



The
University
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Voice and poetry as inspiration and material in acousmatic composition

By:

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Portfolio of acousmatic compositions and analysis files

Included in DVD-Rom 1

All the pieces are in Wav format at 44.1 kHz and 16 bits. Pieces included in the cycle *La lumière artificielle* are octophonic (8.0) and are presented in interleaved Wav files. For a correct listening, the loudspeaker setting must be placed as is indicated in Figure 5. The pieces corresponding to the Three acousmatic tributes, are all stereo in Wav format at 44.1 kHz and 16 bits as well.

Cycle *La lumière artificielle*

Included in the folder 01_Cycle_La_lumière_artificielle_portfolio.

1. *Overture* (2015-2016) 8'
2. *La Lumière* (2015) 9'46"
3. *La Luz* (2016-2017) 9'45"
4. *The Light* (2017) 10'
5. *Hundreds of milliseconds* (Finale) (2017-2018) 11'21"

Three acousmatic tributes

Included in the folder 02_Three_acousmatic_tributes_portfolio.

6. *Un regalito misterioso* (2014-2015) 9'22"
7. *Tom... Far... Orion... Blue...* (2016) 8'28"
8. *Sheffield 17* (2017) 7'11"

Included DVD-Rom 2

The videos are all in QuickTime movie format with codecs AAC and H.264 and the audio in stereo format. The videos corresponding to the cycle *La lumière artificielle* were rendered using stereo reductions of the original octophonic pieces; if it is required to appreciate the videos with the original octophonic audio for those works, it is necessary to insert the video alongside the multichannel interleaved Wav files in a suitable DAW (e.g. Reaper), synchronising their starting points and muting the audio of the video. These videos are included in the folder 03_Videos_EAnalysis.

The EAnalysis files are all in eanalysis format and were generated with the version 1.1.8 of this software; to access them is necessary this version or superior running in an Apple computer with Macintosh Multicore Intel Processor, OS10.7 or later (including OS10.10 Yosemite), 4GB RAM. For more details, visit: <http://eanalysis.pierrecooprie.fr/>

These files are included in the folder 04_EAnalysis_files_portfolio.

Abstract

This thesis combines both practice-based research, in the form of acousmatic composition, and theoretical research, addressing voice and poetry both as inspiration and material. It includes a portfolio of original compositions and a written text with aesthetic ideas that informed the compositional process. The aim of the research was to propose a particular creative strategy, based on Chilean poet Vicente Huidobro's aesthetic theory; a system which aims to create artistic works independent of real world by taking materials from reality and combining them in unexpected ways through an equilibrium between rationality and intuition. This theory, alongside various other theoretical and artistic sources informing the creative process, is explained in a section entitled **Compositional Rationale**. The broader thesis is divided into two parts, each starting with a methodology relating to the compositions described within: **Part 1: Octophonic cycle *La lumière artificielle*** and **Part 2: Three acousmatic tributes**. In order to examine how the **Compositional Rationale** operates within the portfolio's pieces, an analytical methodology has been proposed. This is described in an **Analytical methodology** section and considers the use of two parts of the tripartite model proposed by Nattiez (1990) and developed for electroacoustic music by Roy (2004). The two parts of the tripartite model are *poietic analysis* and *neutral analysis*. The first describes the creative process and compositional considerations of the author, and the second details the constitutive elements of each piece within five areas; Pierre Schaeffer's notion of *sound objects* (1966), Denis Smalley's notion of *spectromorphological functions* (1997), *levels of spatial function* by Annette Vande Gorne (2010), and finally two more types of analyses developed by the author: *voice type* and *speech-sound type*. Taken as a whole, the analysis demonstrates the structural constitution of each piece, and thus shows how Huidobro's creative system, called *creacionismo*, has been applied successfully to acousmatic composition, generating the notion of *acousmatic-creationist* as nomenclature for the process. This is the main outcome of this thesis, a new artistic strategy which balances rationality and intuition within acousmatic composition and places poetry as a driven force in the use of voice, merging artistic practice and theory in a recursive action.

I. Introduction

This doctoral thesis explores the use of voice and poetry within acousmatic music. It includes two components: 1) a portfolio of original acousmatic compositions, in both stereo and multichannel formats, in which voice and poetry are aesthetically central, and 2) a written text, in which compositional strategies for the use of voice and poetry are elaborated and explained for all the pieces. At the same time the text provides an exhaustive analysis of the pieces and a conclusion of findings. The research deals with different influences from the broader electroacoustic music repertoire, alongside ideas and techniques from media poetry. In this way, the research presents a diverse group of notions which constitutes an artistic background for the whole; how this diversity can be assimilated, transformed and subsequently used for the composition of original pieces is the main concern of the thesis thus requiring the development of a coherent creative method in order to achieve that task.

Two main sources of artistic practice have informed the production of works in the portfolio; existing acousmatic and electroacoustic repertoire, particularly where this has included the voice, and various interdisciplinary artistic endeavours, including *media poetry* as a complex group within experimental poetics, *sound poetry*, and avant-garde literature. All these sources are explained in both the **Compositional rationale** section **II** and each chapter; there are both general sources, relevant to the portfolio as a whole, and specific sources that are used to demonstrate a specific point or approach. Among these sources, ideas on artistic creation by the Chilean poet Vicente Huidobro have a particularly prominent place. The poetry and theory of creative process, established by Huidobro in the first half of the 20th century, did not merely provide direct inspiration for specific pieces within the portfolio; they provide a general foundation for the broader compositional rationale that is explored throughout this thesis and especially for the placement of a research-artistic position proposed in this thesis. The Chilean poet's ideas are explained in the **Compositional rationale**, specifically the core concepts of Huidobro's *creacionismo* theory. All this leads to the definition of the works presented as *acousmatic-creationist* pieces. Each chapter subsequently shows the many ways in which these ideas operate in the context of the author's acousmatic compositional practice.

Chapters relating to each piece are included in two Parts: **Part 1: Octophonic Cycle *La lumière artificielle***, consists of 5 chapters, and discusses a large-scale

octophonic cycle of connected works and, ultimately, the elaboration of a bespoke compositional method. **Part 2: Three acousmatic tributes**, includes 3 chapters respectively, which provide yet further diversification of the same core method. In both of these parts, analytical methods are used to draw attention to specific compositional approaches and outcomes and the portfolio as a whole. In doing so, a degree of heterogeneity is identified and described, and subsequently aligned with the notion of *nodalism* - a concept involving a diversity of networks which can allocate a plethora of cultural nodes in a decentralised structure (Adkins 2014); inspired by philosophical, artistic and scientific notions, Adkins proposes this concept as a model to understand human culture, including the production, distribution and reception of artworks; the model emphasises the heterarchical, non-linear and multi-layered character of contemporary culture, where is possible to

Nodalism acts as a unifying network in which these different emergent cultural trends act as local centres of behavioural models or aesthetic thinking (Adkins 2014, p. 56).

Consequently, analysis draws attention to the superposition of constituent elements and references to a wide network of pieces, authors and other artistic and cultural elements. At the same time, analysis provides information on how the portfolio might be understood, as both a collection of self-contained works, and an integrated whole. This, it is argued towards the end of the thesis, represents the main contribution to knowledge, in which theory and practice are ultimately fused.

II. Compositional rationale: Vicente Huidobro and the *Creacionismo*

This section contains relevant notions that are the main theoretical foundation for the compositional process. These ideas operate over a complex grid of supporting materials formed by an electroacoustic music background and media poetry sources. The next chapters, which cover the compositions conforming the portfolio presented, consider these sources and inspirations and consequently discuss them whenever it is necessary to support and describe the pieces; these sources are characterized by having sound and voice as central elements of their aesthetic programmes.

This text considers various avant-garde art forms from the turn of the 20th Century which explore sounds of the voice, both as a form of semantic and non-semantic expression. As shall be discovered later on in this thesis, these explorations are an important background informing the compositions. Besides the rich tradition of vocal works in electroacoustic music, various forms of *media poetry*¹ and art have influenced this thesis.

Among the influences considered in the artistic process of this thesis, this section focuses upon a selection of specific ideas that are of particular relevance to the portfolio. In particular, these include Vicente Huidobro's aesthetic theory named *creacionismo*. Through a discussion of these ideas, we discover some of the central drivers for compositional activity in the portfolio, and therefore lay the central ground for a detailed discussion of those works in the chapters that follow.

The Chilean poet Vicente Huidobro was born on 10th January 1893 in Santiago de Chile. He was son of an aristocratic family and his mother, María Luisa Fernández, was an active writer, artist and feminist. Indeed, it was her support and inspiration that pushed him to publish his first text at the age of eighteen, in 1911 (Goic 1975). Until 1916, his poetry was very close to *Modernismo*², but it was starting to expose some personal ideas

¹ According to Kac (2007, p. 11), *media poetry* is part of what is called *experimental poetics* and is based in different approaches of the avant-garde movements in the early 20th century, which are both "rational and anti-rational". These movements are "[...] Futurism, Cubism, Constructivism, Dadaism and Lettrism", but include paths from the print-based works within "[...] Spatialise, Concretism, L=A=N=G=U=A=G=E, Beat, Visual Poetry, Fluxus, and Process/Poem" (Kac 2007, p. 11). The notion of *poetic experimentation* started to emerge in the middle of the 20th century, as a growing number of practitioners in different regions started to connect in the post-war decades. This group rediscovered "the long-forgotten approaches of the avant-garde in the first decades of the century" (Block 2007, p. 231).

² Literary movement of Spanish America which its main figure was the Nicaraguan poet Rubén Darío. The main characteristics of this movement were the liberation from strict rules tending to free use of themes and poetic elements such as verses shapes, rhyme, rhythm and other experimentations. It had as sources the European movements of *Parnassians* and *Symbolists* (Jrade 2012, pp. 894-895)

regarding the creative process, claiming the need for an art avoiding *mimesis* and favouring instead an intermedia approach to creation to achieve this avoidance. In fact, in 1914 he gave a presentation at the *Ateneo*³ de Santiago entitled *Non Serviam*⁴ (Arenas 1975); a manifesto which inaugurated his new ideas. The manifesto was published in 1925 in *Manifestos*. This book is a collection of various theoretical texts covering his aesthetic ideas, including his notions of the creative process, the role of the poet in the 20th century and analysis and comparisons with the previous literature and others artistic movements of his time, such as futurism and surrealism. Some lines of the manifesto are extremely direct in terms of the transforming aesthetic of Huidobro:

[...] El poeta dice a sus hermanos: “Hasta ahora no hemos hecho otra cosa que imitar el mundo en sus aspectos, no hemos creado nada. ¿Qué ha salido de nosotros que no estuviera antes parado ante nosotros, rodeando nuestros ojos, desafiando nuestros pies o nuestras manos?” [...] Non serviam. No he de ser tu esclavo, madre Natura; seré tu amo. Te servirás de mí; está bien. No quiero y no puedo evitarlo; pero yo también me serviré de ti. Yo tendré mis árboles que no serán como los tuyos, tendré mis montañas, tendré mis ríos y mis mares, tendré mi cielo y mis estrellas. Y ya no podrás decirme: “Ese árbol está mal, no me gusta ese cielo..., los míos son mejores” [...]”⁵ (Huidobro 1999).

This passionate statement against *mimesis* is consistent with his will of autonomy for art in regards to real world objects and entities as models to be imitated: “For Huidobro, the aesthetic phenomenon should exist like a plant, a star, or a fruit, with its own reason for being” (Sarabia 2012, p. 316). At the same time, Huidobro emphasizes the crucial role of the poet as an individual, a sort of demiurge creating worlds and beings: “El Poeta es un pequeño Dios”⁶ (Huidobro 1999). Creation is personal, therefore its outcome, the

³ Name of a certain type of cultural group (scientific or literary) and at the same time the name of the place where the group used to meet. *Ateneos* were very common in several capitals of Spanish speaking countries during the 20th century, particularly in the first half of it. Famous in the biography of Huidobro are his presentations at the *Ateneos* of Santiago, Buenos Aires and Madrid, (1914, 1916 and 1921 respectively).

⁴ Latin for *I will not serve*.

⁵ All the quotations from (Huidobro 1999) correspond to the official website <https://www.vicentehuidobro.uchile.cl>, and because of that there is no page reference. The translation for this text is: “[...] The poet says to his brothers: “Up to now we have done nothing but imitate the world in its aspects, we have created nothing. What has come out of us that was not previously in front of us, around our eyes, challenging our feet or our hands? [...] Non serviam. I do not have to be your slave, Mother Nature; I shall be your master... I shall have my trees which will not be like yours, I shall have my mountains, I shall have my rivers, I shall have my sky and my stars. And you will not be able to tell me: “This tree is bad, I don’t like that sky... mine are better” [...]”. Translation: A. Albornoz.

artwork, is independent of the way the world works; in this way, the artist creates a new world. Argentinian architect and art researcher Alejandro Crispiani, explains Huidobro's theory:

[...] el poeta [...] da nacimiento a un universo que le es propio y que está en cierta forma cerrado. El poema creacionista respresenta un mundo paralelo que no se toca con lo real; se instala en la realidad como una realidad diferente, absolutamente resistente a ella y a sus principios de funcionamiento⁷ (Crispiani 2011, pp. 66-67).

In this way both poetry, and art more generally, would imitate nature not in its realisations and constructs but in its way of acting, that is, as a creative entity (Sarabia 2012, p.316). In other words, if nature creates original things that are placed in the world, Huidobro asks to avoid imitation of these objects and rather encourages to create as nature does.

In a conference given in 1916 at the *Ateneo* of Buenos Aires, Huidobro claimed: “[...] la primera condición del poeta es crear; la segunda, crear, y la tercera, crear”⁸ (Huidobro 1999). This sentence motivated the Argentines to baptize him as a *creationist*; a foundational moment where the name of the theory was coined: *creacionismo*, thereby summarised Huidobro's ideas of avoiding imitative art in the search for sheer invention⁹. Huidobro's goal, namely the invention of new facts and new objects, is tackled by him through the exposure of unexpected relationships between pre-existing elements (things from the real world) (Huidobro 1999). Thus the artist uses elements of the objective world and, by means of combining and transforming them, obtains new facts to be added to the world (Huidobro and Goic 2003, p. 1311). From this, we might identify a range of key procedures advocated by Huidobro, including the relocation, re-contextualisation and transformation of concepts, images and sounds. These procedures are realised by

⁶ “The poet is a little God”. This verse is part of the poem *Arte poética* first published in the book *El espejo de Agua* (1916). Translation: A. Albornoz.

⁷ “[...] the poet [...] gives birth to a universe that is his own and that is closed in a certain way. The creationist poem represents a parallel world that is not touched with the real; is installed in reality as a different reality, absolutely resistant to it and its operating principles”. Translation: A. Albornoz.

⁸ This quotation is part of the manifesto *El Creacionismo (The Creationism)* first published in French in 1925 as part of the book *Manifestes*. In this text, the author explains his aesthetic theory and review several moments, including conferences and facts. The text says: “[...] the first condition of the poet is to create; the second, to create, and the third, to create”. Translation: A. Albornoz.

⁹ This aesthetic programme would have a great impact on later Latin American literature and arts (Crispiani 2011).

creating new words, combining pre-existing ones, connecting adjectives to nouns in unexpected ways, and ultimately through the dislocation of language in pursuit of a pure sonic content of syllables and phonemes¹⁰.

In addition to what is discussed above, Huidobro claimed to have identified a conceptual path for his theory, which is different to the guidelines of two of the most relevant avant-garde movements of 20th century: Italian Futurism and Surrealism. With the first one, the author maintains a certain distance, especially regarding specific principles by considering them as old or absurd (the admiration for recklessness, the exaltation of war, contempt for women), although he valued the idea of liberation of words and verses¹¹ (Huidobro 1914, pp. 163-171). Regarding the second, the Chilean poet rejects the advocacy of the subconscious as main engine for artistic creation, since he considered this surrealist premise impossible and also an attempt to fragment the human mind; in fact, Huidobro believed that humans act according to both, reason *and* the subconscious¹² (Huidobro 1999).

In accord with the above, Huidobro argues that poetic activity involves two aspects; *reason* and *imagination*. This duality, he argues, is representative of the dual nature of human beings. Consequently, he states a condition that enables one to achieve the *creationist* goal; the *poetic delirium* or *superconsciousness*. This is a particular state in which *delirium* involves fluctuations between *reason* and *imagination*, producing a

¹⁰ As is easy to appreciate, these procedures are similar to *musique concrète* and *media poetry* techniques, which in turn, are inspired by the previous avant-garde methods; see footnotes 11, 17 and 19.

¹¹ Italian Futurism was an endeavour led by Filippo Tommaso Marinetti, who wrote several manifestos around 1909 and who influenced a large number of artists all over Europe and the rest of the world. Francesco Balilla Pratella and Luigi Russolo are famous for having contributed to the musical wing of Italian futurism, through their proposals regarding music and sound and attempts to create a new music where noise (understood as non-traditional musical sounds) is aesthetically central. Considering that 'musical sounds', namely the sound palette from traditional instruments, were very restricted they created new devices, the *intonarumori*, mechanical instruments able to produce a wide variety of sounds indicated by their names, such as "[...] scraper, thunderer, crackeler, crumple, exploder, gurgler, buzzer [...]" (Roads 2015, p. 99) among others. In his manifesto 'The Art of Noises', Russolo argues "Musical sound is too limited in its variety of timbres [...] modern music flounders within this tiny circle, vainly striving to create new varieties of timbre. We must to break out this limited circle of sounds and conquer the infinity variety of noise-sounds" (Russolo 1986, pp. 24-25). These conceptual directives, an integral part of this artistic current and its subsequent influences in the forthcoming music movements of the 20th Century, are the main reasons why Futurism has been well-documented and studied in this area. From the perspective of this research, is interesting to note that some aspects of Futurist Poetry used the spoken word in a sense beyond communicational use of language. With its craving for noise as disrupting element within traditional music and art, Futurism encouraged the use of onomatopoeia in poetry, as a means to highlight agitation and dynamism of nonsense sounds, the pure din of modern life, elements that should be highlighted to replace the old bourgeois social order, according to the conceptual guidelines established by Marinetti (Poggi 2009, p.826). This pursuit is represented in what he called *Parole in libertà* (*Words in freedom*), a style with words liberated from meaning, where poems had a free form and were expressed and experienced in three 'modes'; the integration of text, visual art and the performance of the poem in a theatrical manner.

¹² This is explained in his text *Manifiesto de manifestos* published in 1925.

conjunction: “[...] una especie de convergencia intensiva de todo nuestro mecanismo intelectual [...]”¹³ (Huidobro 1999). The poet’s *delirium* allows for the discovery of unexpected relationships between elements (words, images, sounds) by means of the different techniques mentioned: creation of new words, connection of adjectives to nouns in unexpected ways, highlighting of sonic content of words and phonemes.

Although Huidobro refused to describe his poems as *cubist* (Castro Morales 2008, p. 153), certain techniques associate his works with cubist poets such as Guillaume Apollinaire, Pierre Reverdy and Max Jacob; techniques such as fragmentation and juxtaposition are heavily used in their works, and these became cornerstones of the cubist style. Having arrived in Paris in 1916, Huidobro joined the avant-garde circle, interacted with various artists and released several poetry books¹⁴ (Arenas 1975). Albeit keen to pursue his own artistic agenda, in his endeavour there are clearly connections with Dadaism, Surrealism and Futurism, and these connections are reflected in some ideas and techniques, such as *calligrammes*¹⁵, *painted poems*¹⁶ and *simultaneism*¹⁷, which

¹³ Part of *Manifiesto de manifiestos* published in 1925: “[...] a kind of intensive convergence of our entire intellectual mechanism [...]”. Translation: A. Albornoz.

¹⁴ These books were *Horizon carré*, *Tour Eiffel*, *Hallali*, *Ecuatorial* and *Poemas árticos*.

¹⁵ *Calligrammes* are a type of visual poems where the text is arranged to form certain images. This type of poems had antecedents in texts from ancient times, both in eastern and western cultures (Karasfi 2016). Guillaume Apollinaire wrote some *calligrammes* and are considered as one of the direct sources for *concrete poetry* widely accepted in the related literature (Bohn 2012). It is worth noting that Apollinaire published his collection ‘Calligrammes’ in 1918; this included poems written between 1913 and 1916. Around the same time, the Chilean Vicente Huidobro published ‘Canciones en la noche’ in Santiago de Chile; a book including four *calligrammes* grouped under the title ‘Japoneías del estío’, showing his early experimentations with visual texts, influenced by oriental poetry (theme and form). These initial explorations were later developed by Huidobro in his book ‘Horizon Carré’ (1917), which includes two *calligrammes*, ‘Paysage’ and ‘Moulin’. In 1922, he exhibited a collection of thirteen ‘*painted poems*’ in the Théâtre Edouard VII in Paris. In this way, one might suggest that he was blurring the central distinction between poetry and visual arts. According to Sarabia (2010, p. 41), this kind of works focus viewer’s attention towards the material exposed, guiding them by overlapping writing and visuals, an action which allows to address the image implied in the writing and to accentuate the abstraction of the image. As discussed later in the thesis, a similar idea is addressed within the portfolio of original compositions, particularly where there is a clear intention to move between semantic and non-semantic materials.

¹⁶ *Painted poems* are a type of intermedia works of art which combine elements of writing, *calligrammes* and painting.

¹⁷ According to Kahn (2001, pp. 51-56), *simultaneism* is a variant of Dadaism which applied the phenomenon of simultaneous occurrence of events in life to poems and Dadaist performances; as in life related or unrelated events happen at the same time, producing a certain amount of noise (Kahn 2001, p. 51), poems and Dadaist actions (performances) might operate in the same way. This aspect, typical of music (polyphony), is transferred as well to poetry by Futurism, both Italian and Russian. For instance, Russian futurist Ilja Zdanevich’s used phonetic texts in his theatre plays, as a way of producing textural sound in an operatic manner (simultaneous recitations) (Janecek 1996, pp. 274 – 275) and his use of gramophone, predate ideas and intentions of the forthcoming *musique concrète* and *poésie concrète*. It is worthy to point out here the diverse manifestations around the same idea of *simultaneism*, which precisely gave name to the mentioned specific type of poetry within the Dadaist environment in Zurich and Paris (Howarth 2011); an example of this poetry are the poems for four voices ‘Fievre puerperale’ and ‘Église’ by the Dadaist Tristan Tzara and the Unanimist Jules Romains respectively, both in the field of what was called by Huidobro as *simultaneist poetry* (Huidobro and García-Huidobro 2012, pp. 29-30).

were used in his poetry or enunciated in some projects (Huidobro and García-Huidobro 2012). All the ideas reviewed so far coalesce in his masterpiece, *Altazor* (Huidobro 2016) also known as *Altazor o el viaje en paracaídas*¹⁸. This poem in seven sections named *chants*, was started in 1919, but only published in 1931 in Spain. *Altazor* is a sky voyager, described by Sarabia (2012) as “an anti-poet and a “high-hawk” aeronaut [...] (travelling) into the realms of nothingness, the “infiniterity”. The poetic journey is in fact a metaphysical trip in seven stages corresponding to each *chant* of the poem, gradually leaving behind an old language in favour of a new one and, eventually, leading to the disintegration of meaning through the use of only the sonic semblance of Spanish words and, at the very end, just phonemes lacking any linguistic meaning. According to Cussen (2014), this famous poem is regarded as one of the foundations of *sound poetry*¹⁹ in Chile and Spanish America by several authors and it has been the subject of much analysis. Beyond this, there are numerous musical pieces inspired by the poem; although various *chants* have drawn critical attention, most have focused upon the final *chant*, due to its sonic properties (Cussen 2014, pp. 82-86). This thesis has avoided using *Altazor* as direct source or to undertake the task of a new musical version of it.²⁰ As result of the previous idea, this composition process was influenced only by idea of language fragmentation present in *Altazor*.

As was mentioned previously, the *creationist* artwork has three characteristics: independence from the real world, resistance to the real world, and action according to its own other-worldly rules (Crispiani 2011, p. 66). Considered in such a way, the poem can be understood as a device that functions as a system of elements or actions (words, images and sounds evoking an aesthetic reaction from the receiver) or, perhaps, as a machine; in his manifesto *El Creacionismo*, Huidobro stated parallels between artistic activity and the creation of machinery: “Lo realizado en la mecánica también se ha hecho en la poesía”²¹ (Huidobro 1999). In the manifesto *La Creación pura*: “¿Acaso el arte de la

¹⁸ *Altazor or a voyage in a parachute*. Translation: A. Albornoz.

¹⁹ See Appendix 3, *Sound poetry* definition.

²⁰ In fact, use of this text has become platitude in the Spanish speaking world and consequently a challenge due to the diverse nature of the musical versions.

²¹ “What has been done in mechanics has also been done in poetry”. Translation: A. Albornoz.

mecánica no es también la humanización de la naturaleza [...]?”²² (Huidobro and Goic 2003, p. 1311). According to Crispiani (2011), poetry, under the light of Huidobro’s ideas, is able to articulate new human potentials allowed by machines. In this way, poems and machines share the same function; one has as much artificiality as the other (Crispiani 2011, p. 66).

The compositional method adopted in this thesis intentionally draws upon a number of these concepts, and may be summarised as a combination of intense *rational* and *imaginative* actions leading to:

- Selection and rejection of materials from the real world according to a personal *system* (Huidobro and Goic 2003, pp. 1311-1313). In this way, the elements from reality enter the artist’s subjective world. The *system*, both subjective and heterogeneous, is described in each case of the presented portfolio in chapters 1 to 8.
- Transformation and combination of selected elements from the world (images, sounds), by means of techniques appropriate to their nature, the aesthetic intentions and expected concrete form of the piece. This implies the recording of recitations in the studio, the subsequent selection and edition of the recordings and the use of sound transformations. All these procedures are detailed in chapters 1 to 8. In this way, the combined elements are delivered back to real world in the form of a piece. Again, although there are some systematic actions carried, the general procedure is open, not rigid and specific to each piece. The establishment of adequate techniques appropriate to the nature of each element, the aesthetic intentions of the author and the concrete form of the pieces are described in the analysis provided in chapters 1 to 8.

Huidobro visualizes the creative process through a diagram in his manifesto *La Creación pura* (Huidobro and Goic 2003, p. 1312):

²² “Is not the art of mechanics also the humanization of nature [...]?”. Translation: A. Albornoz.

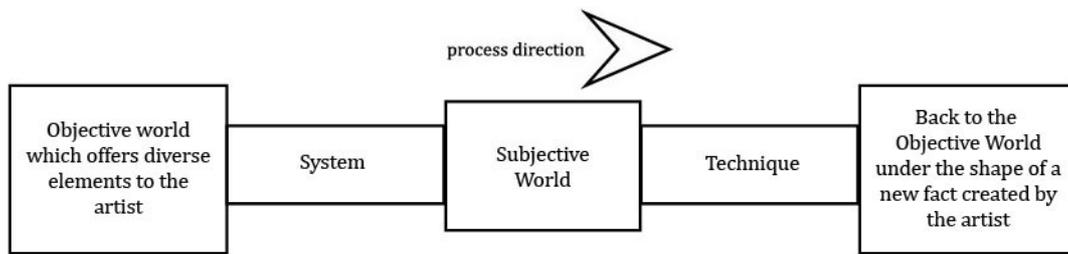


Figure 1: Huidobro's diagram of poetic production (the arrow signalling the process' direction is not in the original)

As Marta Rodríguez explains:

In Huidobro's scheme <<two bridges>> of interaction are considered: system and technique. The first includes similarity and abstraction operations, by means of which some elements are selected, i.e., some properties are chosen while others are eliminated. The second bridge is technique whose function is to combine those elements (Rodríguez 2000, p. 22).

Poetic delirium or *superconsciousness*, the special human condition described by Huidobro in his *Manifiesto de manifiestos* (Huidobro 1999), is the essence of the pair *system-technique*, first and second bridges respectively. Since *poetic delirium* involves fluctuations between *reason* and *imagination*, as a result the poetic production process "[...] could be originated by sensibility or intuition, but when it sees the light, intelligence starts to function [...]" (Rodríguez 2000, p. 23). The second bridge, *technique* combines and transform the selected elements and shapes the poem in doing so. The criteria which guide the processes of abstraction and similarity within the *system*, would depend on the poet as an integral human being, with his or her specific sensibility, intelligence, interests and cultural background. What exactly constitutes the second bridge, *technique*, depends on the poet, his or her skills, concrete means and ultimately his or her knowledge. According to Huidobro (Huidobro and Goic 2003, p. 1312) the degree of concordance between poet's technique and the selected elements from the objective world, determines his or her artistic signature, the style.

Having considered this scheme, its functionality can be applied to acousmatic composition; since the acousmatic creative procedure implies the creation of sound and structures at any point during the composition, the resulting sounds (and even the final piece) can be incorporated to a recursive process as many times as the author thinks necessary to conclude a specific work or to generate materials for different pieces (Chion

2017, pp. 15-16; Moore 2016, p. 7). This can be represented changing slightly Huidobro's original diagram:

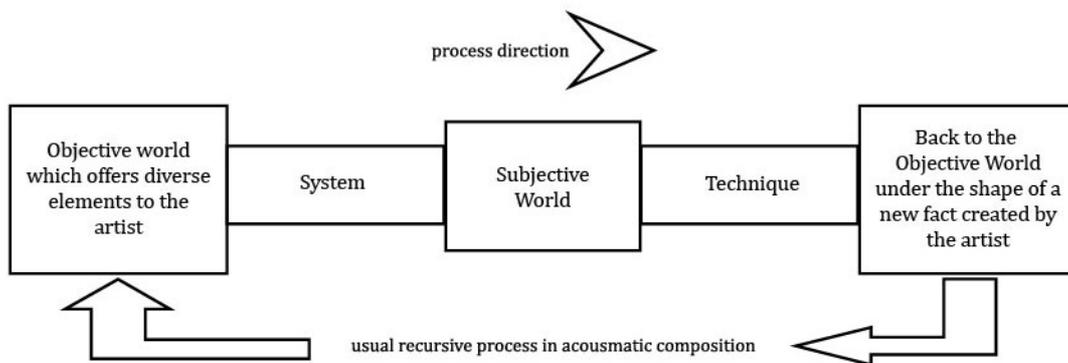


Figure 2: Huidobro's diagram adapted to acousmatic compositional process

According to this, the compositional method produces a novel outcome (a *new fact*²³, an artwork) each and every time it is used. Furthermore, this outcome is deemed to be self-sufficient, in other words, its own existence constitutes his purpose. Following the manifesto *La Creación pura*, the *new fact* given back to world is an aesthetic phenomenon completely free and independent, “[...] como cualquier otro fenómeno del mundo exterior, tal como una planta, un pájaro, un astro o un fruto, y tiene como éstos su razón de ser en sí mismo”²⁴ (Huidobro and Goic 2003, p. 1311).

In reference to the development of a method drawn from the ideas of Huidobro, the term *acousmatic-creationist* has been adopted to define the works included in the portfolio. The next chapters describe and analyse the eight pieces included in the portfolio, showing the methods and procedures used in each compositional case and providing insights on their artistic nature; the findings demonstrate the diversity of approaches and musical results and how this variety operates under the general guidelines previously described in the compositional rationale.

²³ Huidobro (Huidobro and Goic 2003, p. 1311) used these words, “hechos nuevos” (new facts) to describe the artistic outcome of the creative process described.

²⁴ “[...] like any other phenomenon of the external world, such as a plant, a bird, a star or a fruit, and like these, has its reason of being in itself”. Translation: A. Albornoz.

III. Analytical methodology

The previous section reviewed the compositional rationale for this doctoral research. This specific section describes the general guidelines of the method of analysis, which applies equally to all the chapters included in **Part 1: Octophonic cycle *La lumière artificielle*** and **Part 2: Three acousmatic tributes**. Consequently, the following eight chapters describe and analyse each piece of the cycle, showing in this way the particular features in each case and their functioning according to the compositional rationale.

The well-known *tripartite* model proposed by Jean-Jacques Nattiez in his book *Music and Discourse: Toward a Semiology of Music* (Nattiez 1990) will be used as basis to address the analysis and description of the pieces contained in the portfolio, linking this to the various terms and ideas developed by Stéphane Roy (Roy 2004)²⁵. This model establishes three dimensions in which a symbolic and an artistic phenomenon can be analysed: *poietic*, *esthesis* and *trace* (also known as *neutral*) levels. The description and analysis of the pieces included in the portfolio will be achieved through the *poietic* and *neutral* levels. The *esthesis* dimension involves the reception of the symbolic phenomenon; this implies all the perceptual and interpretative processes of the receivers, namely the audience (in a private listening session or in a concert). Since the *poietic* process does not necessarily correspond to the *esthesis* one (Nattiez 1990, p. 17), this kind of analysis escapes the scope of the present investigation, because it would involve the implementation of a study focused on the audience, diverting attention from the initial motivations of the compositional practice.

In each analysis, the criteria applied are selected according to their predominance in any given piece, section or subsection. For instance, if a section is characterised mostly by its spatial composition, other aspects are covered but with less attention; these less preponderant criteria are briefly explained in most of the cases and when the author considers that the previous analytical texts or elements described are enough to contextualise and evidence the issue analysed.

To review and understand the criteria used in the analysis of the portfolio's pieces, three appendices have been provided, each of which presents the theoretical foundations for the analysis and the criteria themselves; these appendices are:

²⁵ A description of the analytical model adopted in this thesis can be found in the Appendix 1.

- **Appendix 1:** The tripartite model by Nattiez/Roy and the Schaefferian typology
- **Appendix 2:** Structural analysis: Form and structures in time and space
- **Appendix 3:** Voice lexicon: speech production

Appendix 1 presents the general model of analysis and specific elements from Schaefferian theory used. Appendix 2 summarises the *Spectromorphology* theory of Denis Smalley which is used to address the structural aspect of the pieces. At the same time, some concepts of Smalley's spatial glossary are used to complement Annette Vande Gorne's *levels of spatial function*, which are in fact the main notions used to describe the spatial composition of the works. Appendix 3 is a description of the basic concepts used regarding the *voice type* elements within the pieces and their speech production types. This third appendix presents a selection of ideas taken from phonetics, phonology and basic linguistic notions.

For each piece, the analyses are divided into the following sections:

- Distribution of *Sound objects* and *spectromorphological* structure: notions covered in Appendices 1 and 2. *Sound objects* address sound materials as discrete units within the morphological and time scale described by Schaefferian theory, while *spectromorphological* functions are used to evidence the structural functioning of those sound objects as gestures and textures which "could be small or large scale" according to Smalley (1997, p. 114).
- Spatial distribution and structure: concepts described in Appendix 2. This analysis address spatial design of the pieces assigning compositional functionalities to it according to Vande Gorne (2010) and at the same type provides details about specific spatial features according to the spatial descriptors proposed by Smalley (2007).
- *Voice type* and *speech-sound type* distribution: notions explained in Appendix 3. These are two analytical tools proposed by the author addressing vocal materials. *Voice type* to evidence the presence or absence of semantic content and *speech-sound type* to specify type of semantic materials or the type of speech-sound when there is no semantic content.

For the sake of clarity, **Appendix 4** briefly describes a software for graphic representation of each analysis for each piece. EAnalysis, the tool employed, has provided images to illuminate the analyses and the written description of the works. All the necessary information of what it is any of the concepts, criteria, perspectives and visual presentations presented in this thesis, can be reviewed in those appendices.

Within the *neutral* level analysis of each piece, there are some comments in regard to certain compositional aspects, namely, indications or clues about how specific sound materials operate structurally, such as articulations, gestures, spaces, trajectories or sonic dynamics. At the same time, the reader will also find some statements about artistic intentions that link to the general concepts of the thesis; this type of analysis allows the identification and contextualization of the materials and sections of the pieces according to their compositional functions. However, this analysis uses the most objective language and perspective possible, in most cases reserving the links to the compositional rationale for each conclusion section.

From this point in this thesis, along with the titles of works, poems and books, if any notion is presented in *italics*, refers to the analytical criteria, compositional background and lexicon established. If the same word is presented without *italics* in normal way, is referring to the idea in a wider sense or as is used in common language. For instance, the word 'emergence' presented in normal roman type means 'appearance' in a general sense, but presented in *italics*, *emergence*, refers to an *onset spectromorphology* type according to Smalley's classification of structural functions for electroacoustic music compositions.

Part 1: Octophonic cycle *La lumière artificielle*

The cycle *La lumière artificielle* is inspired by an idea for a specific project by Vicente Huidobro. During an interview with Angel Cruchaga Santa María for *El Mercurio* newspaper, 31st August 1919, Huidobro talks about the avant-garde artistic environment in Europe within the first two decades of the 20th century. The interview reveals his panoramic vision of some poets and artists and, at the same time, outlines some of his own activities and projects. There is an interesting statement in this document, referring to a project idea that was never released. When the interviewer asks him “¿Qué obras tiene en preparación?” (“Which pieces are you preparing?”) (Huidobro 1919, cited in García-Huidobro, 2012:34), the Chilean poet discusses some of his later completed works, but his comments on the non-implemented work are particularly inspiring:

El poema creacionista simultaneísta *La lumière artificial*, a tres voces en gramófono, con nuevos procedimientos (...) ²⁶ (Huidobro 1919, cited in García-Huidobro, 2012: 34).

It is possible to see similarities with techniques and notions already developed by Huidobro’s contemporaries, including Ilja Zdanevich, Tristan Tzara and Jules Romains, Russian futurist, dadaist and unanimist respectively²⁷.

At the same time, the project suggests a physical setup, namely three voices on gramophone evoking a multichannel distribution; since in Huidobro’s statement there is a proposal of *simultaneism*, it was imagined three gramophones surrounding a central space, as is in multichannel set ups for acousmatic music.

Regarding the aesthetic aspect of the works, the use of fixed sounds by means of recording technology, can be related to the intermedia nature of *media poetry* (Kac 2007) or what has been defined as *electroacoustic poetry*²⁸ (Zurbrugg 2005) or *electronic*

²⁶ “The creationist and simultaneist poem *La lumière artificial*, for three voices on gramophone with new procedures (...)” Translation: A. Albornoz. It is interesting to note that the title of the project is a combination of words in Spanish and French, being *La lumière* the French for *The light* and *artificial* the Spanish for *artificial*, since in French the correct word is *artificielle*. This detail confirms the natural bilingual thinking by Huidobro, widely developed in his poems.

²⁷ See the Compositional rationale section, particularly footnotes 11 and 17.

²⁸ *Electroacoustic poetry* is a notion proposed by Nicholas Zurbrugg (2005) and is part of what this author defines as *electroacoustic literature*: “[...] an avant-garde postmodern genre characterized by its dependence upon recording technology, both as a means of production and as means of reproduction” (Zurbrugg 2005, p. 2).

*literature*²⁹ (Rettberg 2008). The proposal of a simultaneity of voices on fixed media, anticipates *media poetry* and *electroacoustic poetry* which, in turn, are part of the interconnected ground where electroacoustic music was born and evolved. That is how these works and ideas coming from the first avant-garde are materialised abundantly in the second half of 20th century; such are the cases of Henri Chopin and Bernard Heidsieck³⁰, sound poets who used tape recorders to create *electroacoustic poetry* and, in doing so, have accomplished the futurist idea of multiplying the human being through technology by means of a dense overlapping of voices in their creations (Zurbrugg 2005, p. 5).

As has been seen, Huidobro was a pioneer in the creation of intermedia pieces and a referent for *sound poetry* and *sound art* in Spanish America. The fact that the poet lived in Santiago de Chile and Paris and wrote both in Spanish and French, is a central inspiration for the cycle *La lumière artificielle*; Huidobro valued the translation of poetry from one language to another and, as a matter of fact, in his manifesto *El Creacionismo* (Huidobro 1999) the artist explicitly articulates this idea and gives an example of the same verse in French, Spanish and English³¹. In this manifesto, the poet points out that it is impossible to translate the sonority of a poem, the inner musicality of words. But if the central element is an image or an image/idea, it can be translated to any language. In doing so, the poem is enriched with different sonorities of the different languages (Huidobro 1999).

Considering this and the theoretical framework defined in the compositional rationale, the driving ideas of the project as a whole were to:

- Compose using words and speech sounds from three languages: French, Spanish and English. This was motivated by the concepts explained above (“three voices on gramophone” statement, *simultaneism* and the valorisation of translation).

²⁹ According to Scott Rettberg (2008, pp. 1, 9), *electronic literature* is a confluence of artistic paths with no defined common programme, a heterogeneous creative area where different disciplines and technique are mixed, interleaved or part of an exchanging grid which operate within the domain of digital media, namely computer technologies and internet.

³⁰ See Appendix 3, *Sound poetry* definition.

³¹ “La nuit vient des yeux d’autrui [...] La noche viene de los ojos ajenos [...] Night comes from others’ eyes” (Huidobro 1999).

- Compose in a multichannel format. The motivation for this was the implicit spatiality in Huidobro's concept of "three voices on gramophone", from where it was assumed arbitrarily each of them located in a different gramophone. The octophonic format was selected for two reasons: it was available in the University of Sheffield Sound Studios and it is considered one of the most widespread standards (Vande Gorne 2010, p. 165).
- Use vocal materials, ranging from *semantic* content expressed through words to *non-semantic* materials by means of words fragmentation and disintegration; in other words, to compose using the movement between these two poles, semantic/non-semantic as an articulatory and structuring procedure. This is one of the core aspects of the present thesis and it is described in its text³².
- Use extensively simultaneity or juxtaposition of sounds in the immersive space provided by the octophonic format. Again, this is widely supported by the previous theoretical notions.
- Encompass the use of simple audio editing techniques alongside sophisticated digital processing, such as cut and paste and granular synthesis. This characteristic, typical of this artistic field, allowed a *creationist* approach to the compositional process, crafting and extracting unexpected relationships and new objects respectively.
- Use of pre-existent texts, taken from philosophical and scientific sources, in order to enrich the conceptual content and, at the same time, show that the use of already existing cultural products is not only possible following the *acousmatic-creationist* diagram (Figure 2), but coherent with the *nodalism* theory (Adkins 2014).

The cycle is made up of five pieces: *Overture*, *La Lumière*, *La Luz*, *The Light* and *Hundreds of milliseconds (Finale)*. Each of these five sections of the cycle, engages with a range of specific and general ideas. This pentalogy can be listened to as whole, in the order proposed or not, or as individual pieces. The sound source material for the entire cycle was generated from the original Huidobro interview: the phrase 'la lumière artificielle' recited by three female voices, each in one of the three languages defined: French, Spanish

³² See Appendix 3 for a description of concepts regarding vocal sounds used in this research.

and English. Sound materials related to the gramophone as direct samples with connotative features were also used.

Two more texts were added to form the initial sound/conceptual palette:

1. A text by Friedrich A. Kittler, taken from his book *Gramophone, Film, Typewriter*, a publication translated from the original in German by Geoffrey Winthrop-Young and Michael Wutz (Kittler, Winthrop-Young et al. 1999). The book is an historical review of the techniques for sound and image recording and of the printed word, and at the same time is a theoretical discussion of the ontological, artistic, linguistic and discursive aspects generated by these technologies. Some sentences featuring ideas related to aesthetical and communicational implications of sound and image recording and reproduction were selected from the introductory paragraph of the book. The original sentences and words in the English version of the book are:

- "What phonographs and cinematographs [...] were able to store was time [...] Time determines the limit of all art [...] To record the sound sequences of speech, literature has to arrest them in a system of 26 letters, thereby categorically excluding all noises sequences." (Kittler, Winthrop-Young and Wutz 1999, p. 3).
- "Gramophone"
- "Phonograph"

These words were subsequently recorded in English, French and Spanish.

