

## Musical signification in acousmatic works: the case of Eduardo Polonio

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### Abstract

Eduardo Polonio (b. 1941) is considered one of the pioneers of electroacoustic music in Spain working in 1966 as a composer in the first sound laboratories in the country, Alea in Madrid and Phonos in Barcelona, in this latter exerting also as a professor.

From 1965 to 1969 he attends Darmstadt summer courses (Germany). During this stay he gets in contact with the latest trends in contemporary music and studies instrumentation with Günther Becker. In 1969 he realizes an intensive course at Institut International de Musique Electroacoustique de Bourges (IMEB) in France. This experience led him to discover the potential of electronic instruments where thereafter opts for using technical media and abandons serialism and aleatory music.

Besides composing and performing, he is founder of musical groups such as Alea Música Electrónica Libre, the first spanish group of live electronic music. He is also teacher, festival organizer, co-founder of the Asociación de Música Electroacústica de España (A.M.E.E.), creator of his own Diáfano Estudio de Música Electroacústica laboratory, and author of various writings for conferences, symposia, seminars, magazine articles and books, most of them for Institut International de Musique Electroacoustique from Bourges (IMEB).

With respect to musical production, his works since 1980 are characterized by its interdisciplinary nature in close collaboration with artists from various backgrounds.

Throughout his career as a composer he receives numerous commissions from private and public entities. The composer's catalogue of works includes a wide variety of categories: multimedia, video, theater, cinema, radio, opera, fixed medium and concerts, this latter the most plentiful genres (Polonio, 1998).

Regarding his style, a new musical production period starts in 1981. He leaves repetitive technique and decides to use new musical materials based on music concrete aesthetic.

The main characteristics that define the personal style of Polonio are tenderness and irony (Iges 2001). But particularly the poetic language is constant in his musical composition. The albums *Acaricia la mañana* (1976-84) and *Blood Stations-Syntax Error* (1985) are examples of this approach. They are integrated by brief pieces that evoke the idea of baroque suite. This concept allows the possibility of writing long pieces with varied and complex materials, and on the other hand to connect to the public through the Long Play format (Zulian, 2001).

Within this poetic category we distinguish the following works: *Flautas, voces, animales, pájaros, sierra, la fragua de protones, trompetas, frialdad con sangre, arpas judías, trompetillas, agua, agujero negro* (1981), *Cuenca* (1985), *Narcissus* (1988), *Vida de*

*Máquinas* (1988), *Esa ola de luz* (1990), *Ice Cream* (1991), *ChC* (1992), *Histoires de Sons* (1993), *En un eclipse, en un eclipse total, en un apogón general del universo* (1998).

Another characteristic of his work is relating the music to mathematics field. Some his compositions evoke certain concepts and theoretical models and other occasions mathematic operations are patterns of organization. Is the case of *Ussesion* (1995) and *U flu for fru* (1996). They are composed using U binary number, concept introduced by british mathematician Alan Turing to describe universal machine principles. *Diagonal* (1991) is another work its structural foundation corresponds to this linear geometric concept.

*Devil's dreams* (1998) and *Trois moments précédant la genèse des cordes* (2001) address mathematics but in this case as evocative way. *Devil's dreams* is structured into 12 sections which represent Tepotaxi's dreams, the character of the book *Der Zahlenteufel: Ein Kopfkissenbuch für alle, die Angst vor der Mathematik haben* (1997) by german writer Hans Magnus Enzensberger and *Trois moments précédant la genèse des cordes* (2001) alludes "string theory."

This paper, which is part of my ongoing research, focuses on semiotic study applied to extra-musical signification processes in most important acousmatic works of the spanish composer Eduardo Polonio, *Cuenca* (1985), *ChC* (1992) and *Trois moments précédant la genèse des cordes* (2001). They are concert works most representative of each decade with similar musical style. Their sound materials are based on exploration of timbre qualities and have great evocative power of images, stories and concepts.

*Cuenca* (1985) stands for break with the minimalist world. Its compositional process reflects this spanish city landscape and the diverse experiences lived by the composer in this place.

*ChC* (1992) recreates the myth of cicadas by Plato, the story about men forgot eating and drinking until they die and finally become this sort of insect. In 1994, he awards the Magisterium of the Grand Prix International de Musique Electroacoustique in Bourges (France) for this electroacoustic composition.

*Trois moments précèdent la genèse des cordes* (2001) was composed in 2000 commissioned by Institut International de Musique Electroacoustique de Bourges (IMEB). In 2002, Eduardo Polonio receives III SGAE prize for electroacoustic music in Spain for this work. *Trois moments précédant la genèse des cordes* recreates the "string theory" capable of integrating the four natural forces: gravity, electromagnetic, strong nuclear and weak nuclear. This theory explains that inside the elementary particles of atom underlies the vibration of a string which by vibration mode defines the nature of these particles, i.e., its electric charge and mass.

The methodological framework applied to this study corresponds to analytical approach proposed by Francesco Giomi and Marco Ligabue, trying to identify signification strategies in acousmatic works of Eduardo Polonio. The study of this kind of strategies will be carrying out in different categories: narrative organization and characterization of sections, semantic associations, anticipation and repeat, and narration of timbres (Giomi and Ligabue 1998).

This paper examines in each of these levels how sound events work as signs to express abstract concepts and external realities to musical discourse. The study of extra-musical associations is complemented by Philip Tagg's semiotic approaches based on the concept of "anaphones" (2012). This concept refers the use of existent models in sound formations, i.e., sounds capable of connection with other sensitive levels by evoking other sounds, transmitting tactile sensations or suggesting movement ideas. Depending on mode of

perception the anaphones are divided into three categories: *sonic anaphones*, *tactile anaphones* and *kinetic anaphones*.

And to conclude, it should be pointed out that hitherto there is no musicological research centred on Eduard Polonio, so this paper contributes to diffusion the figure and work of this spanish composer and represents fundamental episode in electroacoustic music evolution of 20th and 21st century in Spain.

