ambiguous: From listening to composing. *New World Music Magazine,* Number 8, 1998: 4-18

LENDVAI, ERNO. Béla Bartók - An analysis of his music. (London, Kahn & Averill, 1971)

LEPPERT, RICHARD & McCLARY, SUSAN Editors. Music and society -The politics of composition, performance and reception. (Cambridge: Cambridge University Press, 1987)

LESTER, JOEL. Analytic approaches to twentieth-century music. (New York: W,W,Norton & Company,1989)

MANUEL, PETER. Popular musics of the non-Western world, an introductory survey. (Oxford: Oxford University Press, 1988)

MARTI, SAMUEL. Intrumentos musicales precortesianos. (México: Instituto Nacional de Antropología e Historia, 1968)

MATOS MOCTEZUMA, EDUARDO. Miccaihuitl, el culto a la muerte. *Artes de México* No. 145, 1971: 6-9

MERTENS, WIM. American minimal music. (London: Kahn & Averill, 1983)

MORENO RIVAS, YOLANDA. La composición en México en el siglo XX. (México: Consejo Nacional para la Cultura y las Artes, 1994)

MORGAN, ROBERT P. La música del siglo XX. (España: Ediciones Akal, S.A., 1994)

NATTIEZ, JEAN-JACQUES. Music and discourse, toward a semiology of music. (New Jersey: Princeton University Press, 1990)

OBREGON, GONZALO. Representación de la muerte en el arte colonial. *Artes de México* No. 145, 1971: 37-39

PAVON SARRELANGUE, RAUL. La electrónica en la música. (México: INBA-SEP: Publicaciones CENIDIM, 1981)

PAZ, OCTAVIO. El laberinto de la soledad, obra poética. (México: Fondo de Cultura Económica, 1960)

RAHN, JOHN. Perspectives on musical aesthetics. (London: W.W. Norton & Company, 1994)

RECK, DAVID. Music of the whole earth. (New York: Charles Scribner's Sons, 1977)

ROSAS COBIAN, MICHAEL. In pursuit of an electroacoustic Aesthetic. MA in Music, City University, London: 1990

ROADS, CURTIS (Editor) Composers and the computer. (Los Altos, California, William Kaufmann, Inc. 1985)

RUGELES, ALFREDO. Crossover - Contemporary art music, popular and folk music in Venezuela. *New World Music Magazine,* Number 8, 1998:32-39

RUSSCOL, HERBERT. The liberation of sound-an introduction to electronic music. (Englewood Cliffs, N.J: Prentice-Hall, Inc., 1972)

SCHWARTZ, ELLIOTT& GODFREY, DANIEL Editors. Music since1945 - issues, materials, and literature. (New York: Schirmer Books, 1993)

SCHWARTZ, ELLIOTT& CHILDS, BARNEY Editors. Contemporary composers on contemporary music (New York: Da Capo Press, 1998)

SMITH BRINDLE, REGINALD. Musical composition. (Oxford, New York: Oxford University Press, 1986)

SMITH BRINDLE, REGINALD. The new music - The avant-garde since 1945 Second Edition. (Oxford, New York: Oxford University Press, 1987)

SMITH BRINDLE, REGINALD. Contemporary percussion. (London, New York:Oxford University Press, 1991)

STRAVINSKY, IGOR. Poetics of music. (Cambridge, Massachusetts: Harvard University Press, 1970)

TEMES, JOSE LUIS. Instrumentos de percusion en la música actual. (Madrid: Editorial DIGESA, 1979)

VARGAS, LUIS ALBERTO. La muerte vista por el Mexicano de hoy. *Artes de México* No. 145, 1971: 57-59

VIÑAO, AIEJANDRO. Magic realism in music: four electroacoustic compositions. Ph.D., City University, London: 1987

WEISBERG, ARTHUR. Performing twentieth-century music. (Binghamton, New York: Yale University Press, 1993)

YUASA, JOJI. The shadow of tape music on instrumental music. *Contemporary Music Review*, Volume 1, part 2 1987: 53-74

YUDICE, GEORGE, FRANCO, JEAN, FLORES, JUAN (Editors). On the edge-the crisis of contemporary Latin American culture. (Minneapolis and London: University of Minnesota Press, 1992)

Part II

Recordings and scores

Work and recording details

Magna Sin for steel pan and electroacoustic sounds (on tape)
Composed and realised at the City University, Music Department, London between October 1991 and March 1992.

First performance: Ricardo Gallardo, steel pan.
Electrifying Exotica, Purcell Room, South Bank Centre, London, May 1992.

Recording details

Duration: 11:10"
Ricardo Gallardo, steel pan

Recorded at the City University, London, October 1992 by Gabriela Ortiz and Michael Rosas Cobian

Commissioned by Sonic Arts Network for the Electrifying Exotica Festival.

Five Micro-Etudes for electroacoustic sounds (on tape)
Composed and realised at the City University, Music Department, London between May 1992 and October 1992.

First performance: Contemporary Music Series II: New Mexican Music, Pick-Staiger Concert Hall, North Western University, School of Music, Evaston Ilinois, November, 1994.

Recording details

Duration: 11:10"

Recorded at the City University, London, March 1993 by Gabriela Ortiz

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En Pares for chamber ensemble
Composed and realised at the City University, Music Department, London between October 1992 and April 1993.

First performance: Nordia Ensemble and members of the Stockholm Symphonic Wind Orchestra.
Niklas Willén: Conductor,
Stockholm Cultural Centre, The Auditorium, World Music Days 1994, Stockholm, October 1994

Recording details

Duration: 10:38"
Nordia Ensemble and members of Stockholm Symphonic Wind Orchestra.
Niklas Willén: conductor
Recorded at the Stockholm Cultural Centre, Stockholm Cultural Centre, The Auditorium, October 1994

Things like that happen for cello and electroacoustic sounds (on tape)
Composed and realised at the City University, Music Department, London between September 1993 and February 1994

First Performance: Judith Mitchell: cello.
The Sixteenth Annual Festival of Electroacoustic Music 1994, New Hall, City University, London, March 1994

Recording details

Duration: 12.48"

Judith Mitchell: cello
Recorded at the City University, London, May 1994 by Gabriela Ortiz and Michael Rosas Cobian

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Concierto Candela for percussion and orchestra
Composed and realised at the City University, Music Department, London between October 1992 and June 1993

First Performance: Ricardo Gallardo: percussion.
Hector Quintanar: conductor.
Orquesta Sinfónica de Guanajuato.
XXI Festival Internacional Cervantino, Teatro Juarez, Guanajuato, October 1993.

Recording details

Duration: 22'35"

Ricardo Gallardo: percussion.
Ronald Zollman: conductor.
Orquesta Filarmónica de la Universidad Nacional Autónoma de México.
Recorded at the Sala de Conciertos Nezahualcoyotl, México, December 1994 by Xavier Villalpando

Released commercially on Urtext Digital Classics JBCC 003/4

Commissioned by Ricardo Gallardo with funds from the Festival Internacional Cervantino.

Altar de Muertos for string quartet
Composed and realised at the City University, Music Department, London and México City between September 1994 and June 1996

First Performance: Kronos String Quartet, 1996/97 Home Season, Theater Artaud, San Francisco, April 1997.

Recording details

Duration: 35.10"

Kronos String Quartet, Teatro Nacional de las Artes, Centro Nacional de las Artes, México D.F., October 1997.

Commissioned by Kronos Quartet by Inroads, a program of Arts International with Funds from The Ford Foundation; The Multi-Arts Production Fund of The Rockefeller Foundation; and the Festival Internacional Cervantino