2. A selection of paragraphs, sentences and words from a scientific article on human language by Colin Phillips and Kuniyoshi Sakai; this text, entitled *Language and the brain* (Phillips and Sakai 2005, pp. 166-169), was recorded after the first four pieces were finished; the reading was done by a new female voice and only in English. Originally, the text was part of an alternative project to this thesis. That project, entitled *Ruido*, consisted of a dance-theatre play directed and performed by Sheffield based dance artist Lucy Haighton, involving acousmatic music and live electronics by the author of this thesis and carried between October 2016 and February 2017. Some sounds derived from this text were added to the previously

composed sections (especially to the *Overture*); the main paragraph was slightly adapted by the performer by including the words 'such as'; the text and words from this article are:

- “Many species have evolved sophisticated communication systems [...]” such as “[...] (birds, primates and marine mammals), but human language stands out in at least two respects which contribute to vast expressive power of language. First, humans are able to memorize many thousands of words, each of which encodes a piece of meaning using arbitrary sound or gesture [...] Second, humans are able to combine words to form sentences and discourses, making it possible to communicate an infinite number of different messages and providing the basis of human linguistic creativity. Furthermore, speakers are able to generate and understand novel messages quickly and effortlessly, on a scale of hundreds of milliseconds” (Phillips and Sakai 2005, p. 166).
- “Evolve”
- “Humans”
- “Sound”
- “Expressive”
- “Communication systems”
- “Encodes”
- “Species”
- “Arbitrary”
- “Linguistic”

The appropriation of these theoretical texts and the subsequent re-contextualization of them into a poetic environment, allowed the generation of an expressive artistic process propitiated by the *creationist* approach. The intention was to provide ambiguous material, situated in a blurred frontier, it being possible to assume them to be scientific, philosophical, or poetic texts.

The directive for the three women was to record the sentences in different ways, in an attempt to form a diverse palette containing both neutral and more expressive versions. A significant degree of freedom was granted in the recordings, in agreement with each of the three speakers. Nevertheless, specific instructions were provided as general guidelines and some particular actions were requested as well. Although part of the dance play *Ruido* mentioned above, the texts from the article *Language and the brain* were recorded in a similar way with additional *phonetic* materials provided by the performer, including sighs, whining, breathing and vocal games with some sounds such as *vowels* and *consonants*.

General instructions included speaking normally, in whispers, toned and aloud, emphasizing certain aspects of their own natural intonation. Fortunately, each of the speakers delivered original propositions from these starting points. These vocal actions and ways of speaking were applied to all the texts, but special instructions were given for Huidobro's sentence. In addition, it was requested of each woman to vocalise *words*, *syllables* and *letters* separately using the previous characterisations. In a natural way, some specific features of each language emerged in the process, prompting a request for the performers to accentuate these and explore them freely, leading to the extension of durations and shift frequencies of some sounds, all of this during the direct recording of the performed voice.

Using instructions inspired by Trevor Wishart's own directions for *Red Bird* (Wishart, 2012: pp.17-27), the initial set of commands can be seen in Figures 3 and 4.

La lumière artificiel

L → llllll...

La → la, laaa, laaaaaaa...

Lu → lu, luuu, luuuuuuu...

Lum → lum, luuum, luuuuumm, luuummmmm... etc
mière

mièrrrrre, mièrrrrreeeee...

artificiel

ar → aarr, aaaaarr, aaarrrrrrr, etc.

rrr, rrrrrr, etc.

tif, tiff, tiiiiiff, tiiiffrrrrrr, etc.

tificiel

fic

ficiellll, etc.

ciel, cieel, cieellllll, etc.

Normale, chuchotement, intonation, à haute voix, etc.

Figure 3: Handwritten text with the instructions for the French speaker

The artificial light

T → ttt, etc. (as in the)

Th

The → thee, theeeeeee, ...

a → aa, aaaaaaaa, etc.

ar → arr, arrr, aaaaarrrr

art → arttttt, aaaaarrrttt, arttttt... etc.

ficial → etc (as in artificial)

light → li

ligggggg, etc.

lighttttttt, etc. } as in light.

↳ luz artificial

L → llll, etc

la → laaaa, llllaaa, llllaaaaaaaa...

luz → luuuu, luz, luzzzzzz.

z → variations.

ar → aaaaarrrr... etc.

art → artttt, aaarrtt, aaarrrrrrrttt... etc.

arti → variations

ficial → etc → ffff, fffiii, fiiiialll

fiiiceeee

fiiiceiiiiaaaaall

Figure 4: Handwritten text with the instructions for English and Spanish speakers

All these texts were developed and processed to obtain a large sound palette that can be organised as follows:

- Prepared sounds: pure vocal sound objects extracted from the original recording sessions (original large sound files); this was achieved using simple techniques to get them prepared for further treatments or for direct incorporation to the composition. These techniques included cutting, fade in, fade out, noise reduction and normalisation. These sounds are divided into eight groups: *shorts*, *percussive shorts*, *whisperings*, *syllables or letters*, *words*, *sentences*, *long* and *stereo movements*. Each performer gave different types of utterances and effects, for example whisperings from one reader included rough or creaky sounds while

another reader provided slightly rough textures with more emphasis on tonal aspects (intoned reading). These differences were applied for every category and were indicated in the name of the digital sound files; suitable nomenclatures borrowed from traditional music jargon or colloquial language were used as well (staccato, shout, sweet, melodic, weak, glissandi). The category *stereo movements* refers to movements in the panorama produced by the readers, each of which, during their performances, changed dynamically her relative distance to the pair of microphones used.

- Processed sounds: the stage after the simple techniques including *accumulations*, *iterations*, *wefts* and *pedals*³³ by means of several techniques such as time stretching, pitch shifting, granular synthesis and reverberation. From these materials, new ones were obtained by means of a second or third stage with the simple techniques described above.
- Spatialized sounds: besides the stereo movements created during the recording takes, octophonic and stereophonic movements of many sounds and *mesostructures*³⁴ were accomplished using software tools, in order to compose the spatial aspect of the pieces.

All these sounds were arranged by montage, procedure during which sequences, *mesostructures*, and the pieces' macro-forms were composed. As is proposed in the compositional rationale, by following the procedure described in the adaptation of Huidobro's diagram (Figure 2), new sounds emerged in a recursive dynamic from this

³³ These are types of *sound objects* according to Pierre Schaeffer's *Traité des objets musicaux* (Schaeffer 1966). From here on, several Schaefferian nomenclatures are used to describe sound materials within the pieces and are presented in *italics*. The same applies for related aesthetic and compositional ideas presented throughout the thesis and the Appendices: if a concept is presented in *italics*, it refers to the compositional background and established lexicon; if the same word is presented without *italics* in the normal way, it refers to the idea in a general way or in its common use. To get an explanation of these specific Schaefferian concepts in this paragraph, see Appendix 1 or directly see the *Traité des objets musicaux* (Schaeffer 1966) or *Guide Des Objets Sonores: Pierre Schaeffer et la Recherche Musicale* by Michel Chion (1995). Similarly, the notions and lexicon of *Spectromorphology* (Smalley 1997), the *spatial level functions* by Vande Gorne (2010) and terminology provided by *phonetics*, are used to describe the pieces in regard of these aspects considered from a structural point of view. In order to have a definition of them, please see Appendix 2 and 3, or the corresponding bibliography. Regarding the *spectromorphological* graphic representations, the icons proposed by the EAnalysis software were used; in order to get a visual catalogue of them, see Appendix 2.

³⁴ See Appendix 2 for a definition of *mesostructure* and other terms used in the description of the structural aspect of the pieces. This concept and this specific spelling are taken from the text *Composing Electronic Music: A New Aesthetic* by Curtis Roads (2015).

process. Additional *non-vocal* sounds, specific for each piece were produced by means of new recordings or synthesis and classified in similar ways (*short, long* and so on).

Regarding the spatial layout, a circle of eight loudspeakers was used; these loudspeakers were set in four stereo pairs from front to rear, 1-2, 3-4, 5-6 and 7-8; this arrangement allows for transitions between combinations of stereo imaging and inherently multichannel projection. Following the design shown below, where each loudspeaker is pointed towards the centre of the circle, the pair 1-2 was considered as the main and frontal pair; the composer is positioned facing this frontal pair (1-2):

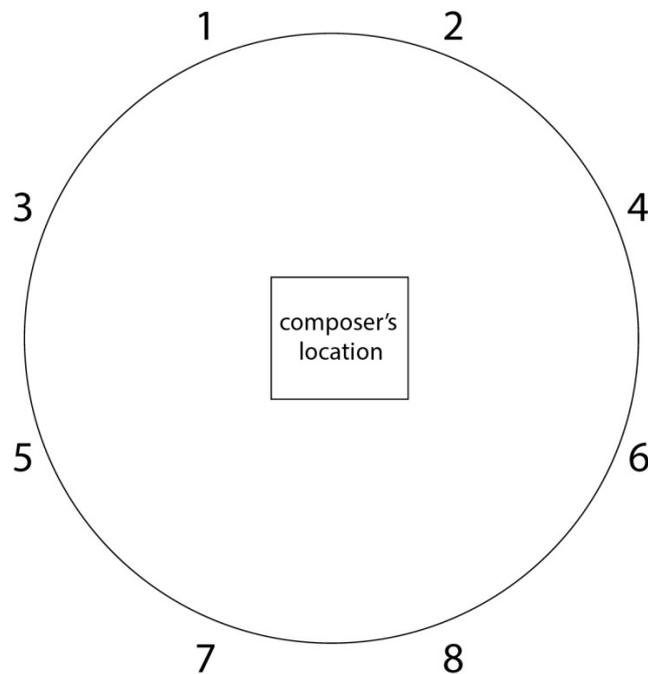


Figure 5: Octophonic compositional layout used

The whole cycle was composed without consideration of a discrete subwoofer signal.

Chapter 1: *Overture*

1.1 *Poietic analysis*

This was the first piece composed. The works were composed from the first to the fifth in a successively and intuitive way. The original idea was to focus each section on a specific language, from which arose the composer's personal nomenclature of *French section*, *Spanish section* and *English section* for the pieces *La Lumière*, *La Luz* and *The Light* respectively. At the same time a broader approach was taken in the *Overture* and the final section by including sounds from the three languages. This is one of the main characteristics of this section, which attempted to introduce and present the sonic world of the cycle, thereby using a lot of the prepared sound palette, overlapping *semantic* materials with many *non-semantic* sounds and consequently mixing the three languages. This heterogeneity links to the notion of *nodalism* (Adkins 2014), and the 'Huidobrean' ideas of *poetic delirium* (Huidobro 1999) as a means to discover unexpected relationships between the compositional elements, which are concretized through this aspect of the piece: the confluence and amalgam of many diverse sounds.

The aims of the composition in this particular work were:

- To compose intensively in long work sessions, after deep listening to the materials. All of this followed an intuitive *modus operandi* avoiding structures or pre-conceived designs. In other words, following a *musique concrète* procedure and a *creationist* attitude, merging imagination and reasoning during the process, always when in contact with the materials and without notes to follow in respect of sections, spatial distribution and macro-form.
- To introduce materials in a gradual way.
- To present gestures and motifs which are developed in subsequent sections in order to create coherence within the whole. Among these materials, one specific composite object was selected as significant for its inner formal cogency to be later reintroduced and developed in some of the subsequent pieces of the cycle. This *sound object* has been named the 'signature object' in order to mention it in the subsequent chapters.
- To give priority to the abstract materials as a driven force for the sonic discourse.

- To display a wide range of spectral content, ranging from very low frequencies to higher ones and to use layers with *complex mass sound objects*, filling the spectral space.
- To deploy a calm pace in general, which is accelerated or paused in some moments to create the macro-form. Since the work is an introduction to the sonic universe of the whole cycle, it was considered pertinent to unfold the *Overture* in a gradual way, reserving larger developments of rhythmic patterns and faster paces for the other pieces of the pentalogy.
- To make extensive use of the possibilities for creation of spatial zones, movements and trajectories provided by the octophonic format, in order to obtain a rich spatial design.

1.2 *Neutral level analysis*

There are eight sections in the piece, defined by specific articulations or transitions. These are determined by significant sonic activities in turn defined by notable changes in one or more of the structural elements analysed (*sound objects, structural functions, levels of spatial function, voice type distribution and speech-sound type distributions*). Within the eight minutes duration³⁵, the sections are:

1. Starting section	(00:00:00 - 00:21:21)
2. First <i>mesostructure</i>	(00:21:21 - 01:46:14)
3. Second <i>mesostructure</i>	(01:46:14 - 03:17:43)
4. Middle section	(03:17:43 - 04:46:32)
5. Bridge	(04:46:32 - 04:56:26)
6. Third <i>mesostructure</i>	(04:56:26 - 06:42:15)
7. The final section	(06:42:15 - 07:54:29)
8. Coda	(07:54:29 - 08:00:00)

³⁵ In every case, the timing indicates local times for each piece. The time values, corresponding to time positions, are provided including minutes, seconds and hundredths of seconds following the data provided by EAnalysis software.

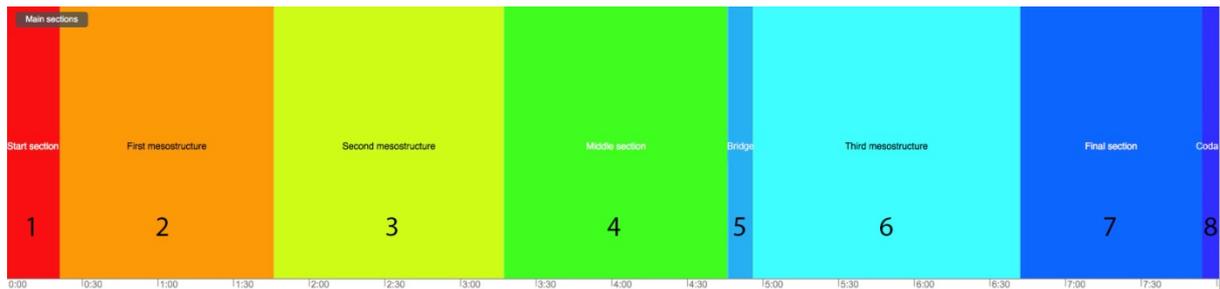


Figure 6: *Overture* main sections distribution, graphic representation

1.2.1 Distribution of *Sound objects* and *spectromorphological* structure

The starting section introduces two *macro-objects* of the *homogeneous type* (H), one in a higher tessitura corresponding to a *complex mass homogeneous* object (Hx) and the other in lower frequency range corresponding to a *tonic mass homogeneous* object (Hn). These introductory materials are presented in a long *emergence - disappearance* gesture. The atmospheric character of this introduction is re-exposed through a new *emergence* structural function including more layers of Hn objects and the previous Hx , giving a thicker sonority to install the first *mesostructure* from 00:21:21. Progressively, different *sound objects* are introduced to develop the section following a process of *motion/growth* of *ascent* and *descent unidirectional* type (Smalley 1997), including *tonic* and *complex mass samples* (En , Ex), *tonal mass continuous* (N), *complex mass impulses* (X), *complex mass accumulations* (Ax , known as granulations in common electroacoustic music jargon) and more *tonal mass homogeneous* objects (Hn).

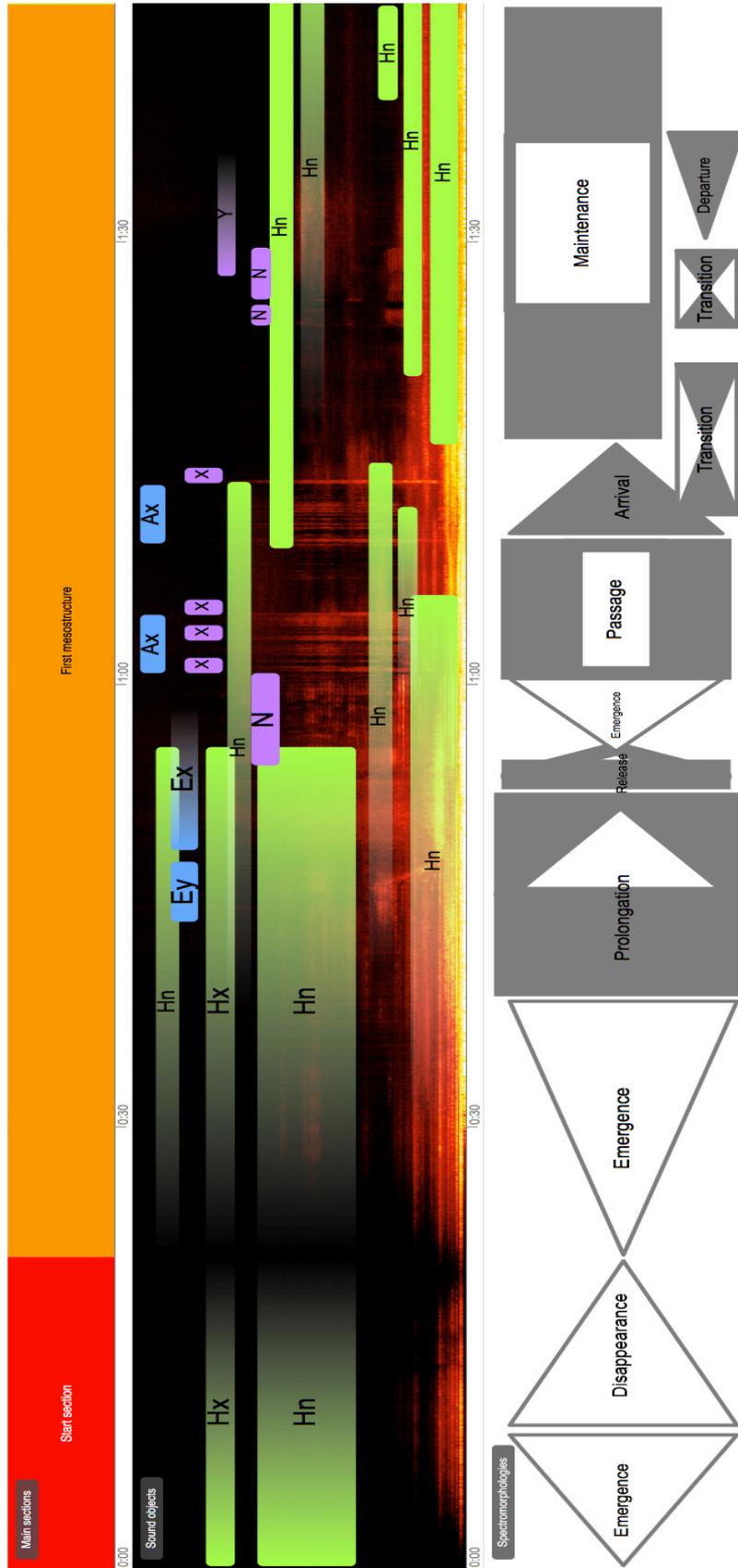


Figure 7: Overture: Sound objects and spectromorphologies distribution for start section and first mesostructure

As is possible to see in Figure 7, after the *emergence* at the beginning of the first *mesostructure*, the following structural functions keep the pace of the *ascent/descent* motions and the *agglomeration* growth process by means of *prolongation*, *passage*, *maintenance*, producing inner fluctuations through *transitions*, *release*, *arrival* and *departure* gestures. The next section, the second *mesostructure* in the following Figure 8, is launched by a *macro-object* of the *tonic mass iteration homogeneous* type (*Zn*) while the previous *H* objects are faded out quickly (*release* structural function), hence in an overlapping which can be expressed as a *spectromorphological anacrusis*. After that, a compound including *emergence*, *disappearance* and *transition*, leads to a larger *emergence* by means of various objects: *N, X* and a significant *Y* object (*continuous variable mass*) which is in fact a vocal glissando, all of which is accompanied by a weft of *Hn* objects. The *balanced objects* are closed by *X* objects that open the way to new *macro-objects* (*Zn, Hn, Ax, complex mass samples* or *Ex*) in the structural form of a *transition* with an *emergence* character for this *ascent* and *agglomeration* processes.

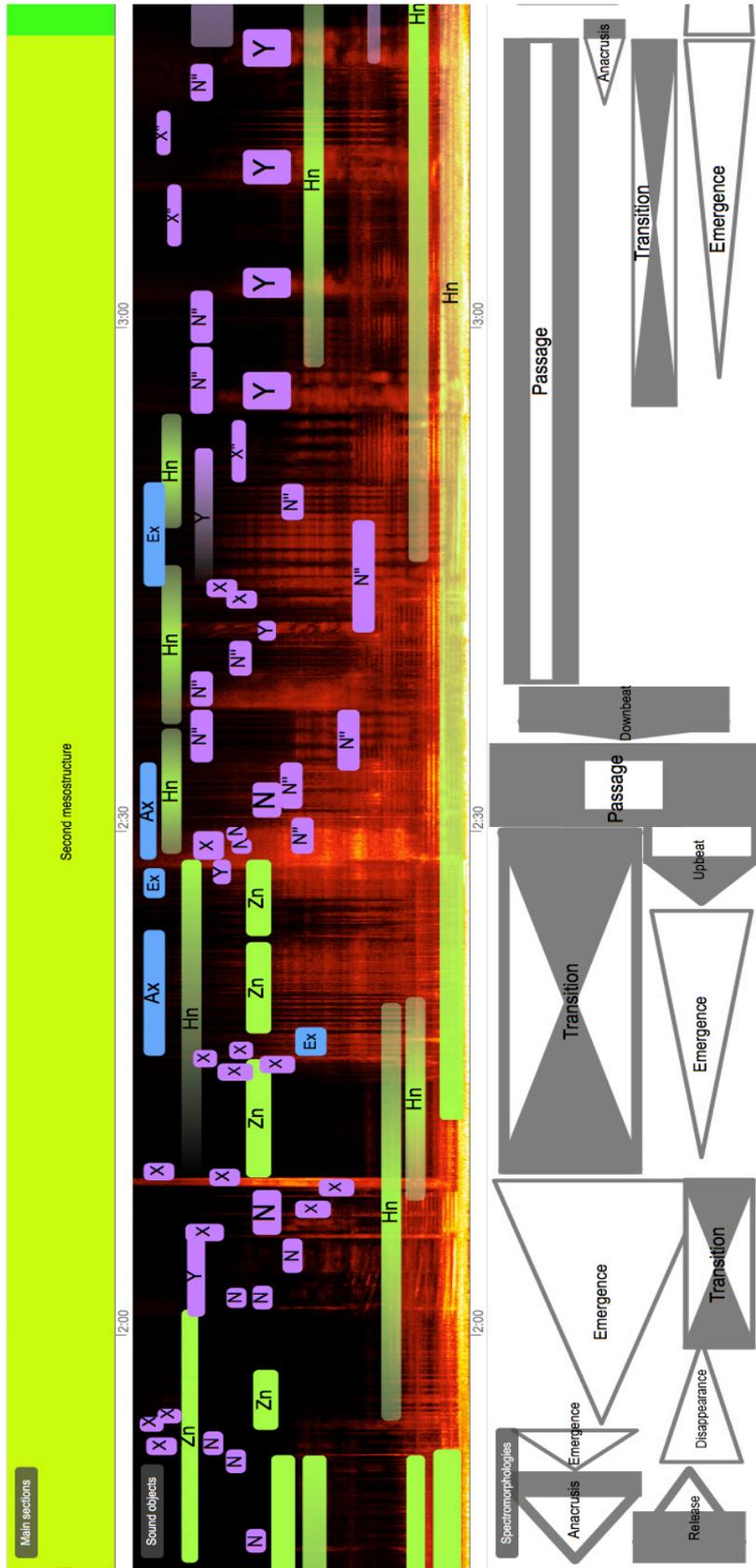


Figure 8: Overture: Second mesostructure's distribution for sound objects and spectromorphologies

At 02:28:50 approximately, an *upbeat* structural function is produced thanks to an accelerated *Ax* triggered by the succession of one *Y* and one *X* object, creating a *passage* for a *downbeat* function, where *tonic iterations* (*N''*) stabilize the rhythm leading to a larger *passage* which in turn leads to the end of the section. This *passage* is constituted by several *iterations* (*N''* and *X''*), *Hn* wefts which operate as foundation and the appearance of four distinctive *Y* objects (four vocal glissandi) functioning as *transition* for the next section. In the form of an *anacrusis*, a longer *Y* object constitutes the main gesture for the beginning of this middle section (ending of Figure 8), which is settled while a low pitch *Hn* is faded away (*disappearance* function). A *closure* function ends this *transition* using a new *Y*, an *X* and *X'* objects too; at 03:51:62 a block composed by short and long iterations (*X''* and *Y''*) accompanied by complex and variable mass samples (*Ex* and *Ey*) is started. The middle section is heading to its end from 04:20:24 when the ending of an *Ex* is overlapped with several *X* objects triggering *Zx* materials constituted by *iterations* loops of a very stable *complex mass*, after which, a succession of high pitch *Ex* and the re-exposition of a low *Hn* finalise the section. The following Figure 9 shows these elements.

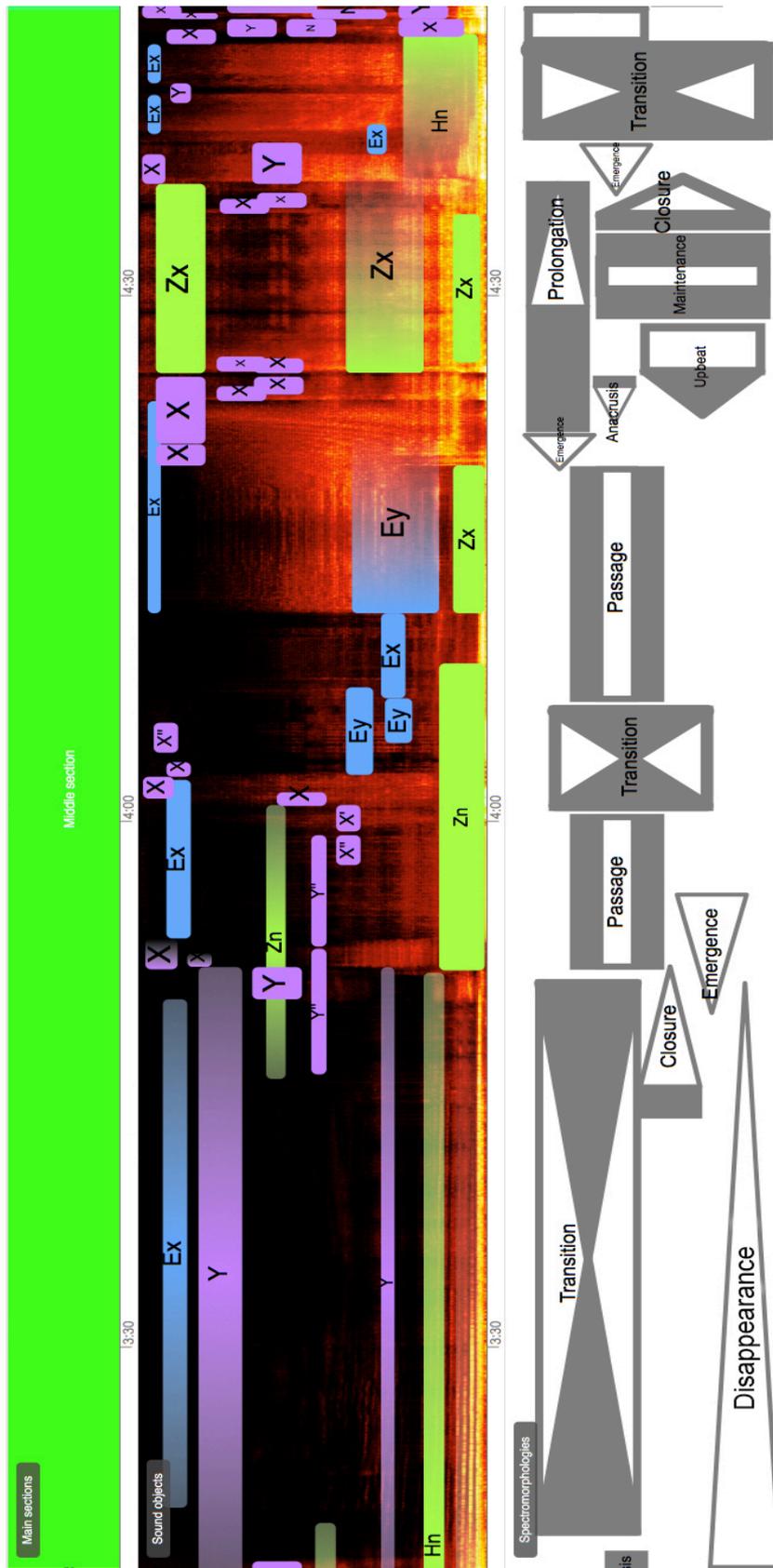


Figure 9: Middle section's sound objects and spectromorphologies distributions

Up to this point, the general aspect of the piece is given by long objects which operate as a sonic bed for the development of granulations and other textural materials, a path with an atmospheric character marked by shorter *balanced objects* in the form of *continuous, impulsions* and *iterations factures*, either with *tonic, complex* or *variable mass*. The pace is relatively calm, and it has been altered by an *upbeat* structural function at 02:28:50 to be reinstalled shortly after with a *downbeat* function at 02:35:00 approximately.

After a compound gesture (*X, N* and *Y* objects) the middle section ends and the bridge starts in the form of a *resolution* structural function, where a prominent *N* object, from now on the 'signature object', with a fade out tail, is presented for the first time in the cycle, followed by a low pitch *Y*, a phrase of *N, X*, a new *Y* and a series of short *balanced objects* which close the bridge and start the third *mesostructure*. This bridge is short (ten seconds approximately) and operates as a pause connecting the two sections (middle and third *mesostructure*) but at the same time has an idiosyncratic character, becoming a signal due to its clear facture and shape and its vocal nature. Because of this, it was selected and used as a signature and attention call.

Figure 10, shows this *N* object at the left side of the image, starting with a clear attack and then fading out (reverberation and loudness decrease) overlapping with the low *Y* object which in turn articulates the short objects triggering the third *mesostructure* at 04:56:26 with a series of *tonic mass* and *Y* objects assembled in a highly articulated sonic succession.

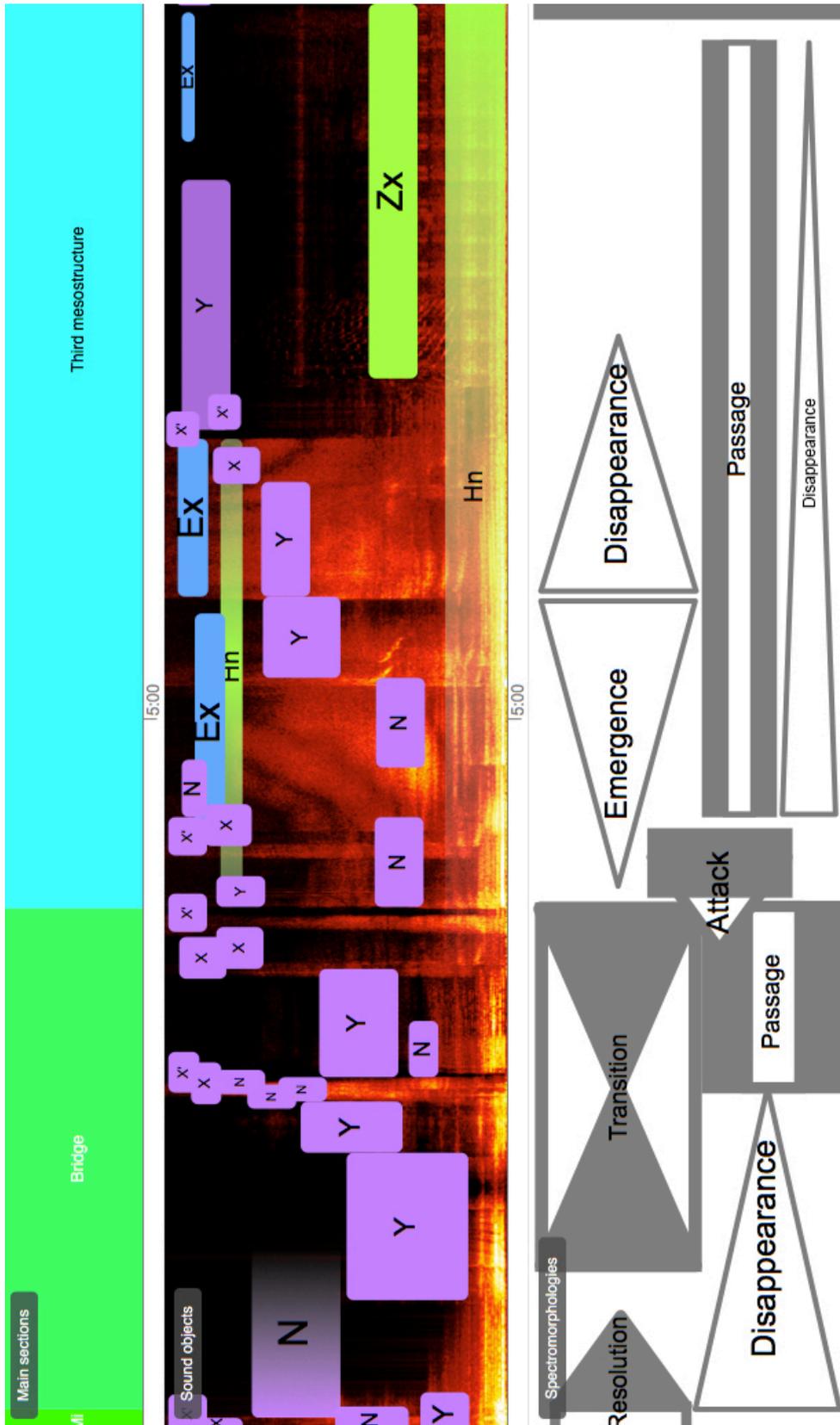


Figure 10: 'Signature object' in the bridge section just before the third *mesostructure*

Shortly before, high pitched *Ex* objects and a *Hn* advance at the same time with a low *Hn*. At 05:06:75 a *Zx*, in the form of a loop, starts stabilizing the pace of this *passage* structural function, then *releases* the energy and launches a new *transition*, compound by a new version of the section's beginning. There are two motions which serve to emphasize the next materials in this *mesostructure*, since they are contrasted in terms of spectral content: the new version of the starting materials of the section are presented without the previous low *Hn* (05:14:42-05:27:68), an articulated movement which in this moment has a 'pierced' spectral space due to the lack of continuous sonic background. After that, new calm gestures with similar *balanced objects* are deployed but again with *Hn* as background, with even lower pitch, filling the spectral space, contrasting with the previous gesture and accentuating the difference with the new part of the section, started at 05:39:44 with a clear *attack* of a strong *complex mass impulsion* (*X'*). The new part, started at 05:39:44, is exposed by means of clearly separated frequency zones in the form of sustained *En* (high pitch), *En* (middle pitch) and a looping *Zx* (middle and low pitch), all of them producing a *maintenance* structural function. This *maintenance* function is the main feature of this third *mesostructure*, as is easy to see in Figure 11.

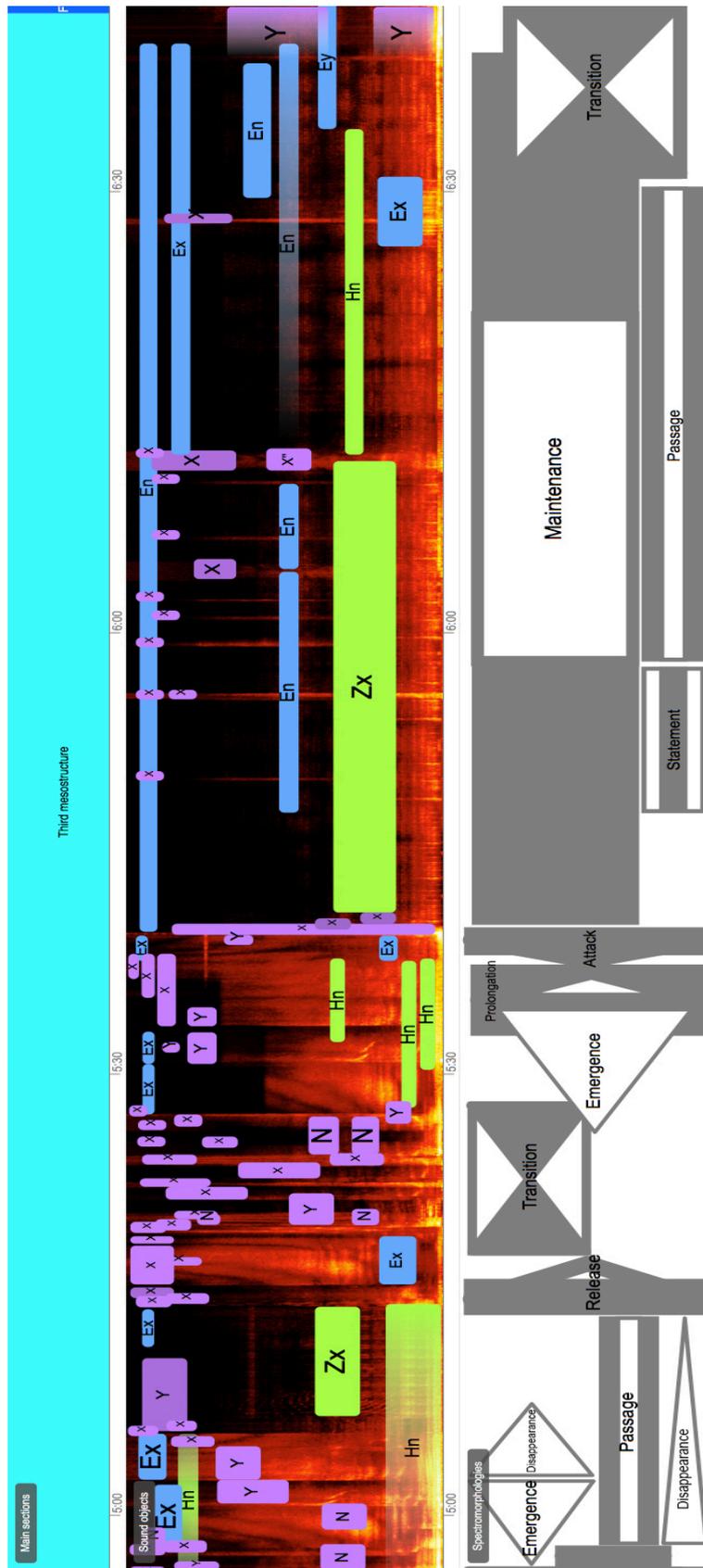


Figure 11: Third mesostructure's sound objects and spectromorphologies distributions

Inner compositional variety and development are given by *complex mass balanced objects* (X and X') operating as milestones, the inner variations of the *macro-objects* (Hn and Zx) and the *samples* (En and Ex)³⁶.

At the end of the section, a transition in the form of an Ey and two Y objects, one with middle pitch and the other with low pitch, close the gesture and open the final section at 06:42:15, which is very active and varied as can be seen in Figure 12.

³⁶ Precisely, E objects are characterized by an unpredictable *facture*, although they can contain repetitive features.

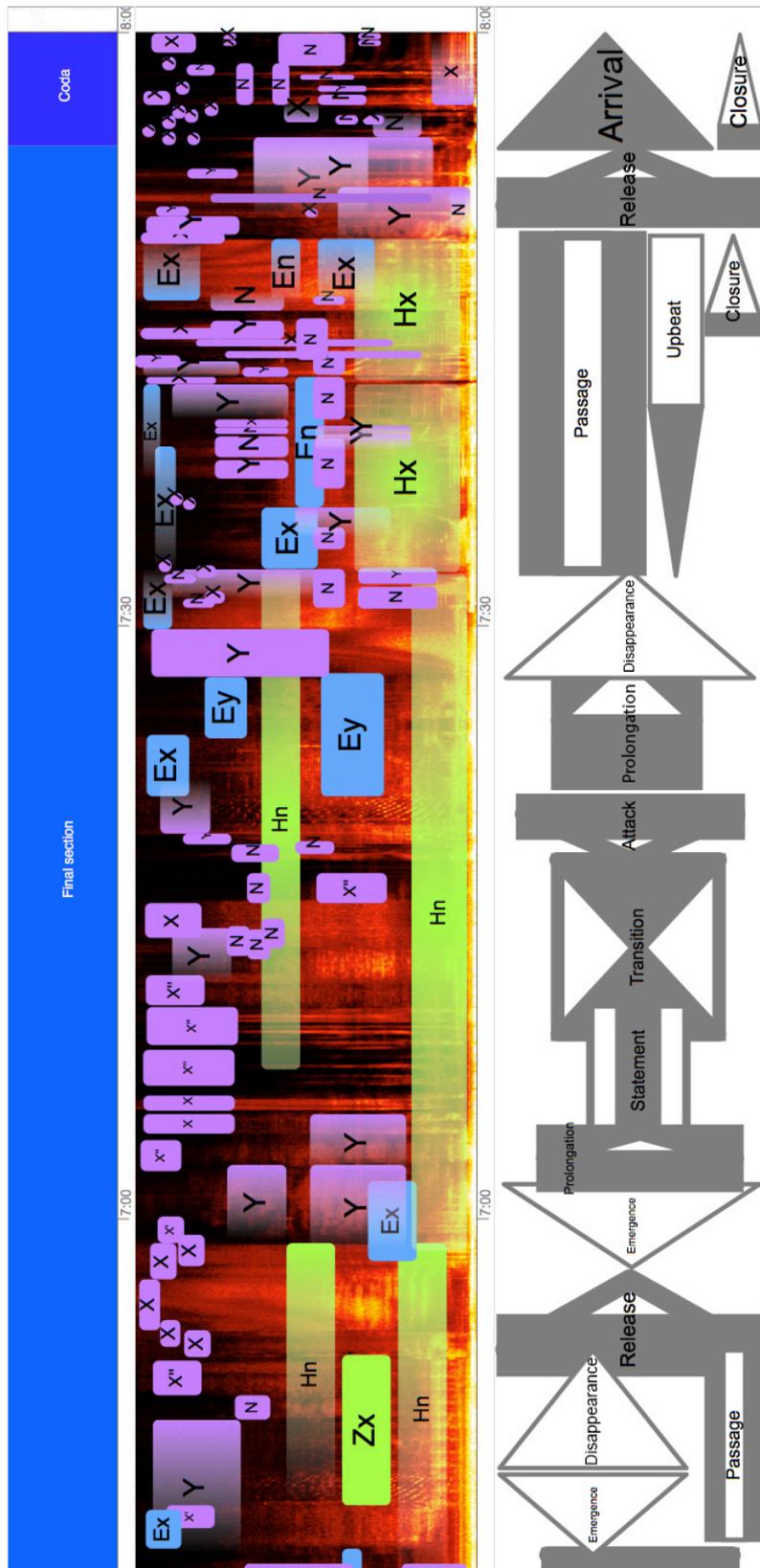


Figure 12: Sound objects and spectromorphological distributions in the Final section and Coda

Here, the general structural development contains diverse functions (*emergences, disappearances, passages, releases, statement, transition, attack, prolongation, upbeat and closures*). Within these diverse structural functions, there is a general motion of *undulation* which is repeated in a movement of increasing directionality by means of growing processes of *accumulation* with variable tension produced by ups and downs of *dilation* and *contraction* in short time periods, as in the change produced at 07:18:90 or at 07:46:44 by means of three *E* objects producing an intense unfolding of active textures. The section concludes with a *release* function consisting in various *balanced objects*, including a low and thick *Y*, which, when finished, provides spectral space, acting as a tension *release* for the coda, thus finalizing the piece through the *closure* and *arrival* functions. This coda is a short gesture (07:54:29 - 08:00:00) containing some clear vocal materials in the form of *impulsions, continuous* and *iterations*, anticipating materials to be used and developed in the next sections. In particular, the *tonic mass continuous* object (*N*) which ends this *Overture* (07:58:34 - 08:00:00) acts as connector to one of the main types of objects used in the second piece of the cycle.

1.2.2 Spatial distribution and structure

Since the software used for the graphic annotations (Couprie 2014) generates colours for the representations in a different way each time for each piece (according to the number required by the user) and assigns them to the representational rectangles and texts within them, it is necessary to list the *levels of spatial function*³⁷ and their visual representation for each case; this applies as well for *voice type* and *speech-sound type* distribution figures. In every subsequent chapter, the coloured rectangles representing both *levels of spatial function* and *voice type* and *speech-sound type distributions*, are firstly presented in figures with the rectangles organised in columns and rows. When the number of rectangles is more than three or four, they are organised in columns from top to bottom and then from left to right, following their order of appearance in the EAnalysis software figures. If the number is three, four or less, they are presented in unique row and ordered from left to right. For this piece, see Figure 13.

³⁷ For a definition and explanation of these functions see Appendix 2.



Figure 13: *Levels of spatial function for Overture*

The piece shows a progressive deployment of *levels of spatial function* (Vande Gorne 2010) increasing the diversity of them within the sections towards the end, as can be seen in Figure 14. In this sense, space is a structural element in every section. Generally, these spatial functions operate as a tool to increase complexity and dramatic development.