## 1. Introduction

The aim of this paper is to analyse the extra-musical signification processes in most important acousmatic works of the spanish composer Eduardo Polonio, *Cuenca* (1985), *ChC* (1992) and *Trois moments précédant la genèse des cordes* (2001).

They are concert works most representative of each decade with similar musical style. Their sound materials are based on exploration of timbre qualities and have great evocative power of images, stories and concepts. Links to these musical works can be found on the Internet.<sup>1</sup>

## 2. Methodology for the analysis of acousmatic music

In order to address the study of musical significations in Polonio's acousmatic works, semiotic approaches help to reveal how sound events considering as signs are capable of expressing, in a synesthesia way, abstract concepts and external realities to musical discourse. The methodology applied corresponds to the framework proposed by Philip Tagg based on his concept of "anaphones" (2012). This concept is divided into three perceptual categories referring to sounds which by means of iconic representation evoke other sounds (*sonic anaphones*), tactile perceptions (*tactile anaphones*), and impressions of movement (*kinetic anaphones*).

Another approach carried out which complements this semiotic study derives from the methodological framework outlined by Francesco Giomi and Marco Ligabue, in particular what they call "signification strategies." This permits to identify procedures used by the composer to link concepts to abstract musical thoughts. In this case, their theoretical concepts divided into four categories<sup>2</sup> are crucial to determinate the general structure of the Polonio's works (Giomi and Ligabue, 1998: 141-143).

The analysis will be supported by sonograms providing a visual representation of the works and revealing interesting data to understand the relationships between the internal structure of the musical work and its external world.

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<sup>1</sup> <http://www.eduardopolonio.com> (last accessed 07/14).

<sup>2</sup> 1). Narrative Organization and Characterization of Sections: The structure of the composition is divided into sections representing different moments in terms of preparation/indetermination, culmination/tension, and conclusion/relaxation. 2). Semantic Associations: These types of associations are developed by composer to allude tension by using specific morphologies or to activate symbolic processes. 3). Analepsis and Prolepsis: the composer uses anticipation (analepsis) and repetition (prolepsis) as structural procedures of the musical discourse. 4). Narration of Timbres: Different typologies are used by composer to develop different musical narrations.

### 3. Analysis of Polonio's acousmatic works

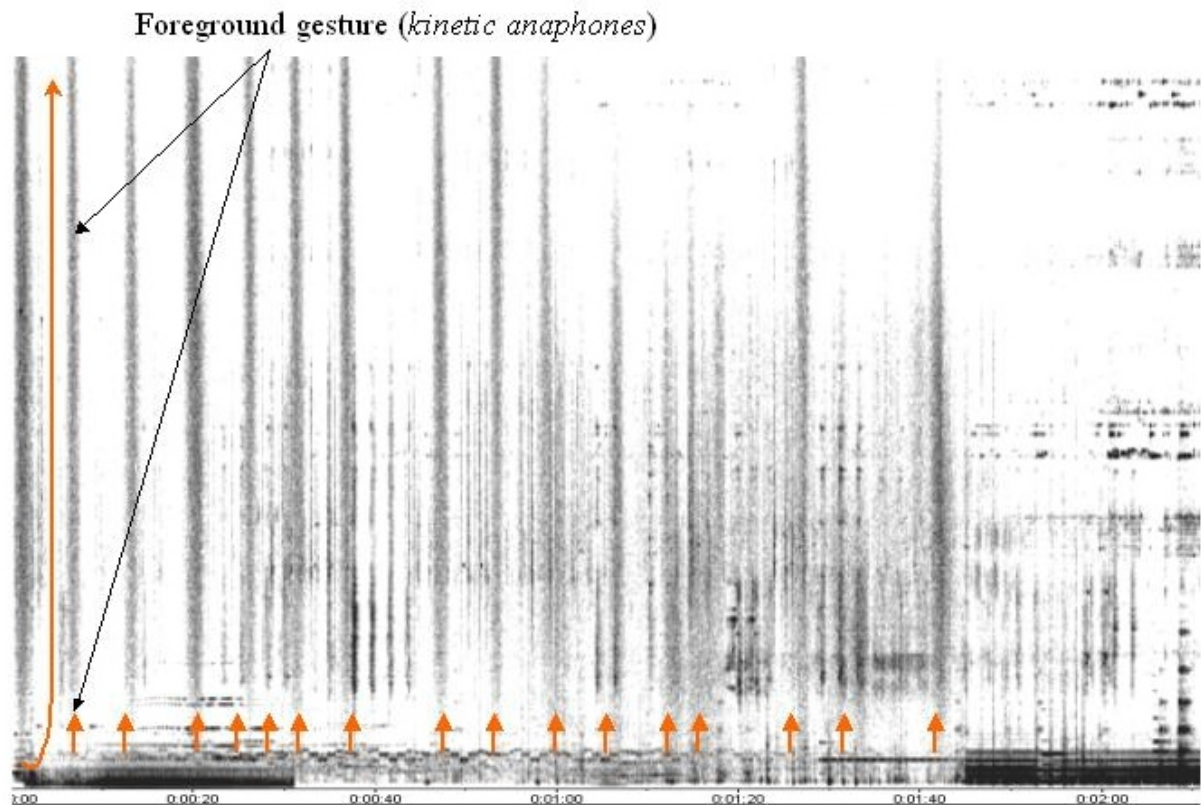
#### 3.1. *Cuenca* (1985) 13'27

This work is based on the Spanish city called Cuenca in which the composer try to reflect perceptual sensations provoked by this particular landscape.

The piece is divided into three sections followed by a coda.

**A section** (0'00 – 2'31): This section contains a foreground gesture appearing regularly. This energetic profile is perceived as a *kinetic anaphones* describing undulating movements corresponding to curved forms of the Cuenca ravine.