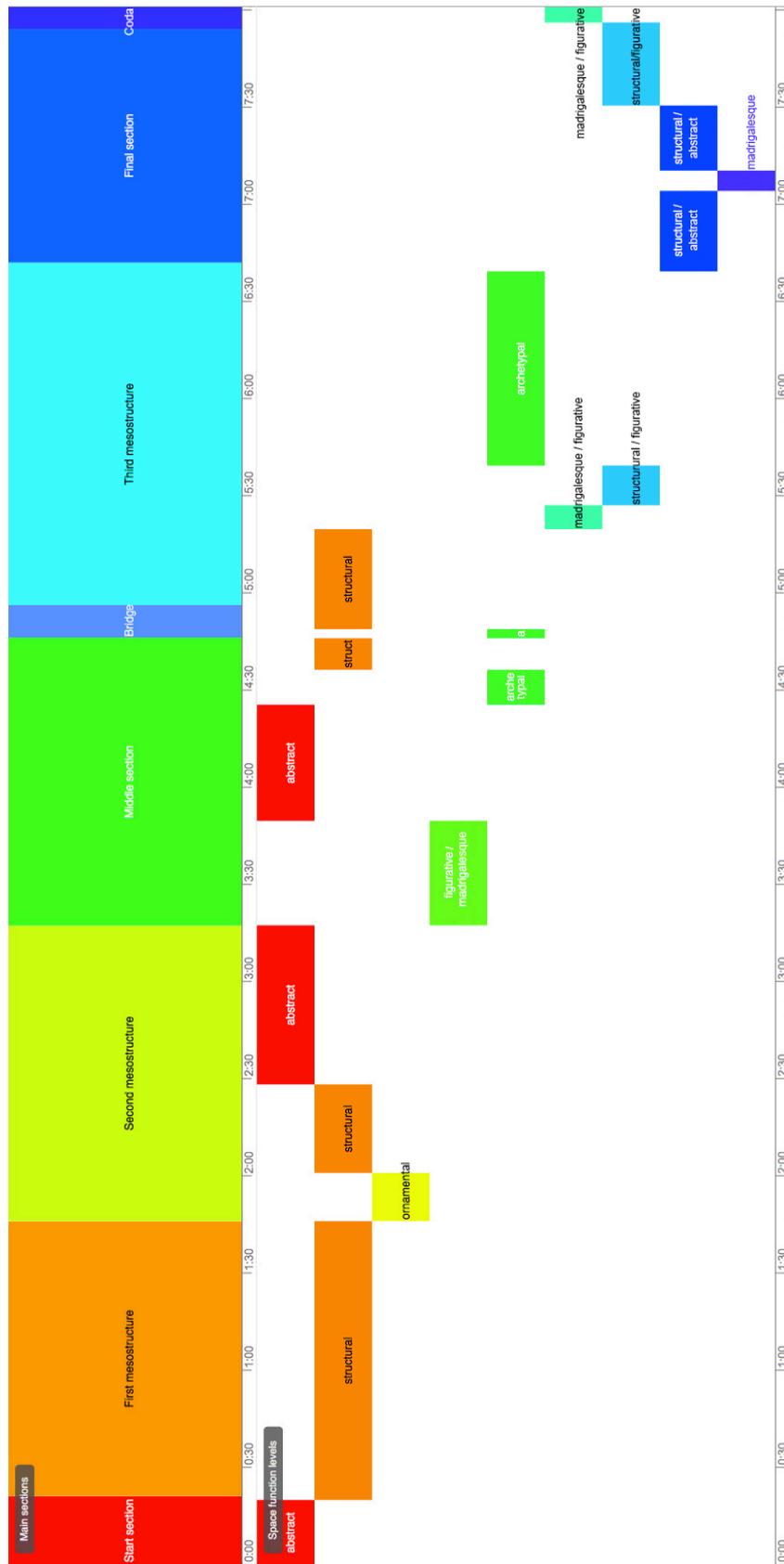


Figure 14: Levels of spatial function distribution for Overture

The starting section (00:00:00-00:21:21) presents an *abstract* immersive space, slightly focused in the main stereo pair of loudspeakers. Sound materials within it are then distributed in a wider way into the octophonic setup, opening of the first *mesostructure* (at 00:21:21) with a *structural* level through a contrasting action; this contrast includes rotations and movements, defining the spatial architecture of the section.

The *Zn* object, at the beginning of the second *mesostructure*, acts as a sign to mark this section by means of an *ornamental level* function over the eight loudspeakers (01:46:15-02:01:03).

After that, the behaviour reverts to a function characterized by an immersive space with pointillist³⁸ distribution of the *accumulation* objects operating at that time. All of this gives a dense space with no clear hierarchy between the sounds, with the exception of a slight predominance of the frontal loudspeakers (1-2). The section moves to a more *abstract level* functionality through the overlapping of spatial layers, some trajectories and the sporadic appearance of focal sounds in specific loudspeakers.

The middle section starts with a clear *Y* object, whose vocal nature is reinforced by the spatial trajectory applied to it, conceding two level types: *figurative* (points out its feature as a human voice) and *madrigalesque* (creates a figurative image of a human entity falling/flying around). This strong figure between 03:17:49 and 03:49:76 connects with the next segment of this *mesostructure*, which in turn projects three successive functional levels: *abstract* (at 03:49:75 with various layers shaping zones, points and lines), *archetypal* (at 04:25:59 in the form of rotation, a circle surrounding the listener) and *structural* (at 04:36:40 returning to the immersive space with no clear focal weight).

The middle section ends with the bridge at 04:46:32 and the appearance of the 'signature' *N* object, to which a specific *level function* is assigned: *archetypal*, which by means of reverberation, opens a big, deep and distant space. On top of this far space, another function is placed, a *structural* function that oversteps the bridge into the third *mesostructure*. This *structural* function is prolonged in the section until 05:19:82 when a prominent *Y* object operates in a compound function: *madrigalesque/figurative* in a similar way to the previous 'falling-flying' voice at 03:17:49, but in this case a voice connoting in a 'room-like' space and close breathing and vocal intonations, transforming

³⁸ In this thesis the terms 'pointillism' and 'pointillistic' are used in the sense of structures composed by a perceptible sense of points rather than continuous texture or lines; is important as well to understand that it refers to the painting technique known as pointillism rather than to the musical trend linked to serialist developments especially regarding Anton Webern's aesthetics.

an intimate space into an unnatural situation by amplifying it (05:21:51 to 05:27:22 approximately). This is clearly a *creationist* junction of elements that produce an ‘unexpected relationship’ between elements due to its unrealistic aspect.

Then the section moves to a new compound *level of spatial function: structural/figurative*, where the elements are both drivers of spatial layers and focal points and again connoting surrounding close voices. Although naturalistic, the configurations and behaviours for these voices are impossible in reality, again an unexpected association. The *maintenance* structural function described in the previous part of the analysis, at 05:39:43, with its sustained nature, gains in interest through an *archetypal* spatial function, which gives dynamism to the section: once more via the rotation of materials in addition to short displacements and distant space layers.

The final section begins at 06:42:15 and the space is spread widely by means of a complex compound *level of spatial function: structural/abstract* which in fact has been started shortly before at 06:39:42 with the *Y* objects. The spatial expansion continues and is only marked with a *madrigalesque* function: the appearance in the frontal zone of voices whispering successively the title of the cycle in French, English and Spanish respectively between 07:04:28 and 07:10:53. Then, at 07:30:63, the *structural* function is still operating but its *abstract* part becomes *figurative* since many voices appear, speaking, intoning and whispering complete *sentences, words* and *phonemes*, all in spatial layers, trajectories and focal points. These end to give space to the coda, where a *madrigalesque/figurative* function closes the piece by means of clear voices and some transformations of them.

1.2.3 Voice type and speech-sound type distributions

In this final analysis, the categories used for *Voice type* make reference to the inclusion or absence of *semantic* content. They are *semantic, semantic dissolution* and *vocal extended*. The first two are self-explanatory. *Vocal extended* is a term proposed in this thesis to point out a type of material which, although it has a vocal nature, it has been so extensively processed by electroacoustic music techniques, that it can be approached as either *semantic* or *semantic dissolution*. In some instances, hybrid cases such as *extended & semantic dissolution* are presented, in order to acknowledge a compound distribution. On the other hand, the *speech-sound types* make reference to a detailed categorization of

phonetic elements within the pieces. In appendix 3 all these categories are explained in detail, however it is worth reviewing them briefly here for being their first appearance: *phonetic* (a general category for complex elements), *phonemes* (minimum segment of sound that differentiate a word from another, not necessarily carrier of meaning), *allophones* (variants of a *phoneme* which do not alter the identity of it, although can generate new words in these compositions by a procedure of relocation), *word* (smallest syntactic unit, namely has meaning and it is independent as utterance), *sentence* (assembly of words, it carries meanings and messages), *extended* (different to the previous one, since it points out a *phonetic* aspect ‘extended’ by performance or electroacoustic treatments), *non-vocal* or *electronic* (absence of speech or recognisable speech due to the sole presence of electronic sounds or recognisable sounds but which are not voices) and hybrid cases combining two or more categories. It is important to state that for both analyses, the predominance of an aspect (*semantic*, *word*, *extended*, *electronic*, etc.) is the rule to classify the particular section or part of a piece. This is important to understand since, in spite of hybrid cases, there are moments or sections where a multitude of materials cohabit, nevertheless one category has been identified as the predominant.

The voice distribution categories for this piece are shown in Figure 15.

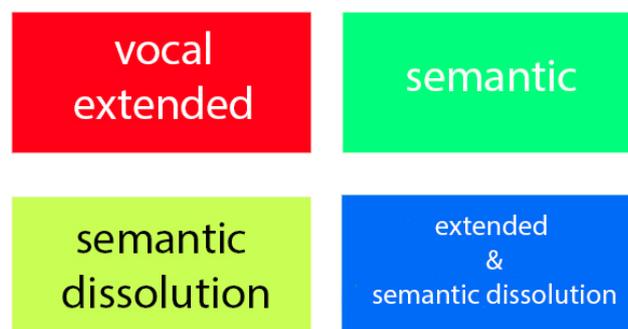


Figure 15: Voices categories for *Overture*

And the speech sounds distribution categories can be seen in Figure 16.

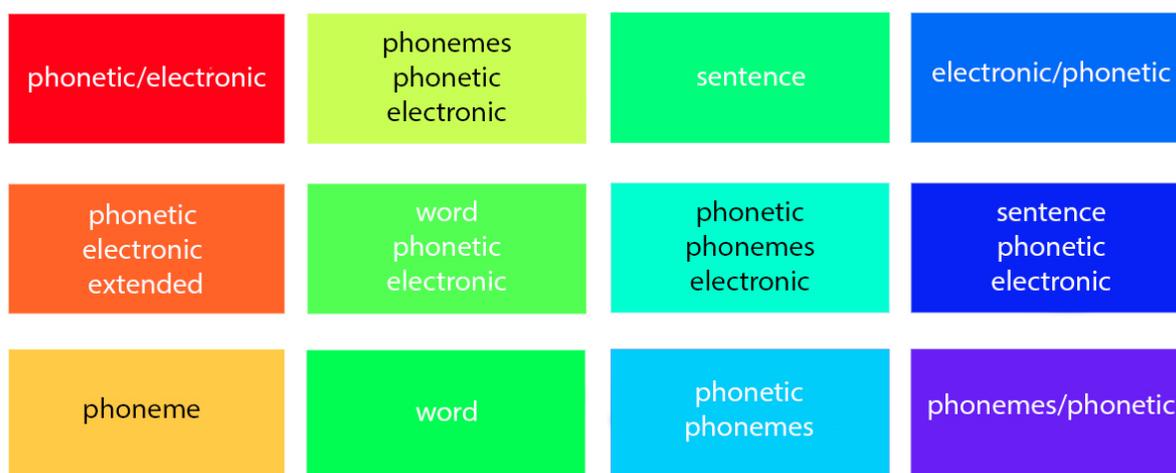


Figure 16: Speech sounds categories for *Overture*

As is possible to see in the following figures, the whole piece has a predominance of *semantic dissolution* and *vocal extended* materials regarding voice distribution, and subsequently a pre-eminent presence of *phonetic*, *extended* and *electronic* materials in terms of speech sound distribution, with a high relevance for small units constituted by *phonemes*. The starting section and the first *mesostructure* have no *semantic* materials. Actually, the first *semantic* material, a *word*, appears at 02:05:98 in the second *mesostructure*, after a succession of *vocal extended* and *semantic dissolution* blocks, composed in turn by *phonetic*, *phonemes*, *electronic* and merging of them. In this second *mesostructure*, is possible to find two more *semantic* elements, *words*, one at 02:43:32 and the other at 02:55:22. A passage of around fifty-three seconds approximately, starting at 02:57:30 in the second *mesostructure* and finishing at 03:49:70 in the middle section, there is no *semantic* material at all, but it is interrupted by a word (the definite article 'la' in Spanish which can be considered as *phoneme* as well). After that, there is another long passage, between 03:51:65 and 04:20:31, which, without *semantic* content, appears in the form of a simple sentence in French: 'la lumière', which is electronically extended. At 04:46:32 the 'signature object' (*N*) is described in this analysis as *vocal extended* and *phonetic/electronic/extended* in terms of voice distribution and speech distribution respectively; this shows its complex nature as *sound object* and vocal material as well.

The absence of *semantic* content persists through a series of highly complex *sound objects* obtained by means of extensive use of electroacoustic techniques, between 04:22:27 and 07:04:22, that is, from the last third of the middle section to the second third of the final section. This implies that the whole third *mesostructure* has no *semantic*

content at all in its 1'46" of duration. Because of these unobtrusive appearances of few *semantic* materials the emergence of the *sentences* in the three languages, at 07:04:33, 07:06:75 and 07:08:82 respectively, is very noticeable and operates as a call of attention in both cases. If the 'signature object' *N* at 04:46:32 is a morphological accent (as a *sound object*), these sentences are an accent in another sense, as carriers of meaning, which mark the last part of the final section. The sentences are accompanied by complex vocal objects (*extended* and *semantic dissolution*) closed by the coda with a *semantic dissolution* produced through gestures composed with *phonemes* and their fragmentations, all without highly processed sounds.

The general aspect can be appreciated in Figure 17, where *semantic* content is represented by six small green rectangles (second row 'Voice distribution', black background) and their correspondent phonetic types (*words* and *sentences* in third row 'Speech sounds', grey background) in the form of small rectangles in different shades of green.

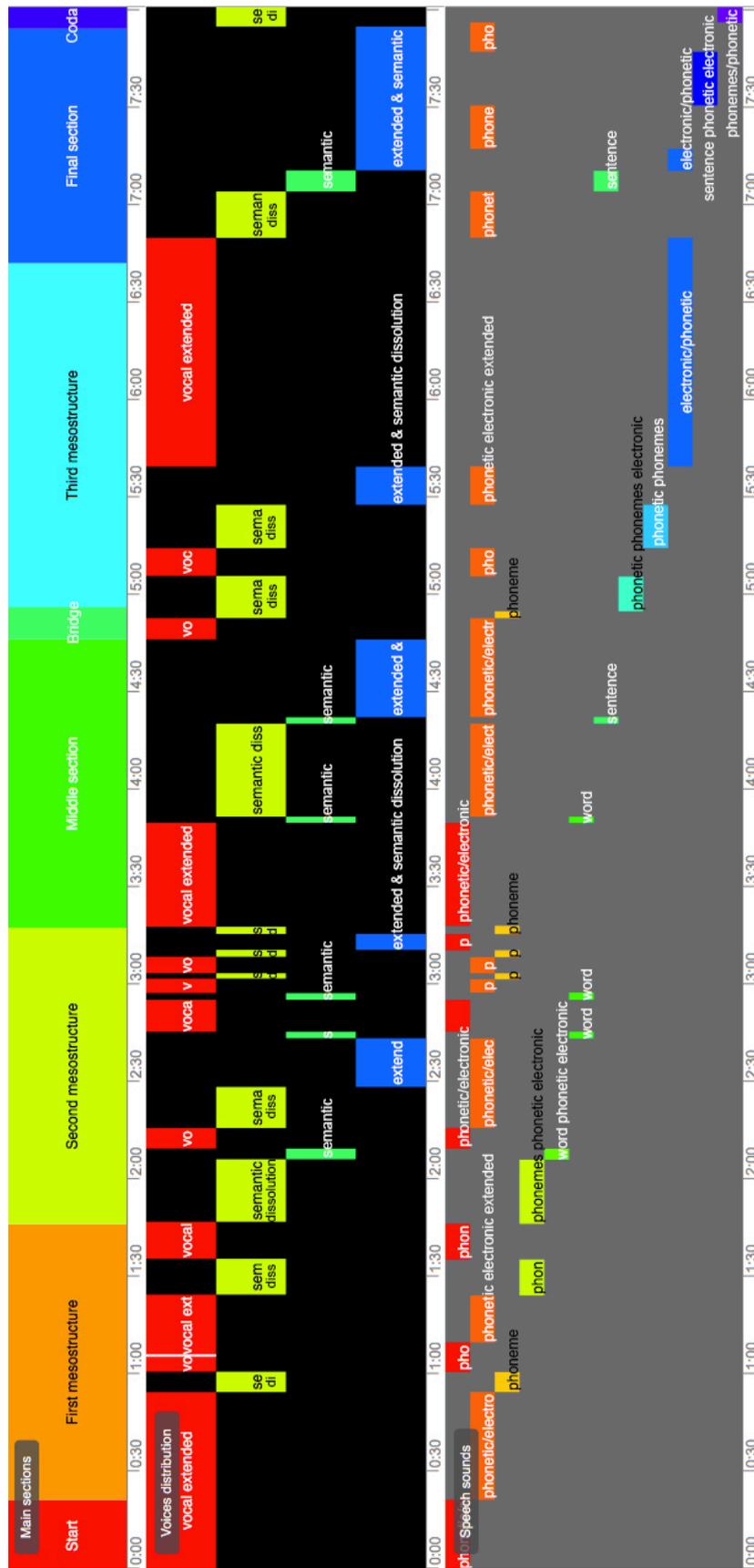


Figure 17: Voice and speech sound distributions for *Overture*

1.3 Analysis conclusion

The piece shows a large number of complex materials, both as *sound objects* and *spectromorphologies*, which are developed through diverse techniques, such as juxtaposition of layers and manipulation of constant structural changes, in spite of the clear pace of the musical discourse (see section 1.1.1). This multitude of expressive resources forms a heterogeneous sound world. In this sense, the gestures and articulations, by means of the wide range of spectral content, create an intense work which in turn is balanced by the spatial composition and distribution of the vocal materials. Thus, the dialogue between *imagination* and *reason* proposed by Huidobro³⁹ is present in the piece: the great deployment of sounds and structures due to the intense and intuitive compositional procedure (*imagination*) is balanced by the more rational use of spatial composition and the careful distribution of *voice type* and *speech-sound type* (*reason*).

Although the smallest details are lost in the image, the contrast between the profuse nature of *sound objects* and *spectromorphologies* and the more measured features of *levels of spatial function*, *voices* and *speech sounds distributions*, can be easily appreciated in the next Figure 18 (from top: *main sections*, *sound objects*, *spectromorphologies*, *levels of spatial function*, *voices distribution* and *speech sound distribution*). Finally, as can be seen later, this *Overture* has presented the sonic world developed in subsequent sections.

³⁹ See Compositional rationale.

Chapter 2: *La Lumière*

2.1 *Poietic analysis*

This is the second section of the cycle. It is focused on the French language and associated sonic features. This was addressed, intuitively, from the very beginning in the recording sessions by a process where, in addition to the instructions provided to the performer, the reader herself proposed several expressive actions, namely the inclusion of improvised simple intonations and singing. As matter of fact, these melodic materials became important in the construction of the whole compositional structure, especially in order to develop the final section and the ending, and the particular colour of the performer's voice was crucial to characterise this section of the cycle. In addition to the detailed work through cutting and pasting small and medium size units of vocal materials, various digital techniques, including stretching and pitch shifting, among others, were used.

The aims of this work were:

- To compose giving priority to the hybrid approach proposed in the rationale (*acousmatic-creationist*).
- To create compositional development based on the evident aspects of French language pronunciation; to make intensive use of small *phonetic* units (*phonemes* and *words*), the specific sonic features of letters, the melodic nature of the *sound objects* provided by the performer and the rhythmic patterns that emerged.
- To use the transition from meaning to sound texture in both directions as a compositional element; to achieve this transition through the union, juxtaposition of *semantic* and *non-semantic* materials, with gradual changes between them.
- To give precedence to rhythmic and pointillistic design, contrasting with the *Overture* and its long *wefts* and textures.
- To work with highly referential elements, namely loops and metallic sounds (derived from a can and a lid) in clear reference to *musique concrète* and specifically to the *Étude pathétique* composed in 1948 by Pierre Schaeffer.
- To confer a playful and slightly humorous sense on the piece.

- To compose a more dynamic, playful spatial discourse by means of different types of movements, spatial zones and trajectories, thereby contrasting with the previous piece.

2.2 *Neutral level analysis*

There are seventeen sections in the piece defined by the different compositional elements (articulations, transitions, pauses). This neutral level analysis is done again in the same five analytical areas: *sound objects, spectromorphologically derived structural functions, levels of spatial function, voice type and speech-sound type distributions*. The sections are:

1. Start / Presentation	(00:00:00 - 00:47:86)
2. First <i>mesostructure</i>	(00:47:86 - 01:47:49)
3. Transition	(01:47:49 - 01:56:68)
4. Second <i>mesostructure</i>	(01:56:68 - 02:39:28)
5. Pause	(02:39:28 - 02:40:44)
6. Third <i>mesostructure</i>	(02:40:44 - 03:01:76)
7. Pause	(03:01:76 - 03:05:19)
8. Fourth <i>mesostructure</i>	(03:05:19 - 03:36:03)
9. Pause	(03:36:03 - 03:38:10)
10. Fifth <i>mesostructure</i>	(03:38:10 - 04:29:93)
11. Middle section	(04:29:93 - 06:44:86)
12. Sixth <i>mesostructure</i>	(06:44:86 - 07:57:16)
13. Transition	(07:57:16 - 08:03:36)
14. Seventh <i>mesostructure</i>	(08:03:36 - 09:01:22)
15. Transition	(09:01:22 - 09:07:77)
16. Final section	(09:07:77 - 09:34:67)
17. Ending / Closure	(09:34:67 - 09:46:00)



Figure 19: Main sections of *La Lumière*

2.2.1 Distribution of *Sound objects* and *spectromorphological* structure

The piece starts with a clear presentation of short materials constituted by *balanced objects* in articulated gestures separated by pauses. The first section is an introduction of the type of *sound objects* comprising the piece. In its sonic world, the particular vocal timbre of the performer is a substantial signature for the whole piece. Structurally the first fifteen seconds are well-shaped gestures formed by clear *attacks* and *closures*; after the initial four of them, *tonic mass* objects, these gestures expand their forms by means of *prolongations*, *emergences* and *maintenances* throughout the section. A couple of accelerations (*upbeat* functions) give variety to the rhythmic discourse at 00:30:46 (after the main *prolongation*) and at 00:44:79 (after the longest *maintenance*) respectively as is shown in Figure 20.

At the end of this initial section, the ‘signature object’ *N* presented in the *Overture* at 04:46:32, is presented again in this piece, at 00:47:15, but on this occasion as the beginning of a compound gesture, including various *N* and *X* small objects and finishing with a low version of the original *N* (pitched down) which decays for almost five seconds without any other sound accompanying it. After that, between 00:53:11 and 01:19:91, a sequence of *N* objects and a couple of high *X* objects create an *emergence* starting a persistent section in the form of a *maintenance* of *continuous* and *iterative* objects. Those objects have mainly *tonic* and *complex masses* and a couple of them *variable masses*. Shortly after the first occurrence of the *N* ‘signature object’ (in its new version), a new appearance is delivered at 00:56:04, this time with other gestures ongoing (the ‘signature objects’ are indicated with green arrows, the low pitch *N* object is clear in both versions since are the bigger ones). All of this can be seen in Figure 21.

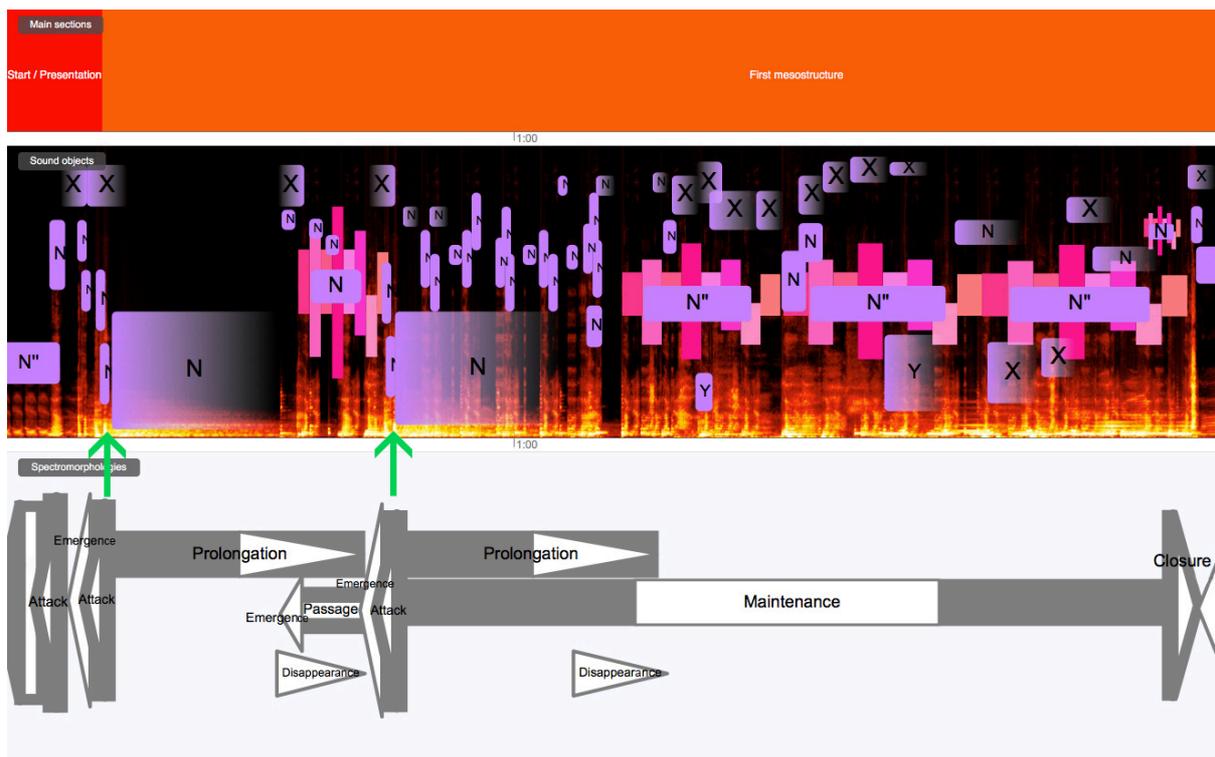


Figure 21: The ‘signature object’, twice at the beginning of the first *mesostructure* in *La Lumière*

These new and more complex versions of the original *N* ‘signature object’ operate as indicators of a new state within the piece, namely an increase in complexity, both in the spectral range and in the grouping of materials as gestures and articulations. Fluctuations between these two poles, one more simple, clean with few materials, and the other

complex and filled with diverse sounds, forms most of the musical discourse of the whole piece. In this sense, until this point, the *motion process* is basically of the *plane* type, being more characteristic the *growth process* of an increasing *agglomeration*. In this way the *creationist* ‘unexpected relationships’ are achieved by intense juxtapositional procedures.

Within this first *mesostructure*, starting at 01:13:01, *N* objects appear with no clear relation to recognisable objects such as voices or their derivatives. These materials increase their presence throughout the work, including variations and more complex ones. The ‘signature object’ appears again in the last third of the section at 01:32:71 (green arrow indicates it), releasing the energy by means of *prolongations* and a clear *disappearance*, as Figure 22 shows, all constituted by different *impulsions*, *iterations* and *continuous* objects with *tonic* and *complex masses*.



Figure 22: Ending of the first *mesostructure* of *La Lumière*

After that, an *N* and three *Y* objects close definitively the section and launch a transition with a notable *attack* function. This transition, between 01:47:48 and 01:56:68, is divided in two small sub-sections separated by a short silence. The first half presents some

balanced objects related to previous materials and a new sound in the form of a *complex mass accumulation (Ax)*, a sound very denotative of a metallic real object. In the second half, only *complex mass continuous* objects are presented to launch a shorter version of the previous *Ax* and a second even shorter version accompanied by an *N* vocal sound which operate as triggers of the second *mesostructure*.

This *mesostructure* (01:56:68 to 02:39:27) is characterised by the presence of repetitions and loops in the form of long *tonic* and *complex mass iterations*, successions of *impulsions* and *continuous facture objects* (again with *tonic* and *complex masses*) and *samples (Ex and En)*. This rhythmic and pulsating section is unfolded through a persistent *plane motion process* and again with an *agglomeration growth process*. The variety is given by the diverse nature of *spectromorphological functions* deployed and overlapped as can be seen in Figure 23.

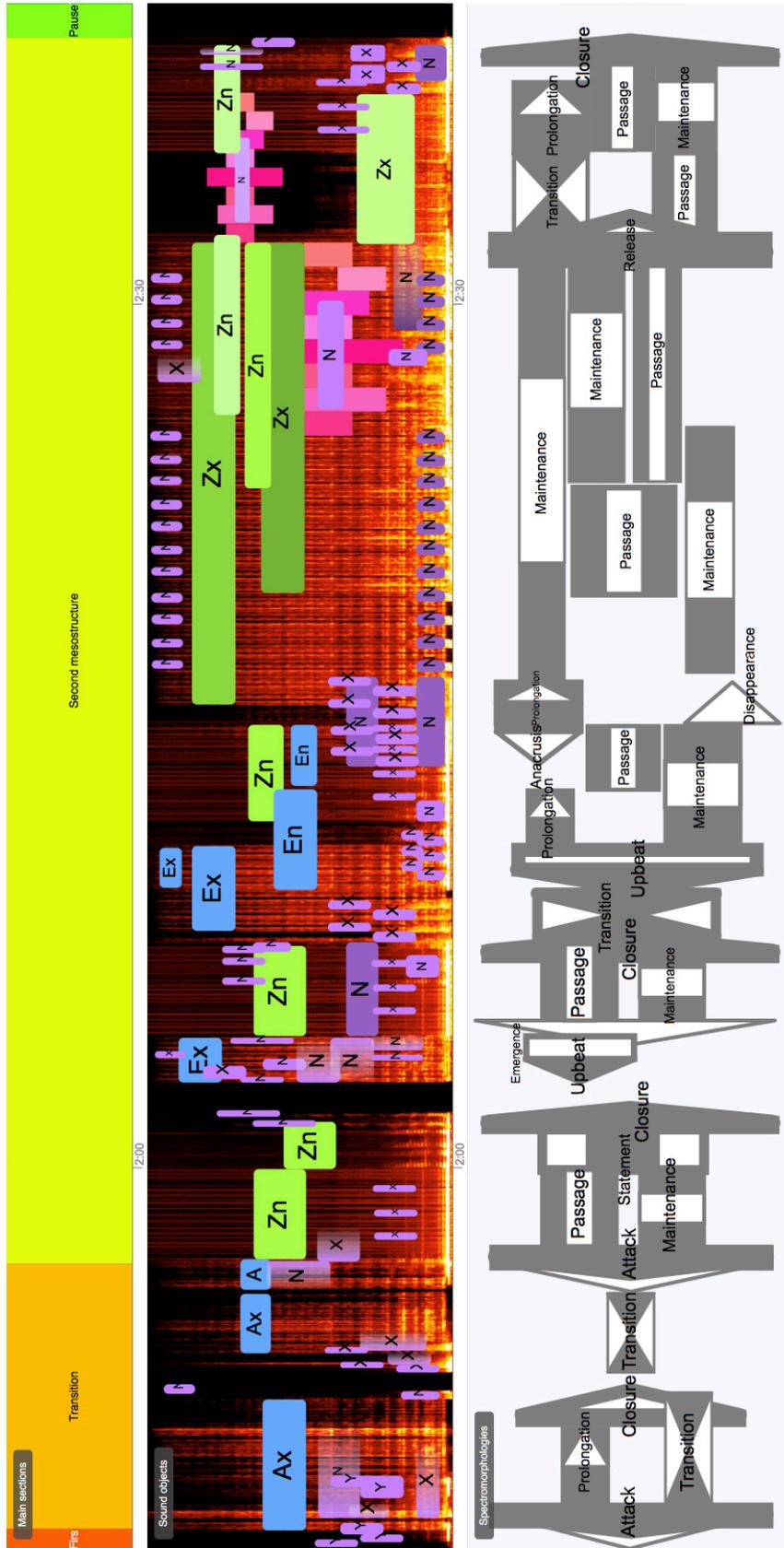


Figure 23: *La Lumière*, the second mesostructure between a transition and a pause

The figure shows the previous transition and the first pause (a short silence) just after the second *mesostructure* is ended by a *closure* function. The following third *mesostructure* is a short section (02:40:44 to 03:01:75) similar to the previous one because of the use of repetitions and loops but is mainly defined as such by two pauses and for containing a distinctive *sample of variable mass* (*Ey*), a rich compound sound with an iterative feature, whose *mass* rises in tessitura whilst its inner rhythmic pattern is accelerated. This *Ey* appears at 02:45:94 and then repeated at 02:57:08 to close the section at 03:01:75, when the pause is stated through a release function with an attack-resonance compound gesture (high *X* and *N* and a low *X*). It is naïve to pretend avoid the denotative nature of the *Ey* object, that in fact is a recognisably stereotypical sound in electroacoustic music: the disc or lid that rotates in acceleration until it stops. After the second pause, the fourth *mesostructure* (03:05:19 - 03:36:02) starts with two gestures composed by *balanced objects* articulated and separated by a silence. The second gesture launches the rest of the section, a merging of materials similar to the previous ones and including some new ones: strong shapes that renew the sound palette of the piece at this point. Two sounds are relevant, especially in the way they interact: the previous *Ey* object and a new *En* which is *iterative* and *granular*⁴⁰ in its *sustainment*. This gives it a distinctive *harmonic timbre*. Both objects, *Ey* and *En* are matched due to their iterative and rugged (grain) features, creating a dialogue and a mixed sonic statement between their denotative natures: the metallic sound source and an object derived from vocal material. In this fourth *mesostructure*, the *spectromorphological functions* operate in succession rather than being overlapped as in the second *mesostructure*, giving a clear linear motion with a *reciprocal* action (the gestures move in *parabolic* motion) where *growth processes* of *agglomeration* and *dissipation* complete their unfolding. The section ends with a *statement/closure* function in the form of a *Y sound object*, standing out as clear vocal action, creating expectation but pausing the sonic flux since ends in a new silence, which in turn separates it from the next part as the following Figure 24 shows.

⁴⁰ These are Schaefferian morphological criteria. They are described in Appendix 1. In spite of the inclusion of several criteria in the appendix, just some of them are used when it is necessary within the analysis to describe relevant sonic features.

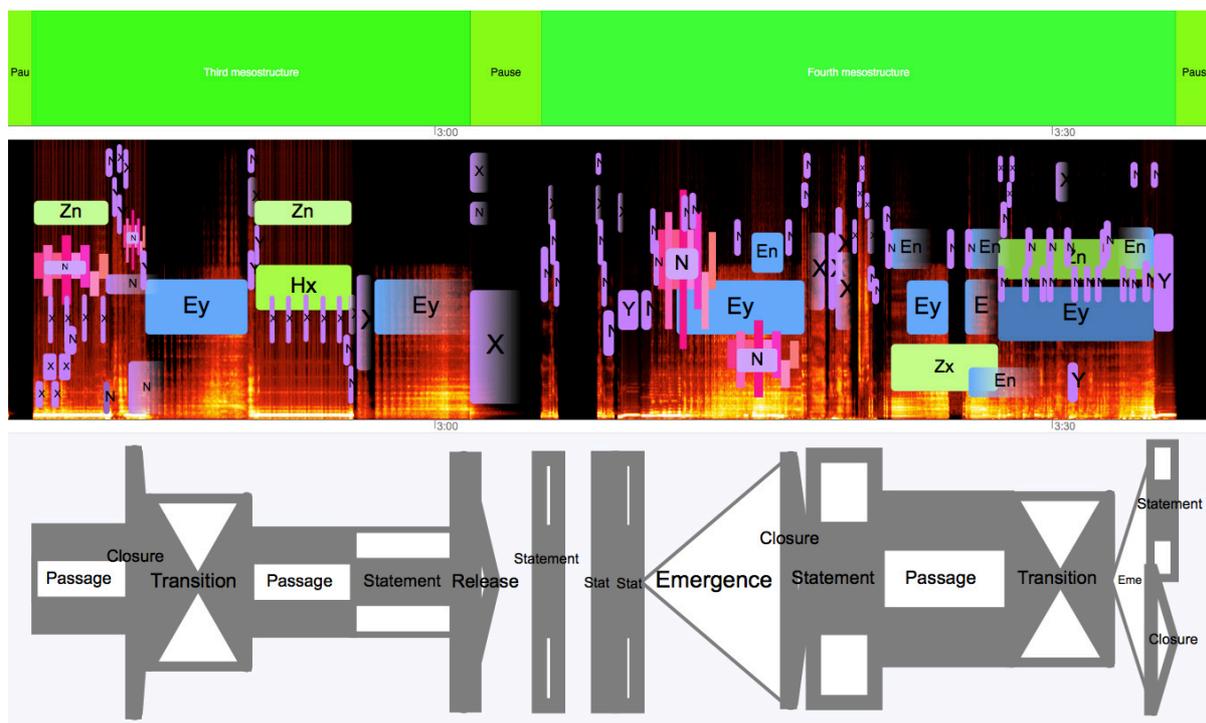


Figure 24: Third and fourth *mesostructures*

The next part starts at 03:38:10 and presents *balanced objects* grouped in gestures and articulations similar to the groups of sounds that begin the piece. In this case, concentrating on certain types of vocal materials during the first half of the section and employing repetitions and short loops akin to those presented in the previous two *mesostructures*. Vocal glissandi (*Y* objects) have great relevance to the way the sounds are linked within the gestures. Then, at 04:01:74, more complex and elaborated textures and objects are presented. Reverberation, stretching and granulation (a noticeable *An* object starting at 04:03:16 and spectrally dense *A* and *T*, *accumulation* and *weft*, both at 04:07:16); combined with *balanced Y* sounds, change the sonic environment of the piece. This moment is signalled as a clear *departure* structural function. The *motion* and *growth* developments are similar to the previous sections: *parabola* and *agglomeration*. This fifth *mesostructure* can be appreciated in the next Figure 25, where is easy to see the pointillist discourse changing to sustained and elongated materials in its second half.

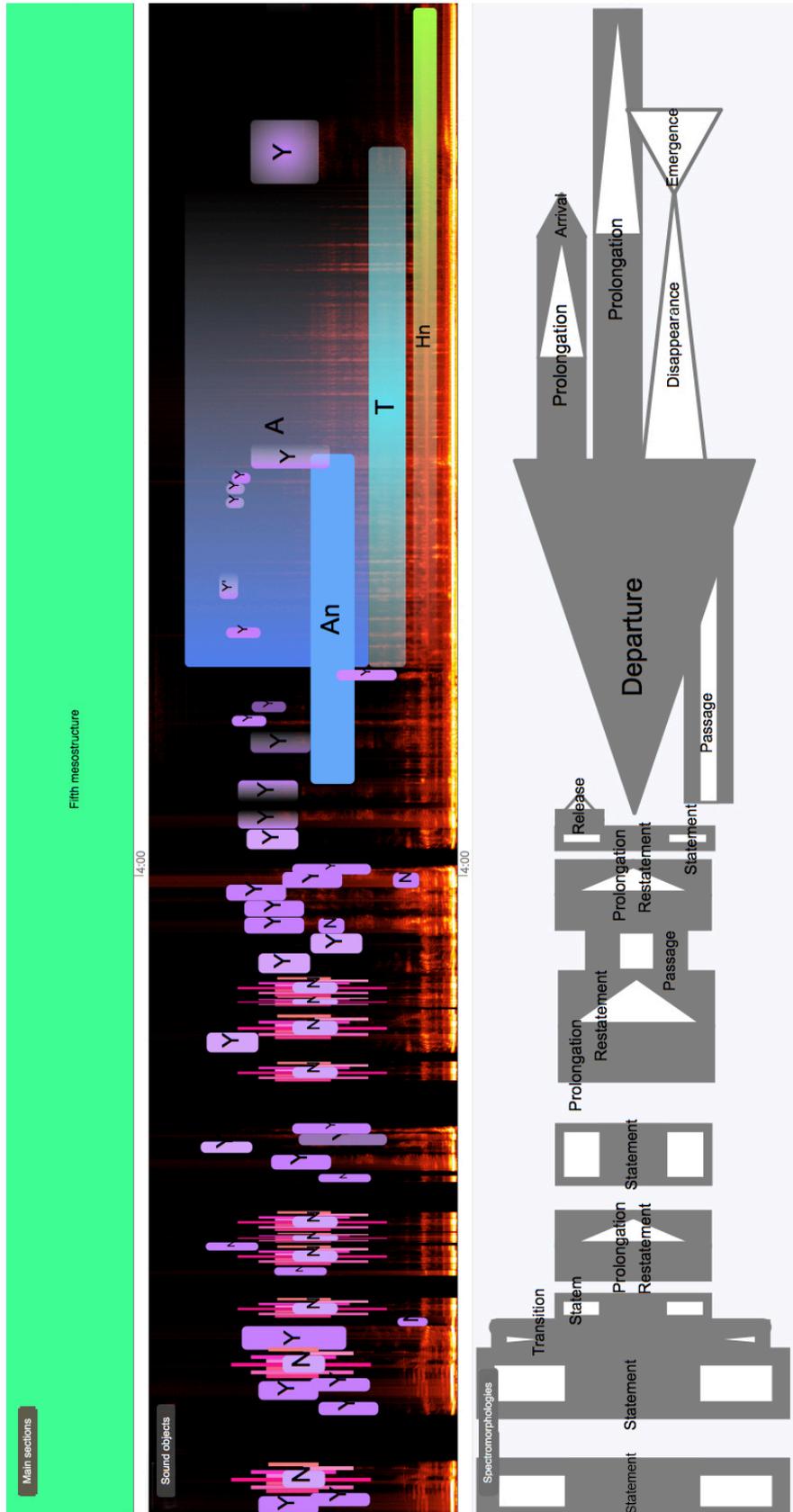


Figure 25: The fifth *mesostructure* of *La Lumière*

Following this development, the next part is the middle section which is the longest among all (04:29:93-06:44:86); it starts after the previous *Hn* object is silenced through a compound figure containing a clear *N* vocal sound articulated with some *complex mass continuous* objects (whose are vocal materials as well). Then several *macro-objects* are presented, composing a complex spectral weft over which different articulations with *impulsions* and *continuous fractures* of *tonic* and *complex masses* are situated. The *macro-objects* (*Hn* in different tessitura levels, high *Hx*, *Zx*, *Ex*) shape a dense flux of sound where elongated *Y* objects interact with other *balanced* sounds, mainly *X*. The *motion* pattern is *ascent* with an *agglomeration growth* once more. Among several structural functions that give variety to the section, the more distinctive are long *maintenance* and *passage* with a significant *prolongation* in the middle. Many *spectromorphologies* operate as *emergences*, giving a sense of accumulative progression. The section can be divided in two parts as well, the first being the first atmospheric with a predominance of *macro-objects* as driving forces, and the second one with some of them (one *T* and two *Hn*) acting as a bed for several *Ex* and *balanced* objects, all of which are clear milestones in the course of the sonic discourse. Very idiosyncratic (and similar to the *Ey* sounds of the third *mesostructure*) are the *E* objects which are repeated in an almost regular pattern, alternating according to their position in the tessitura (high and lows). After the *complex T* ends at 06:21:17, finishing the long *passage* function with two *disappearances* and a *transition*, a development of phrases is unfolded as a sort of ending, using mainly *X* vocal objects and some *N* and *Y* sounds in the form of *transition*, *emergence*, *disappearance* and *transition*; the next section is opened shortly after an *Ex* a rich object formed by noise bands produced by the performer, as can be seen in Figure 26.