On the other hand, in low frequencies is possible to distinguish a complex texture quite similar to stone hitting and rock dragging trying to represent tactile sensations of rough surface.



**Figure 1.** *Cuenca*, A section 0'00 – 2'31

**B section** (2'32 – 6'56): There is the sonority of creaking wood evoking as a *kinetic anaphones* motion in time. This seems to recreate visual and tactile sensations corresponding to a bedrock landscape and at the same time to create a sense of restless.

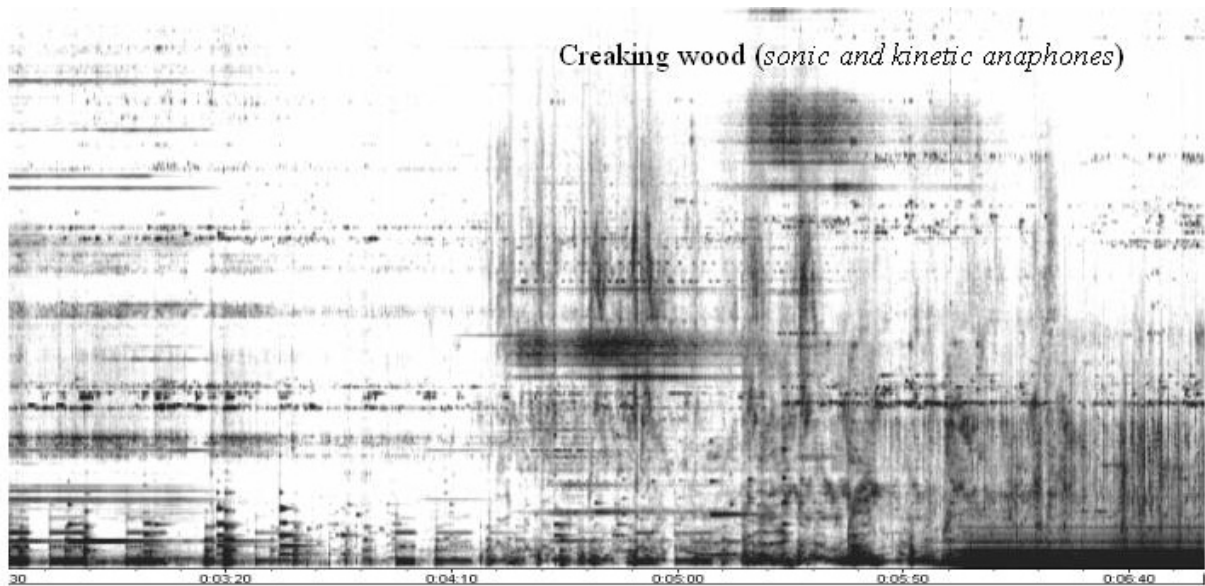


Figure 2. Cuenca, B section 2'32 – 6'56

**C section (6'57 – 9'04):** It represents a serenity state by using metallic sonorities reminding tinkling bells. This type of sound evoke as a *kinetic anaphones* the image of suspension particles suggesting in this case delicacy and calm.

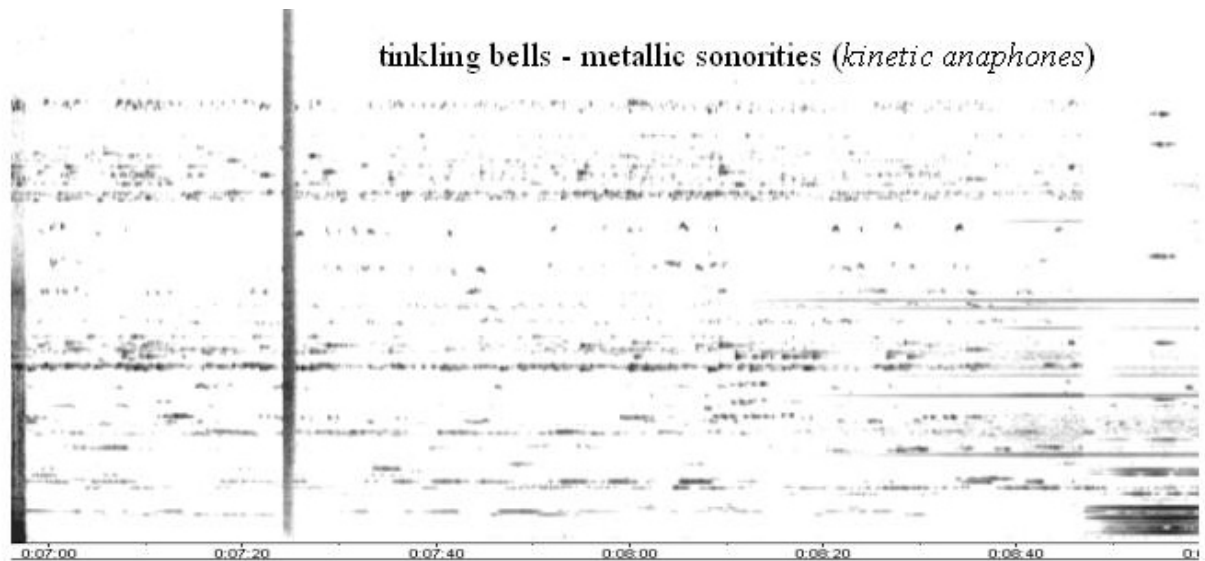


Figure 3. Cuenca, C section 6'57 – 9'04

**Coda (9'05 – 11'30):** This section includes sonorities from previous sections finalizing with a musical discourse based on drones which recreate an light unstable atmosphere.