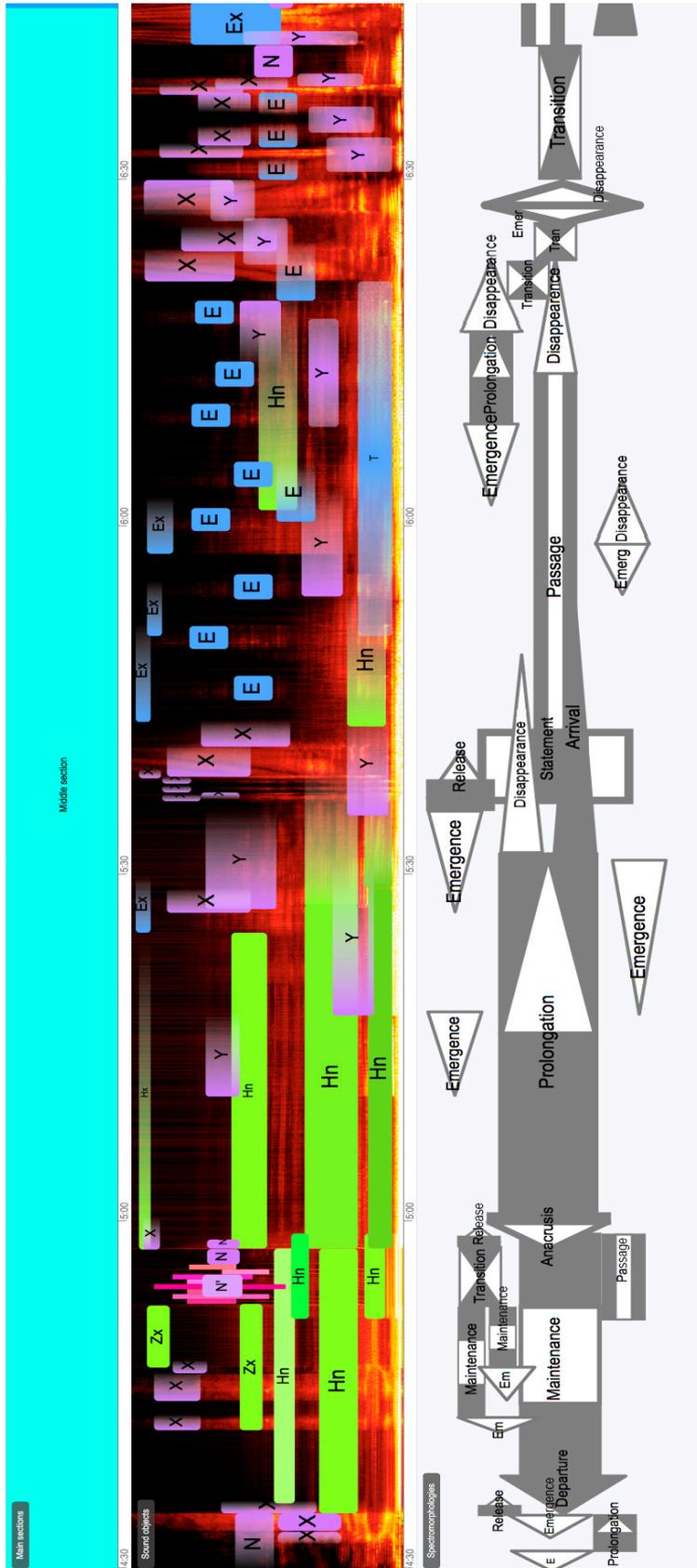


Figure 26: The middle section of *La Lumière*

In fact, that *Ex* operates as a short bridge with the similar *X* objects that open the sixth *mesostructure* at 06:44:85. The section starts to present phrases where these *complex mass* objects interact with *tonic mass* objects of increasing complexity, namely overlapping of *Y* and *N sound objects* and more significantly the presence and eventually superposition of *P* objects. These materials are, in traditional musical language, melodies and constitute the most common types of sounds presented from this point until the end of the work.

After these six initial seconds, the section is calmed by means of a *downbeat* structural function. After that, an *agglomeration growth* process starts to accumulate objects and the piece departs (*departure* function) to a different expressive zone with a quiet pace where vocal improvisations are provided by the performer. These materials are arranged in different superpositions and articulations with long *P* objects interacting and supporting a rich combination of *E, Ey, X, N* and *Y* sounds. Clearly the main structural features of the section are *maintenance* and *passage*, with an evident *arrival* and *release* combined to finish at 07:57:16. At that moment the next part, a transition, is shaped by a *statement* function, in fact an uttered sentence with the form of an isolated *Ex* object as is shown in the following Figure 27.

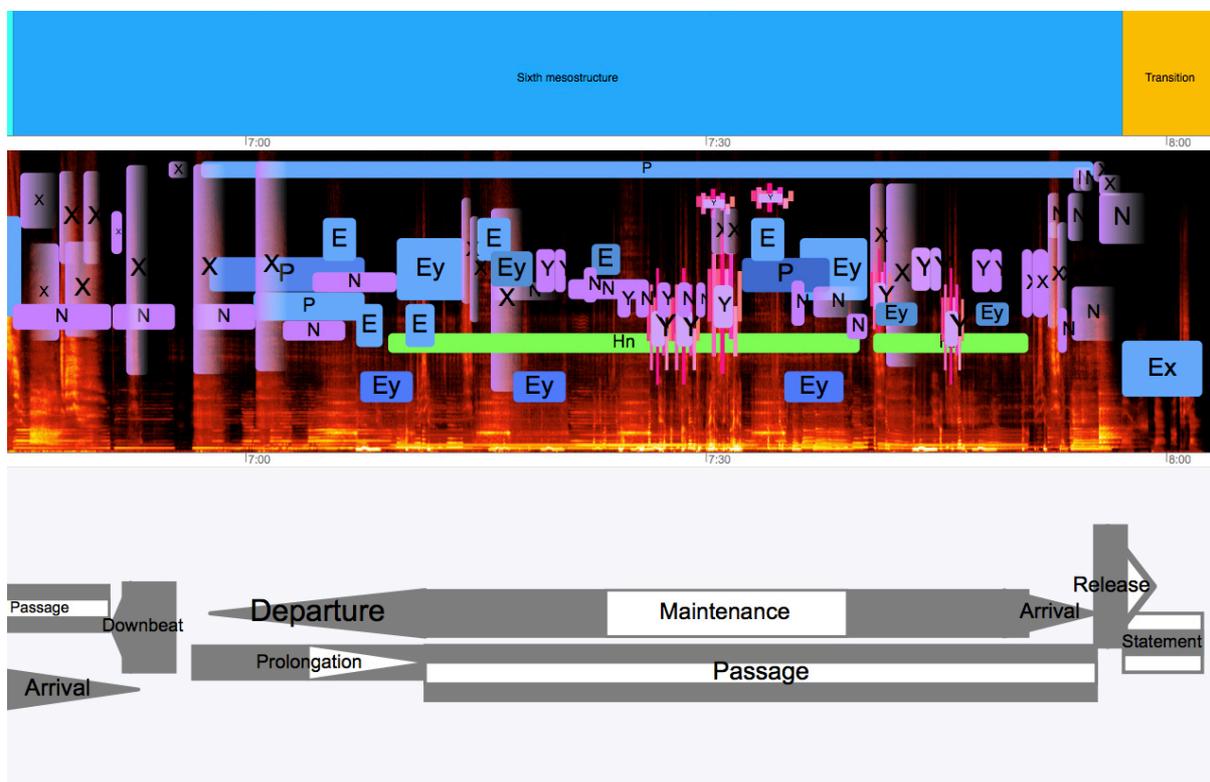


Figure 27: *La Lumière*: the sixth *mesostructure* and the following transition

This transition in turn introduces the seventh *mesostructure* (08:03:35 - 09:01:21), where the *P* objects and, in general, the *tonic mass* objects give way to *complex mass* sounds, where *iterations* and *impulsions* have an important role in the construction of this long section (almost a minute). The speed is accelerated and decreased but with a local function rather than global, in fact the pace is quiet in spite of some fast *iterations*, thus there is no predominance of *upbeat* or *downbeat* functions but there are *motion processes* of *parabola* and *oscillation* in concert with *growth processes* of *agglomeration* and *dissipation*. Notable is the presence of several *cell (K)* objects with their characteristic disparity and disorder of *impulsions* within an object perceived as a whole. In this case *variable* and *complex masses* operate in their inner bodies with great variation due to the abrupt changes in their *mass profiles*. The *spectromorphological functions* reflect the pace described above by means of *prolongations*, *statements*, *attacks* and some *transitions*. All these materials and behaviours contribute to a part based on *complex mass* or a 'noisy' section, constituting a moment of contrast to reintroduce the *tonic* and *P* objects in the final section, which in fact start to reappear at 08:39:30 in a gradual way by means of five *Y* objects that are reinstated at the beginning of the next transition part. This transition is a combination of these *Y* (melodic objects) and some *X* (noisy materials) in an *emergence* function and acts as a preparation for the clean presentation of new *sound objects* in the final section, at 09:07:77. All these elements can be seen in Figure 28.

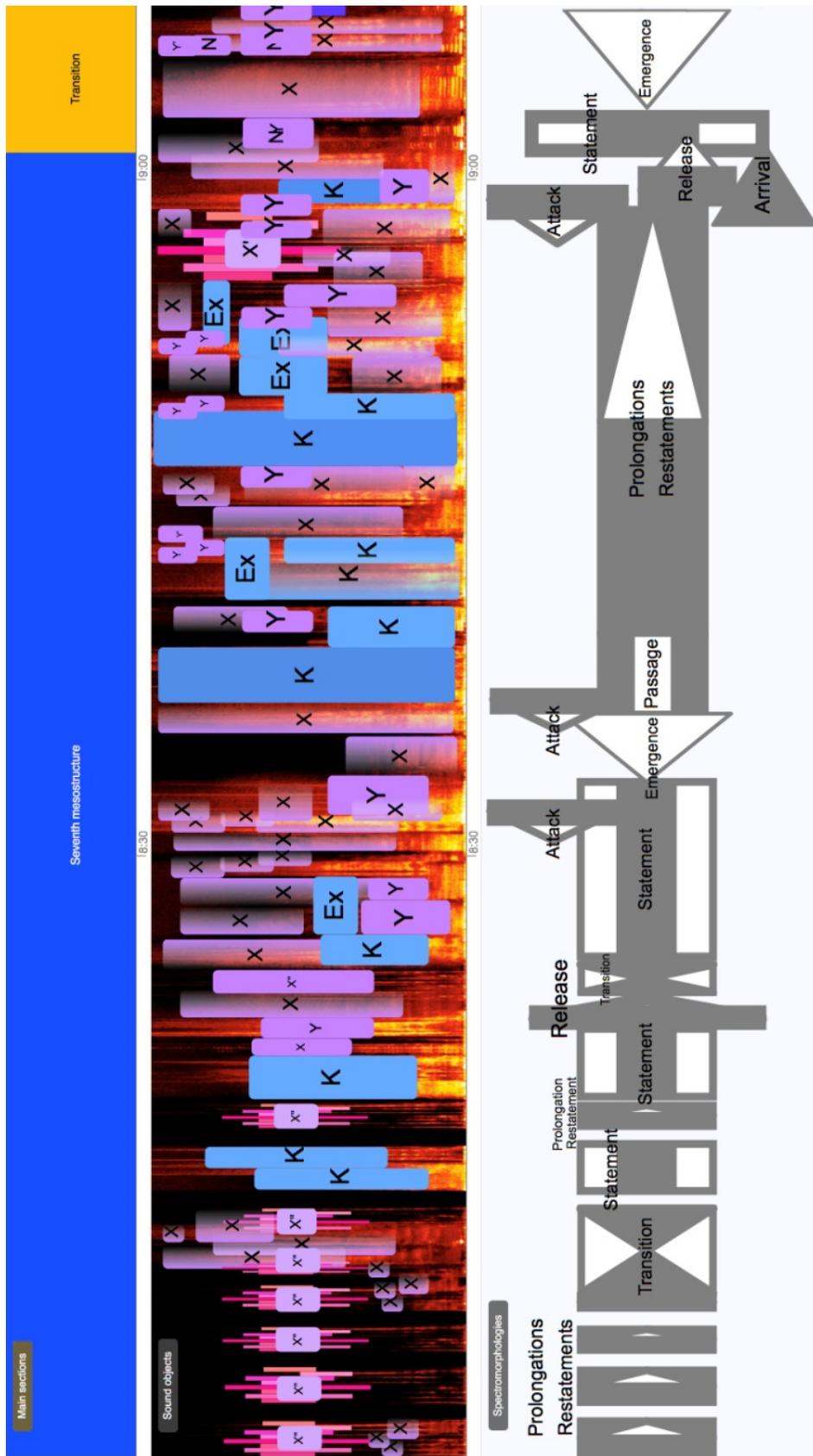


Figure 28: The seventh *mesostructure* and the last transition of *La Lumière*

The final section (09:07:77 - 09:34:66) presents several *P* objects overlapping. With the addition of *N* and *Y* objects in specific moments, the *tonic* and 'melodic' feature of the section is strongly stated. Besides some clear pitch-shifted and filtered versions of already presented objects, in general the vocal materials that constitute the section are presented in a 'naturalistic' way and the layers operate as a choral juxtaposition in an *agglomeration growth process* driven by structural functions of *maintenance*, *passage* and *prolongation*. The preeminent homogeneity of the *harmonic timbre* of these *sound objects* (voices) is balanced with the variation in the distribution in time and slight changes in their spectra by the filtering mentioned above. The ending/closure section (09:34:65 – 09:46:00) has the same nature which is only different by the inclusion of an *Ex* object, a *complex mass* loop which contrasts very much with the rest. The structural functions are *terminations: closure, resolution* and *arrival*. The *P, N* and *Y* objects, the naturalistic voices, seem to stop like a person suddenly silent, thus ending the piece. These ending sections are shown in the following Figure 29.

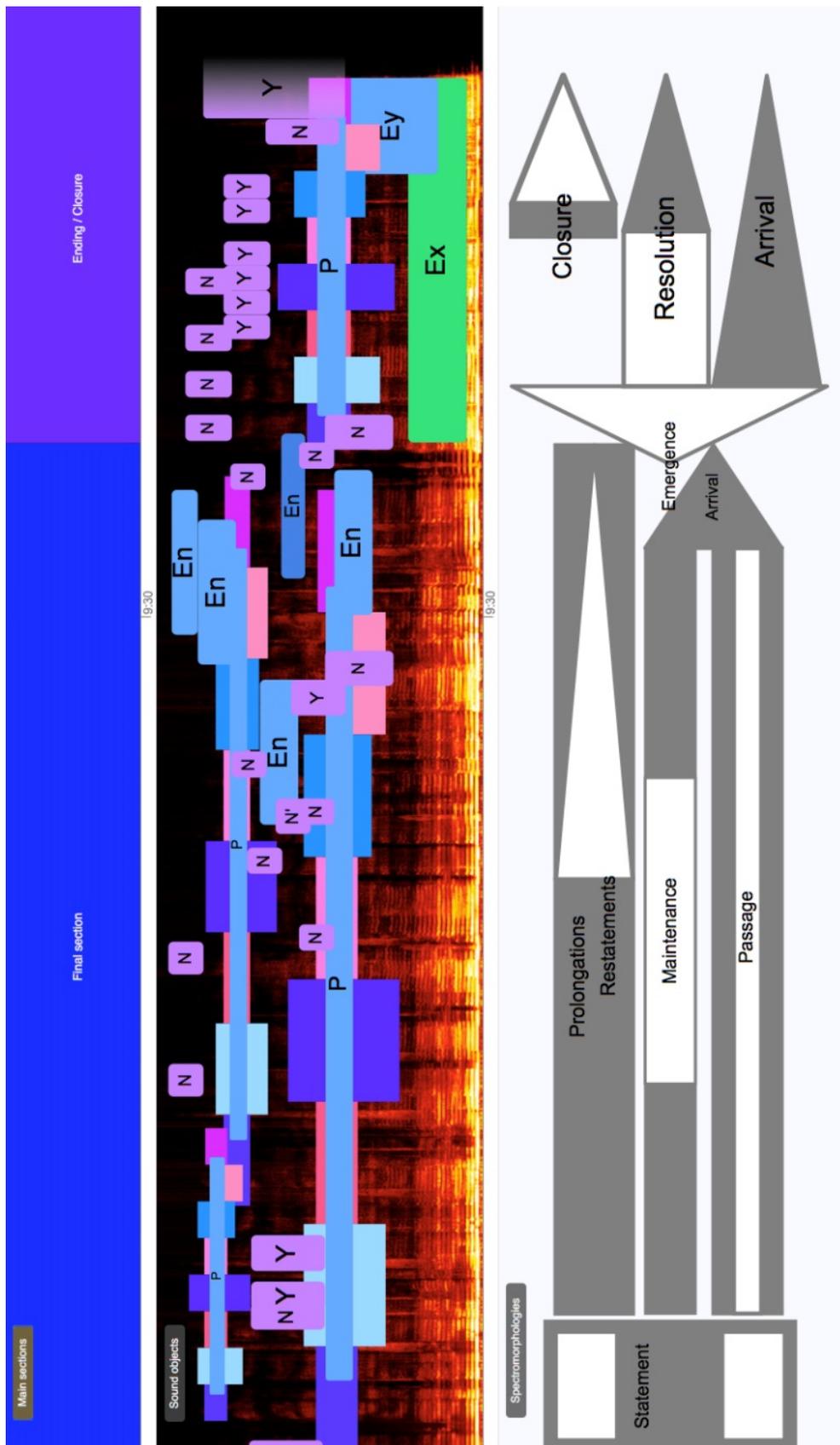


Figure 29: The final section and the ending/closure section of *La Lumière*

2.2.2 Spatial distribution and structure

The *levels of spatial function* present in this piece can be seen in Figure 30.

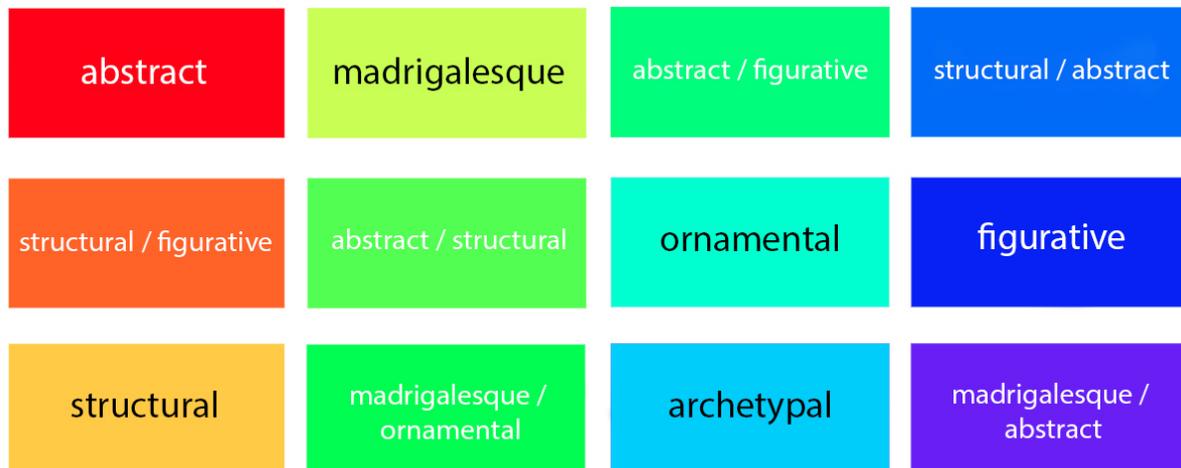


Figure 30: *Levels of spatial function for La Lumière*

As is possible to see in the previous figure, there are several compound functions present. This is due to the complex nature of the piece's spatial composition and the consequent hybridity or ambivalence of some of them. At the same time, this denotes a richer and varied use of spatial figures and environments than the previous piece of the cycle; in this way, the use of juxtaposition and its contrast with successive material distributions in regard to *sound objects* and *spectromorphological functions*, is reinforced by the overlaying of spatial configurations.

The piece starts with an *abstract* function level which is kept throughout the first section ('start/presentation') between 00:00:00 and 00:47:86. The *balanced objects*, distributed in compound phrases during this section, have their dynamism and pointillist features emphasized by means of the spatial figures traced by movements and different planes. The next section ('first *mesostructure*') has different levels of spatial functionality, starting with a compound *structural/figurative* level, since the spatial design is used as a change to valorise the new part and transmit an imaginary space, in this case a huge and distant one, produced by the *N* 'signature object' described in the previous analysis. This first distribution turns into a *structural* function at 00:53:07, creating a contrasting moment through sounds located at fixed points and simple stereo trajectories on loudspeakers pairs.

The *structural/figurative* level returns shortly after at 00:56:45 with the repetition of the *N* 'signature object'. The initially deep spatial setting is stopped at 01:01:93 by a vocal sound, close and dry, suggesting a character uttering an unintelligible sound just in front of the listener (whilst other *phonemes* are distributed on other loudspeakers), thus being a *madrigalesque* function. The *iterations* and looping patterns of *balanced objects* continue and at 01:02:78 are accompanied by new sonic trajectories over the space and different planes and focal points, all operating as a combined *abstract/structural* function. In this way, space creates a sub-section between 01:02:77 and 01:19:89. This sub-section gives variety to the whole *mesostructure* which was defined as such by the *sound objects'* distribution and the *spectromorphological functions* described previously.

A character transiting through the space in front of the listener contributes to the variety at 01:19:88 by means of a clear syllable moving from right to left over loudspeakers 3 and 4, again as a *madrigalesque* function. Then two zones of *abstract* level functions between 01:21:61 and 01:23:73 and 01:27:94 and 01:32:04 respectively, are separated by a compound *madrigalesque/ornamental* function between 01:23:73 and 01:27:94. The beginning of this composite, a syllable again, accentuates the notion of 'character acting' outlined above by reinforcing its transitory function (Vande Gorne 2010, p. 165), here moving from left to right over loudspeakers 5 and 6, transiting right behind the listener's head. The rest of the sounds acts as an *ornamental* spatial distribution. After the second *abstract* level function, at 01:32:04, is another *madrigalesque* function, this time the same syllable moving from the left to the right on loudspeakers 3 and 4. This short trajectory marks a moment to change the functionality into an *abstract/figurative* one, which lasts until 01:47:45 coincidentally with the *mesostructure* of which it is part.

The transition section operates as an *ornamental* function, nine seconds long, with different panning movements over loudspeaker pairs 1-2, 3-4 and 5-6, projecting the dynamism of an *Ax* and some *balanced objects* over the corresponding spatial layers, as Figure 31 shows.



Figure 31: Start/presentation section, first *mesostructure* and first transition with *levels of spatial function* of *La Lumière*

This is a wake-up call to initiate the second *mesostructure*, which starts at 01:56:81 with an *abstract level* function consisting of a diffused focal point, a surround sound projection with no clear source point for the *Zn* objects presented. A short interruption, in the form of a *madrigalesque* function (two syllables) is presented at 02:01:40. The *abstract* function is maintained throughout the section and even constitutes the initial part of the forthcoming third *mesostructure*, until 02:45:94. This *abstract* level function section is mainly formed by spatial layers that overlap with different trajectories.

The third *mesostructure*, started at 02:40:44, interrupts the *abstract* function with an *archetypal* level at 02:45:94 in the form of a circular clockwise trajectory for the denotative *Ey* object (metallic lid rotating). Shortly after, at 02:50:91, the same type of looping and repetitive materials are re-exposed with a *structural/abstract* level function, namely an *abstract* function with a *structural* component whose contrasting nature defines the section. Then, the *Ey* object is repeated in an *archetypal* function, but with a movement, which is difficult to determine at first, moving half clockwise and half

anticlockwise. The *archetypal* moment ends through a metallic hit (two *X* and one *N* in unison).

After a pause, the fourth *mesostructure* starts with a *madrigalesque* function shaped by dry vocal materials projected close to the listener, again as ‘characters’. Then, the *Ey* metallic rotating *sound object* superimposed to *N* and *En* sounds are presented in an *ornamental* function between 03:10:42 and 03:17:83, after which a *madrigalesque* short articulation is presented: close whispering voice and denotative *X* objects (metallic hits). After this, the *mesostructure* ends with a *structural/abstract* section where the most remarkable sounds are the conjunction of an *En* (*iteration* derived from vocal material) and an *Ey* (rotating metallic lid), putting in spatialised dialogue their *harmonic timbres* and *grain* features.

The fifth *mesostructure* begins at 03:38:10 with a *structural* function which last until 03:49:92, when all the previous pointillist trajectories are interrupted by a short *madrigalesque* moment of simple stereo movements on loudspeakers pairs: first 3-4 and subsequently 1-2 and 5-6, again with the already shown ‘character action’. Then an *abstract* function places *balanced objects* on stereo trajectories over the different loudspeaker pairs. A new short *madrigalesque* moment at 04:00:08 (a dry vocal sound on the frontal pair, as a close presence) is an accent/stop action after which the *mesostructure* adopts an *abstract/figurative* spatial level function until its end, unfolding layers, planes and diverse spatial distances. Until here, the *levels of spatial function* are diverse and have the relevant role of emphasising the structural distribution of *sound objects* and *spectromorphologies*, and, at the same time, creating dynamism and variety. This can be seen in the next Figure 32.

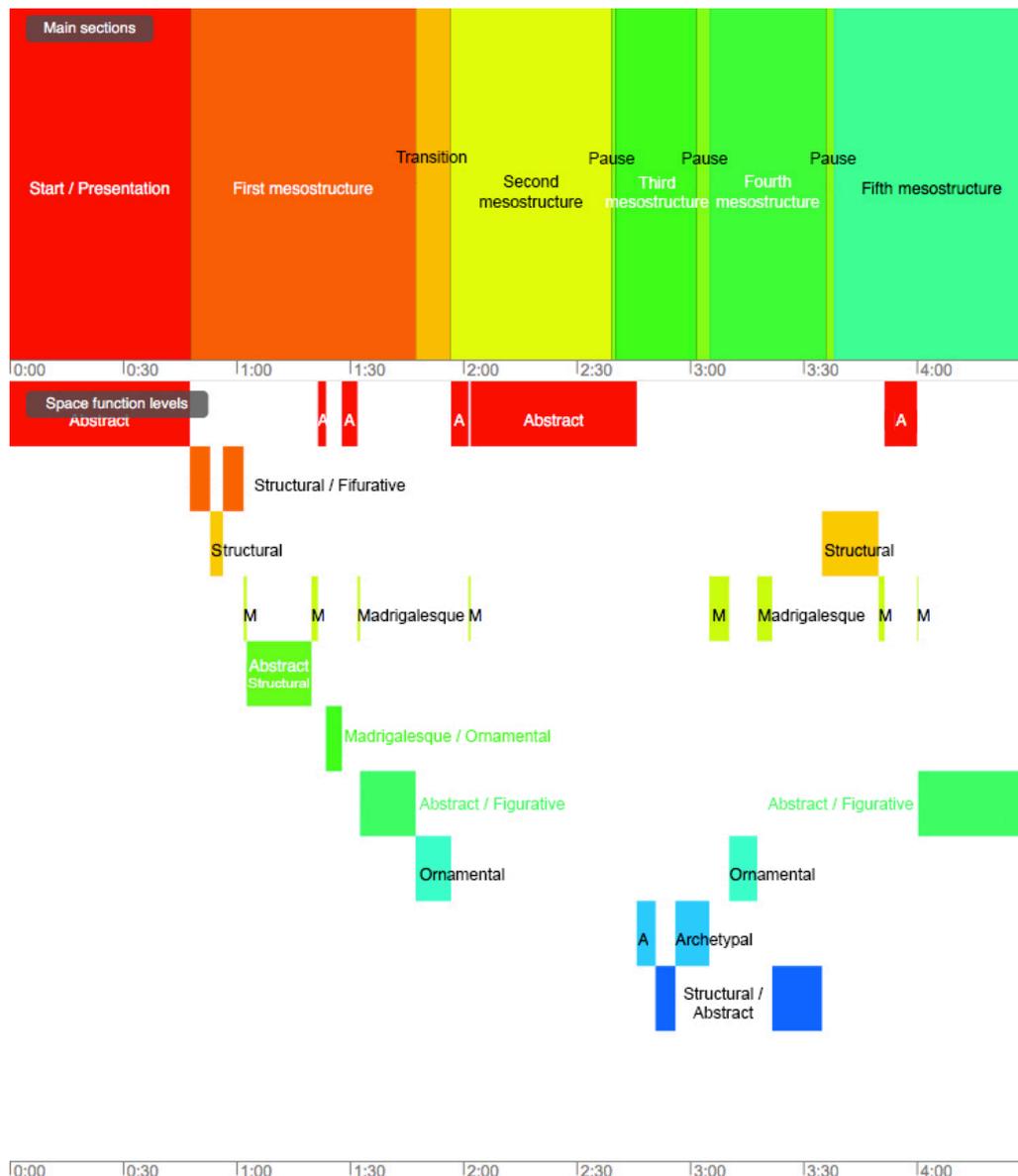


Figure 32: Levels of spatial level function distribution for *La Lumière*, from start/presentation section until the fifth mesostructure

The long *Hn* object which closes the section covering all the surrounding space (scattered homogeneously on the eight-channel circle) is interrupted by the *figurative* function at the beginning of the middle section (04:29:92); this is a strong compound vocal gesture that seems to come from a distant space and get closer. Then this long section continues moving between *structural* and *abstract* functions where the *macro-objects* are placed and unfolded as very immersive spaces, with several dense layers of sound shapes and spatial configurations. An important moment, that operates as a bridge between the first *structural* zone and the first *abstract* zone, is an *ornamental* section between 04:53:26 and 04:58:45 with pointillist vocal materials in the form of *tonic mass*

impulsions (*N*) appearing in different positions over the eight-channel ring. Then, after the *abstract* function in the form of *macro-objects* with diverse but similar *harmonic timbre*, a *figurative* moment gives a change in the middle of the homogeneity of the objects' sustainment. This *figurative* instant is constituted by a compound gesture with *X* and *Y* objects in a closer space and then moving away (05:27:03 to 05:36:31). After this, the space is presented as a medium to clarify the rest of the section (Vande Gorne 2010, p. 165) with a *structural* function, until 06:29:85, when space turns into a composition of trajectories and spatial layers through an *abstract* function. This function is maintained and afterwards it delivers the beginning of the sixth *mesostructure* between 06:44:85 and 06:51:23.

This initial part of this section is constituted by *complex mass* objects (*X*) and a *tonic mass* object (*N*), a clear syllable uttered with intonation by the performer and presented dry on loudspeakers 3-4 and again as a 'character' acting closer to the listener. When this *N* object and the spatial traces of the *X* materials stop, a hybrid function is adopted: *madrigalesque/abstract*. In fact, the spatial composition marks the extra-musical aspect of a naturalistic presentation of feminine voices reciting and singing in different spaces. The *abstract* aspect is given by the lines, planes and zones provided by the behaviour of the different *N* and *P* objects and by the reintroduced *Ey* and other *X* materials. This spatial function is the general nature of the section and is maintained until 07:55:61, when an *ornamental* function ends the *mesostructure* with a reverberant *N* and *X* simple hit/gesture. Promptly, the *Ex* object, which constitutes the transition, connects with the seventh *mesostructure* through its *madrigalesque* use of space: a sentence whispered close and dry on the frontal 1-2 loudspeakers. All these *levels of spatial function*, covering the middle section, the sixth *mesostructure* and the next transition, can be seen in the following Figure 33.

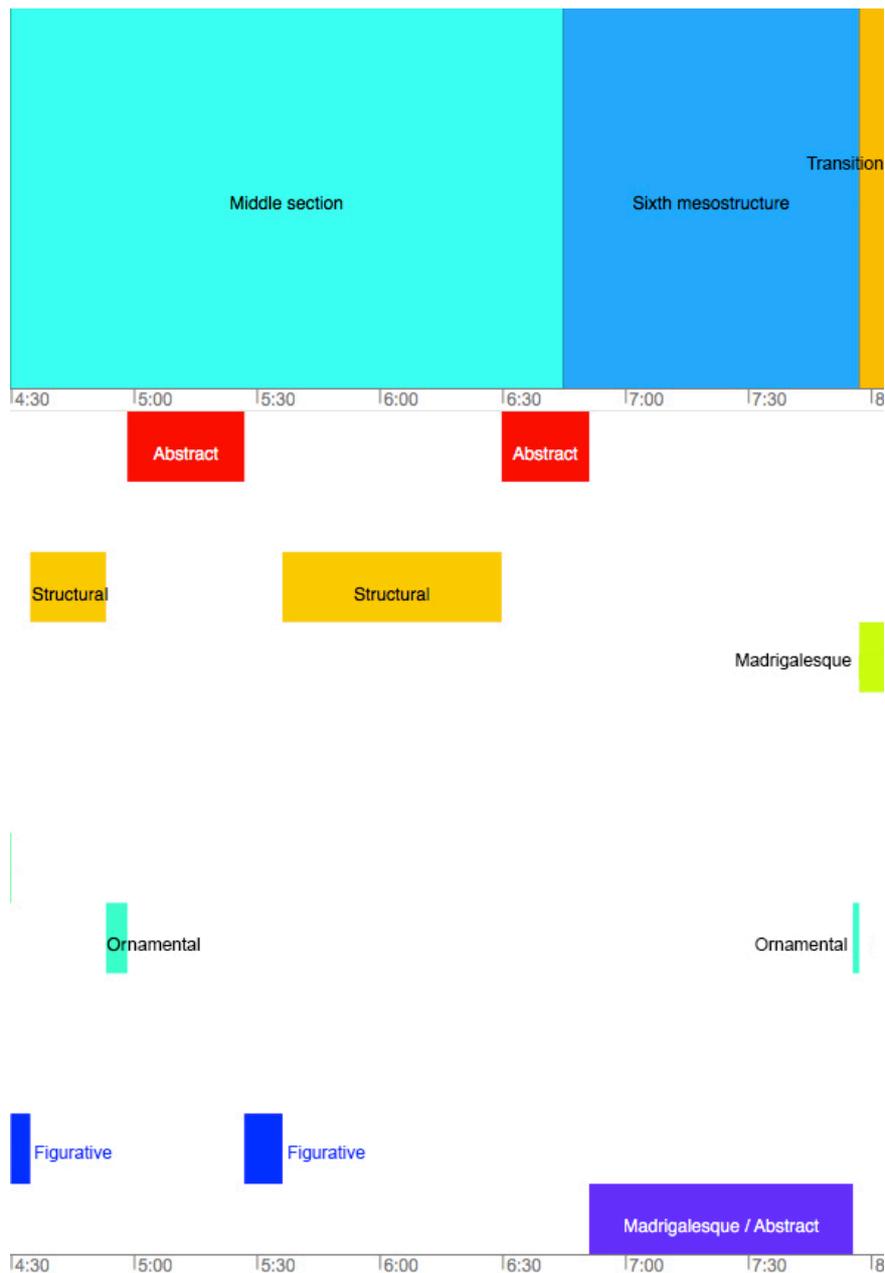


Figure 33: *La Lumière*: levels of spatial function at the end of the middle section, the sixth *mesostructure* and the following transition

The seventh *mesostructure* starts at 08:03:35 with a change of *spatial function* reinforcing its uniqueness: characterised by a *structural* function with planes and trajectories. Afterwards, the function is maintained but with an *abstract* aspect added by the accumulation of sounds located at fixed points, trajectories and juxtaposition of spatial zones. This compound function, *structural/abstract*, started at 08:15:15 and including the transition section, operates until 09:07:77, when the final section begins with a well-defined *madrigalesque* function instated by the naturalistic distribution of the singing female voice. This sound's homogeneity in *harmonic timbre*, as has been

explained in section 2.2.1, is balanced not only by the variation in temporal distribution, but by the spatial distribution as well. This superposition of zones and emission points (in the form of an unrealistic choir), turns into an *ornamental* function at 09:43:35 by means of an abrupt truncation and the application of very short naturalistic reverberation. This close room-like space ends the piece. As can be seen in Figure 34, in contrast to the first third of the piece (until the fifth *mesostructure*), the final sections (from the sixth *mesostructure* until the end) have fewer *levels of spatial function* (six in comparison to eleven of the former) and fewer changes.

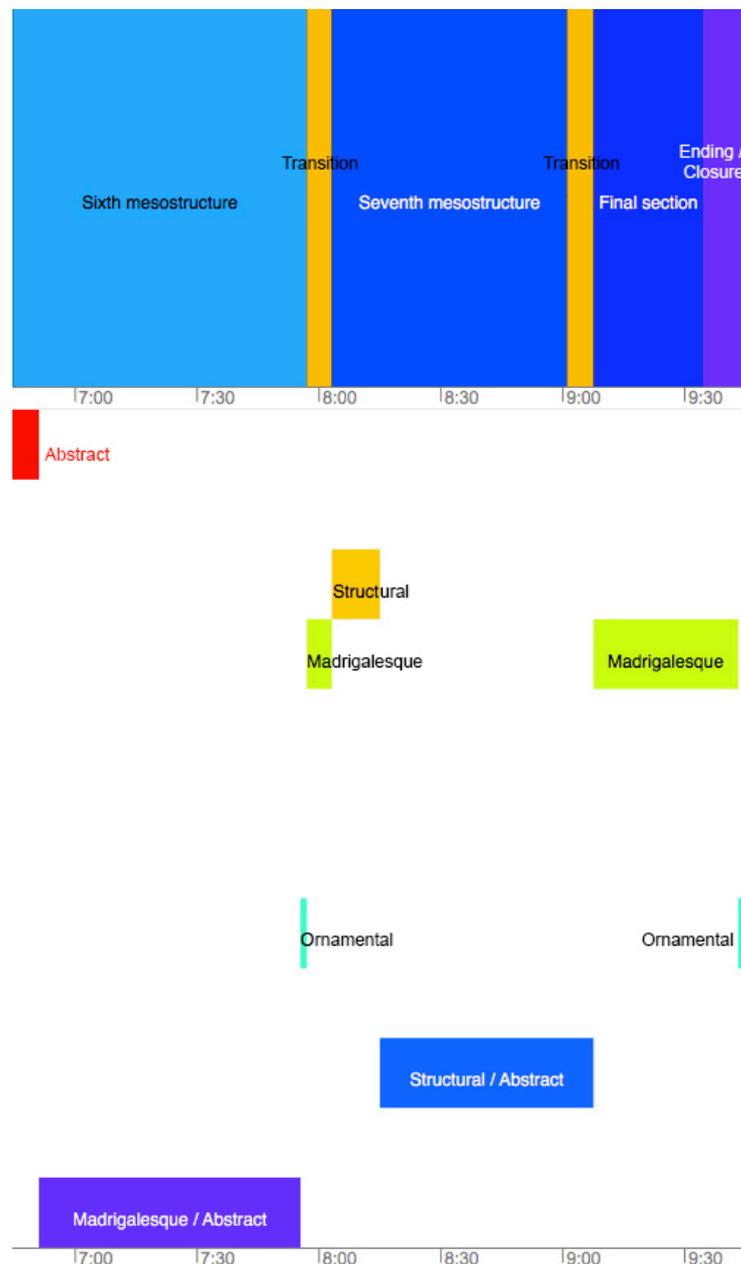


Figure 34: La Lumière: *levels of spatial function* distribution from the sixth *mesostructure* until the end

2.2.3 Voice type and speech-sound type distributions

For this section, the voices distribution categories can be seen in Figure 35.

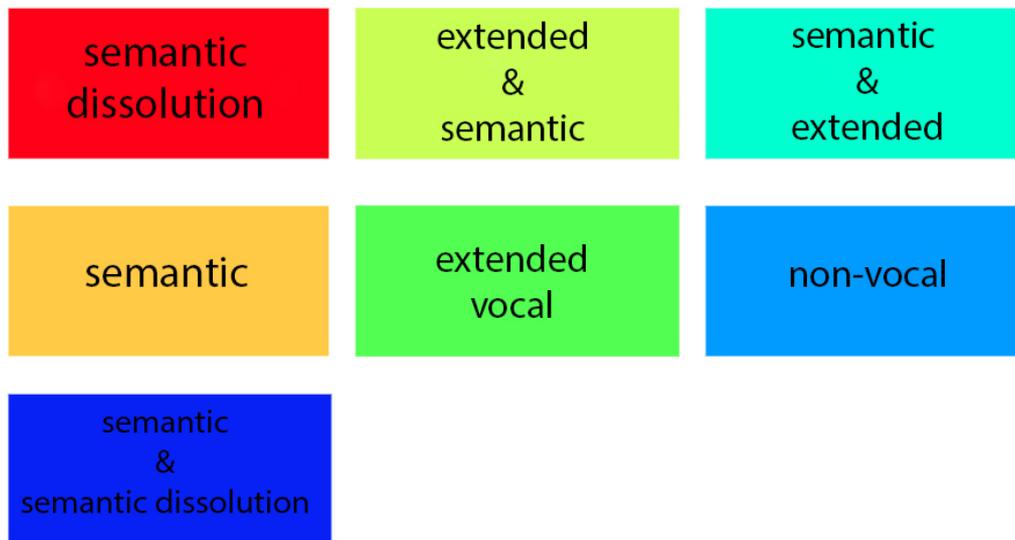


Figure 35: Voice distribution categories for *La Lumière*

And the speech sounds distribution categories are in Figure 36.

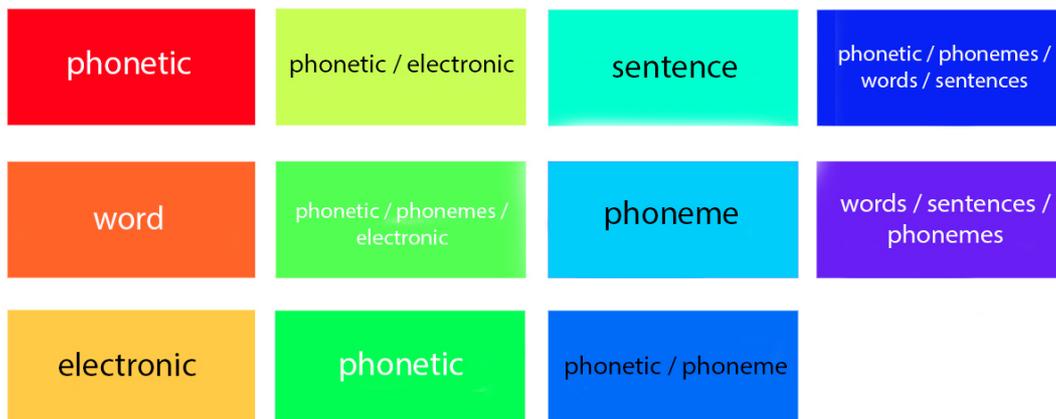


Figure 36: Speech sound distribution categories for *La Lumière*

In comparison to the *Overture*, this piece has more voices categories and in the case of the speech sounds, one fewer than the former. This is only a quantitative difference, since the more relevant aspect is the greater presence of hybrid categories, merging up to three or four basic classes, which reflects a greater complexity in this aspect of the composition.

The start/presentation section has a predominance of *phonetic* materials and includes three *words* at 00:14:73, 00:23:71 and 00:46:29 respectively, which are three versions of the French article 'la' ('the'); these are the only pure *semantic* elements in a section where *semantic dissolution* and *extended vocal* materials are the main categories. After these introductory elements, the first *mesostructure* starts at 00:47:86 with *extended vocal* material corresponding to an *electronic* category in the speech sound distribution. Following this, the sounds fall into hybrid categories at 00:53:08: *extended & semantic dissolution* for voice distribution and *phonetic/electronic* for speech sounds distribution. The latter becomes *phonetic/electronic* shortly after at 00:53:11 and turns into *phonetic/phonemes/electronic* subsequently at 01:02:06; these changes reflect a complex weft of utterances that constitute an interleaved progression of *extended & semantic dissolution* and *semantic & extended* categories for the voice distribution. At 01:42:95 an *electronic* moment of *extended & semantic dissolution* (an electronic tail of a sound fading out) gives the entrance for a *word* ('la' article again: *semantic*) and then *semantic dissolution* elements produced by a *phonetic/electronic* distribution, ending the section and starting the transition. Figure 37 shows these distributions.