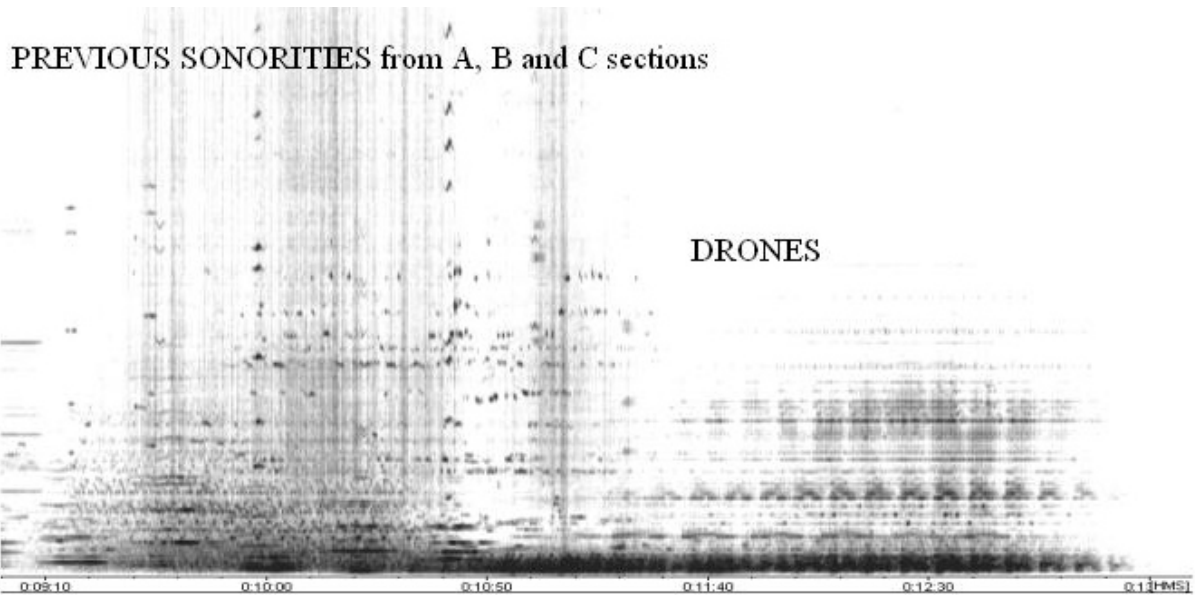


Figure 4. *Cuenca*, Coda 9'05 – 11'30

### 3.2. *ChC* (1992) 10'52

The title comes from the sentence “Canta Hermano Cigarra.”<sup>3</sup> The musical piece is centred on cicada myth of Plato recreating transformation processes suffered by this type of insects.

The work is divided into three sections preceded by an introduction and followed by a coda.

**Introduction** (0'00 – 0'30): This section begins with a female voice declaiming Fedon text followed by three musical phrases of pure sounds. The woman voice without any sound effect along with these pure tones suggest transparency corresponding to the first stage, the birth.

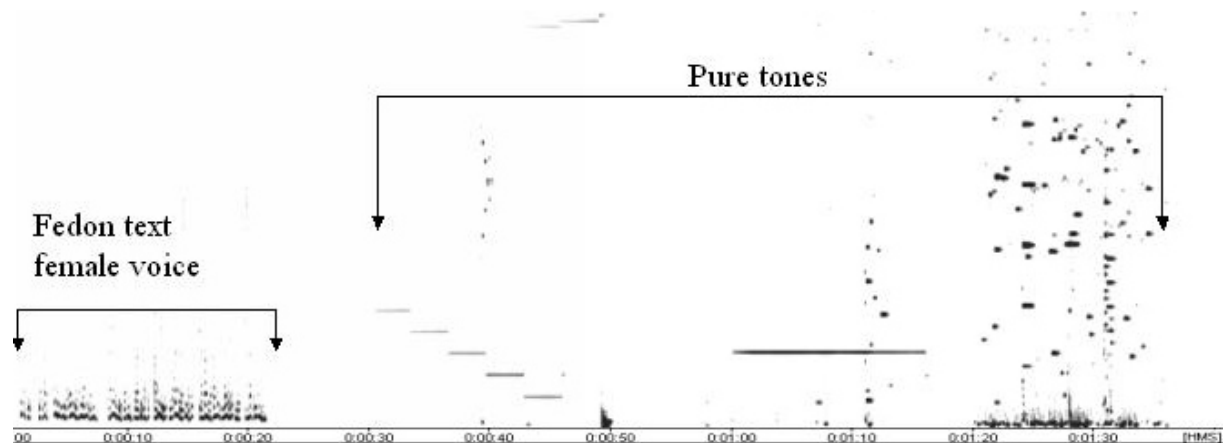


Figure 5. *ChC*, Introduction 0'00 – 1'41

**A section** (1'42 – 3'26): This part is founded on multiple flow direction of spectral content. This turbulent behaviour is perceived as a *kinetic anaphones* provoking a disorientation sensation.

<sup>3</sup> Translated into english is “Sing brother cicada.”

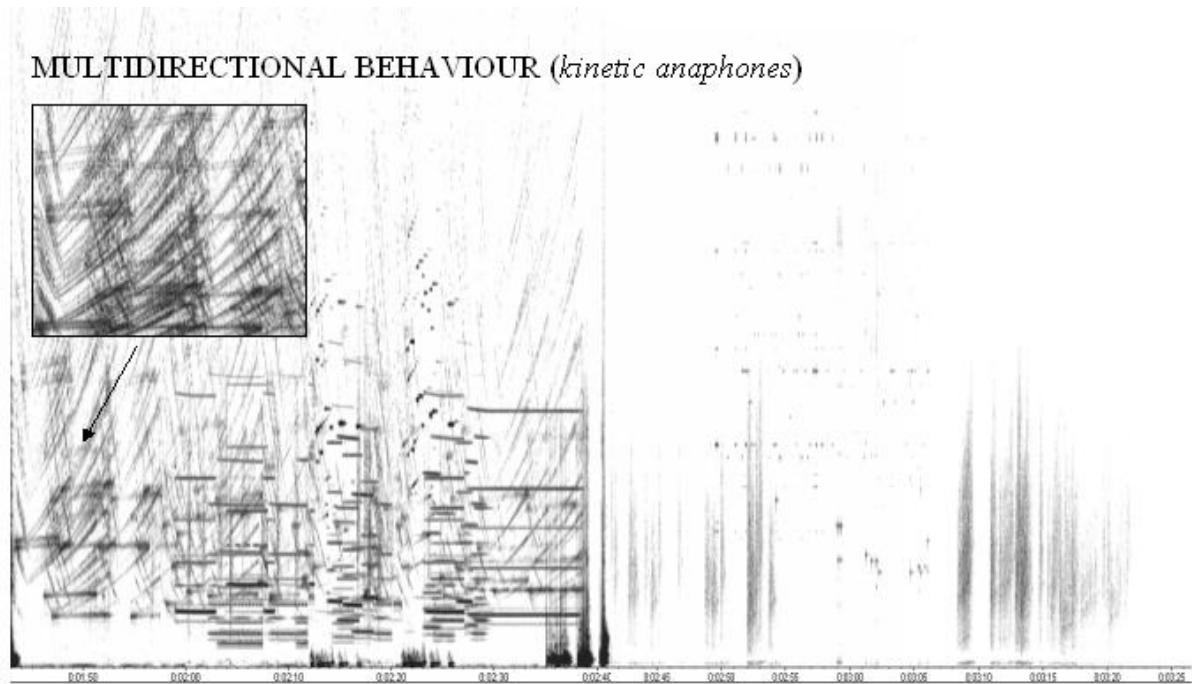


Figure 6. ChC, A section 1'42 – 3'26

**B section** (3'27 – 4'47): In this section exists a kind of fight between different timbres. The intermittent discourse formed represents a resistance to a transformation process.

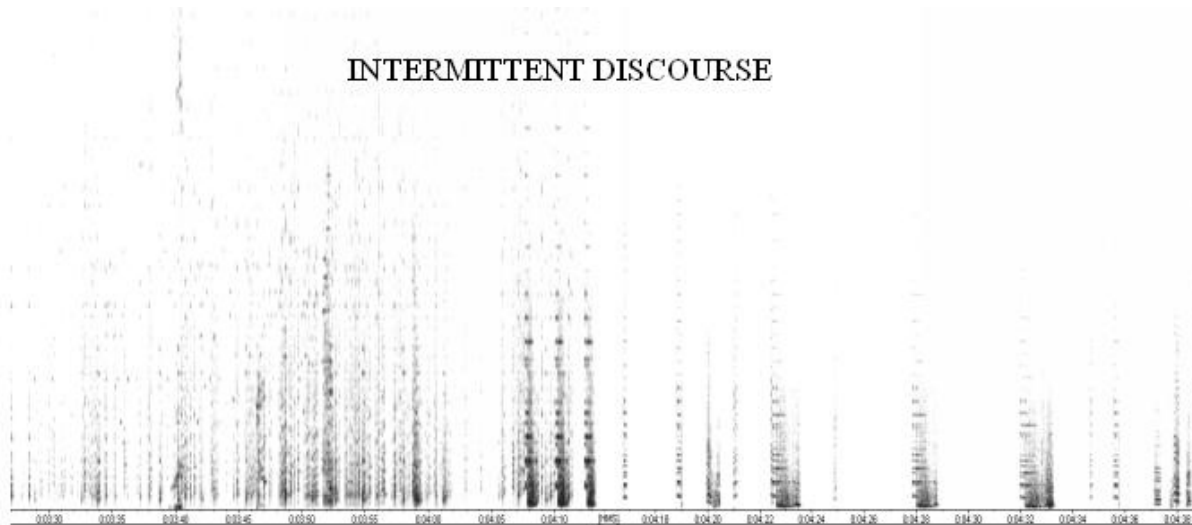
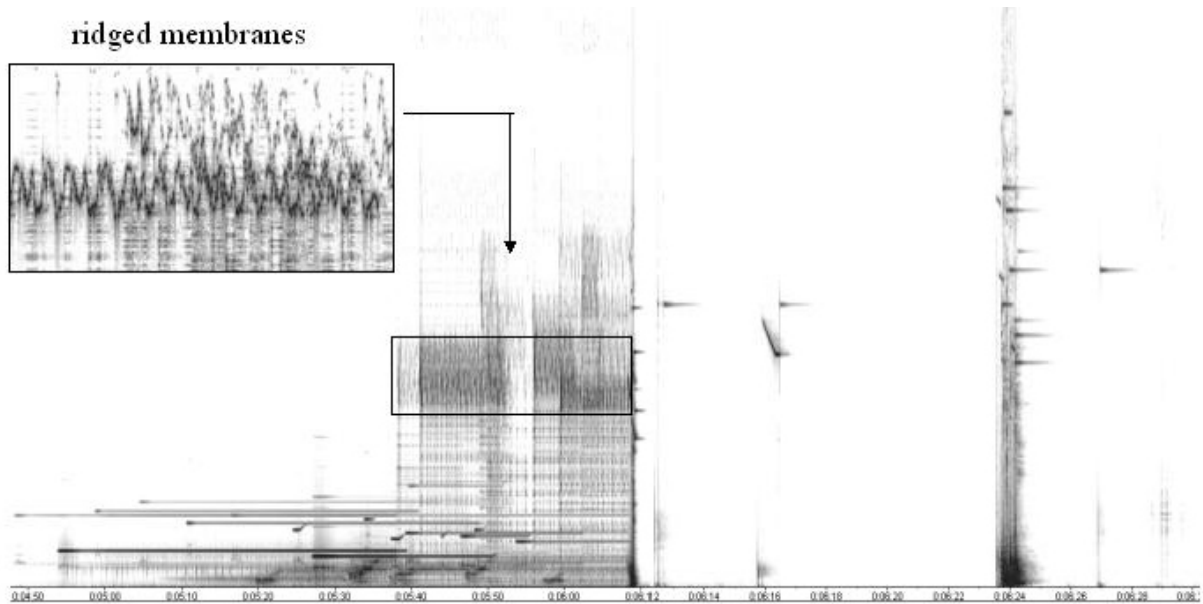