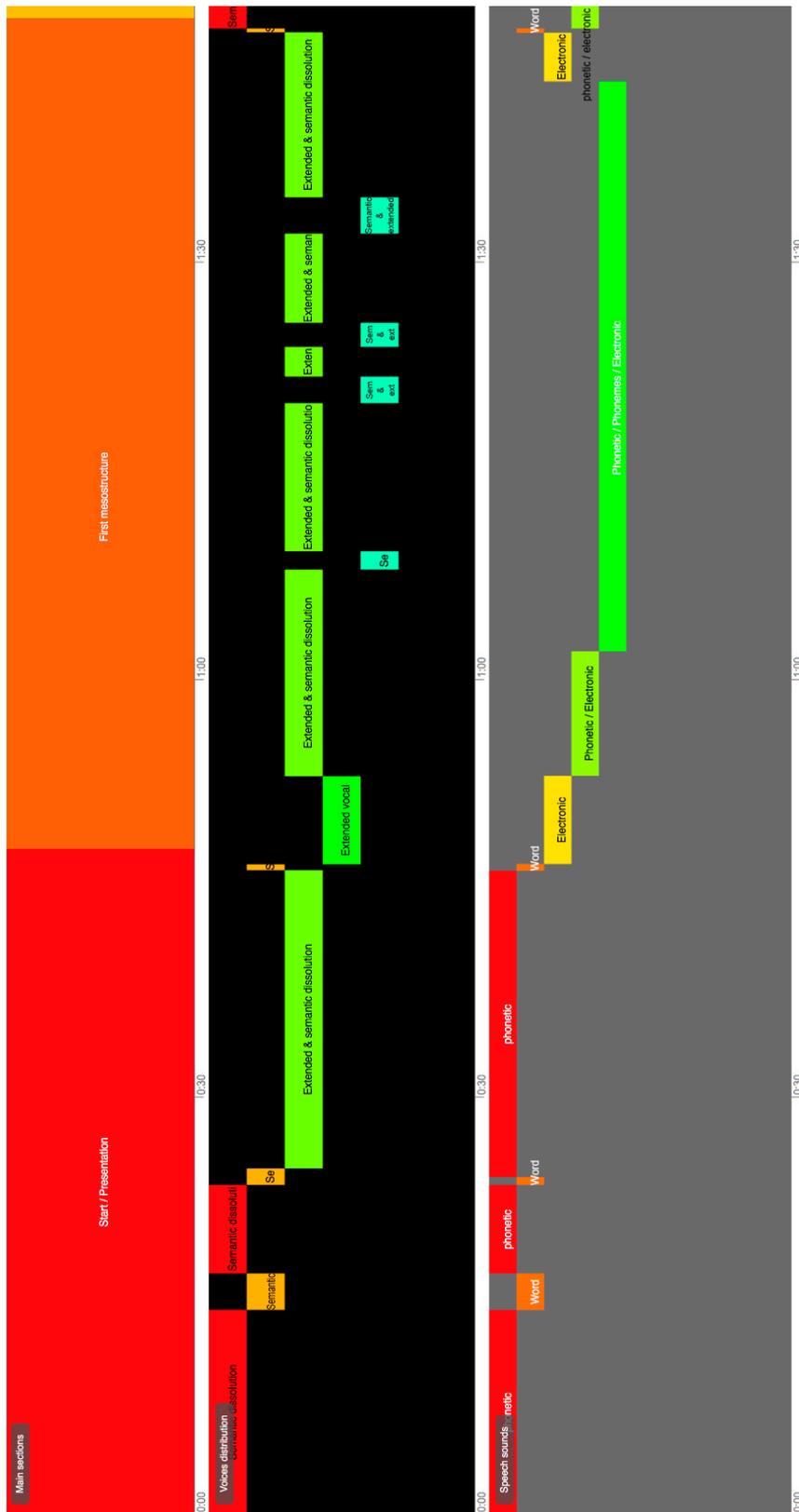


Figure 37: Voices and speech sounds distributions for the start/presentation section and the first *mesostructure* of *La Lumière*

Until here, the start/presentation section can be assimilated to some forms of *sound poetry* or *electroacoustic literature*⁴¹, after which, the first *mesostructure* starts to unfold a development which is certainly acousmatic, but at the same time has a hybrid nature, since is an amalgam of approaches close to *sound poetry*, at least in its fixed manifestations. The *semantic* dissolution is addressed through cut and paste, juxtaposition, repetition and transposition, all procedures shared by *sound poetry* and acousmatic music; at the same time, this *sound poetry* approach is combined with sound gestures that pay attention to the development of *spectromorphologies* and spatial structures. This merging feature is present throughout the piece and the cycle.

The transition itself contains short moments of *semantic dissolution* and *extended vocal* categories at the beginning and the end respectively, with a *non-vocal* class in the middle, consequently giving a pattern of *phonetic/electronic*, *electronic* and *phonetic/electronic* again. After this, the second *mesostructure* starts with *extended vocal* and *phonetic/electronic* for voice and speech sound distributions respectively, presenting three *words* at 02:01:36, 02:01:71 and 02:03:304: the article 'la' twice and the *word* 'ciel' ('sky'), which is in fact a sound produced by cutting the second half from the complete word 'artificielle' ('artificial'); regarding the use of semantic content as compositional material, this type of word-play has a relevant role in the piece and the pentalogy as a whole. These kinds of materials allow expansions meanings already contained in the original texts recorded.

Afterwards, a long section of *extended & semantic dissolution* starts at 02:04:54; this is maintained through all the rest of the section and continues uninterrupted into the first part of the third *mesostructure*. This distribution fluctuates between *phonetic/electronic* and *electronic* speech sounds in an interleaved way. The pause before the next section is a 'silence' and it is not categorised since the analysis software produces a new visual block for every marked structure, 'silence' being something unnecessary in these distribution representations. Following on to the third *mesostructure*, the *extended & semantic* category shares space with *non-vocal* materials, both corresponding to *phonetic/electronic*, *electronic* and *phonetic* categories for the speech sounds distribution. A new pause is introduced at 03:01:75, this time with sonic material in it (attack-resonance compound gesture keeping the previous *non-vocal* and *electronic* categories).

⁴¹ See footnote 28.

The fourth *mesostructure* starts with a *semantic* unit followed by a *semantic & extended* category, both in the form of *words* and *phonetic/electronic* material; this last category is prolonged with a corresponding *extended & semantic dissolution*, which in turn is maintained throughout the section, interrupted only by a semantic unit (a *sentence*) and a short *semantic dissolution* at the end. The second chunk of *extended & semantic dissolution* is manifested through *electronic* and *phonetic/electronic* categories in the speech distribution. The distribution in the second, third and fourth *mesostructures* is shown in Figure 38.

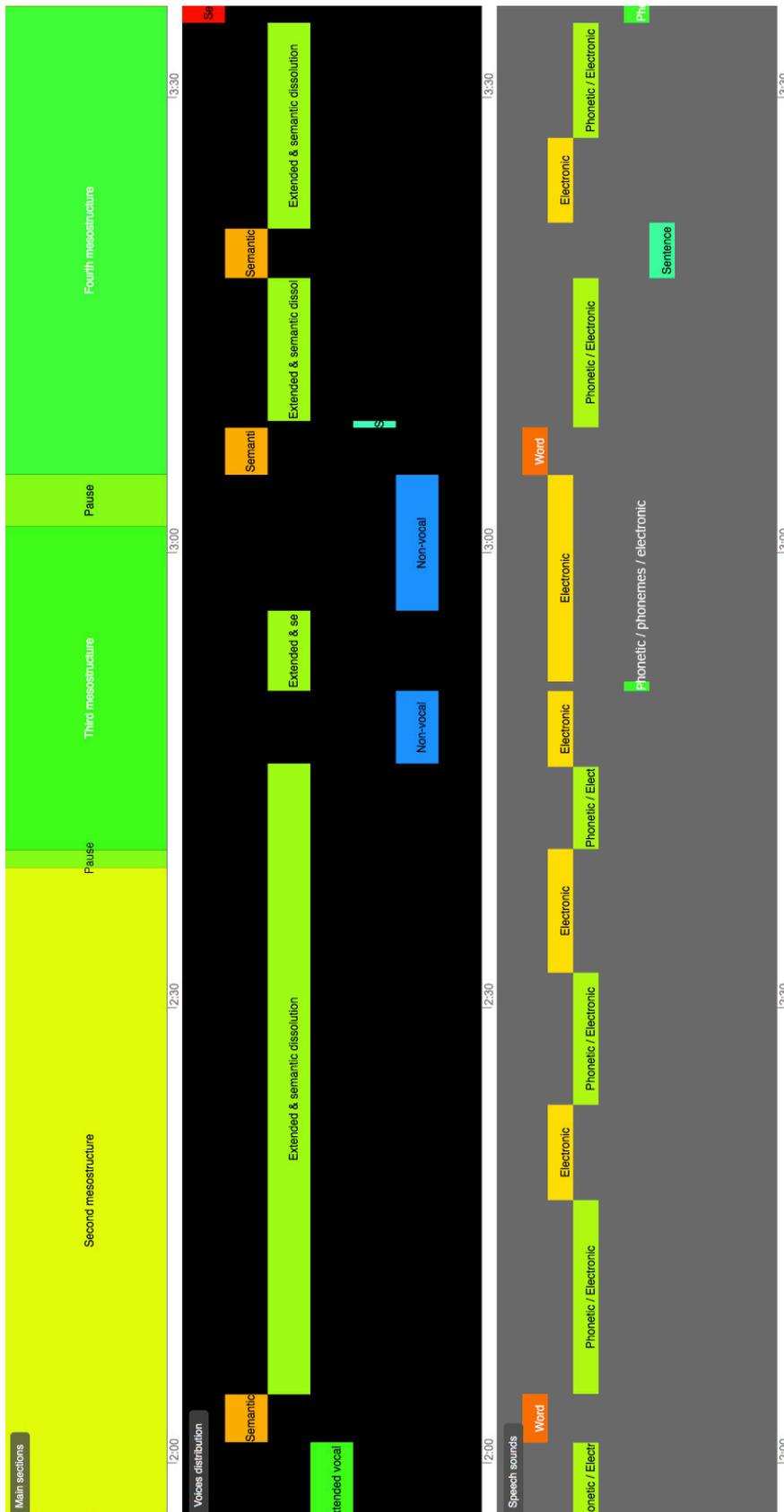


Figure 38: *La Lumière*: voices and speech sounds distributions for second, third and fourth *mesostructures*

As is shown in Figure 39, a new silence (pause) at 03:36:02 is the division between the fourth and the fifth *mesostructures*. The fifth section starts at 03:38:10 with a *semantic dissolution* by means of *phonetic* materials and *phonemes*. The section is completed by an *extended vocal* at 03:44:89 in the form of *electronic* sounds, then a *semantic dissolution* at 03:49:86 through *phonetic/phoneme* speech category, following *extended & semantic dissolutions* at 03:51:55 and 04:00:41, first as *phonetic/electronic* and then as *phonetic/phonemes/electronic*; afterwards an *extended vocal* at 04:14:67, again as *electronic* material, and once more an *extended & semantic dissolution* at 04:23:70 as *phonetic/electronic* distribution.

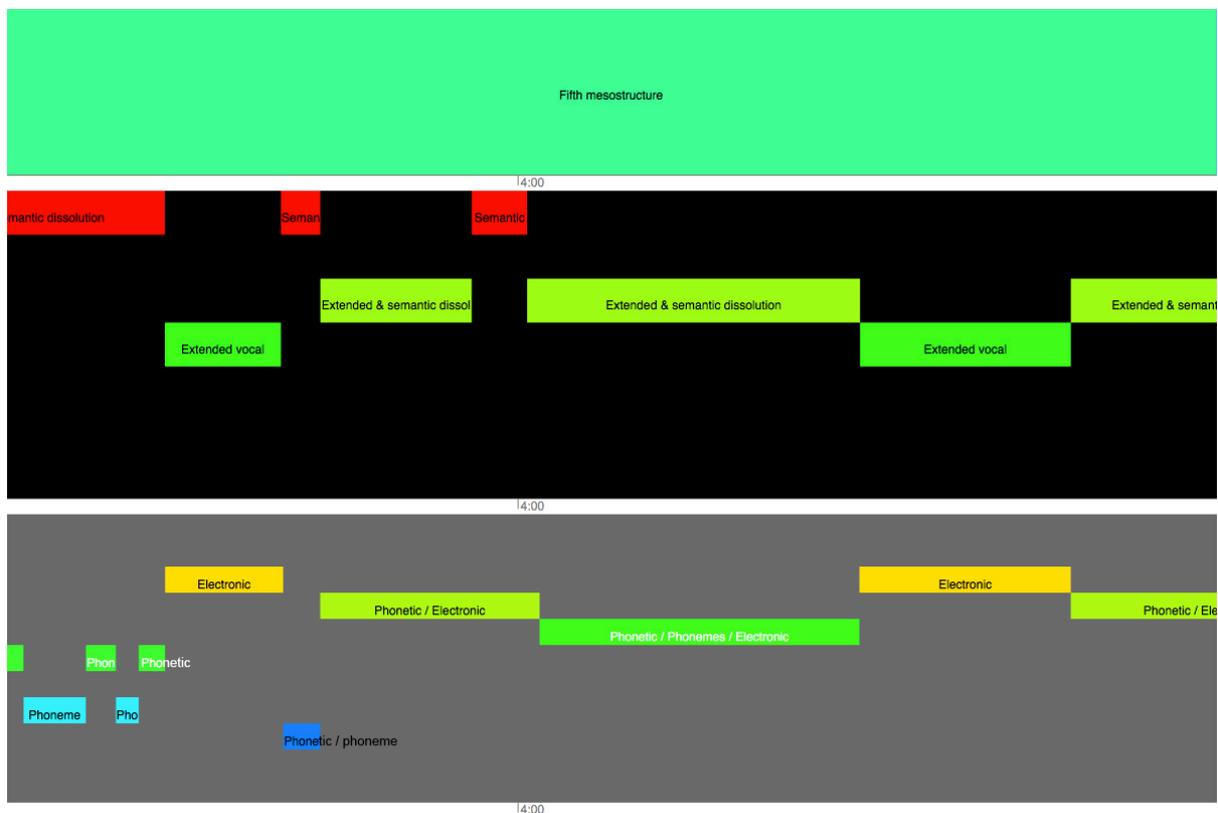


Figure 39: Voices and speech sounds distributions for the fifth *mesostructure* of *La Lumière*

Figure 40 shows the middle section, which starts at 04:29:92 prolonging the categories that ended the previous section: *extended & semantic dissolution* and *phonetic/electronic*. Then it moves between *extended vocal* and *extended & semantic dissolution* with the exception of a *semantic & extended* part at 05:26:66 which is driven by *word* material ('ciel' once more). The rest is manifested through *electronic* and *phonetic/electronic* in the speech distribution. The complexity of *sound objects* and especially of

spectromorphological structural functions in this long section is balanced and at the same time improved by this diversity of vocal materials, their distribution and the changes in the spatial behaviour outlined in the previous section of the analysis. In other words, the aural complexity of *sound objects* and their conjunction in complex compound structural functions, *spectromorphologies*, balance the complexity of the whole section.

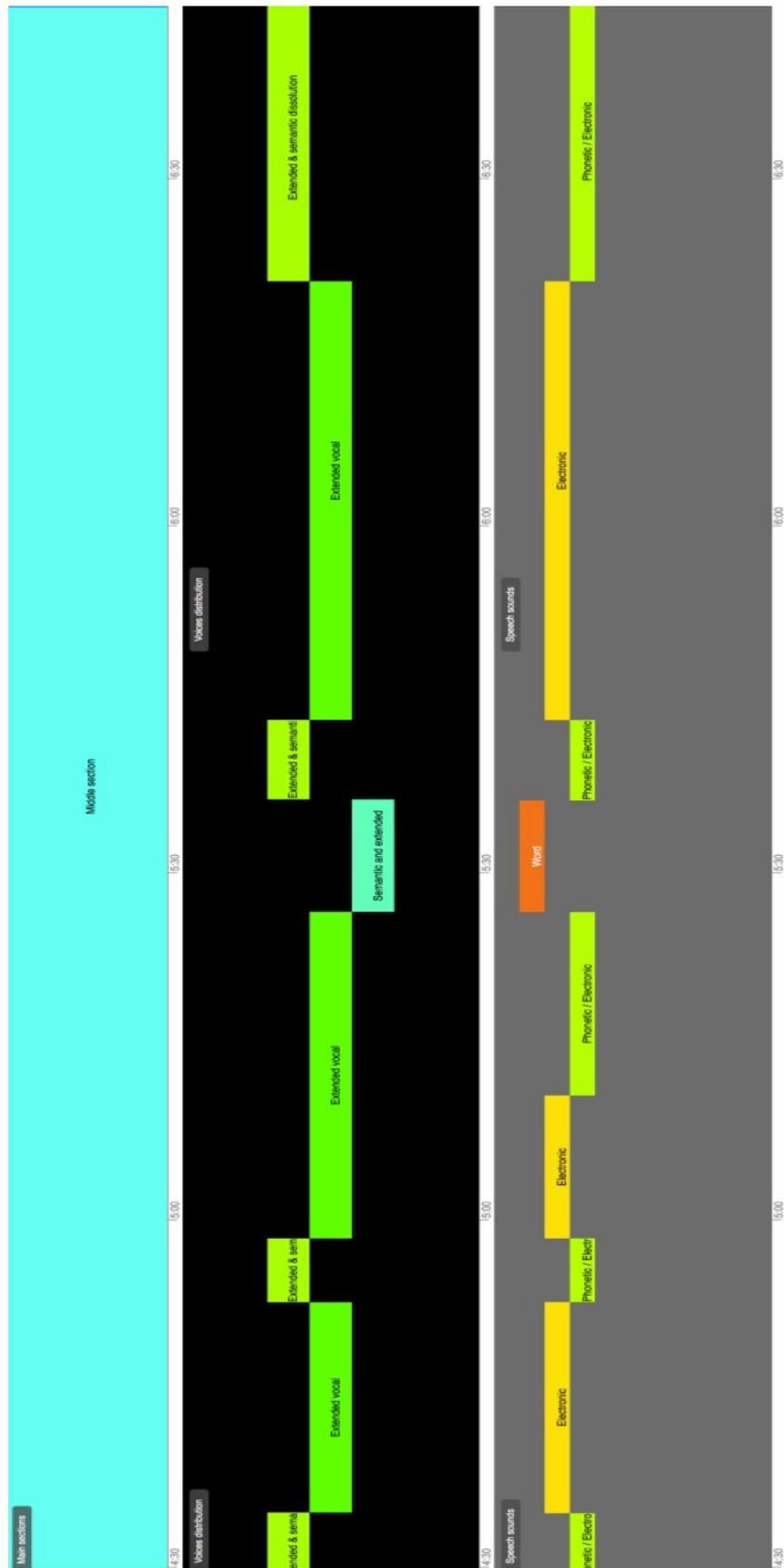


Figure 40: Voices and speech sounds distributions in the middle section of *La Lumière*

The sixth *mesostructure* starts at 06:44:85 and is focused on compound categories: *semantic and extended* in the voice distribution part and *phonetic, phoneme, words and sentences* in the speech production part respectively. As can be seen in Figure 41, after a short remnant of the previous section (one second of *extended* and *semantic dissolution*), this distribution operates all along the section for the voice distribution analysis, only with the only exception of a prominent *semantic dissolution* between 07:30:20 and 07:32:39, a short unfolding of balanced *sound objects* with *phonetic* fragments and *phonemes*.

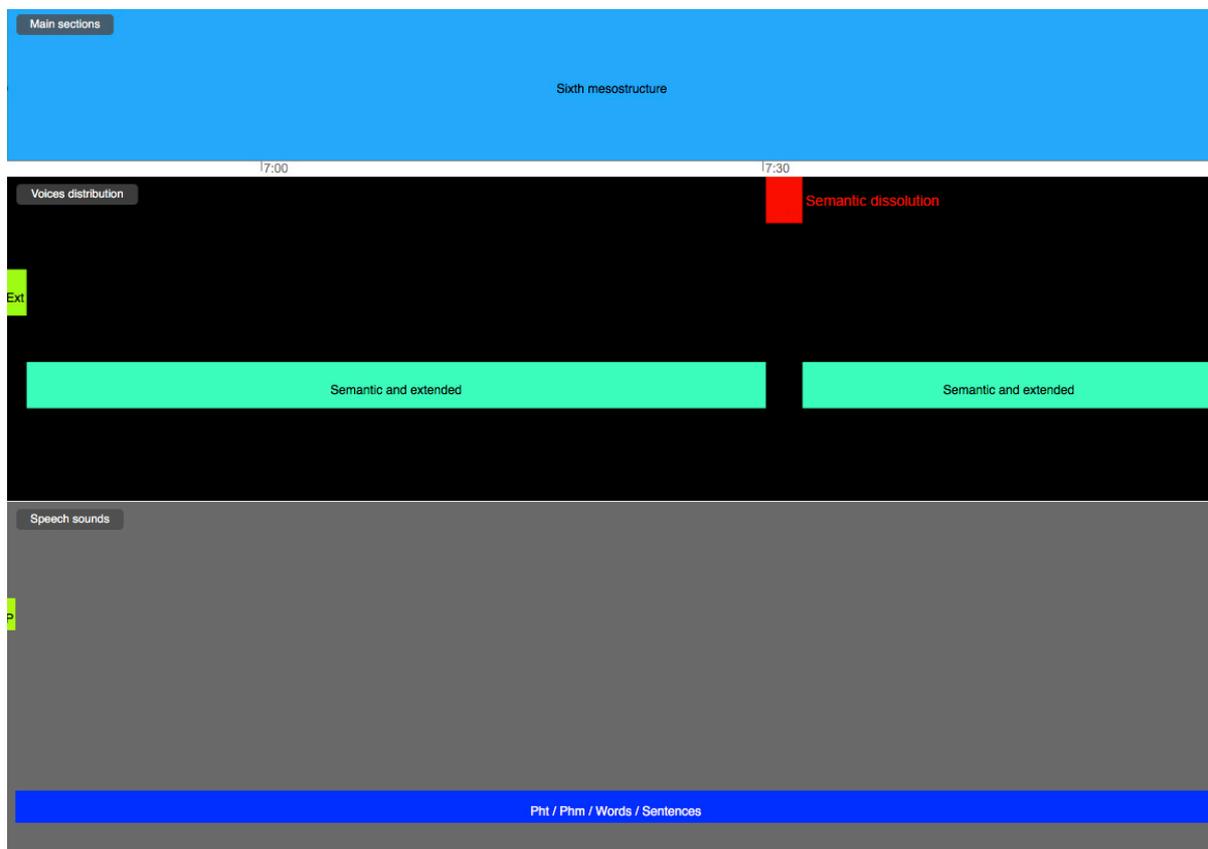


Figure 41: *La Lumière*: voices and speech sounds distributions in the sixth *mesostructure*

The next section is a transition (07:57:16 to 08:03:35) presented through a whispered *sentence*, the title of the whole cycle, *La lumière artificielle*. This is not the first time this sentence has been presented, in fact it has been placed in the sixth *mesostructure* in several versions; but here it acts as a structural milestone since it appears isolated from other layers in a *madrigalesque* spatial function that reinforces its realism; these features create the segmentation in this part of the piece allowing the composition to progress by means of gradual *semantic dissolution* in the next section. Starting the following seventh

mesostructure, this sentence is repeated four times to become so fast that, accompanied by other sounds, it turns from *semantic* into *semantic dissolution* by means of *phonetic* content (*voice type* and *speech type* distributions respectively) between 08:11:33 and 08:14:53. At this point again a long section of *semantic* and *extended* with the corresponding *phonetic*, *phoneme*, *words* and *sentences* in speech production, completes this *mesostructure* and, in fact, constitutes the following transition⁴² between 09:01:21 and 09:07:77. The next two sections in Figure 42, Final section and Ending/Closure, share the same voice and speech sound distributions, *semantic* and *semantic dissolution* and words, sentences and phonemes, all presented as clear vocal materials where the simple procedures of juxtaposition and cutting determine their placement and shaping. This mixture states one of the essential procedures for achieving unexpected links between elements in accord with the *creationist* intentions of this thesis: the junction of semantic and non-semantic materials, transiting between meaning to sound texture in both ways. However, the unexpected aspect is present regarding the actual way the relationships between elements are given and not the unexpected feature in itself. In other words, the aims of this piece and the cycle consider the emergence of such unexpected links. This ambivalence proves another important point established in the compositional rationale and the aims of the cycle of this thesis, namely the coalescence of *rational* and *imaginative* actions, in this case in the form of a plan and the random discovery of materials.

⁴² This transition is defined as such because its nature as a *spectromorphological emergence*, rather than other aspects like voices, speech production and *levels of spatial function* categories.

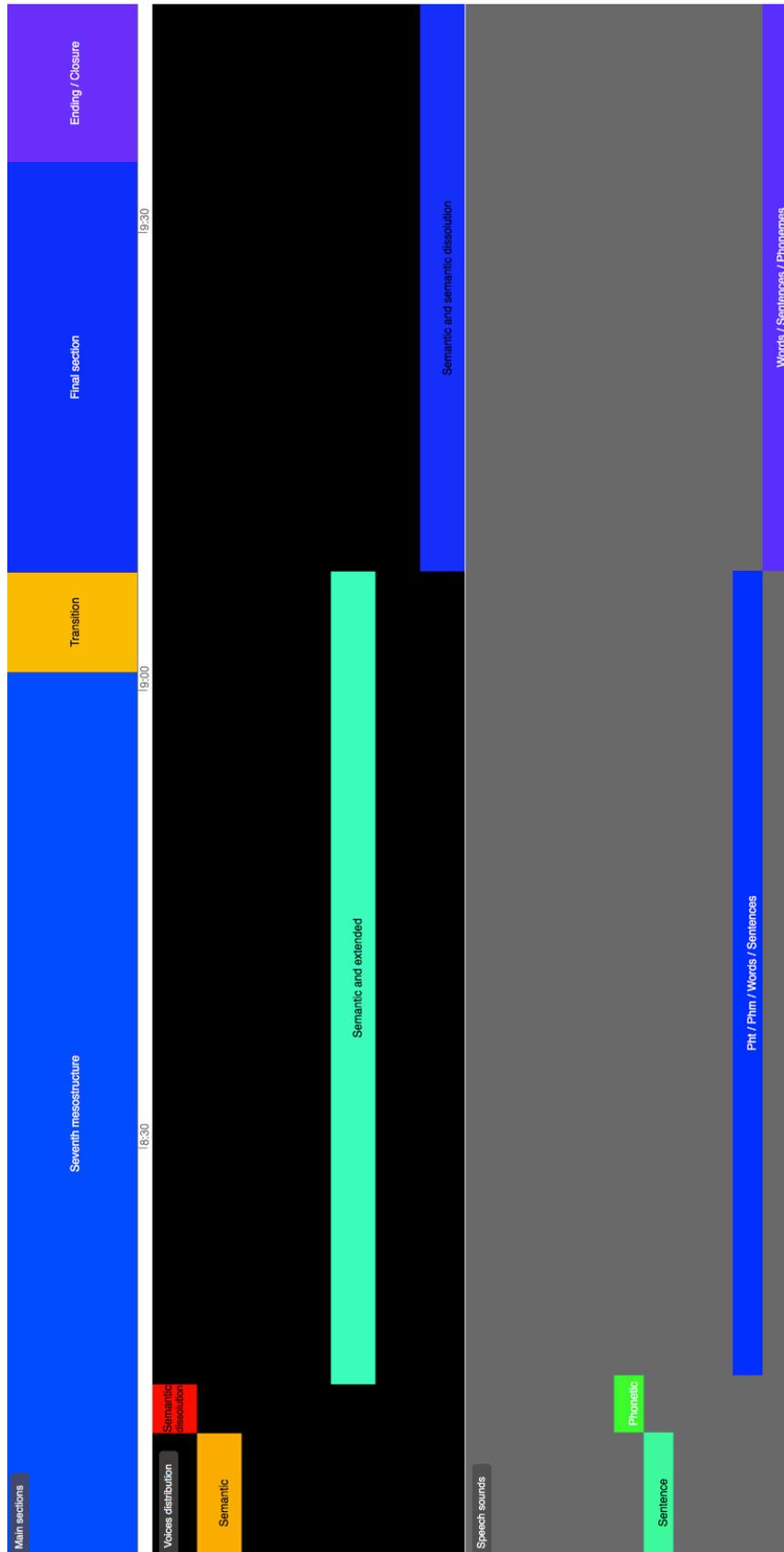


Figure 42: Voices and speech sounds distributions for seventh *mesostructure*, transition, final section and ending/closure of *La Lumière*

2.3 Analysis conclusion

The piece is characterised by the idiosyncrasies of the performer's voice, namely the *harmonic timbre* of her voice. In spite of this and the unity of its sound materials, the key feature of the work is the increasing heterogeneity of all the constituent elements and structures. This heterogeneity is clearly manifested by the high presence of hybrid categories and the great number of overlapped elements and classes. In contrast to the previous *Overture* -where the *levels of spatial function*, voice and speech sound distributions operate as balancing elements for the intense and varied spectral and structural composition- in *La Lumière* these same elements work coincidentally in a hybrid way, both balancing and emphasizing the diverse nature of the sonic discourse. In light of this compositional research, this feature demonstrates a complex weft of aesthetic elements which operate multivocally, which is coherent with one of the general aims stated for the cycle in Part 1 section: to compose works that move between poles, in this case most pertinently poles of *semantic/non-semantic*.

Besides the electroacoustic music influences, the piece shows an impact of *sound poetry* and *electroacoustic literature* on the characterisation of materials, sections and consequently the way the totality is shaped. This is given precisely in the form of extensive work both with *semantic* and *non-semantic* elements, an aspect that is addressed in different ways and levels in the following parts of the cycle.

Finally, with respect to the sonic discourse, the piece is composed of several types of *sound objects*, having a great presence of *balanced objects* and short sounds, giving a dynamic and pointillist feature to most of the work. Figure 43 integrates the five analyses carried out on the piece.

Chapter 3: *La Luz*

3.1 *Poietic analysis*

This is the third section of the cycle and corresponds to the Spanish language as central material of the composition. *La Luz* explores some particular features of Spanish, such as the sonorities of open vowels, the strong sound of the letter 'r' and *fricatives* sounds, merging them with electronics sounds by means of montage or more sophisticated techniques like convolution. Again, an important role is given to the vocal materials obtained by means of improvisations proposed by the performer. The work includes sound materials derived from sources different to the performer's voice, but also the use of these sources in direct, 'raw' presentation. In this way, these sounds acted as symbols, behaving both as metaphors (Wishart 2012) and as cultural links (Adkins 2014) to elements external to the specific musical ambit of the piece. In order to match sounds and contrast them, their morphological features were analysed; for instance, allowing for the interleaving *fricative phonemes* with noise bands produced by *non-vocal* sources.

The aims of this piece were:

- To compose according to shapes and connections between materials found during the creative process, following an *acousmatic-creationist* procedure with no strict structure preconceived.
- To work with a diverse range sounds, not only those derived from electronically processed vocal materials. This method would be a way to provide a sound palette contrasting with the previous two works; this contrast gives variety and acts as a method of segmentation within the pentalogy. At the same time, these *non-vocal* sounds make reference to specific cultural and artistic ideas, as pointed out in the next paragraph.
- To use *non-vocal* sounds as referential elements, providing a wider connotative dimension. This connotation refers to ideas of radio broadcasting and the implication of electricity. As in *La Lumière*, loops and tin lid sounds made reference to Schaeffer's *Étude pathétique*. These elements of *La Luz* also make reference to Stockhausen's *Telemusik* (1966) and *Pole* (1970) and, to a lesser extent, to Cage's use of radio transmission in *Symphony for 12 radios* (1951).

- To go back to the spectral thickness and structural and spatial complexity of the *Overture*.
- In regard to the structure, to have only one prescription: to finish the piece using extended morphologies to create an atmospheric ending with a slow fade out. This simple condition is adopted as way to articulate the piece from the subsequent one in the series, as explained in **Conclusion Part 1**.

3.2 *Neutral level analysis*

This piece has nine sections with a great diversity of materials and changes in spectral content, spatial composition and pace. In this sense, the piece is highly heterogenous, demonstrating diversity in the structural density of all these constitutive elements. Within the nine minutes and forty-five seconds of its duration, the sections are:

- | | |
|--------------------------------|-----------------------|
| 1. Opening | (00:00:00 - 00:19:03) |
| 2. First <i>mesostructure</i> | (00:19:03 - 02:04:83) |
| 3. Transition | (02:04:83 - 02:37:00) |
| 4. Bridge | (02:37:00 - 02:51:12) |
| 5. Second <i>mesostructure</i> | (02:51:12 - 04:05:19) |
| 6. Middle section | (04:05:19 - 05:39:69) |
| 7. Transition | (05:39:69 - 06:09:07) |
| 8. Third <i>mesostructure</i> | (06:09:07 - 08:08:98) |
| 9. Final section | (08:08:98 - 09:45:00) |

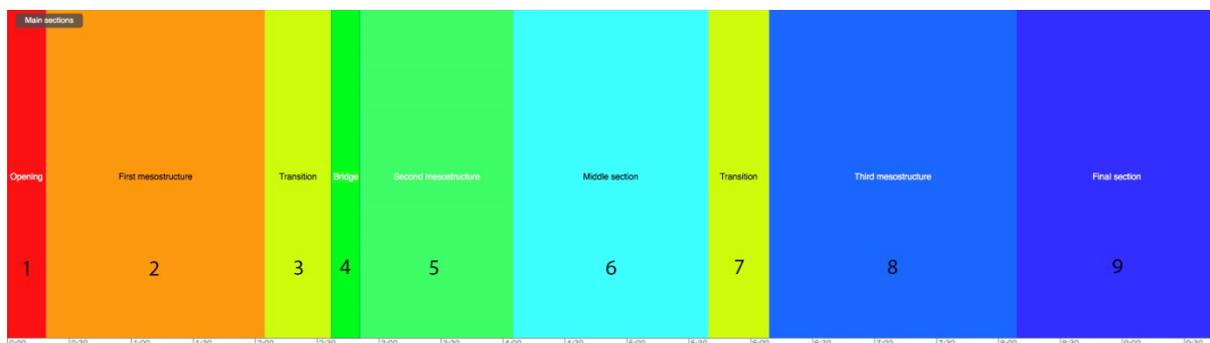


Figure 44: *La Luz* main sections distribution, graphic representation

3.2.1 Distribution of *Sound objects* and *spectromorphological* structure

The work starts with the thick spectrum of a *grosse note* (or *large note*, *W sound object*) complemented and interleaved with a *complex mass balanced object* (*X*) creating a strong initialisation for the piece through an *attack spectromorphology*. After that, the spectrum presented is narrowed to the constitutive spectral components of the following *sound objects*, *variable mass sample* (*Ey*), *balanced variable mass sustainment* (*Y*), a *variable mass long iteration* (*Zy*) and a *tonic mass homogeneous object* (*Hn*), all triggered by an articulation with and *X* object at 00:01:35. After that, at 00:05:09, an *accumulation* (general case, *A*) appears filling the spectral space. The rest of this opening section is completed with some *balanced objects* (*X* and *Y*), a *complex mass accumulation* (*Ax*), a *tonic mass iteration* (*Zn*) and a *complex mass one* (*Zx*); under of all this development, a low *tonic mass homogeneous object* (*Hn*) gives a dense bed to the section from 00:09:07 and its reverberant tail is prolonged into the initial portion of the next section, the first *mesostructure* which, in turn, starts with a *complex mass iteration* (*X''*). After that a *macro-object* of *tonic mass* with an *iteration facture* (*Zn*) creates a change in the pace. Regarding the structural feature, after the initial *attack*, the section unfolds with a *prolongation* and an *emergence* which leads to a new *prolongation*. Afterwards this *prolongation* creates the passing to the next section by means of an evident *disappearance* function of the *Hn* object and a *release* function as can be seen in Figure 45.

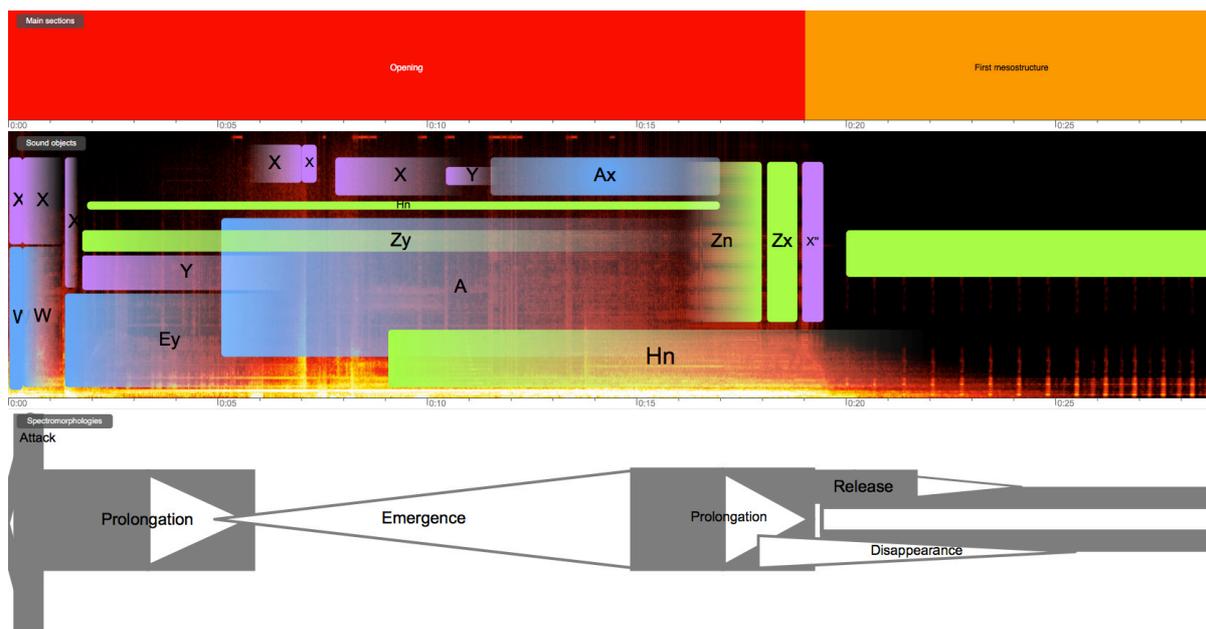


Figure 45: Opening section and beginning of the first *mesostructure* of *La Luz*

A significant characteristic of this initial section is its textural complexity. This is mainly due to the rich and diverse *harmonic timbre*, *grain* and *allure* of the *sound objects* presented, giving a dynamic flux by means of these variations in their *mass/matter* and *sustainment* aspects. At the same time, these behaviours provide an aural sense of spatial plenitude and great activity. By contrast, the first *mesostructure* is started by a clear *release* structural function which clears the aural space, providing in this way a sense of a wide space only occupied by the long *tonic mass iteration* (*Zn*) that starts at 00:20:00 and persists until 01:36:87 where its different versions (slower, faster, lower pitched) continue after have being started at 01:05:44 and 01:10:48. In fact, the 'loneliness' of this starting *Zn* object, lasts only thirteen seconds since it is interrupted at 00:33:02, when a set of *balanced objects* (*X* and *N*) are deployed and operate as preparation and triggering for a significant *accumulation* with *complex mass* (*Ax*) and a *variable mass sample* (*Ey*) starting at 00:36:56 and 00:49:02 respectively. Until here, the general colour of the piece is similar to the two previous sections of the cycle. However, due to the harmonic timbre as main feature, this similarity does not imply a direct repetition of *sound objects*, but rather the presentation of new materials or the unfolding of some only insinuated in the *Overture*. The general behaviour is driven by a *passage spectromorphology* accompanied by *emergences* for the specific *sound object* cases mentioned. The next relevant action is executed by an *emergence* launched by an *X* object and constituted by a clear electronic

sound; this sound begins as an *En* (*tonic mass sample*) which turns into a pulsation in the form of a low pitch *Zn* (*tonic mass long iteration*) lasting for about thirty seconds. At that point of this *mesostructure*, until 01:36:05, the *spectromorphological* functions keep the *passage* feature and add *prolongation* and *maintenance* as can be seen in Figure 46.

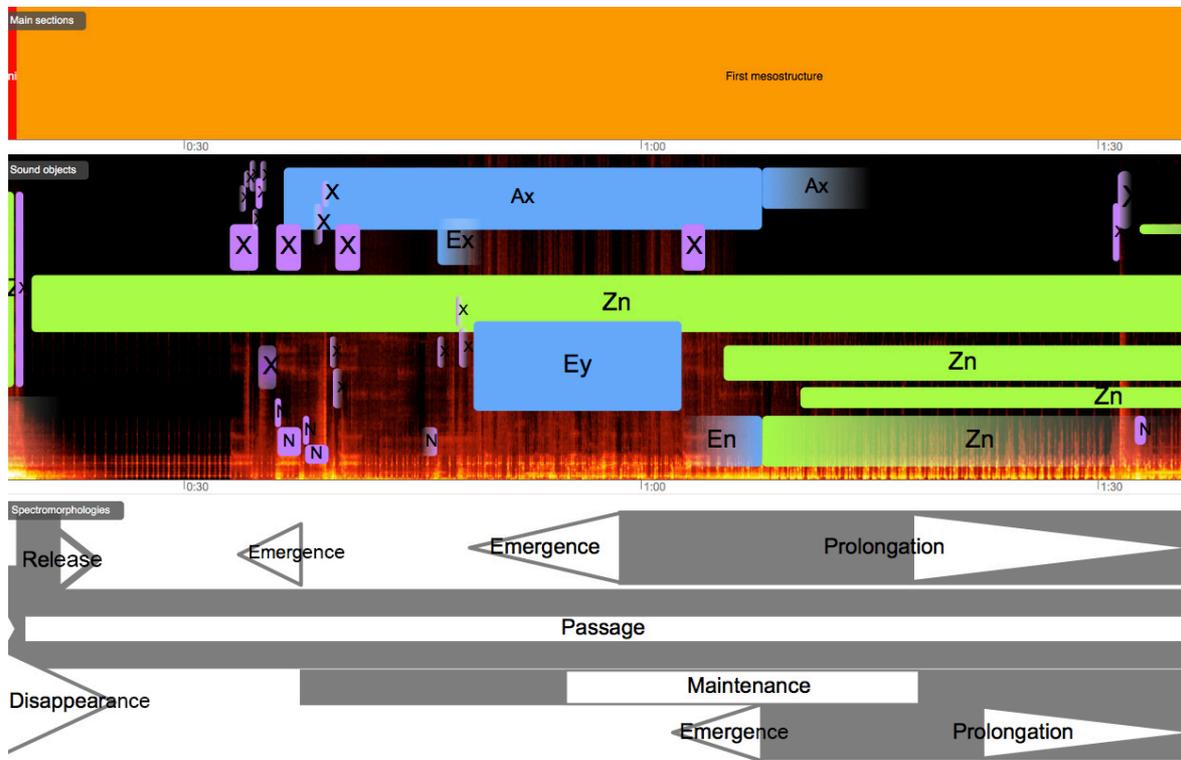


Figure 46: *La Luz* first mesostructure and its sound objects and spectromorphologies until 01:36:05

The pace is constant, around 100 beats per minute⁴³, the group of evolving sounds have ended the previous space but without saturating it. A new change begins at 01:30:98 when a percussive gesture is created by a compound of two *X* objects, initiating the appearance of new sustained objects (a high pitched *Hn* at 01:32:73, an *Ex* at 01:42:30); at 01:36:90 the *Zn* object is presented in a new version, accelerating, accompanied by a low pitched *Hn* from 01:50:44; this acceleration, in the form of an *arrival* structural function (01:36:90 to 01:47:00), leads to a *transition*. All of this, through a new *arrival* function and an *upbeat* function, falls into a pronounced electronic glissandi, a *Y* object very dynamic in its *mass* and *sustainment* because of its fluctuating *harmonic timbre* and

⁴³ This tempo was obtained by using the tap function in the software Ableton Live.

grain. This *Y* object operates as a *release* structural function in connection with a new *grosse note* (*W*) that initiates the next section, the first transition, at 02:04:69 (Figure 47).