Figure 7. ChC, B section 3'27 – 4'47

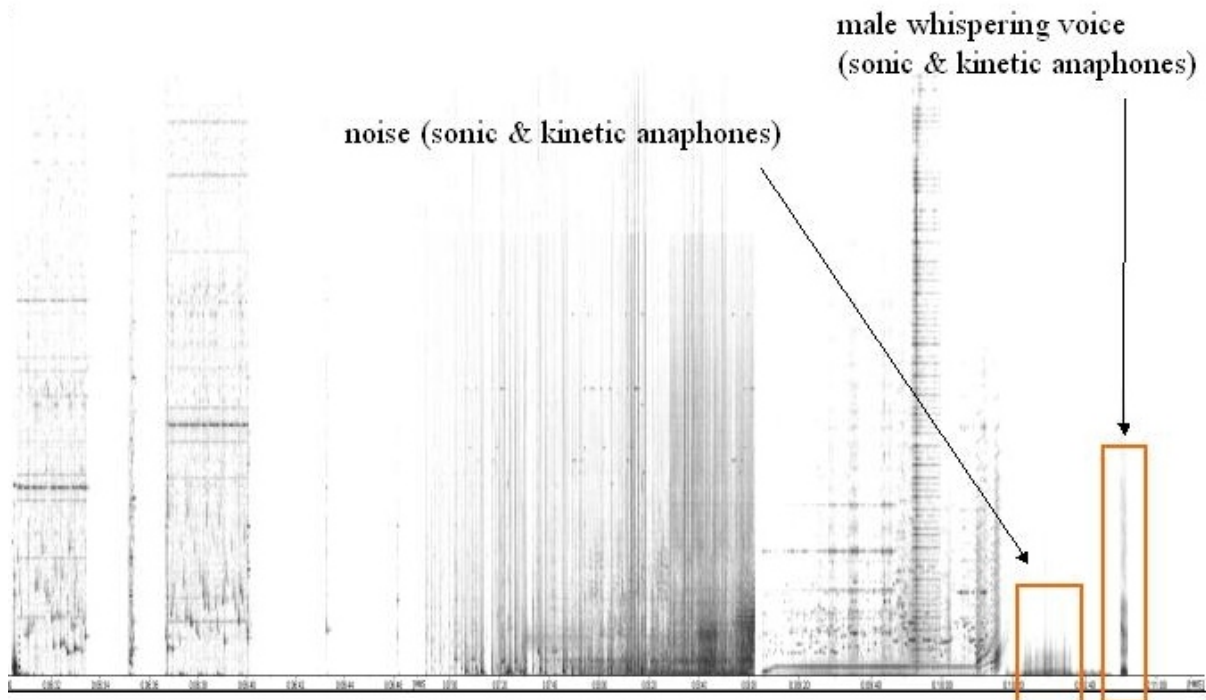
**C section** (4'48 – 6'25): We can appreciate a sonority described as metallic and electronic sound whose rough texture as a *tactile anaphones* evokes the image of ridged membranes.





**Figure 8.** *ChC*, C section 4'48 – 6'25

**Coda (6'30 – 10'52):** At the end of this part it is possible to apprehend a noise quite similar to vibration produced by insect flapping which is following by a male voice whispering the sentence “Canta hermano cigarra.” This latter contrasts the introduction indicating the final conversion of the insects. On the other hand, this interesting effect applied to whispering voice intensifies the “r” consonant recreating once again the sonority of flapping.



**Figure 9.** *ChC*, Coda 6'30 – 10'52

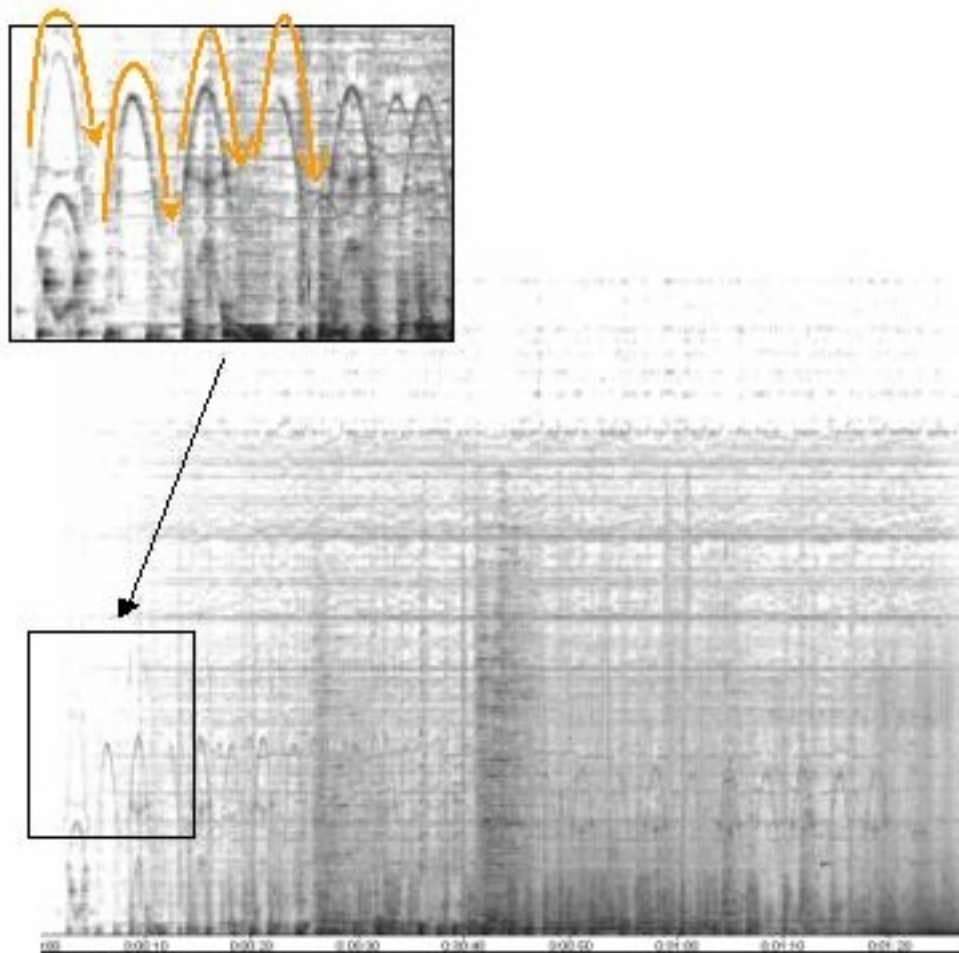


### 3.3. *Trois moments précédant la genèse des cordes* (2001)

The work is divided into three sections separated by brief silences and is focused on notion of “string theory”<sup>4</sup> which is taken as a compositional pretext.

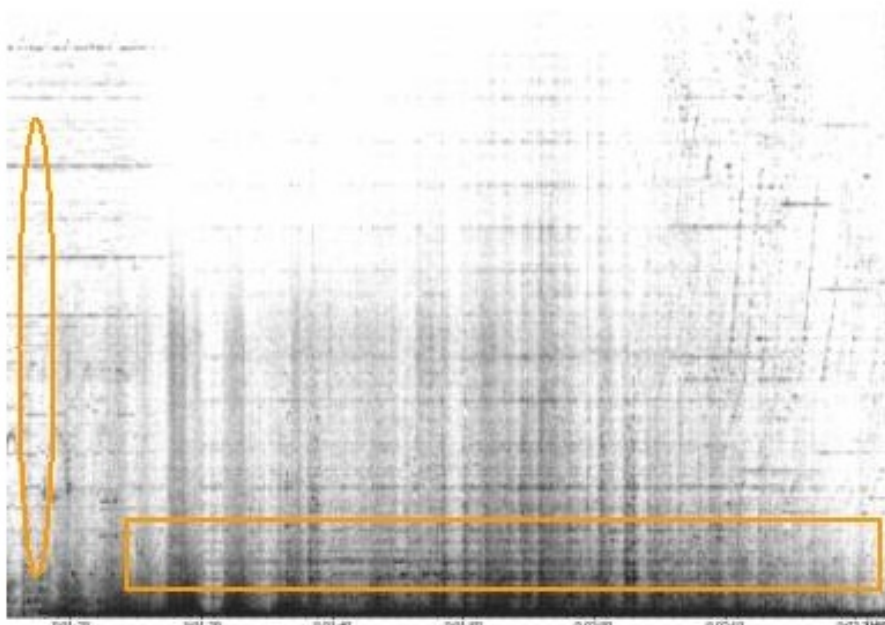
**A section** (0’00 – 6’23): This part reflects high activity of movement by means of different sonorities evoking a perception of displacement. From a physics point of view, we might regard that this mobility concept recreates a complex and dense energy.

This section has principally four types of morphologies perceived as continuous movements, *kinetic anaphones*. The first is visualized on sonogram as a reversed “U” characterised by its ascending and descending morphology. The second and third are sounding at the same time. The second has a wide range of spectral band meanwhile the third consists of melodic-rhythmic obstinate with subtle changes of dynamic. And finally, the fourth has ascending morphology perceived as a glissando.

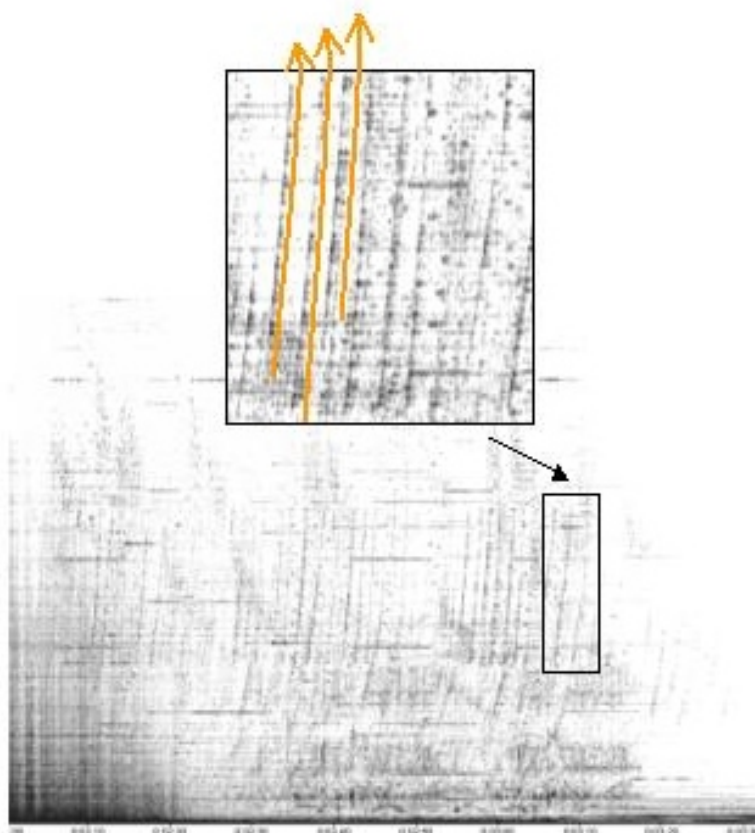


**Figure 10.** *Trois moments précédant la genèse des cordes*,  
A section First type of morphology 0’00 – 1’26

<sup>4</sup> This theory states that the nature of elementary particles relies on the vibration of a string.