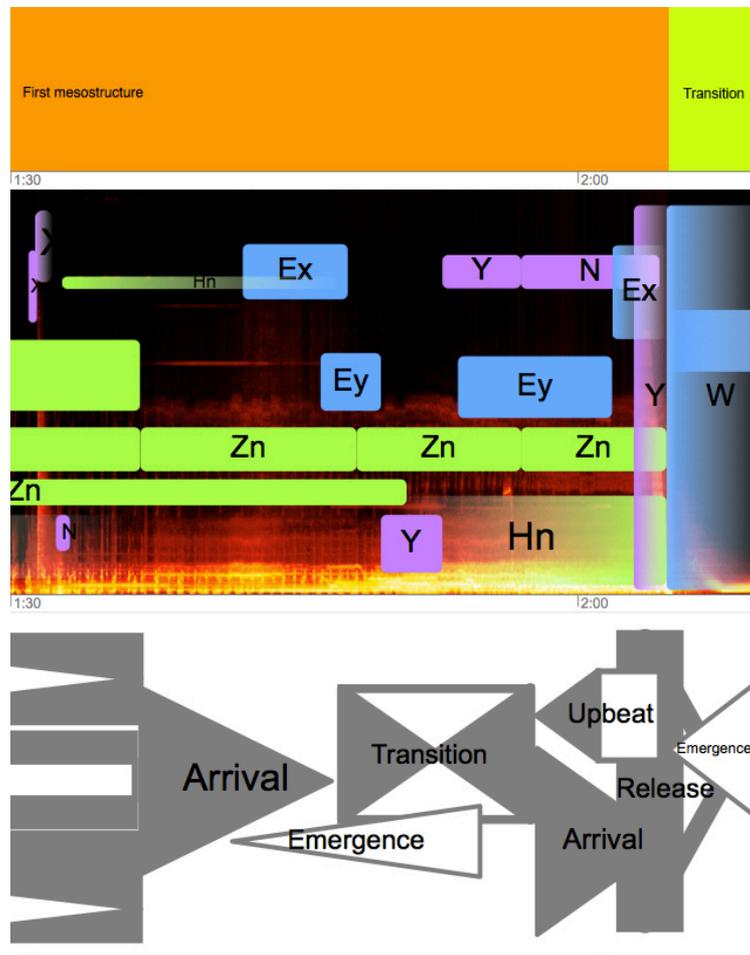


Figure 47: *La Luz* ending of first *mesostructure* and beginning of first transition

The transition promptly advances through an *emergence* structural function that it is an *Ey* object (*variable mass sample*); this *Ey* is constituted by an electronic glissando with a *grain* quality and a dynamic change in its *mass profile* due to a filter technique (02:04:69 - 02:27:66). This textural quality is accentuated by the juxtaposition of other objects such as a new *Ey* at 02:21:02, this time vocal material electronically processed, and other similar sources in the form of *variable mass* objects: five *Y* objects, one *X* and a relevant *variable mass iteration* (*Y'*) started at 02:25:55, which drives the transition to its end. This section is a *maintenance spectromorphology* turning into *prolongations*, accompanied by an *emergence* and finished with a *release* function. This *release* launches an *X* object and an *Hn* sustained over which two *Y* and one *X* are deployed; all of this constitutes the brief next section, the bridge. These *balanced objects* are in fact fluctuations of the *Hn* source

a clear vocal sound at 03:05:47; the preeminent *spectromorphology* is *attack* and *maintenance* by repetitions. From 03:10:47 the section starts to be developed by the inclusion of several sounds which create a rich flow of materials, starting with an articulation composed by *X*, *Y* and *N* *balanced objects* and an *Ex*, all of which triggers a *complex mass accumulation* (*Ax*) that is maintained for around thirty seconds and over which are situated the *maintenance* function of the initial *N* sounds and an increasing number of *impulsions* and *iterations*, both *tonic* and *complex masses*, in conjunction with *variable mass sustainments* and *iterations* (*Y* and *Y'*). Indeed, the segment between 03:28:30 and 03:37:55 is rich in short sounds and repetitions, conferring a percussive quality, that constitutes a set of *spectromorphological statements* (Figure 49).

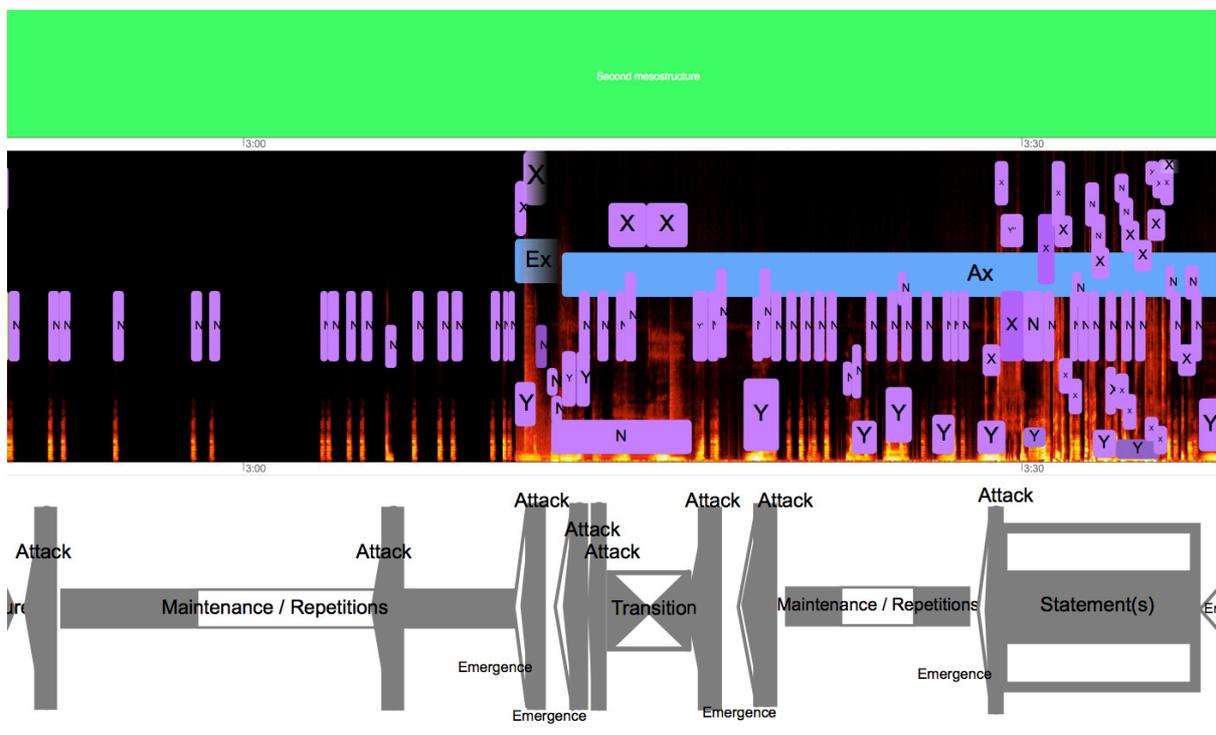


Figure 49: *La Luz* second mesostructure's first forty-nine seconds: *sustainments*, *impulsions* and *iterations* overlapping an *Ax* object

A prominent *Y* object at 03:37:55 launches the next section within this *mesostructure* in the form of an *emergence* structural function. Following the first *emergence*, a second one is started by means of several sounds, highlighting two *iterations* that operate as drivers of a *passage* function; these *iterations* are reinforced and accompanied by a thick low *Y*, a clear electronic sound whose ending initiates a *release* function; the *release* is formed by a compound of *balanced objects*, some of which are marked by resonant tails. After this

passage, a *prolongation* function repeats the N objects, the same as those derived from the Hn in the bridge. These N repetitions are surrounded by different *balanced objects*; an *upbeat* function, starting at 03:56:10, accelerating the pace by a rhythmic accumulation of *impulsions* and other *balanced objects*. A new thick electronic Y has a relevant role as main driver of the sonic content that *release* the energy in a similar way to previous one. In this way the second *mesostructure* ends and the middle section begins through the afore mentioned *release* (Figure 50).

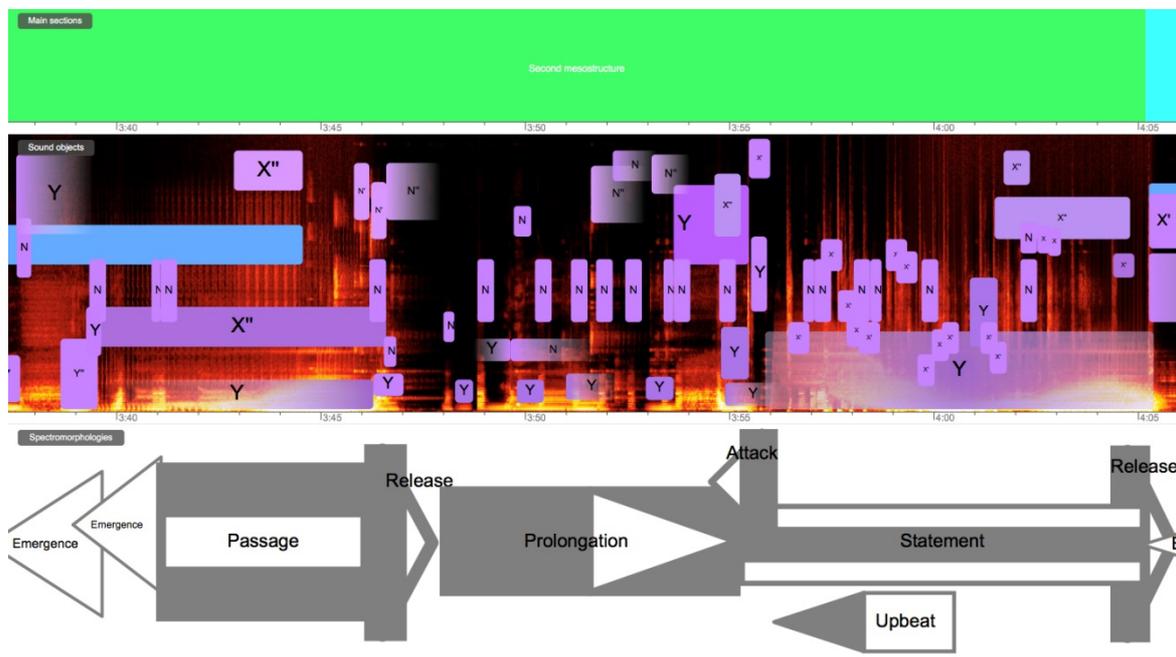


Figure 50: Ending of the second *mesostructure* of *La Luz*

Triggered by the *release* function, the middle section starts with a *tonic mass accumulation* (An) with high frequency content. At 04:13:97, a sequence of *tonic mass impulsions* (N') along with high pitched material begins and continues until 04:43:75 with some variations. The general structural function is a *prolongation*, preceded by an *attack*, a *departure* and an *upbeat* function. The *attack*, a compound of an X' and an N object at 04:16:35, launches two *tonic mass accumulations* (An), one in high tessitura and the other lower, and a succession of *tonic mass iterations* (N''). With no clear borders, a low A object (*accumulation* general case) thickens the general texture of this first third of the section until 04:44:08, as can be seen in Figure 51.

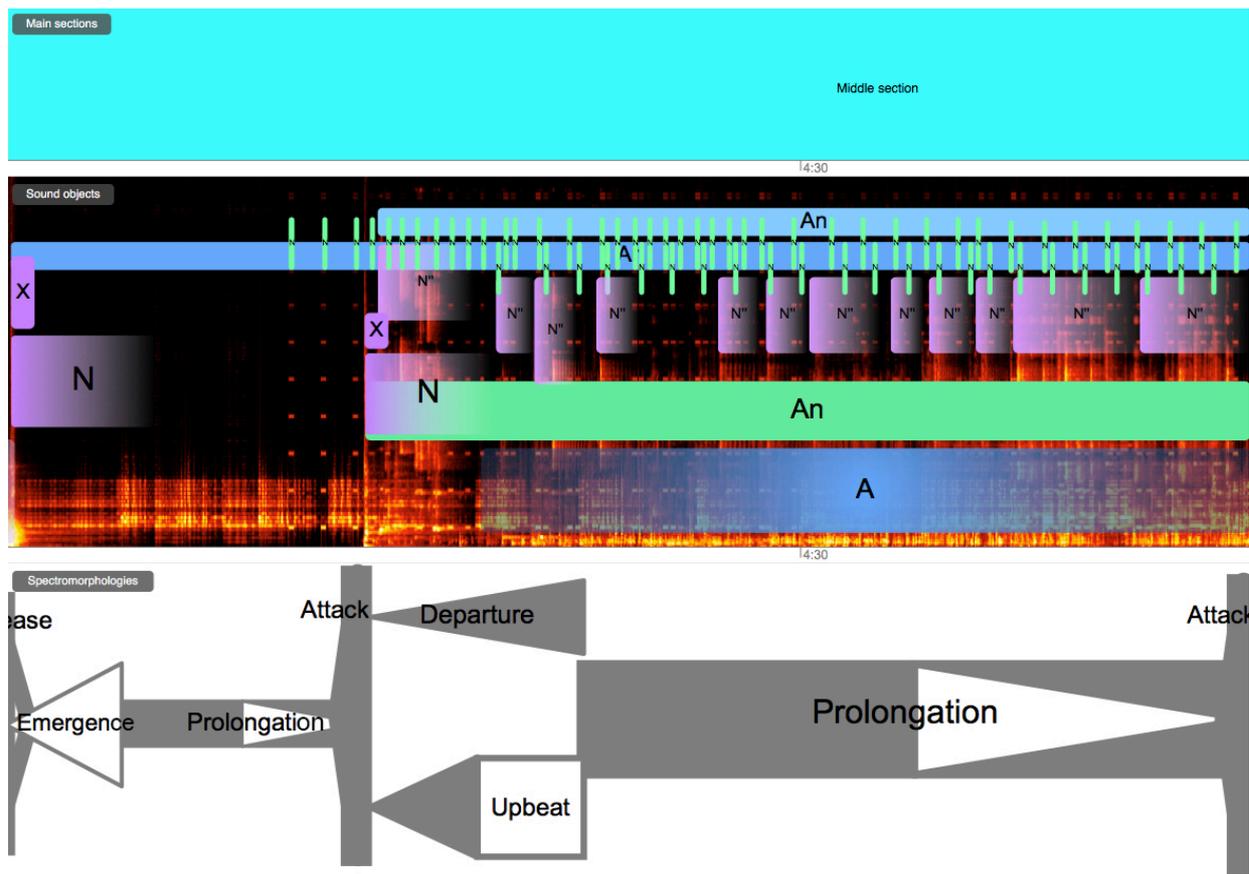


Figure 51: *La Luz* first third of the middle section

Immediately, at 04:44:08, a *grosse note* (W) starts an *upbeat* function consisting of a dynamic An object accompanied by a thick T object (a general case *weft*), a low Hn , a high Hn with a *grain* texture in its *sustainment* and a *tonic mass sample* (En). Shortly after, more objects are added keeping up the pace (a lower version of the previous An , a high pitched Ax , several *iterations* with *tonic, complex* and *variable masses*) all with a *prolongation spectromorphology* function. A *passage* function at 05:10:51, begins composed of a compound of other functions; this *passage* starts by means of an *emergence* function, a noticeable Y'' , in the form of an electronic sound, then an *upbeat* increase the speed to arrive at a *release* function. From 05:22:85, the final part of this section starts with the appearance of an Y , producing an *emergence* and an *arrival* in a continuous manner, directing the energy to a *prolongation* through an Ey object (*variable mass sample*). This is finished by *resolution* and *release* structural functions in the form of a new W object in the company of a X'' and a N , ending the middle section at 05:39:69 when the second transition of the piece starts. The transition lasts thirty-three seconds approximately; in this time frame, three subsections occur successively separated by two silences of two

and three seconds respectively. On one hand, the two first subsections are characterised by their gesture-based development through short balanced objects and the inclusion of an *Ex* and a repetition of the previous *W*; on the other hand, the third subsection starts and ends with the same kind of gestures, including a version of the *W* object with its dynamic profile inverted (fading in and ending in an attack, the opposite of the previous ones). The central part of this third subsection is constituted by a *complex mass sample* (*Ex*) that provides continuity in the form of a *prolongation* function. After the *closure* function, composed by *balanced objects* and the *W* with the inverted profile, the transition presents a silence of two seconds of duration and ends. As it can be seen in Figure 52, all this discourse is very varied, especially regarding the *spectromorphological* development.

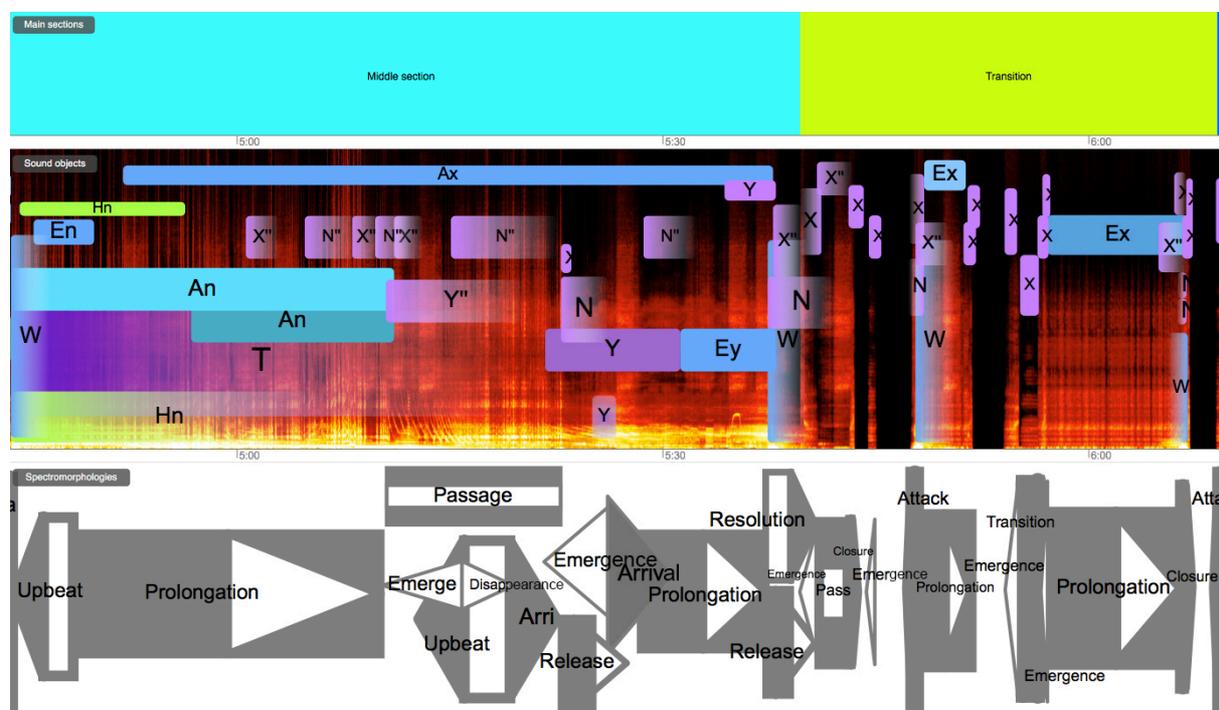


Figure 52: Middle section and second transition of *La Luz*

At 06:09:07, two *X* objects start the third *mesostructure* and launch a series of pointillistic materials including *tonic mass iterations* (*N''*), a high pitch *complex mass accumulation* (*Ax*), a *complex mass sample* (*Ex*), various *X* sustained objects and a low pitched *Zy macro-object*. All of this forms the first part of this section with the clear predominance of a *prolongation* function and ending with a *resolution spectromorphology* by means of only *balanced objects*. The short tail of the resonance, left by these gestures, leads to a pause that resumes the activity at 06:42:63 with another group of *balanced objects*. From this

point, a subsection characterised by the overlapping of *complex mass sustainments* is kept through a *prolongation* function until 07:51:98. This subsection is completed by a succession of samples with *complex, variable* and *tonic masses* (*Ex*, *Ey* and *En*), some *Y* objects and the same *Zy* of the beginning of the *mesostructure*. The group is varied in mass and dynamic, presenting a complex web of textures which is represented by grey triangles and rectangles in Figure 53. As the prolongation reaches its closure, an *anacrusis* function begins at 07:37:82 introducing in a gradual way the *tonic mass* materials that are presented in the next *spectromorphological function*, a *transition* composed by *tonic* and *complex mass samples* (*En* and *Ex*) in addition to *tonic mass iterations* (*N''*); then a *closure* function ends the section by means of a dense grain texture produced by a *X''*, an *Ex* and two *X* objects.

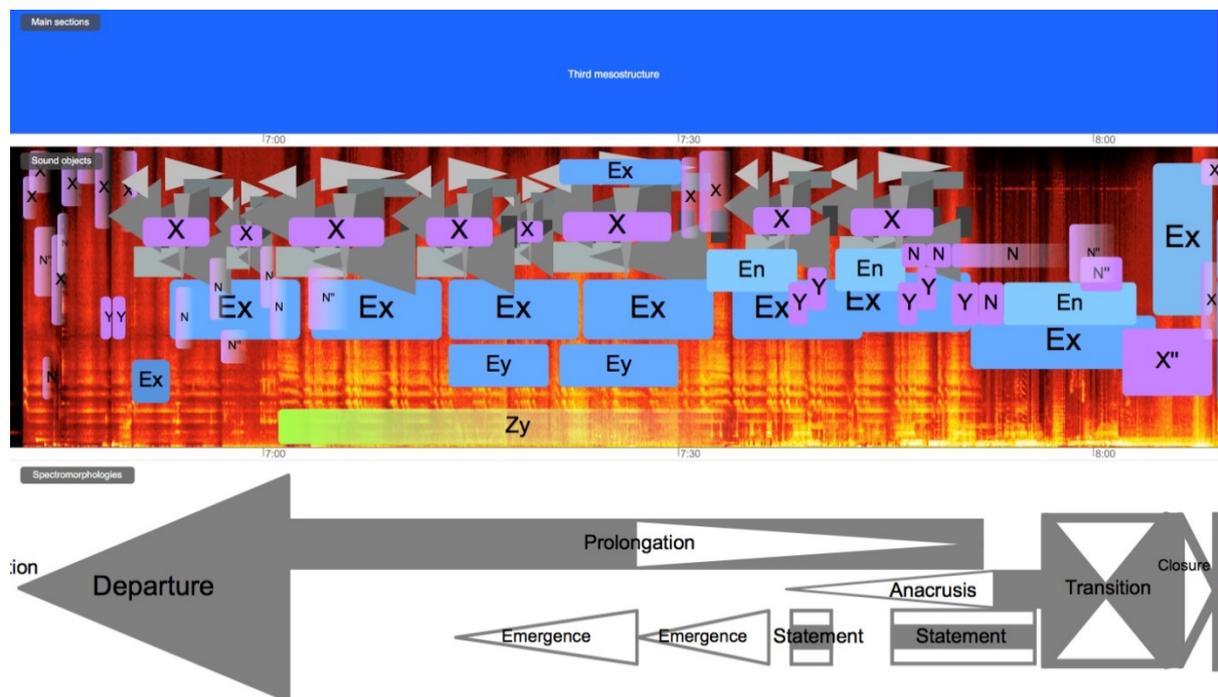


Figure 53: Next two thirds of the third *mesostructure* of *La Luz*: complex mass objects overlapping section and ending

In this way the final section starts at 08:08:98 which, as the previous third *mesostructure*, evolves at a relatively calm pace. Different structural functions follow one another, emphasizing some moments (a *statement* function at the beginning and an *attack* later at 08:26:20) but in general showing a deployment characterised by the *passage* and *prolongation* functions that lead to the *spectromorphologies* of *arrival*, *release* and the two more relevant to ending functions: *resolution* and *disappearance*. In fact, a combination

of *balanced objects*, several *samples* and a *Hn*, gradually give way to a long materials that fade out towards the end; while the *masses* keep being of the three types (*tonic*, *complex* and *variable*), the spectral space is reduced in low frequencies and a greater presence of the higher ones as is the case of the final *Ax*, *En* and *Ey* objects (Figure 54).

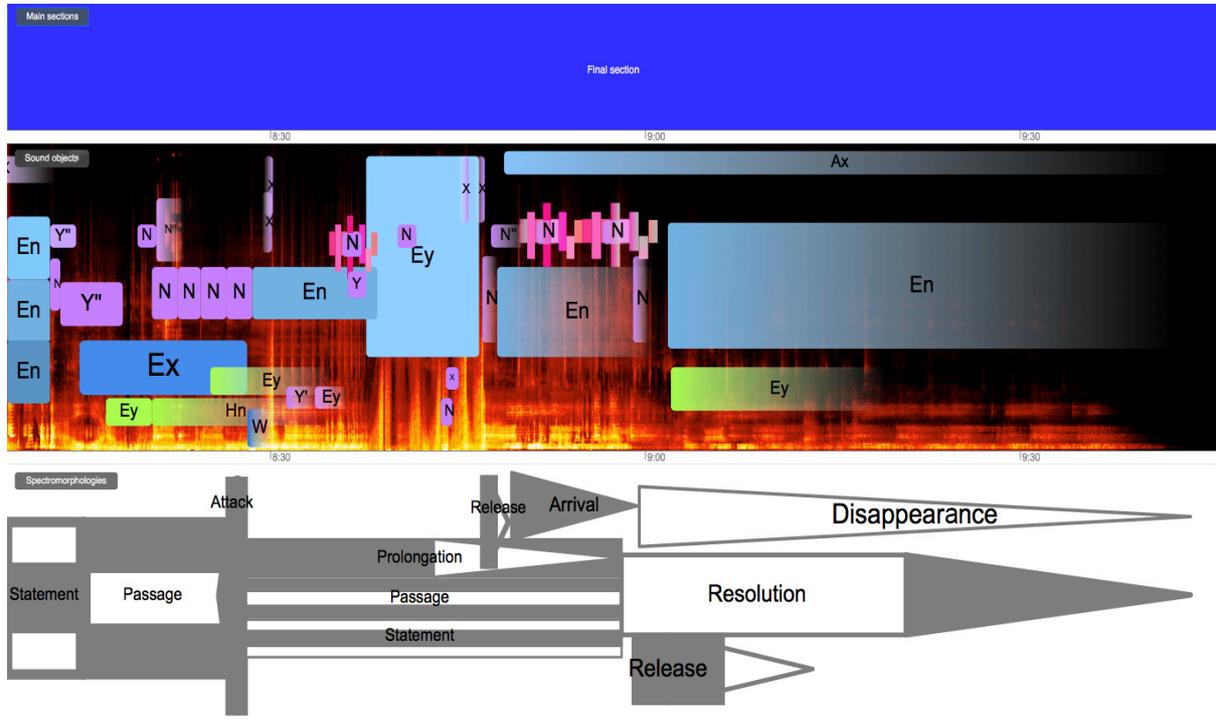


Figure 54: *Sound objects* and *spectromorphologies* for the Final section of *La Luz*

3.2.2 Spatial distribution and structure

The *levels of spatial function* present in this piece are presented in the following Figure 55.



Figure 55: *Levels of spatial function* for *La Luz*

As in the previous piece, *La Lumière*, there are several compound functions. In this sense, there is a concordance between the complexity of *sound objects* and *spectromorphological functions* and the complexity of spatial functions deployed; as in terms of sound materials, the space composition is diverse and tends to combine and overlap positions, trajectories and spatial environments. At the same time, there is a general sense of a filled space in most of the piece, with sections where multiple focal points are presented alongside with different spatial zones and movements. In fact, this type of spatial composition not only creates a dense weft in many cases but helps to articulate the sonic discourse through the variety of spatial functions and their succession in time.

The piece starts with an *abstract* function covering all the opening section (00:00:00 - 00:19:03); this *abstract* function deploys different spatial behaviours (focal points, spatial zones and trajectories) that contribute to the crowded sonic materiality proposed by the diverse *sound objects*. Then, at 00:19:03, the first *mesostructure* begins with a change in the spatial function and two more successive changes: *structural/figurative* (00:19:03), *structural* (00:33:04) and *structural/ornamental* (00:36:59), basically moving from different accent types within a *structural* development, where the articulations are clarified by the functions deployed. The first is carried by the repetitive pattern of reverberating voices (the *Zn macro-object*), the second one triggered by the inclusion of several *balanced objects* (mainly *X*) and the third, a variation of the previous two, marked by the appearance of an *ornamental Ax macro-object* (high pitch and *complex mass* grains distributed in the eight-channel space) and complemented with other objects situated at specific points or moving (*Ey*, *Ex* and some *X* and *N* objects). The *abstract* level returns at 01:02:71, since the attention is guided again to the spatial volumes and movements, especially thanks to the circular trajectory of the low pitch *Zn (tonic mass iteration macro-object)* and the pointillistic traces of the rest of sounds. This *abstract* function is maintained during the rest of the *mesostructure* and it is only interrupted by an accent in the form of an *ornamental/figurative level of spatial function*, which helps to accent the increase in the number of sounds and spatial content (Figure 56).

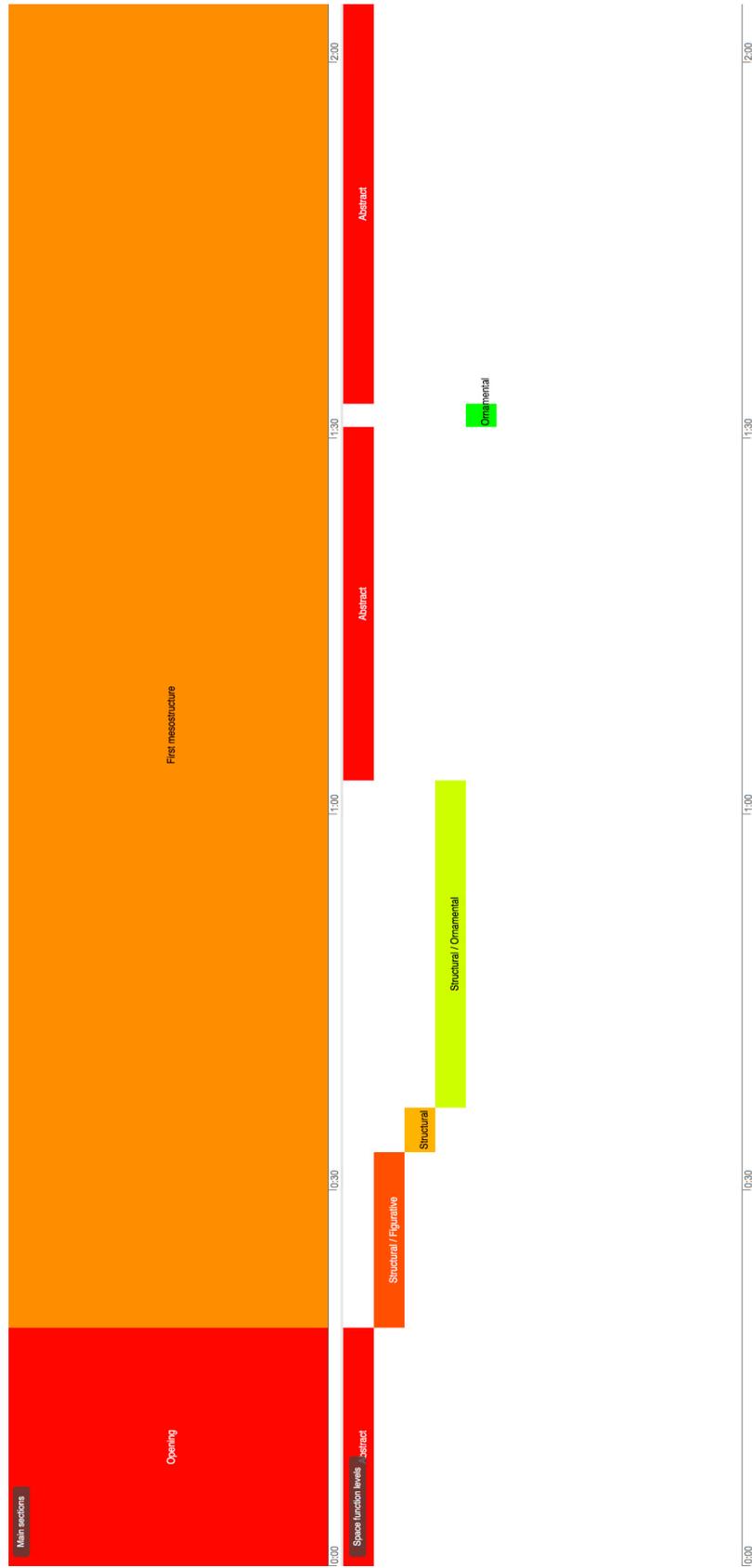


Figure 56: Levels of spatial function for the first mesostructure of La Luz

At 02:04:83, the first transition starts with a change, presenting a *structural* function most of its duration until 02:31:11. Then an *archetypal* function (fall and transit around the listener) appears allowing to move from a frontal space (two evolving *Ey* objects) to an opened space over the surround with these voices falling or transiting and consequently expanding the space. After that, the previous structural function returns during the next section, the bridge, collapsing the space towards the frontal pair of loudspeakers. This frontal position is kept at the beginning of the next section, the second *mesostructure* (02:50:93), which then starts to move around but, most importantly, the function changes to a *madrigalesque/figurative* type; this is due to the nature of the sound material and its *internal space* (Chion 2017, p. 35): a short vocal sound without any reverberation. At 03:10:43 the function turns to an *ornamental* one by means of different focal points and trajectories; this function lasts until 03:17:34 when an *abstract* function operates by presenting planes, trajectories and volumes until 03:28:46: then a *madrigalesque* function appears in the form of voices speaking in an *utterance space* (Smalley 2007), that is a space characterised by intimacy and absence of reverb. Important in this function is the appearance of two Spanish words: ‘artificial’ and ‘arte’, ‘artificial’ and ‘art’ respectively (the word ‘arte’ emerged spontaneously during the performance recording session). After that, from 03:37:53, the rest of the section is developed through a *structural* function, which in fact, is prolonged into the beginning of the next one, the middle section, as can be seen in Figure 57.

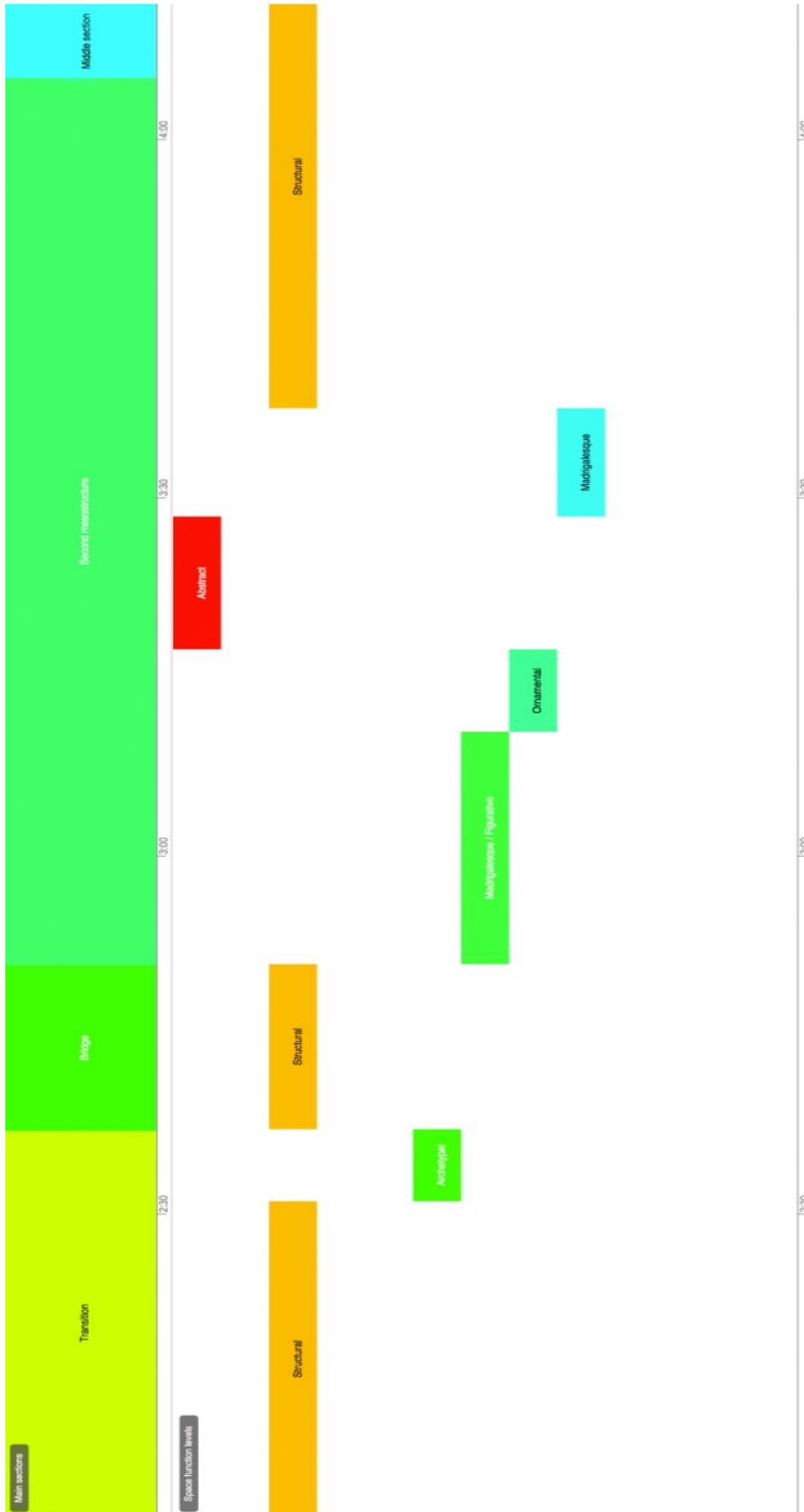


Figure 57: *Levels of spatial function* between the end of the transition section and the beginning of the middle section of *La Luz*

The segmentation that marks the ending of the second *mesostructure* and the beginning of the middle section, it is not given by the *level of spatial function*, which in fact it is kept in the passage between one and the other, but it is prompted by the appearance of new *sound objects* and the clear articulation by means of two *spectromorphological functions*, a *release* and a *emergence*.

The material introduced with the starting of the middle section turns into a compound function, *structural/abstract*, that emphasizes maintenance of the *structural* aspect and the composition of spatial gestures and movements (the *abstract* aspect). Although the movements are prolonged, the launch of a *W* object (*grosse note*) and a *Hn* with great presence in the frontal loudspeakers (1-2), configures a new change: a return to a structural function in 04:44:10. The predominance of movements and figures, especially circular displacements, turns the space function to an *abstract* level; this function starts at 05:10:58 and presents great flow. To end the middle section, the *resolution* and *release spectromorphologies* deployed, operate in the form of an *archetypal function* between 05:37:41 and 05:40:87. This *archetypal* function, as the *structural* one between the second *mesostructure* and the middle section, remains in the beginning of the next part, the second transition (Figure 58).

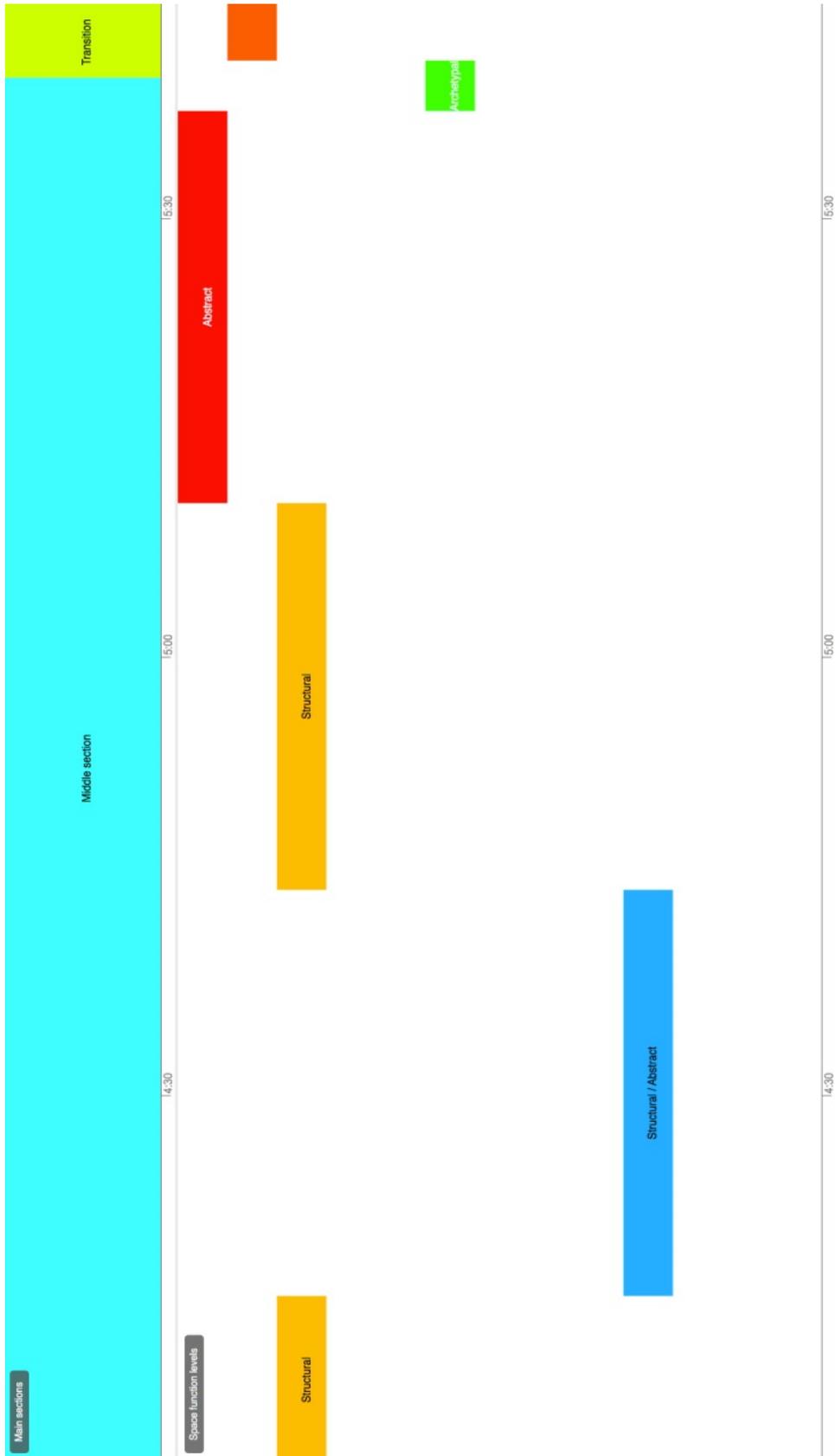


Figure 58: *La Luz* middle section's levels of spatial function

The second transition, starting at 05:39:69, changes its first *level of spatial function*, *archetypal*, into a *structural/figurative* one at 05:40:86. This function marks the development of the section in a specific subsection (*structural function*) including a *source-bonded space* (Smalley 2007) which gives a *figurative* character to the spatial function. A *madrigalesque* function (05:54:05) in the form of human breathing sounds in the frontal loudspeakers, operates as an accent that triggers derived sounds (similar as *sound objects*) but with the prominence of figures, traces and movements in the space, works as an *abstract* function component (05:57:16). This *abstract level of spatial function* covers the rest of the transition as can be seen in the next Figure 59.



Figure 59: *Levels of spatial function* for the transition section of *La Luz*

The third *mesostructure* starts at 06:09:07. Previously, the transition ends with a *closure spectromorphology* that collapses the space into the frontal loudspeakers and leaves a

silence prior to the start of the third *mesostructure*. This starts with a spatial expansion into the eight-channel space by means of a *structural spatial function*. This strong frontal image coexists with movements and traces in the eight-channel surrounding space. It lasts until 06:38:44, when a pause in the dense spatial design is presented as an *ornamental* function which turns quickly into a *madrigalesque/abstract* function (06:42:62) due to the presence of different spaces connoting human presence, far or near, fixed or moving. The progressive complexity of the *sound objects masses* and the increasing overlapping of them, help the double characteristic of this compound function (next Figure 60).