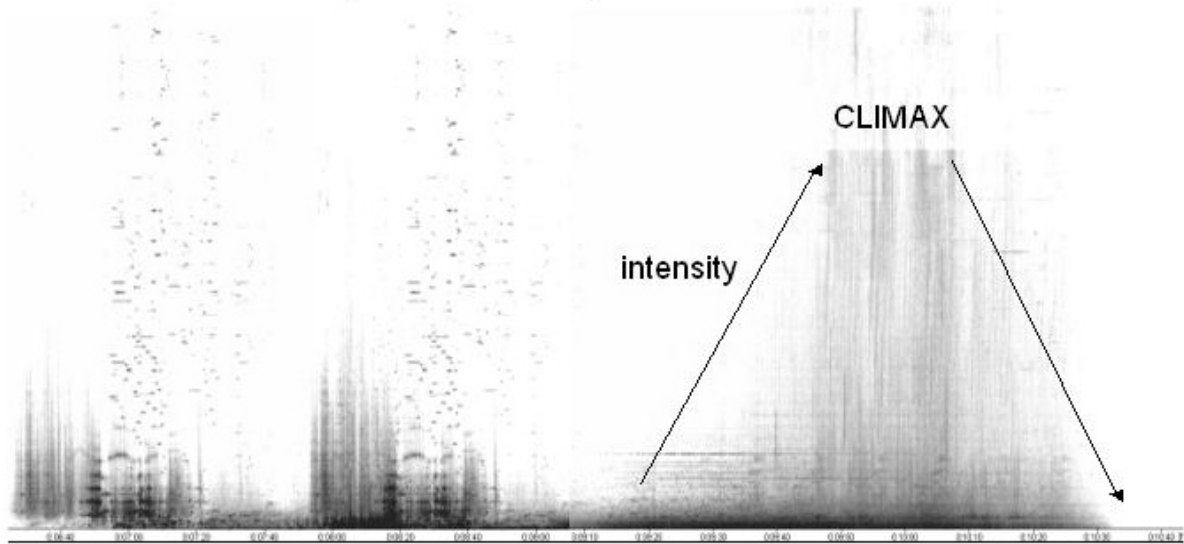
**Figure 11.** *Trois moments précédant la genèse des cordes,*  
A section Second and third type of morphology 1'15 – 2'25



**Figure 12.** *Trois moments précédant la genèse des cordes,*  
A section Fourth type of morphology 2'00 – 3'30

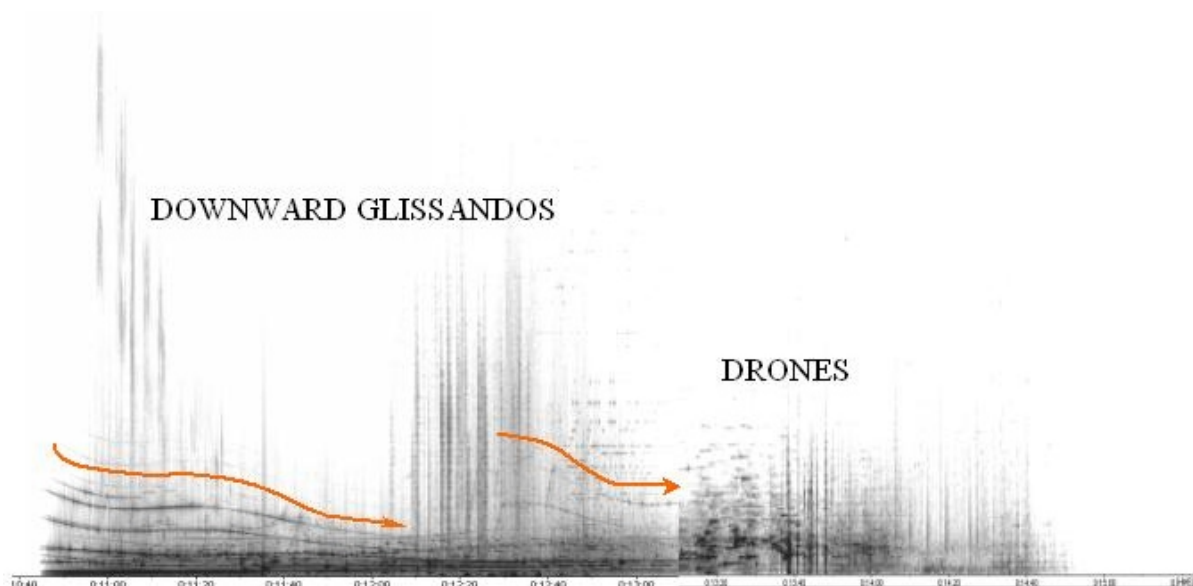
**B section** (6'24 – 10'43): This section includes a complex texture formed by different sound materials which appears to be caused by high energy movement from the previous part. This section finalizes with an accumulation of sonic events increasing in intensity provoking a progressive tension in our expectation. Finally, a climax is reached by this progression in which takes place a gradual attenuation of sound elements.

**COMPLEX TEXTURE (different materials)**



**Figure 13.** *Trois moments précédant la genèse des cordes*, B section 6'24 – 10'43

**C section** (10'44 – 13'14): This part contains very long down ward glissandi ending with a musical discourse based on drones decreasing in intensity. This type of fading out of energy along with small fluctuations from drones evokes as a *sonic* and *kinetic anaphores* the image of distended strings.



**Figure 14.** *Trois moments précédant la genèse des cordes*, C section 10'44 – 13'14

## 4. Conclusions

From this type of analysis arise the following conclusions.

Firstly, the process of working with the emotional nature of morphologies trying to recreate other sounds, tactile and kinetic perceptions by iconic connections allows to composer to organise the sound material into sections with different musical significations in terms of tension and relaxation

Secondly, the semiotic analysis, in this case the use of *anaphones* concept from Philipe Tagg, constitutes a pedagogical tool to approach people who are not expert in the electroacoustic music field to a better understanding.

However, we must take into account this semiotic analysis depends on different aspects such as cultural contexts and personal experiences bringing different meanings to the work. For this reason, in this particular study the interviews with the composer are crucial to identify this type of semantic associations.

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