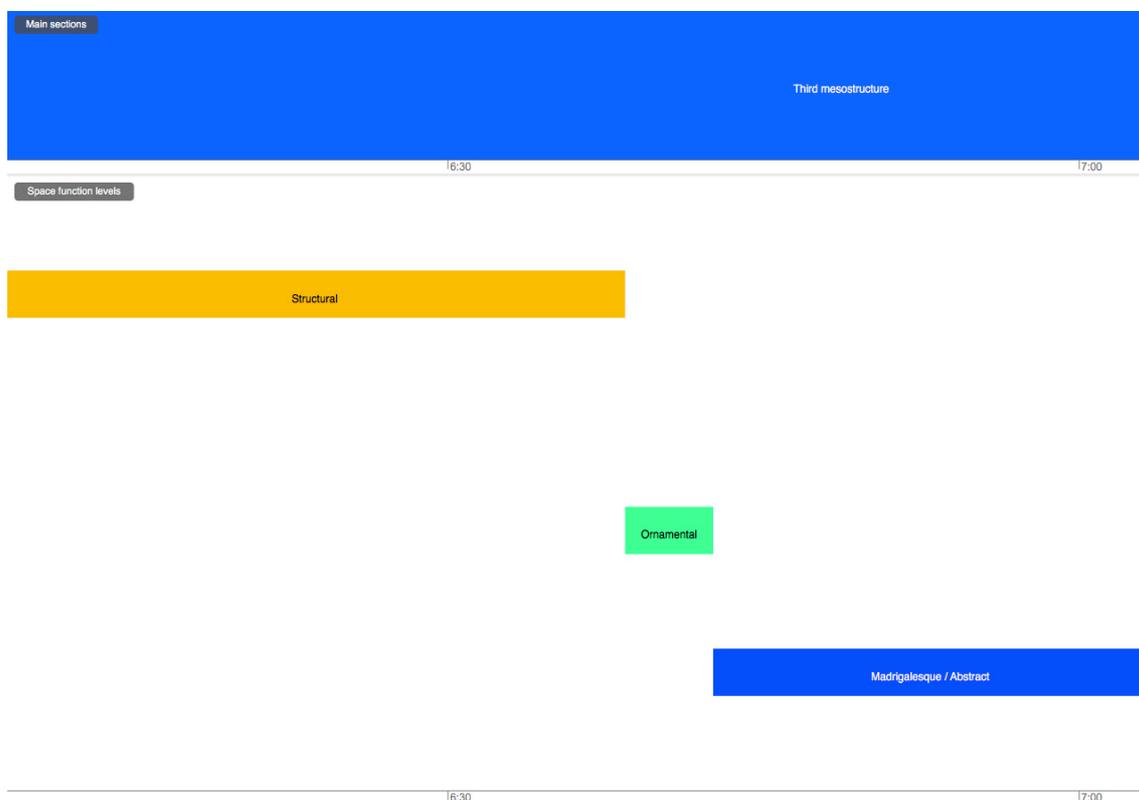


Figure 60: First levels of spatial function in the third mesostructure of La Luz

The inclusion of diverse trajectories, focal points and vaguely positioned planes, changes the function into a *structural* one at 07:03:25; this is because the use of spatial configurations point out a sonic state different from the previous one. The presence of *complex mass sound objects* (noise bands), accentuates the *structural* nature this change has installed. This is kept until 07:34:44, when a *figurative* function begins through the presentation of imaginary spaces inhabited by different voices maintaining their

positions or moving around, akin to the action of characters. This function lasts for the remainder of this *mesostructure*, as can be seen in the following Figure 61.

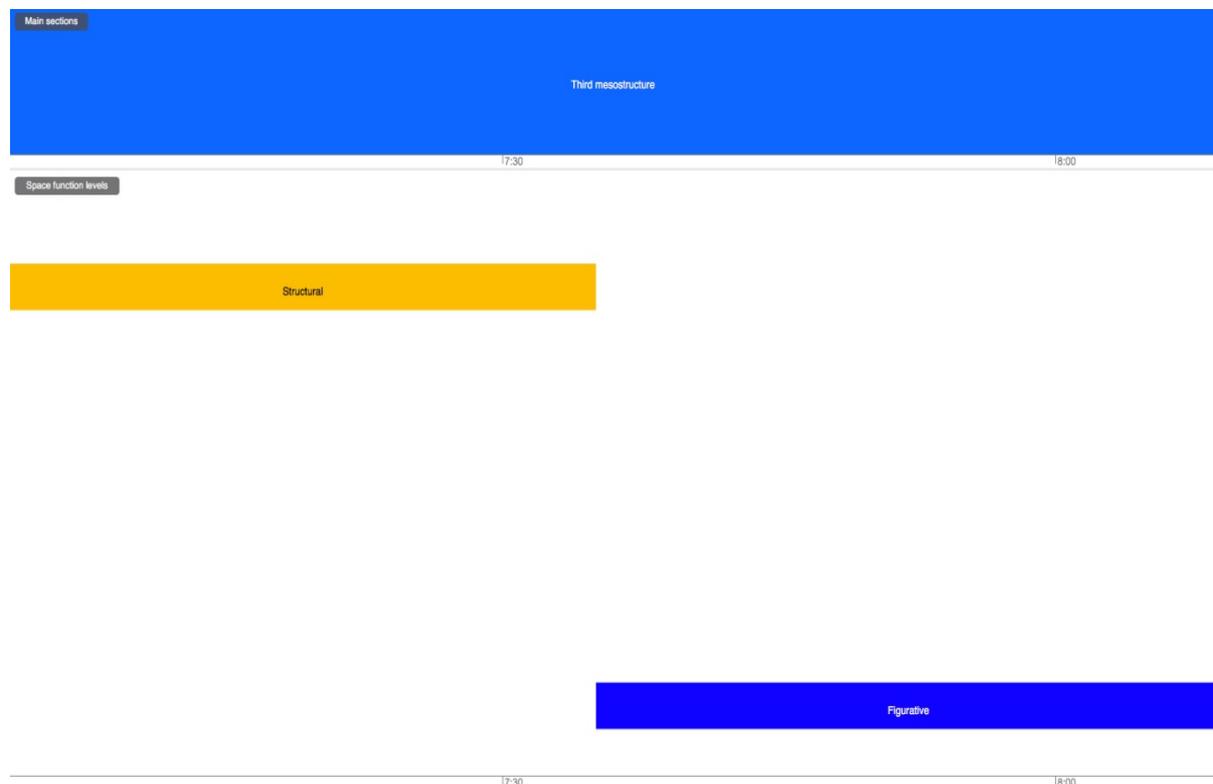


Figure 61: Levels of spatial function for the last part of the third *mesostructure* of *La Luz*

The final section starts at 08:08:98 with a *madrigalesque* function; this beginning is composed of voices speaking in different positions of the eight-channel space and suggesting different distances as well. Here, the *utterance spaces* presented (Smalley 2007), are the key aspect that defines this moment: they naturalistically generate unrealistic superimpositions, with unexpected relationships between them. At 08:12:37, the spatial design is focused again in planes and movements; because of the change produced, the function turns into a *structural* one. Shortly after, at 08:20:54, the high presence of voices, speaking and uttering in different spaces, give a compound space function, *madrigalesque/figurative*: imaginary spaces cohabit with the strong presence of human voice. At 08:37:68, the function becomes *abstract*, where gestures in the form of trajectories and movements are the relevant driving spatial material. After these variations, from 08:46:93, the spatial composition remains with no alterations until the end of the section, thus the end of the piece. Due to the overlapping of elements, the rest of the section is a compound function, *madrigalesque/figurative/archetypal* (Figure 62).



Figure 62: *Levels of spatial function* for the final section of *La Luz*

3.2.3 *Voice type and speech-sound type distributions*

For this piece, the voice distribution categories are shown in Figure 63.

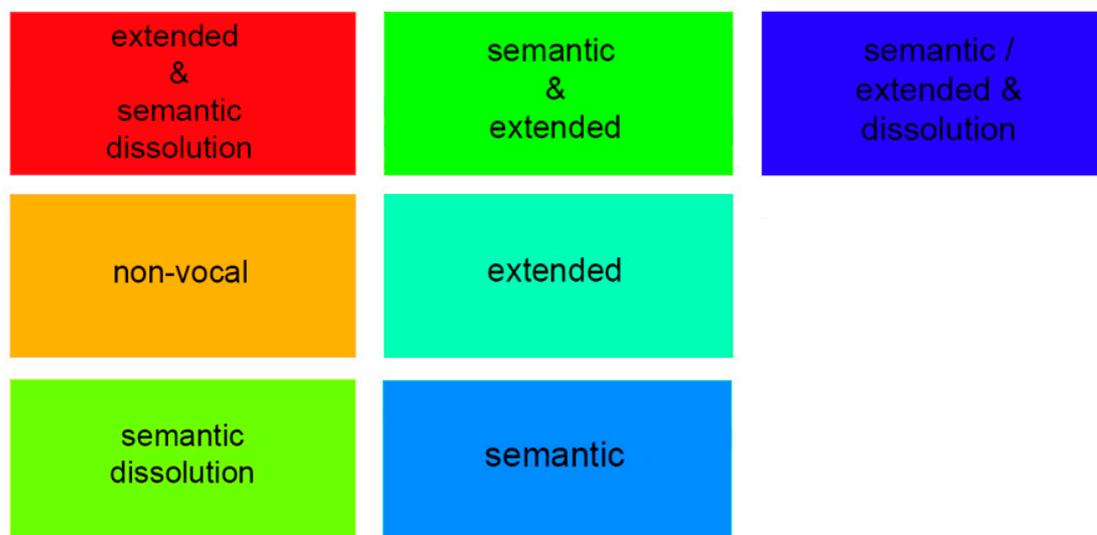


Figure 63: *Voice distribution categories* for *La Luz*

And the speech sounds distribution can be seen in the next Figure 64.



Figure 64: *Speech sound* distribution categories for *La Luz*

As in the previous piece of the cycle, *La Luz* has seven categories for the *voice type* distributions. In the case of speech sounds distribution, the piece has fifteen categories, overcoming the quantity of the two previous pieces. Again, the main feature is the number and specificity of hybrid categories, especially regarding the speech sound production categories. As previously mentioned, this is due to the complexity of this aspect present in the piece.

In regard to *voice type* distribution, the more salient category is *extended & semantic dissolution*, which is present most of the time with great continuity. The other categories are distributed as smaller sections and as variations, fluctuations or disruptions of the main one: *extended & semantic dissolution*. Despite this, speech sounds present a more balanced distribution of their categories, many of them which are compound of two, three or four basic classes; the more repeated are *phonetic/electronic*, *electronic* and *word/phonetic/phoneme/ electronic*.

The opening section presents an *extended & semantic dissolution* distribution with a greater complexity of vocal materials, since *extended* can be addressed both as *semantic* or *semantic dissolution*. The end of this opening section and the beginning of the first *mesostructure* are connected by a *non-vocal* category. In the speech sound distribution, the opening section shows a *phonetic/electronic* category. This is because the vocal material it does not reach to be completely *semantic* and is constituted by complex elements not clearly of a specific *phonetic* type and some of them are of *non-vocal* origin. These distributions for the opening can be seen in the next Figure 65.

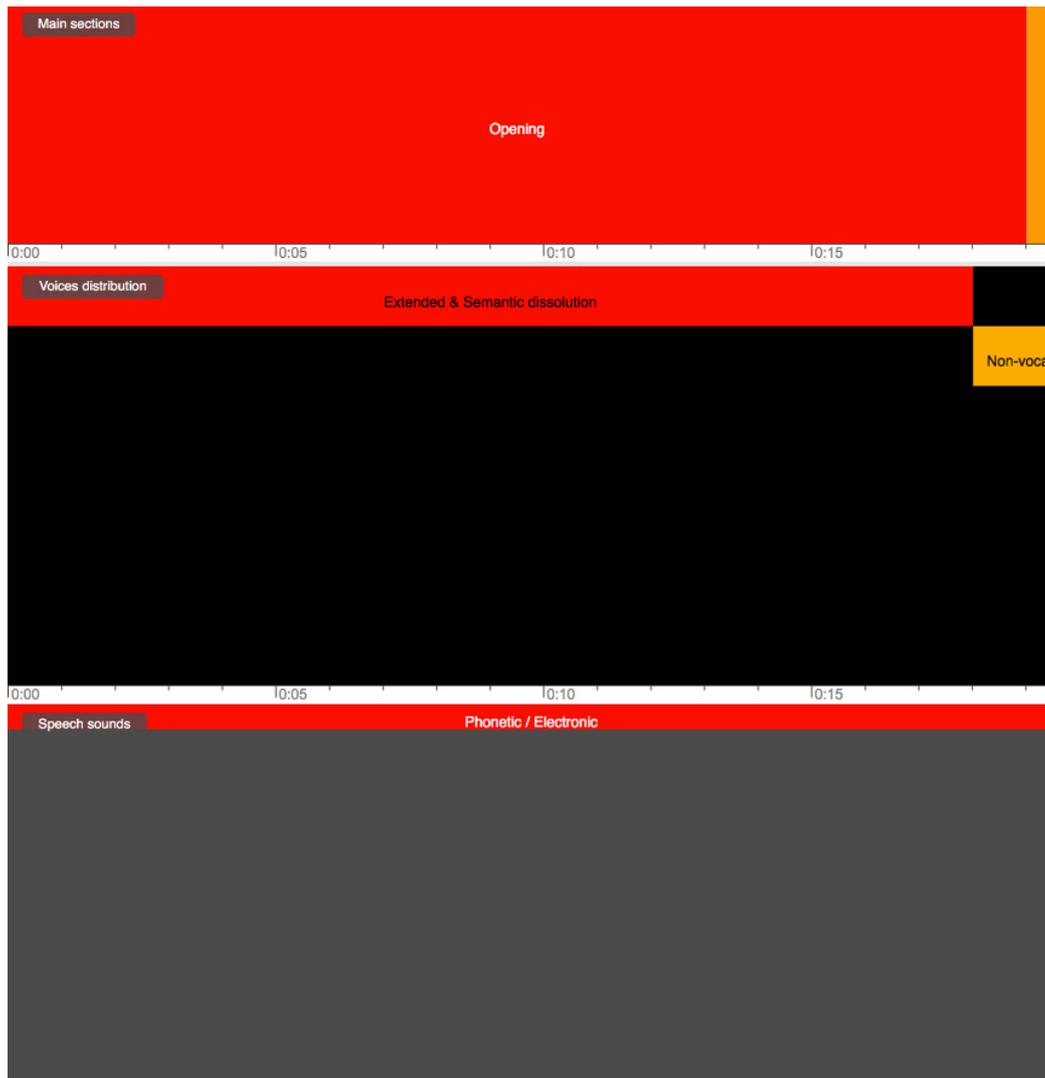


Figure 65: Voice and Speech sound distributions for the opening of *La Luz*

After the *non-vocal* vocal category, the first *mesostructure* presents a *semantic dissolution* category in the form of *phonemes* in the speech sound distribution. These materials, started at 00:19:76, are of *open vowel* type (the Spanish 'a' letter) that are repeated in a constant rhythmic pattern; this pattern is gradually made more complex with the inclusion of pitch shifted and offset versions of itself, while other sounds are added. The hard-electronic processes over these vocal sounds, make them ambiguous and they are stable or change their inner qualities. For instance, sometimes the 'a' behaves like a low pitched 'o'. Shortly after, at 00:33:02, the voices distribution moves to a *semantic & extended* type. In the speech sound distribution, this corresponds to a *phonetic/word* category, which includes the Spanish article 'la' (feminine 'the'). Then, at 00:41:56, the *extended & semantic dissolution* category returns in the voices distribution row, albeit this

time with a different corresponding category at the speech sounds: *phonetic/phonemes/electronic*. This aspect evidences the increase of vocal sounds. It is important to remember here that, as in the previous analyses, the categories described are the most relevant regarding vocal materials and do not imply the absence of other sounds, such as abstract electronic ones. In fact, in the distributions already reviewed, it is possible to find several sounds whose aural shapes do not show a clear connection with vocal sound; they are very abstract or can be linked to some sounds typical of electronic devices. If in *La Lumière* the *semantic dissolution* is achieved through cutting, juxtaposing and further electroacoustic music techniques, in *La Luz* it is presented via a different procedure: the blurring of linguistic meaning (*semantic* content) by the simple technique of reverse audio playback. This procedure is interesting since allows maintenance of a certain fluency in the utterance deployed and consequently imitation of the natural behaviour of human speech through continuity between *phonetic* units. In this way, the characteristic *diphthongs* and *vowel* emission features of European languages, especially of Romance languages⁴⁵ is presented. This is achieved by maintaining the apparent sonority of a real language and negating any *semantic* content. This feature, presented for the first time in this *extended & dissolution* section (between 00:41:56 and 01:02:64), gives variety to the cycle in regard to the vocal materials. This particular procedure was influenced by *electroacoustic poetry* techniques.

The rest of the first *mesostructure* keeps the same distribution of voices, only with an accent at 01:02:63, a *semantic & extended* category that evidences the appearance of the Spanish article 'la', whispered and surrounded by the other complex materials. In the speech sound distribution, it is possible to see how the *phonetic/phonemes/electronic* category persists as well. Coincidentally, the *semantic & extended* category is represented here by the *word/electronic* one. However, the *phonetic/phonemes/electronic* category that corresponds to the *extended & semantic dissolution* in the voices distribution, turns into a *phoneme/electronic* one at 01:15:20; this is due to the discarding of the diversity of speech sounds and maintaining just the vowels' rhythmic pattern (in different pitches) accompanied by a non-vocal pulsating low sound. The tempo of these rhythms is increased towards the end of the section and they end up in a textural glissando that

⁴⁵ Romance languages are a group of languages derived from Latin, including French, Spanish, Portuguese, Italian, Romanian, Sardinian, Occitan, Rhaetian and Catalan (Crystal 1995, p. 301).

triggers the next section, the first transition. The distributions for the first *mesostructure* can be seen in Figure 66.

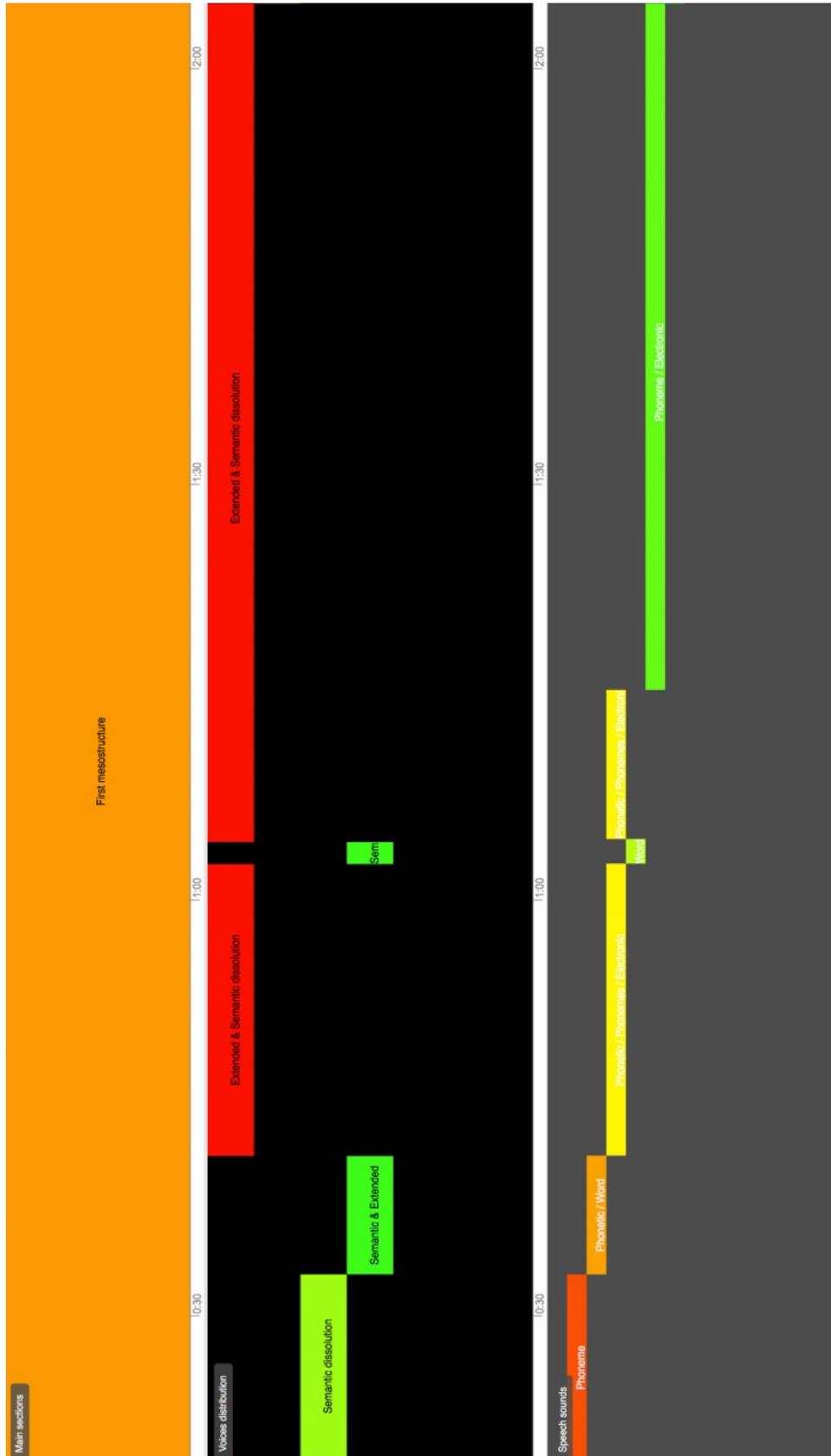


Figure 66: *La Luz* first mesostructure, voice and speech sound distributions

The following transition section (in Figure 67) is formed by a clear electronic feature: in the voice distribution is manifested by a *non-vocal* category followed by an *extended & semantic dissolution* one. Most of the section is composed by an *electronic* category in the speech sound distribution, only changing into a hybrid *phonetic/electronic* at the last part.

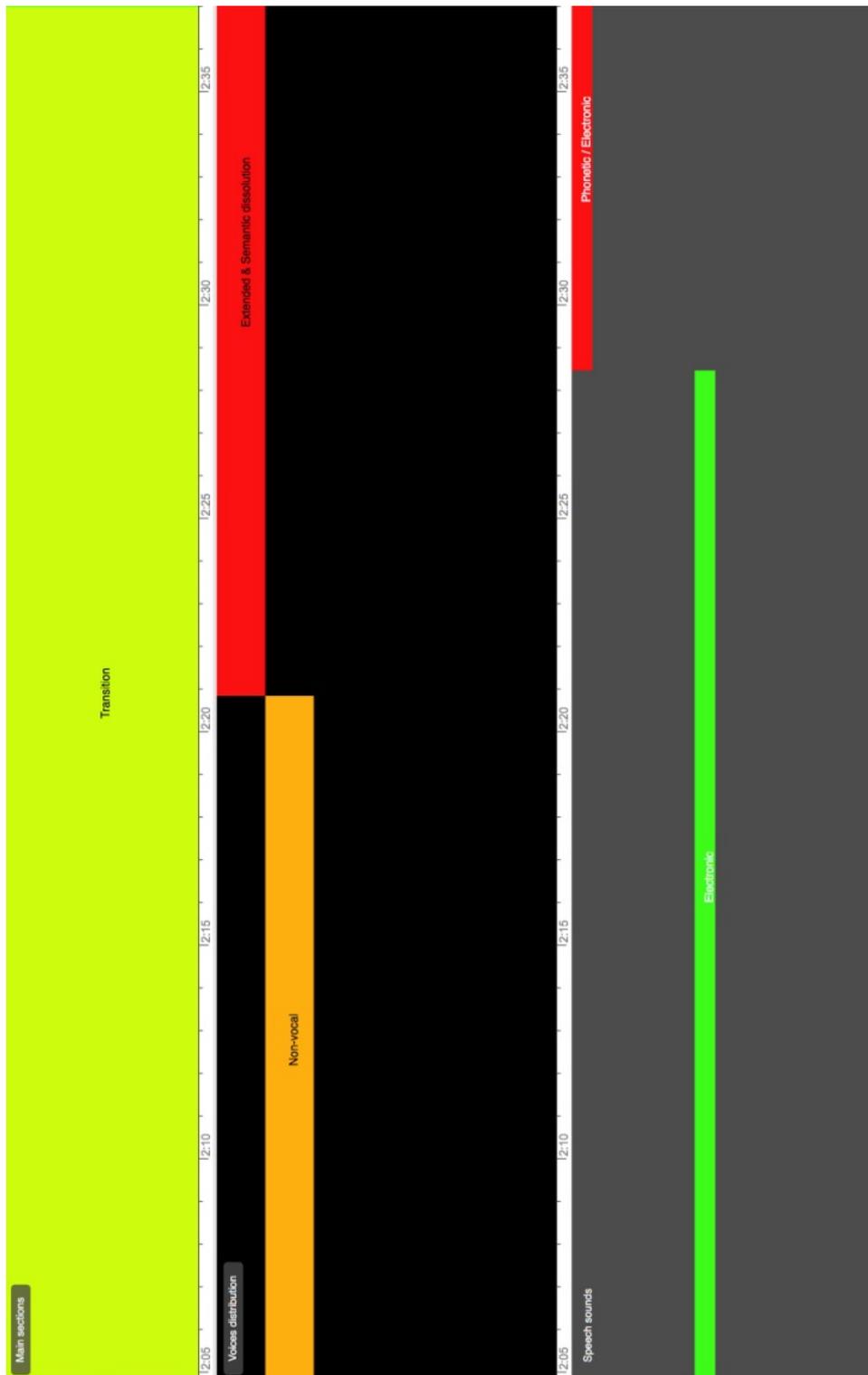


Figure 67: Voice and Speech sound distributions, first transition of *La Luz*

The next section, the bridge, contains the prolongation of the final categories in the previous transition, both in voices and speech sounds distributions. However, the speech sounds category changes at 02:38:84 into an *electronic* one. These distributions operate as emphasizees of the other levels in the composition (*sound objects, spectromorphologies*

and *space functions*), clarifying the transition and connection, respectively, towards the second *mesostructure* which is started with just one sound repeated. This is in marked contrast to the spectral character in the opening and the first *mesostructure*. The bridge distributions can be seen in the following Figure 68.

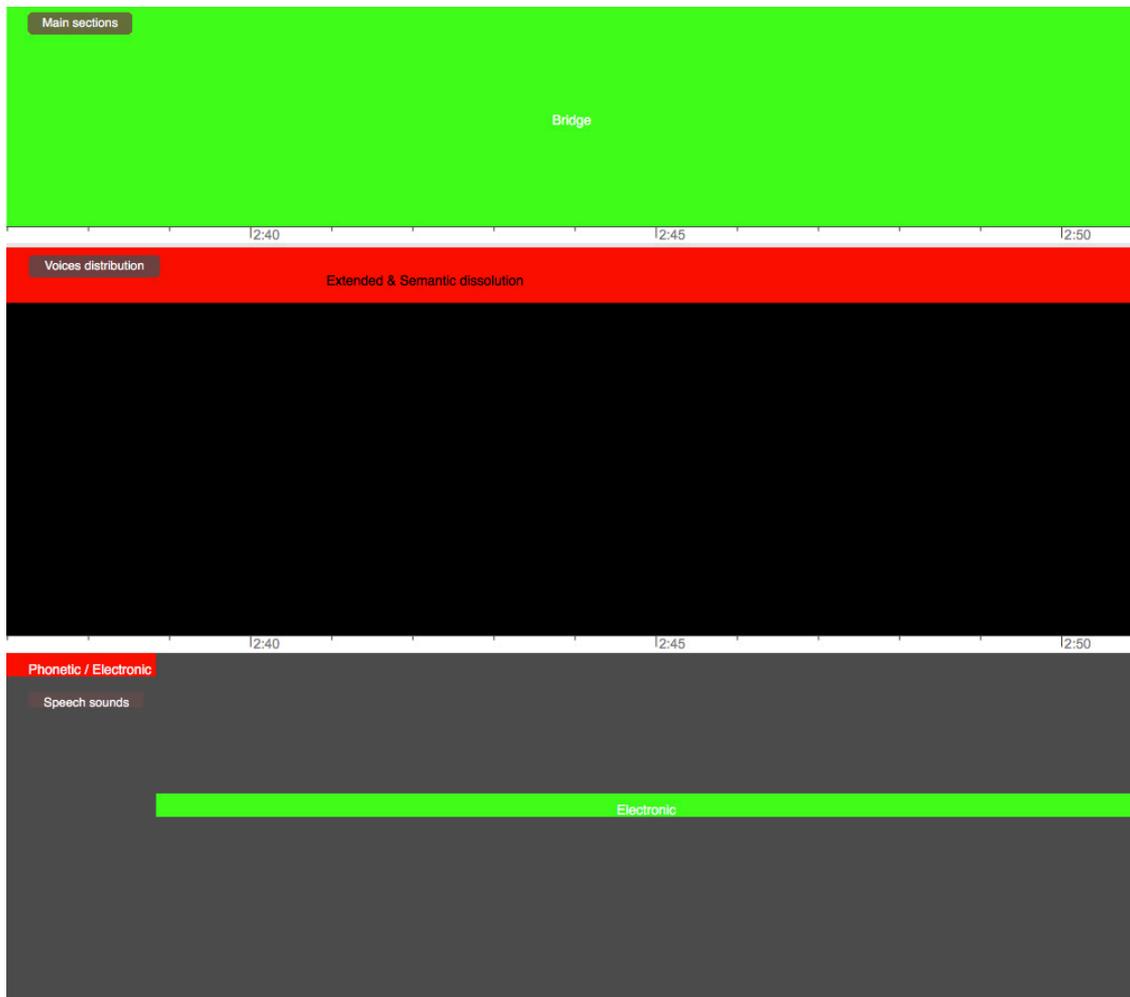


Figure 68: The bridge distributions for voice sounds and speech sounds in *La Luz*

The second *mesostructure*, started at 02:50:92, deploys two categories for the voice distribution: *semantic dissolution* and *extended & semantic dissolution*. These categories point out a strongly voice based section. The speech sound distribution shows more diversity, including seven categories: *phoneme*, *allophone*, *phonetic/phonemes/electronic*, *word*, *word/phonetic/phoneme*, *phonetic/electronic* and *word/phonetic/phoneme/electronic*. The structure presented is based in these materials and their vocal characteristics, exploiting them, again, in the manner of *electroacoustic poetry*. In this sense, the specific features of the vocal materials unfolded typify the

section. The idiosyncratic behaviour of the Spanish sounds are highlighted in the form of gestures and articulations formed by *open vowels* ('a' and 'o'), *syllables, words*, fricative ('f' sound), *coronal sounds* (sounds close to 'd') including the noticeable presence of 't' percussive sounds described as alveolar by Crystal (1995, p. 155) and some rolls (trills) by means of improvisations of the performer with the Spanish 'r'. In particular, during the phonetic/electronic subsection (03:37:56 to 03:48:00 in the Speech sounds row), the sonorities of the *fricative* 'f' and the *coronal* 't' are harnessed through electroacoustic treatments, obtaining some gestures rich in sound textures. Finally, the section ends with a syllable, 'ta', whose reverberated tail releases the sonic energy and its prolonged to the first seconds of the middle section. The distribution for this second *mesostructure* are shown in Figure 69.

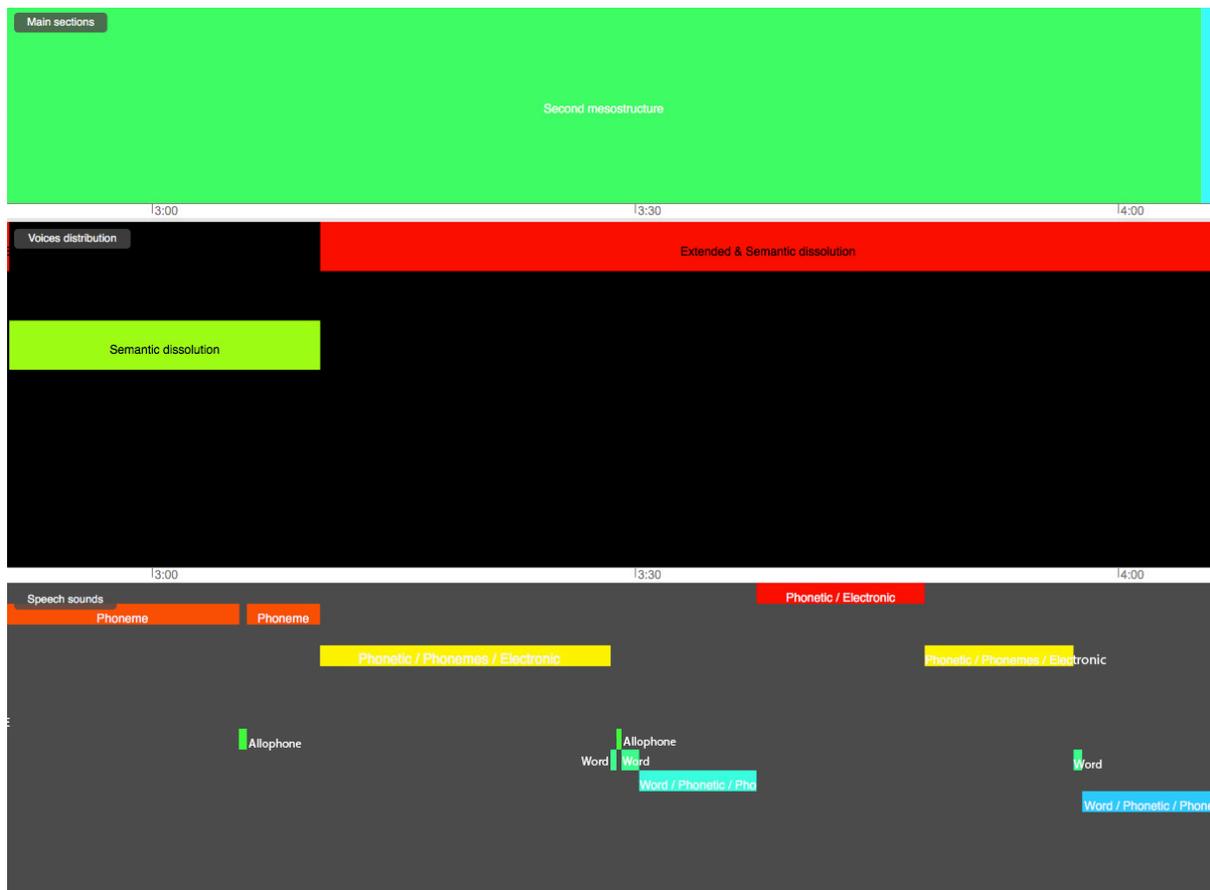


Figure 69: Voice and Speech sounds in the second *mesostructure* of *La Luz*.

The middle section is more homogeneous in both distributions. It starts with a *non-vocal* category in the voice distribution which is equivalent to an *electronic* one in the speech sound distribution. These sounds are spread in a pointillistic way that is marked by a

phonetic accent (the same 'ta' *syllable* presented at the end of the previous section). This accent launches an *extended & semantic dissolution* in the voice distribution; this distribution is the preeminent category in the section and is mainly formed by a *phonetic/electronic* category in the speech sound distribution. The vocal materials have been extensively processed electronically, taking on an artificial aspect. However, the *phonetic/electronic* turns into a *phonetic/electronic/word* category (04:36:66 to 04:44:10) through the inclusion of some *words*; they could be classified as *sentence*, but it was considered more prominent their feature as *words* since they appear fast and overlapped.

These main distributions end up at 05:23:67 with *extended* and *electronic* categories for voice and speech sound distributions respectively. It is important to note here that although the distribution analysis shows delimited areas (clear coloured rectangles in the graphic representations), these are not necessarily sections with well-defined borders. In most cases the situation corresponds to a continuous flux in which representation as *spectromorphologies* is more suited to their nature; nevertheless, as has been stated, this analysis allows one to understand the compositional use of voice, both as structural element and as stylistic material.

After the change, the *extended & semantic dissolution* and the *phonetic/electronic* distributions return for a moment (05:28:68 to 05:32:29). Further *extended* and *electronic*, starting at 05:32:29, these almost close the section: shortly after, at 05:37:80, the *extended* distribution connects the ending of the section with the second transition. Although previously this voice category was in match exclusively with an *electronic* distribution in the speech sound distribution, in this case the compound gesture presents three categories for the speech sounds: *phonetic/electronic*, *phonetic* and *electronic*. Figure 70 shows middle section's distributions, including these speech sound categories entering the first moments of the second transition.

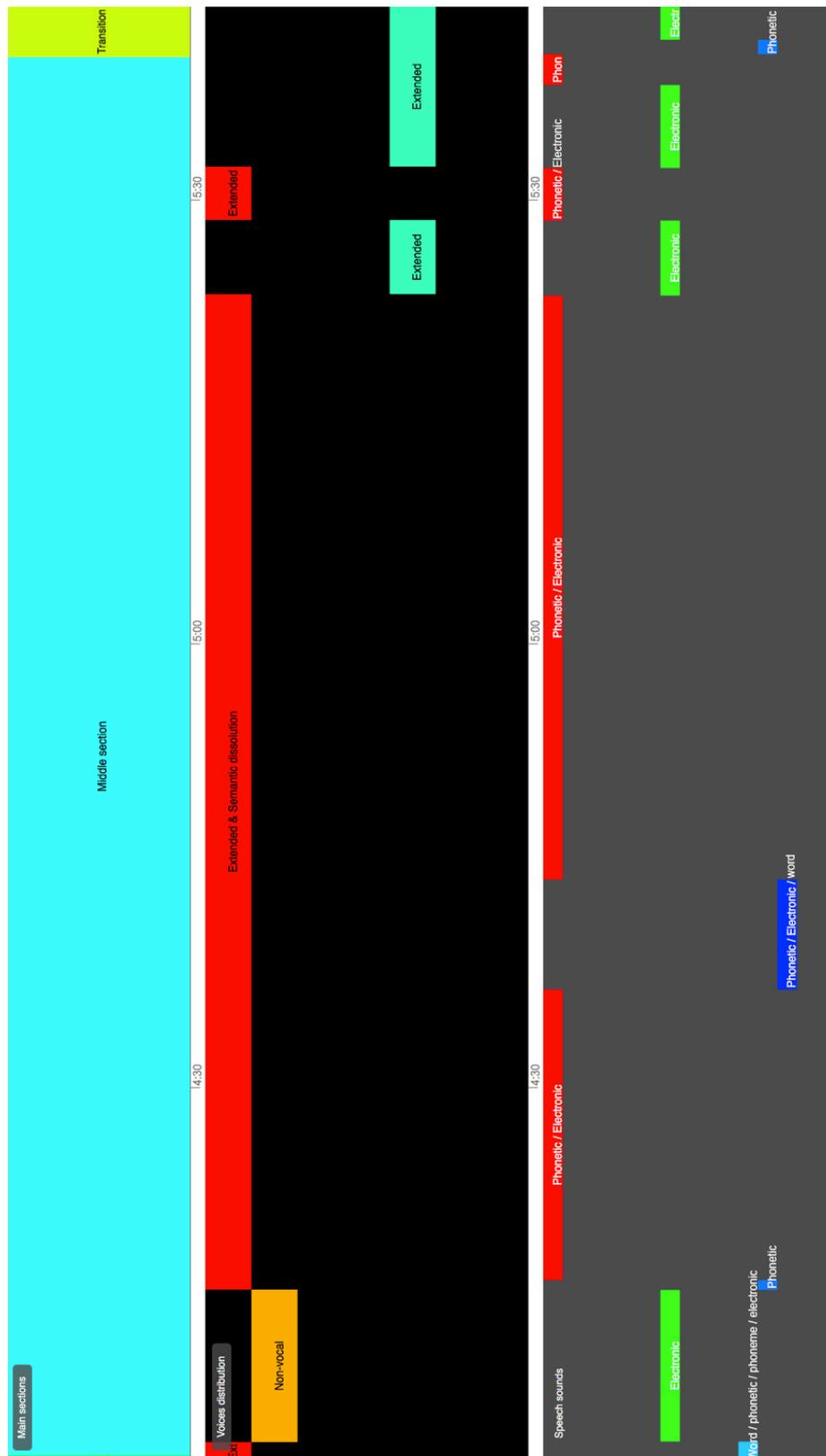


Figure 70: Voice and Speech sound distributions for middle section of *La Luz*

The second transition shows varied distributions in both rows; this due to the diverse materials deployed in a very gestural manner, including four silences. Because of this,

three different categories are grouped in each row in a short period of time, all of them with no presence of semantic content as can be seen in Figure 71.

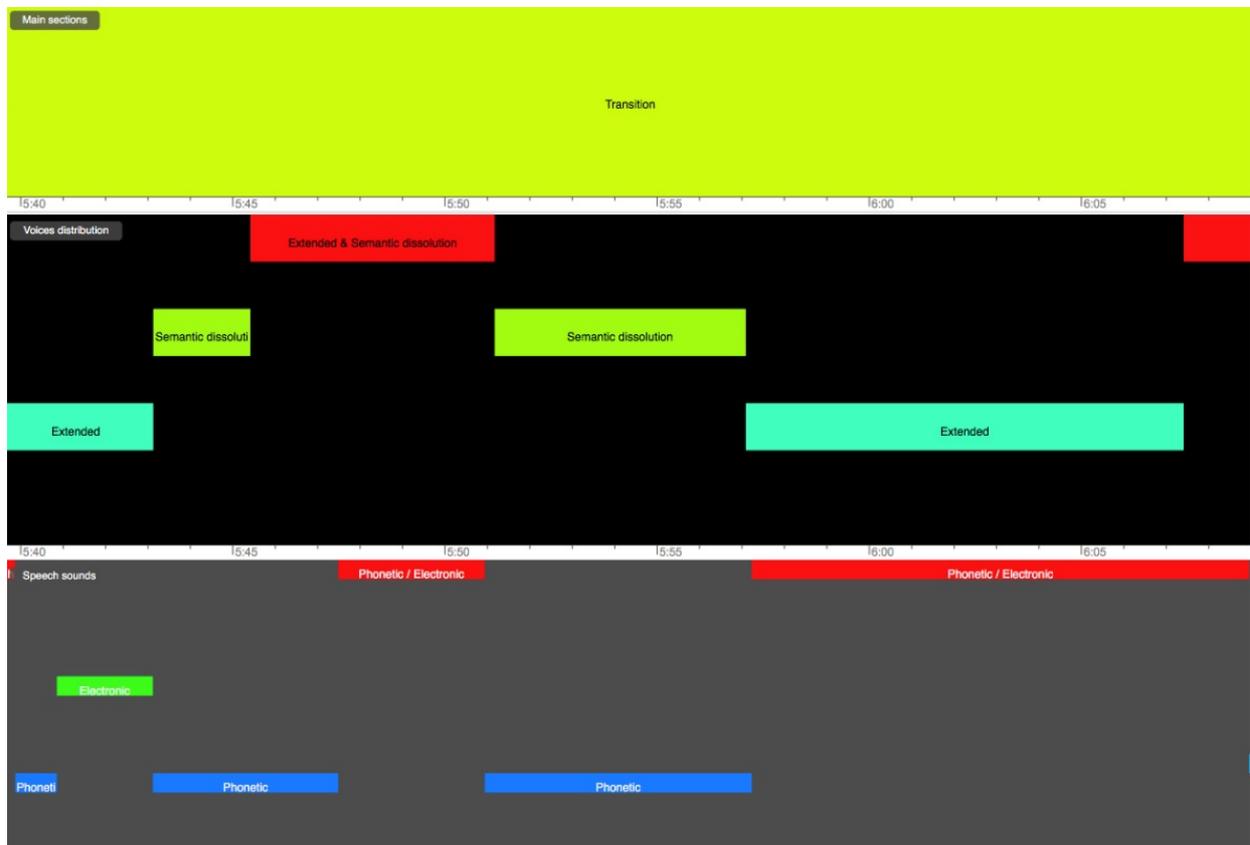


Figure 71: Second transition of *La Luz*: voice and speech sound distributions

Figure 71 shows a red rectangle at the end of this transition in the voices distribution; this corresponds to an extended and semantic dissolution category started at 06:07:42 and that is extended into the first seconds of the next part, the third *mesostructure*.

In fact, the third *mesostructure* begins at 06:09:07 with this *extended & semantic dissolution* distribution which last until 06:44:71, only interrupted by three blocks of *semantic* category at 06:15:43, 06:30:64 and 06:34:20 respectively. The first *semantic* block corresponds to a word (Spanish 'artificial') and it is included in the distribution *word/phonetic/phoneme/electronic* that covers most of the section in the speech sound distribution. The next semantic block corresponds to a *sentence* (Spanish 'la luz artificial') that is indicated in the graphics for the speech sounds, as is indicated the next one with a part constituted by the *word/phonetic/phoneme/electronic* and the rest with a *sentence* (variations of Spanish 'la luz artificial'). These *sentences* are whispered utterances. A similar structure is repeated after these initial distributions, from 06:37:84 on, but

including some sections with *extended* category which, alongside semantic blocks, are the variations over a continuous of *extended & semantic dissolution* distribution, as can be seen in Figure 72, where is possible to appreciate three different distributions for the speech sounds: *phonetic/electronic*, *word/phonetic/phoneme/electronic* and *sentence*. The sentence is the same in Spanish, 'la luz artificial', in slightly different versions.

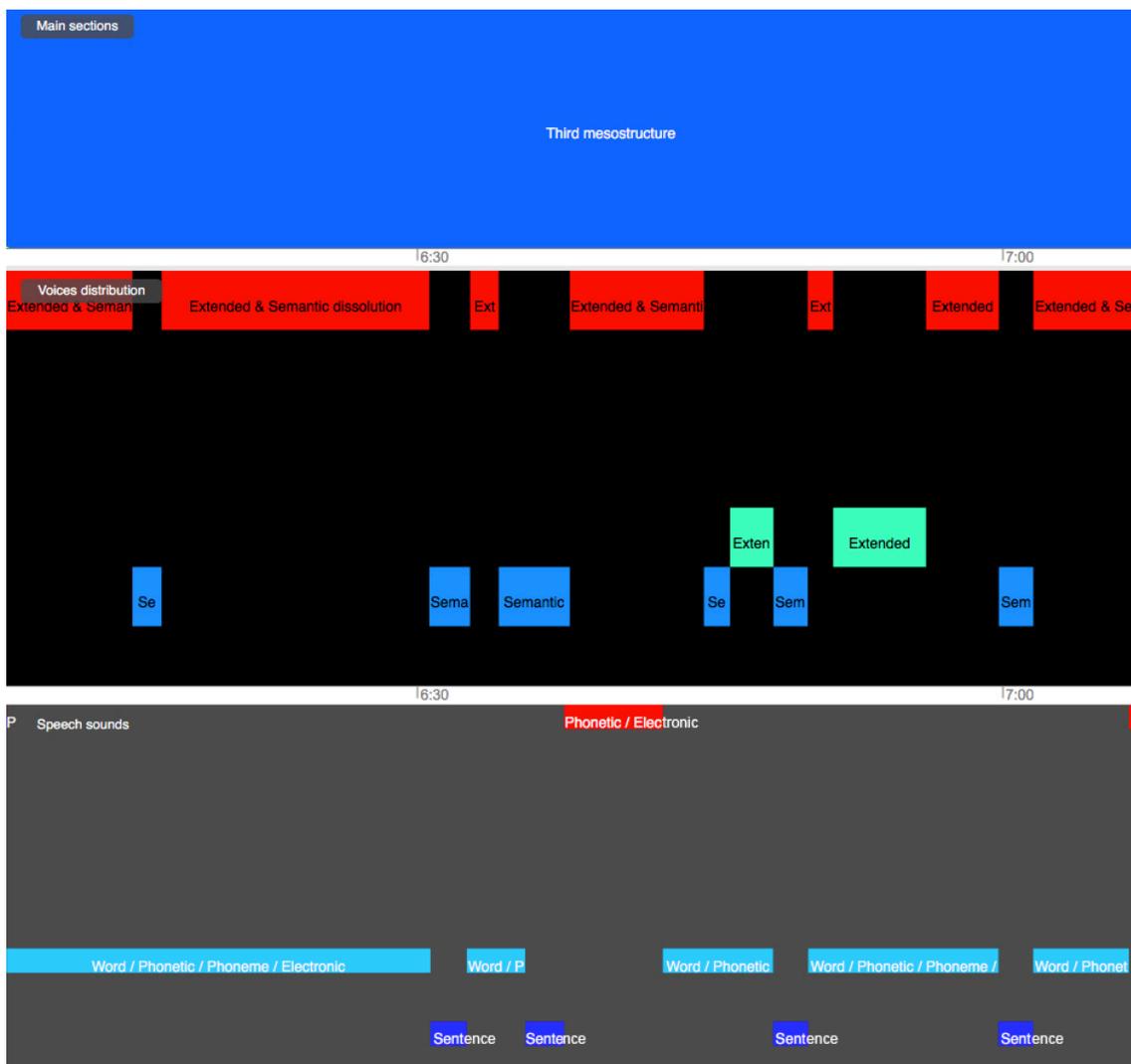


Figure 72: Voice and Speech sound distributions for the third *mesostructure* of *La Luz*

The predominance of fricative sounds is increased from 07:06:73 in the form of an *extended* distribution in the voices row; this corresponds to a *phonetic/electronic* category in the speech sound distributions. These vocal materials are matched and mixed with similar *complex mass sound objects* from other sources, creating this particular moment of the piece which has a very connotative function: evidencing voices, radio broadcasting samples and electronic noise bands. At 07:25:60, the *extended & semantic*

dissolution (red coloured rectangle) returns and lasts for the rest of the section; in the corresponding time-space in the speech sound distribution, the categories are *phonetic/phonemes/electronic*, *word/phonetic/phoneme/electronic*, *allophone* and *electronic*. The extent of these categories and especially their qualities, provide a complex weft, both of sound textures and vocal materials, within which it is possible to perceive a blurred sound materiality of human presence and abstract *sound objects*. This combination is coherent with the heterogeneity pointed to as a guideline and as a goal in the compositional rationale of this thesis. These distributions for the second half of this third *mesostructure* can be seen in Figure 73.

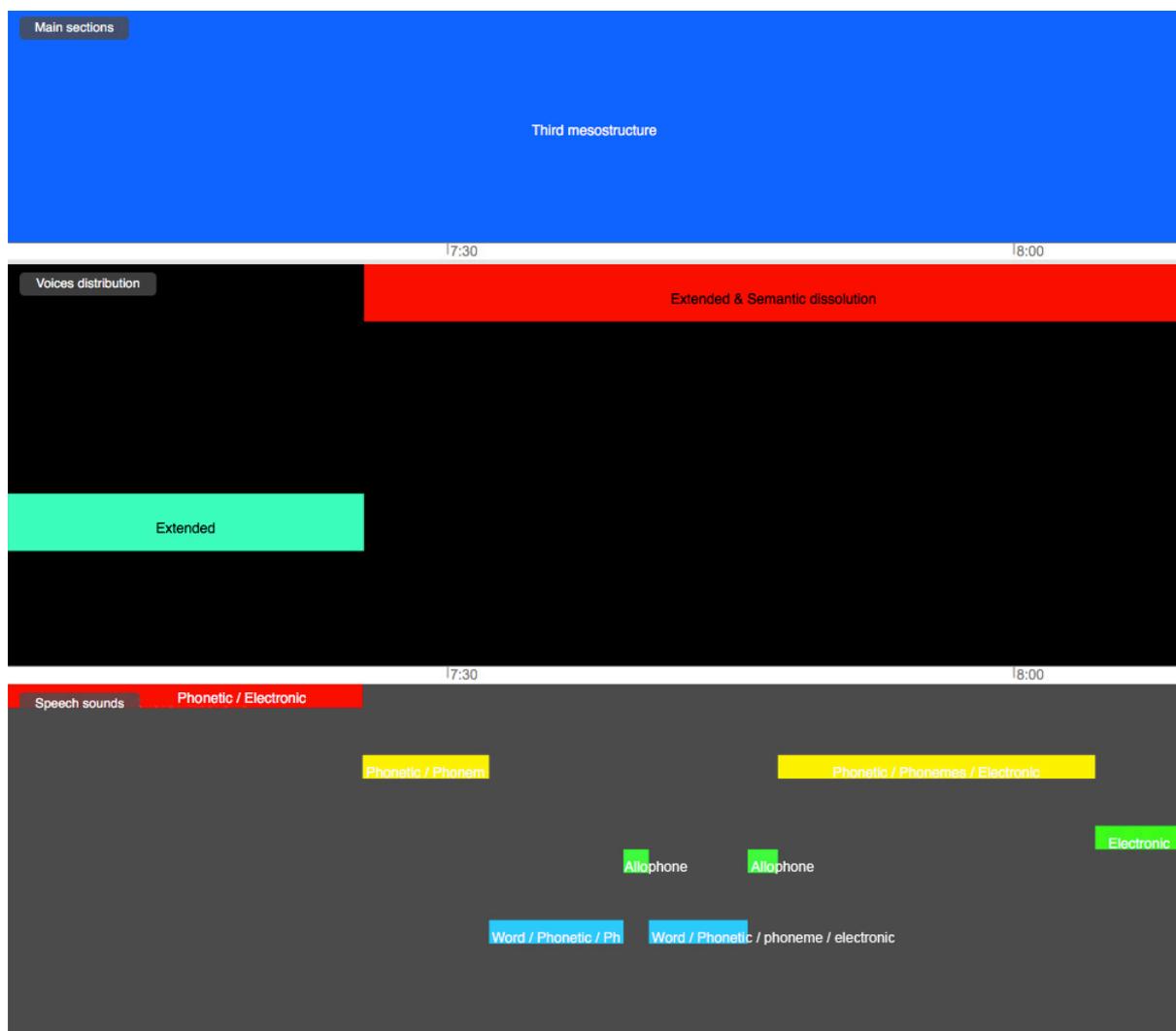


Figure 73: Second half of the third *mesostructure* of *La Luz* with its diversity of vocal materials.

The final section starts at 08:08:98 with clear *semantic* and *sentence* categories for the voices and speech sounds distributions respectively. The sentence, 'la luz artificial' is

presented in a recognisable way and at the same time overlapped with itself and other sounds such as *variable mass iterations* (Y'') and *samples* (Ex, Ey). Then, at 08:13:15, intensively processed vocal materials unfold textural and gestural sounds in the form of an *extended & semantic dissolution* category which is manifested through a *word/phonetic/phoneme/electronic* category in the speech sound distribution. At 08:20:52, a *semantic & extended* distribution appears after having appeared twice in the first *mesostructure*; this time is composed of two speech sounds categories: *sentence* and *phonetic/electronic*, keeping in this way the sonic textural aspect and adding the clear presence of meaning through the Spanish spoken *sentence*. Then, at 08:38:55, a subsection formed by an extended distribution and an electronic one, for voice and speech sound distributions respectively, presents an abstract moment that operates as a junction providing variety and allowing to emphasize the new materials delivered shortly after at 08:46:99, a complex distribution of *semantic/extended & dissolution*. This category is unique within the piece, evidencing the significance of the moment in the compositional discourse. In the speech sound distribution this is presented by means of two categories: *word/phonetic/phoneme/electronic* and *sentence/electronic*, the former being unique category as well. Subsequently, the *extended & semantic dissolution* category returns for the voice distribution coinciding with a *word/phonetic/phoneme/electronic* one for the speech sound distribution. These categories are, in terms of form, variations of the materials presented in the unique distribution of *semantic/extended & dissolution*, evidencing their relationship at the time the semantic content is dissolved. This dissolution is faded out to conclude the piece at a calm pace. The distributions for the final section can be seen in Figure 74.

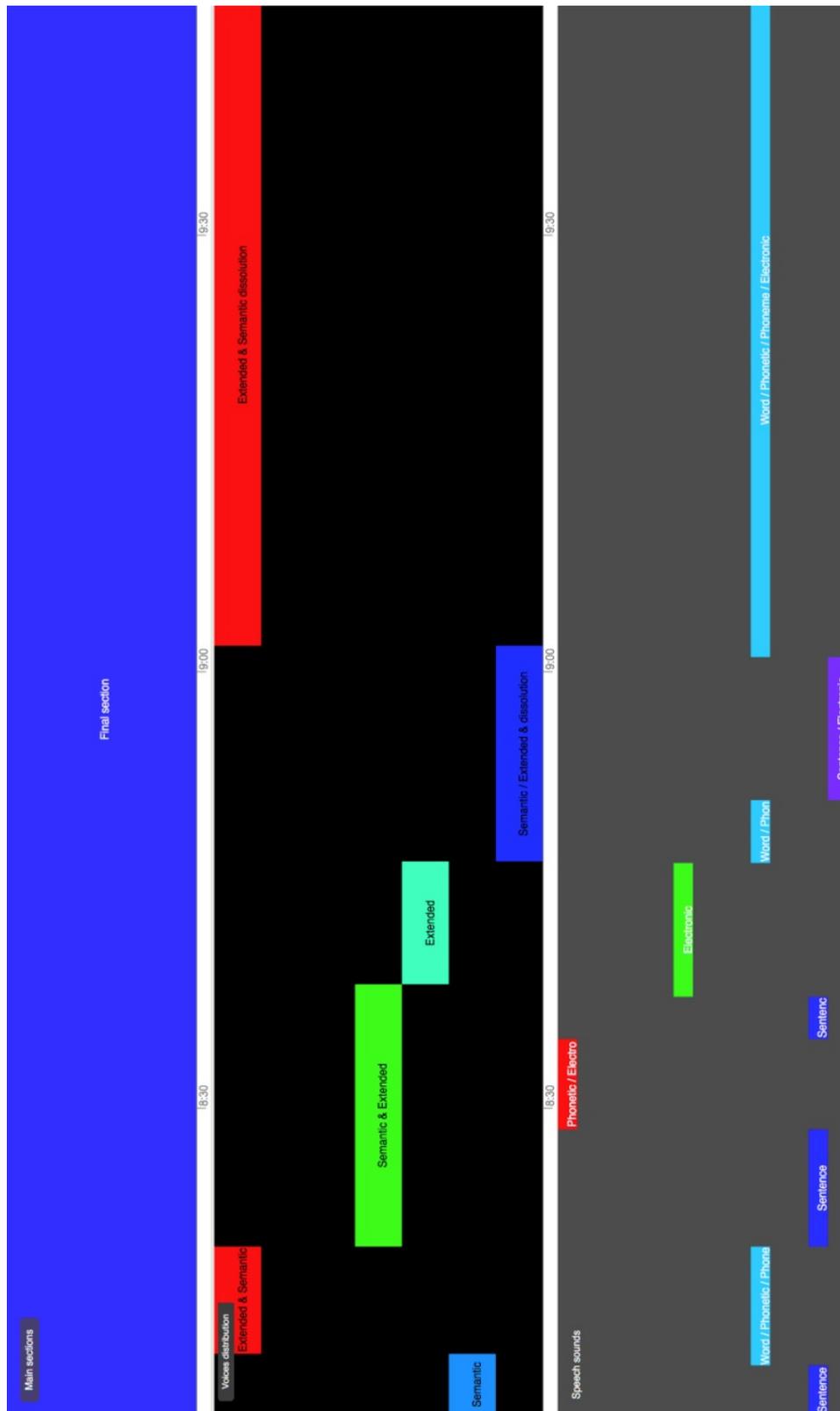


Figure 74: Voice and speech sound distributions for the final section of *La Luz*.

3.3 Analysis conclusion

This piece shows heterogeneity and complexity of elements; a feature of all its constitutive levels and points out a dense weft of connections between sounds, gestures, articulations and referential elements such as voices with *semantic* content and samples of broadcasting transmissions. Although the unity of the work is determined by the cohesion of the discourse (continuity, flux and articulation), it is possible to notice many different sounds driving the piece. In a way this is a return to the sonic heterogeneity of the *Overture* and a development of *La Lumière*. Following the graphic analysis, the more stable elements are present in the *voice type* distribution, as seen in Figure 75. Despite this, the speech sound distribution shows a greater diversity and changes, passing from one category to another in many moments, contributing not only to articulate the piece but to emphasize its segmentation, being relevant moments the passages between the bridge and the second *mesostructure*, between the previous and the middle section and between that and the second transition. Another important moment in this sense is the final part of the third *mesostructure* and the first part of the final section where, coincidentally, diverse categories appear in the voice distribution. Additionally, a *madrigalesque* function in the levels of spatial function provides a contrast after a long period of other function types. At the same time the work is linked to the previous two sections of the cycle and it is detached from them due to the contrast of sound materiality and the structural aspects mentioned above.

If the *Overture* presents the 'sound world' of the cycle and *La Lumière* a playful development of its vocal materials, *La Luz* deploys a thick weft of sound flows, gestures and changes, including large *accumulations*, both in the vertical and horizontal spaces (spectral density and time). In this case, the balance between *imagination* and *reason* proposed by Huidobro is kept although pulled towards the former. The unexpected relationships between elements is present due to the large number of changes, while the cohesion is given by *sound object* composition and the *spectromorphological* discourse, both complemented by the *spatial functions levels* that balance these elements. Figure 75 shows the whole piece with the five analyses.

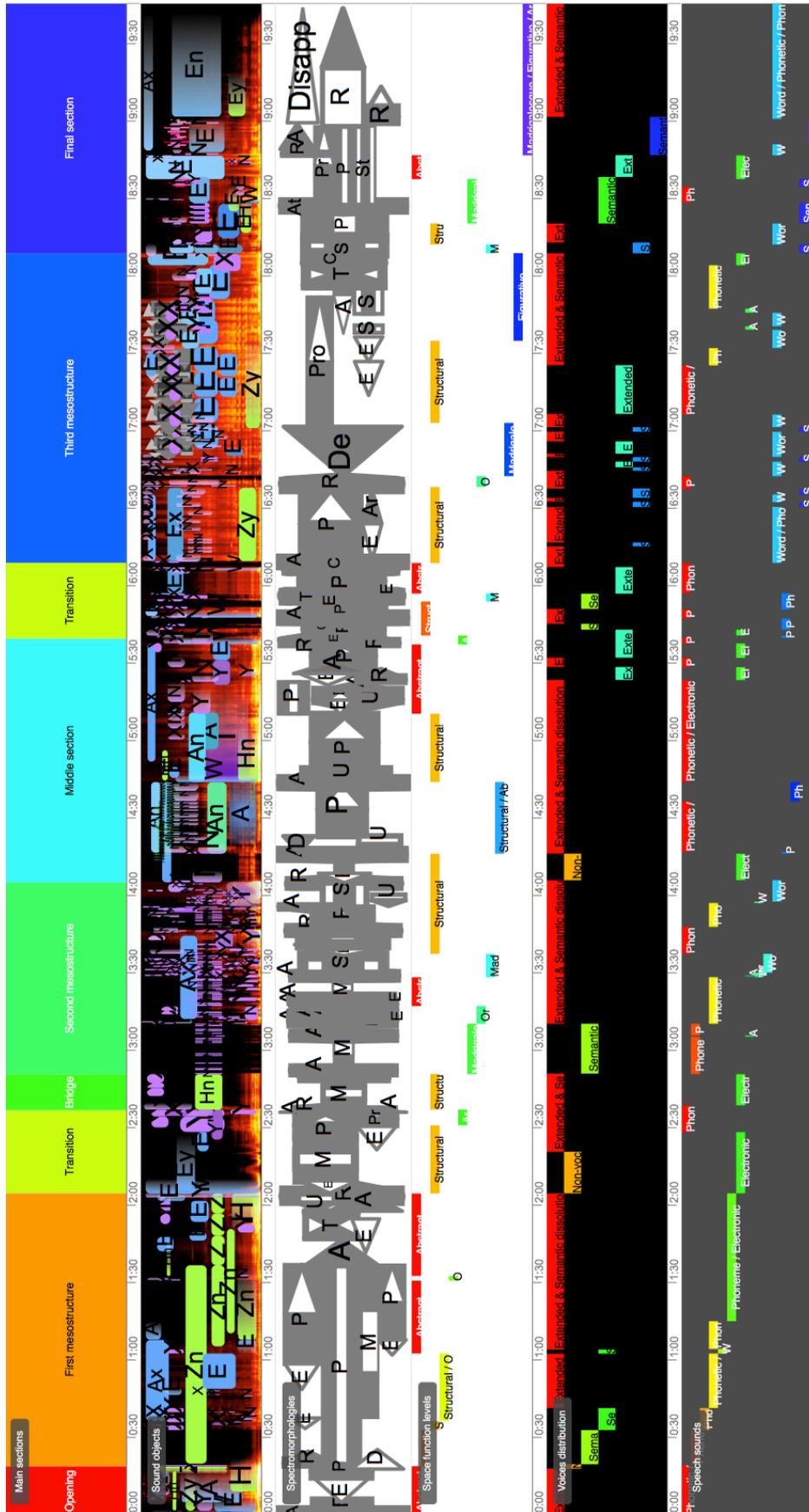


Figure 75: *La Luz* main sections and the five analyses

Chapter 4: *The Light*

4.1 *Poietic analysis*

This is the fourth section of the cycle and is based on English language materials. As all the cycle, it is inspired by the ideas of Vicente Huidobro. The Chilean poet wrote often in Spanish and French, sometimes first in one of those languages and then translating the poems to the other. In spite of that, and the fact he never wrote any significant work in English, this language was included for three reasons: firstly, to complete the idea of three voices proposed by the poet for his project *La lumière artificiale* and, in doing so, to give variety to the cycle; secondly, because it is the language of the artistic and academic environment where the cycle was composed; and thirdly, English is the language used by Huidobro to exemplify his understanding of translation as a procedure that does not alter *creationist* poetry and even is able to enrich it⁴⁶. In this sense, the particular features of this language were not addressed as in the previous French and Spanish sections. Instead of evidencing the specific sonorities of the language by means of cutting and pasting chunks of words and syllables, attention was given to very small units heavily processed with digital tools, highlighting different types of stretching. Despite this, the vocal performer delivered a large amount of *non-semantic phonetic* material that was ultimately used in both raw and processed states. This imprinted the specific *harmonic timbre* of the performer's voice on the piece, a colour and its nuances which are connected to the specificity of English language pronunciation. In this context, the relevance of language is given by the expectation of its appearance. Since the previous pieces have performed the mentioned movement between *semantic* and *non-semantic* poles, the presentation of a new work without it represents a change. This is at the same time a preparation for the following piece, which has, in fact, plenty of semantic elements. As shall be discussed in the final chapter, the substantial use of *semantic* content in English language was reserved for the final section of the cycle, the fifth piece.

In contrast to the previous pieces (*Overture*, *La Lumière* and *La Luz*), this work was planned in a more rational way, considering Huidobro's notion of *reason* and *imagination* as a compound for the creative process. Until this point, throughout the cycle, the balance between *imagination* and *reason* has been carried through an intuitive procedure during the compositional act; as well, it has been argued in the analysis conclusion section of the

⁴⁶ See Part 1: Octophonic cycle *La lumière artificielle* introductory text.

previous chapter, which is to say that in the previous work, *La Luz*, this equilibrium was 'pulled' towards *imagination*. This displacement is manifest through the diversity of all the structural elements in the piece. One of the main guiding ideas of *The Light* was therefore consider, and contrast, the nature of the previous piece; this helped to develop the compositional aims for this section of the cycle:

- To compose a piece that creates contrast with the previous three, particularly with regard to the immediately preceding *La Luz*.
- Regarding the previous guideline, to compose starting with a predetermined duration of exactly ten minutes. The compositional process is focused in structure, a procedure forced by the choice for such duration, without the possibility, for instance, of change the duration of sections and sounds in order to achieve a specific articulative function.
- To create a contemplative piece with pre-eminence of sustained materials and *macro-objects* conferring, in this way, a textural and atmospheric sense to the work.
- To avoid the inclusion of referential non-vocal sound materials and restricting the sound palette to *sound objects* derived exclusively from the voice of the English-speaking performer. Within these defined margins, the sound materials can cover a wide *spectromorphological* and *sound object* range. For the first-time listener, this is not relevant except if the eventual programme note evidences that the whole cycle includes English language; in that case, as has been stated in the main text above, considering the previous presence of French and Spanish languages, the absence of direct use of English in this section operates as a tensioning element to produce expectation. This expectation is fully satisfied with the final words in English at the end of the piece. At the same time, this is pause in preparation for the following work which presents a structure plenty of words and sentences in this language.
- To compose a clearer spatial separation between materials, when compared with the previous pieces. Those pieces address spatial composition in different ways presenting heterogeneity with great activity. They use space in a more intuitive way and at the same time with prominence of local functionality, namely as a way to articulate sections and, more importantly, as expressive tool for the composer.

Consequently, with attention to a more rational use of spatial composition, specifically, to give particular relevance and meaning to the creation of different layers.

- To compose a piece that prepares the way for the final piece in the cycle; the aims of the Finale, discussed in the following chapter, already include large number of voices and materials and the most substantial quantity of *semantic* content within the entire cycle.

4.2 *Neutral level analysis*

This piece has eight sections:

- | | |
|--------------------------------|-----------------------|
| 1. Opening section | (00:00:00 - 02:05:44) |
| 2. First <i>mesostructure</i> | (02:05:44 - 03:09:14) |
| 3. Transition | (03:09:14 - 03:57:38) |
| 4. Second <i>mesostructure</i> | (03:57:38 - 06:22:10) |
| 5. Second transition | (06:22:10 - 07:33:35) |
| 6. Third <i>mesostructure</i> | (07:33:35 - 08:52:03) |
| 7. Final section | (08:52:03 - 09:58:47) |
| 8. Closing | (09:58:47 - 10:00:00) |

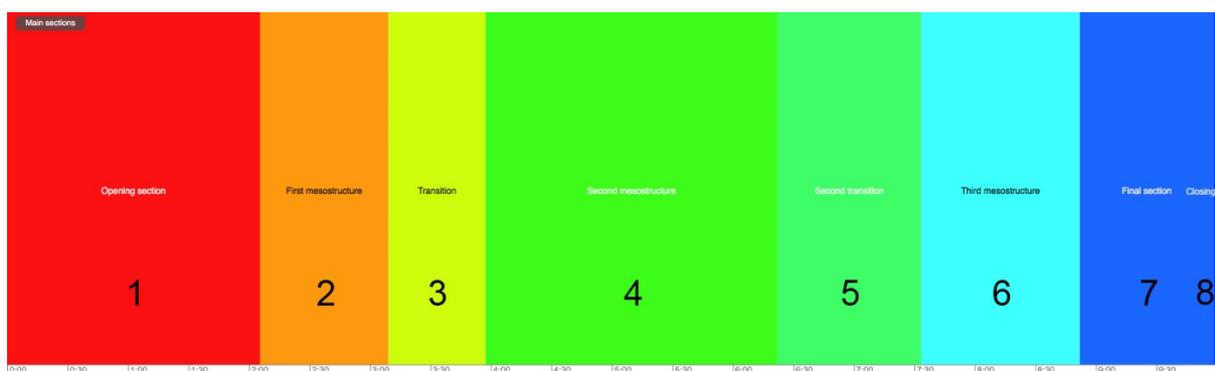


Figure 76: Main sections distribution of *The Light*

4.2.1 Distribution of *Sound objects* and *spectromorphological* structure

The piece opens with a gradual *emergence spectromorphology*; this structural function is formed by a *continuous variable mass* object (*Y*) and the progressive appearance of thick *macro-objects*, including a huge *weft general case* (*T*) on top of which other compound *wefts* (*Tn* and *Tx*), another *Y* and one elongated *Hn* define the first minute of the piece; at 00:11:10 and 00:11:80, *X* objects appear delicately, acting as soft accents within the dense weft growing; then, the *emergence* structural function turns into a *prolongation* at 00:32:83 and lasts until 01:40:59 when a *passage spectromorphological function* changes the tessitura of the *Hn* objects, conferring lower frequencies to this final moment of the opening section. As a connector between the *prolongation* and the *passage* functions, a *complex mass accumulation* (*Ax*) is unfolded with high pitch located in the spectrum. While this *Ax* object is acting, two *Y* objects, at 01:09:44 and 01:25:12 respectively, operate as figures over the background provided by the *wefts* and the *tonic homogeneous* objects (*Hn*); in similar way, a long *iteration* with *variable mass* (*Zy*) appears at 01:50:41. At the very end of the section, two *iterations*, one with *complex mass* in high pitches and one with *tonic mass* in lower pitches, appear at 02:03:87 and 02:04:47 respectively. After that, the opening is ended by means of an *attack spectromorphology* which overlaps with the first seconds of the next section. These elements, constituting the opening section, can be seen in Figure 77.

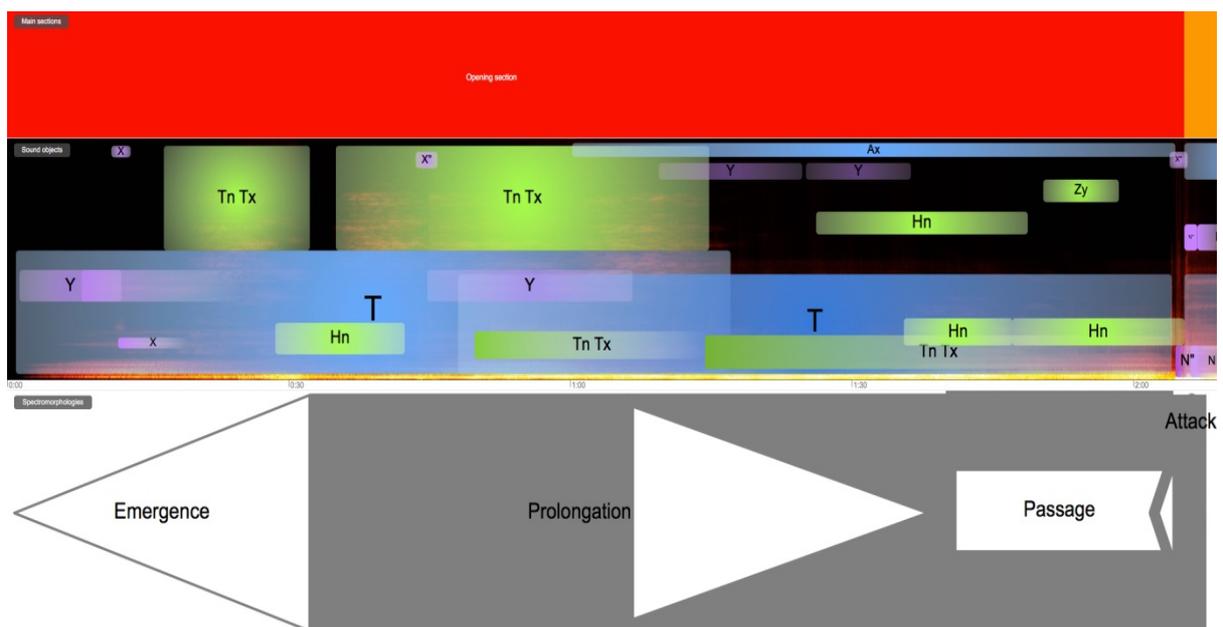


Figure 77: *Sound objects* and *spectromorphologies* for the opening section of *The Light*

The first *mesostructure* begins at 02:05:44 and deploys *balanced objects* (the endings of the *iterations* started in the ending of the previous part in addition to a new *tonic mass iteration* and two *continuous tonic mass* objects) which interact with a new thick *T* object and an *Ax* (marking the starting time of the section) and a *variable mass sample* (*Ey*) at 02:09:77. The segmentation, in terms of *sound objects*, between the opening and this first *mesostructure* is mainly given by a variation of *matter* and *sustainment*⁴⁷, highlighting the fluctuations of *mass* and change of *grain*. The last 25 seconds of the opening are characterised by a smooth texture provided by the low *weft*. In contrast, the starting of the first *mesostructure* presents, in general, a more marked *grain*. In fact, the general textural materiality provided by the large *T* object, the compound *weft* (*Tn Tx*) and the *Hn* object, are accentuated by two *macro-objects* in the form of long *iterations* with *complex mass* (*Zx*), one at 02:19:52 and the other after, at 02:35:61. This last *Zx* object starts in synchronisation with a new *tonic mass homogeneous* object (*Hn*), whose *harmonic timbre* is derived from a vocal sound and that is present not only several times in this piece, but in several moments of the complete cycle of five works. All this dense textural development is nuanced by the inclusion of different objects that are overlapped and juxtaposed in a constant progression. These movements are shown in Figure 78 through the different *spectromorphological functions* traced in the second half of the section. The final moments of this first *mesostructure* are signalled by the structural functions of *prolongation* and *passage*, leading to a *disappearance* at the beginning of the next part, the transition. Until here, the motion processes are characterised by *parabola*, *ascent* and *descent* and growth processes of *agglomeration*, *dilation* and *contraction*. The transition shows various *Hn* objects, a *tonic mass* predominance complemented by some *complex mass iterations* (*X''*) and two *complex mass macro-objects*, a *Hx* and *Ax* in high and low tessituras respectively. In the middle of this section, a gesture is presented through the connection of a *N* and the mentioned *Ax*, generating an idiosyncratic articulation. This articulation has an *attack* function which allows movement from the previous *passage spectromorphology* to a *transition* function, which in turn leads to a *disappearance* function that closes the transition section in the form of an *Ex* (*complex mass sample*) and a compound *weft* (*Tn Tx*). The transition finish and the next part starts through two

⁴⁷ These are Schaefferian concepts (Schaeffer 1966, pp. 389-597), corresponding to *matter* criteria of *mass* and the *sustainment* criteria of *grain*. For further details, see Appendix 1.

balanced objects, an X and an N". The sound object and spectromorphological structure distributions for the first mesostructure and the transition can be appreciated in Figure 78.

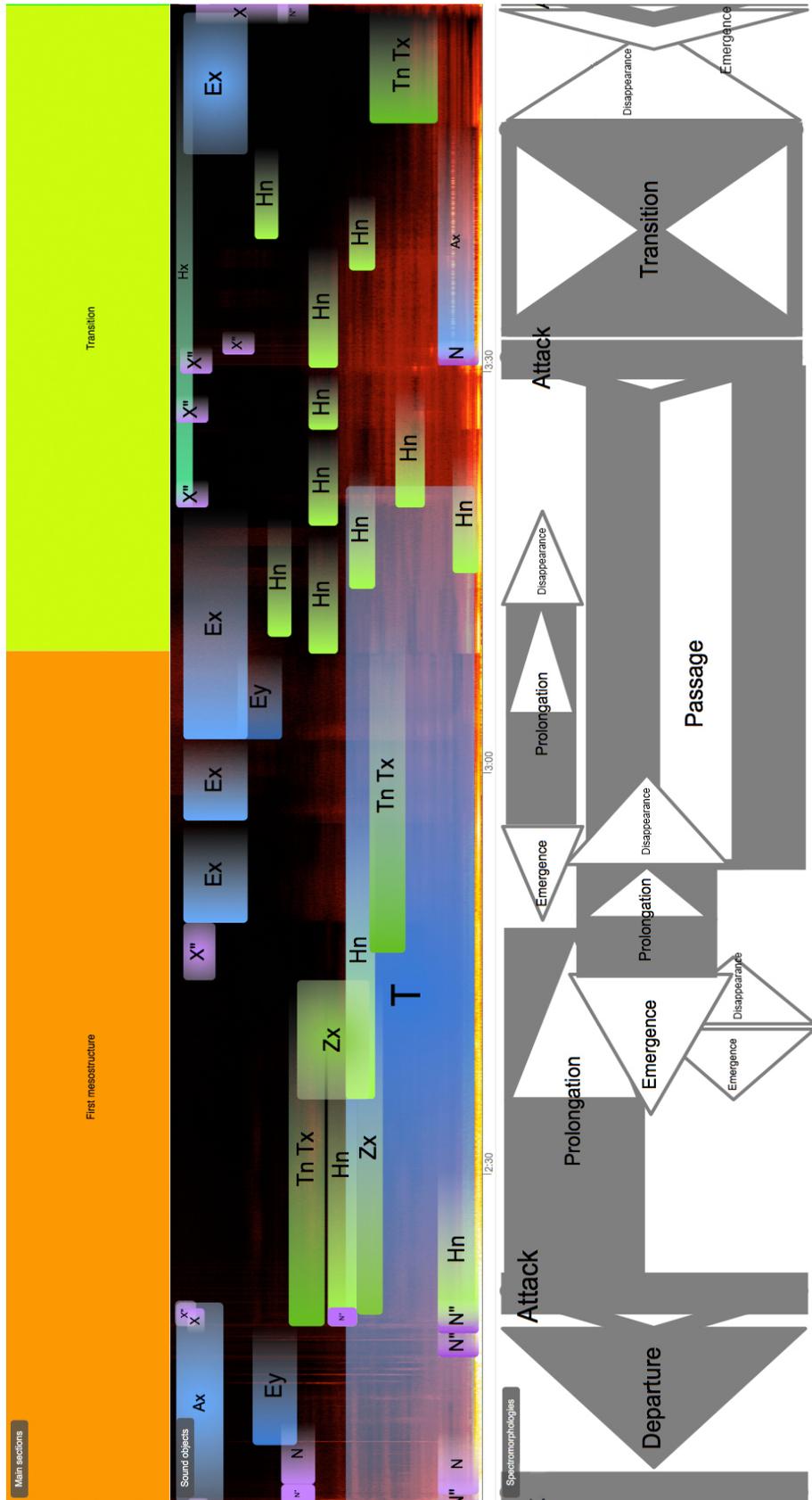


Figure 78: First mesostructure and transition sound objects and spectromorphologies for *The Light*

As it can be seen in the previous Figure 78, the *macro-objects* at the end of the transition are conducted by the mentioned *disappearance* function, that gives way to an *emergence*; this *emergence* prepares the *attack* function which begins the second *mesostructure*.

The final *balanced* objects in the transition join the first object in the second *mesostructure*, a *complex mass iteration* (X'') at 03:57:39. This union shapes an articulation that triggers a thick *weft* (general case, T) and a long *iteration* with *complex mass* (Zx). Consequently, the *attack* structural function triggers an *upbeat* function. This sense of dynamism is signalled by the rhythmic feature of the Zx object and the progression of these *sound objects* is driven by a *prolongation spectromorphological function*. Then, at 04:13:00, a new Zx object is placed by an *attack* function, after which the *prolongation* is reinstalled and complemented with a *transition* function. This *transition* is installed by a new *attack* function in the form of a new thick T object in synchrony with very high pitched Hx (*homogeneous complex mass*) and a compound *weft* ($Tn Tx$).

It is worth noting that, regarding their inner structure (*matter* and *sustainment*), the nature of these objects is dense; consequently, their boundaries are not easy to perceive. Thus, it is important to understand that the objects described are proposed according to the maximum *spectromorphological* and *sound object* segmentations perceived during the analysis; those segmentations were arrived at multichannel listening.

Following the analysis, on top of the *wefts* and the high Hx are distributed different *macro-objects* that give variety to the section: Hn , Hx and Zx , all of which operate through clear attacks and progressions that fade out gradually. These compositional devices confer a sense of continuity that turns the *prolongation* function into a *maintenance* one. The *transition* function gives way to a *passage* that combines with the already installed *maintenance* function. This *passage* is signalled by an X object, a clear vocal sound, presenting a new thick T object accompanied again with *macro-objects* in similar fashion to the previous *transition* function. In this case there are Zx objects, the rest of the long compound $Tn Tx$ object and a new one of the same type at 05:35:20. All these *maintenance* and *passage spectromorphologies* cadence at 05:56:98 through a combination of structural functions: a *resolution* of the previous materials and then *attack*, *upbeat*, *prolongation* and a *disappearance* that fades the aural content. These functions act as a result of their combination as well but, in this case, *sound objects: balanced objects* (X and

N) and *macro-objects* (*A*, *Zx* and *Ax*); create a sequence that lengthen and fades out the aural content delivered. These distributions can be seen in Figure 79.

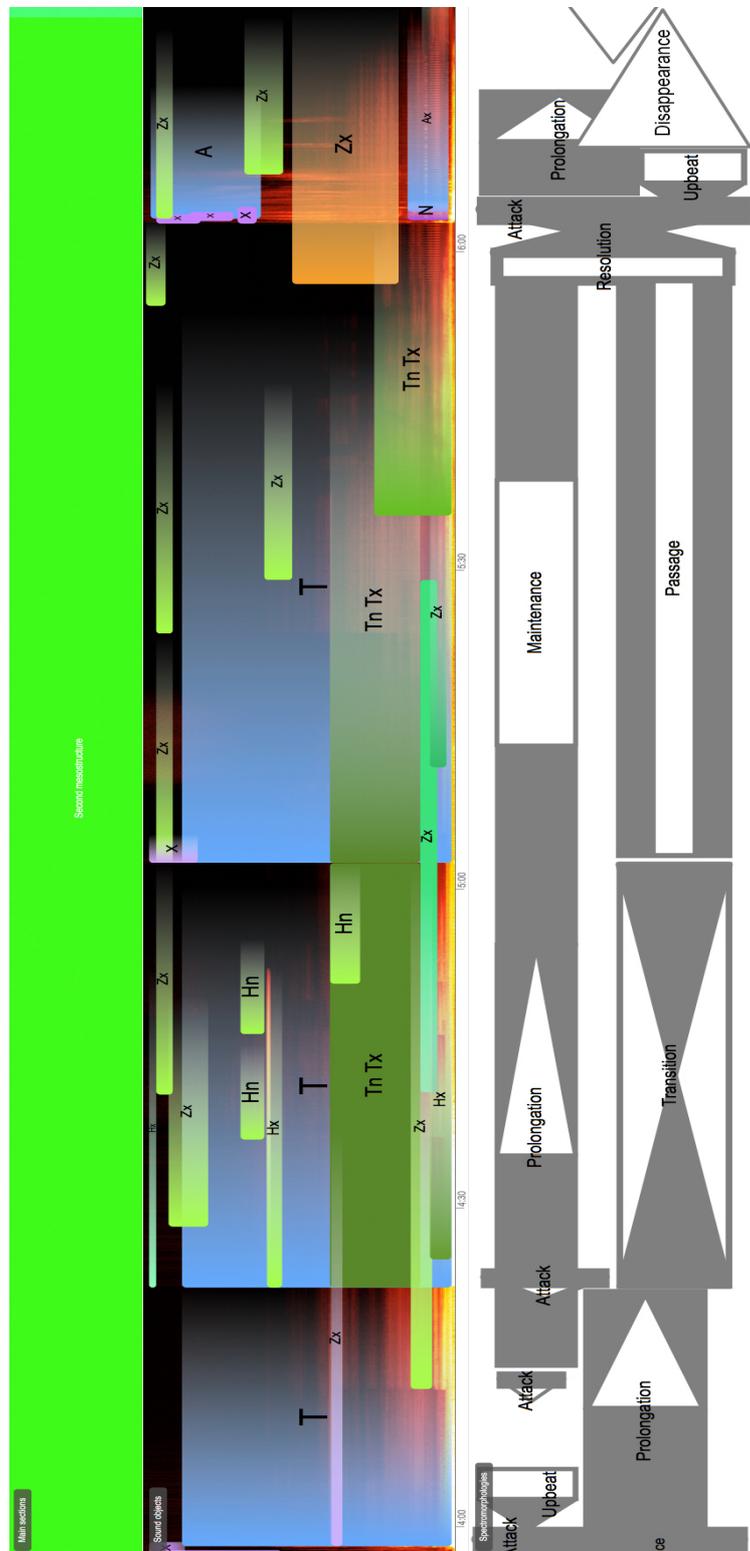


Figure 79: Sound objects and spectromorphologies for the second mesostructure of *The Light*

The preceding faded objects give way to the *emergence* formed by a *homogeneous tonic mass* object that fades in starting the second transition at 06:22:10. This transition is in the form of an increasing arc, a *parabolic* motion process that accumulates sounds, spectral content and articulations towards its centre, decreasing in density towards its ending. This progression is made up of *macro-objects* and signals its peak of activity through a combination of *balanced objects* on top of the former material (06:57:54 to 07:08:45). The *spectromorphologies* in this transition section are diverse (*emergences, prolongation, passages, arrival and disappearance*) and are clearly shown in Figure 80, along with the final one, a *departure* function that launches the third *mesostructure* by means of a *N''* (*tonic mass iteration*) at 07:29:73.

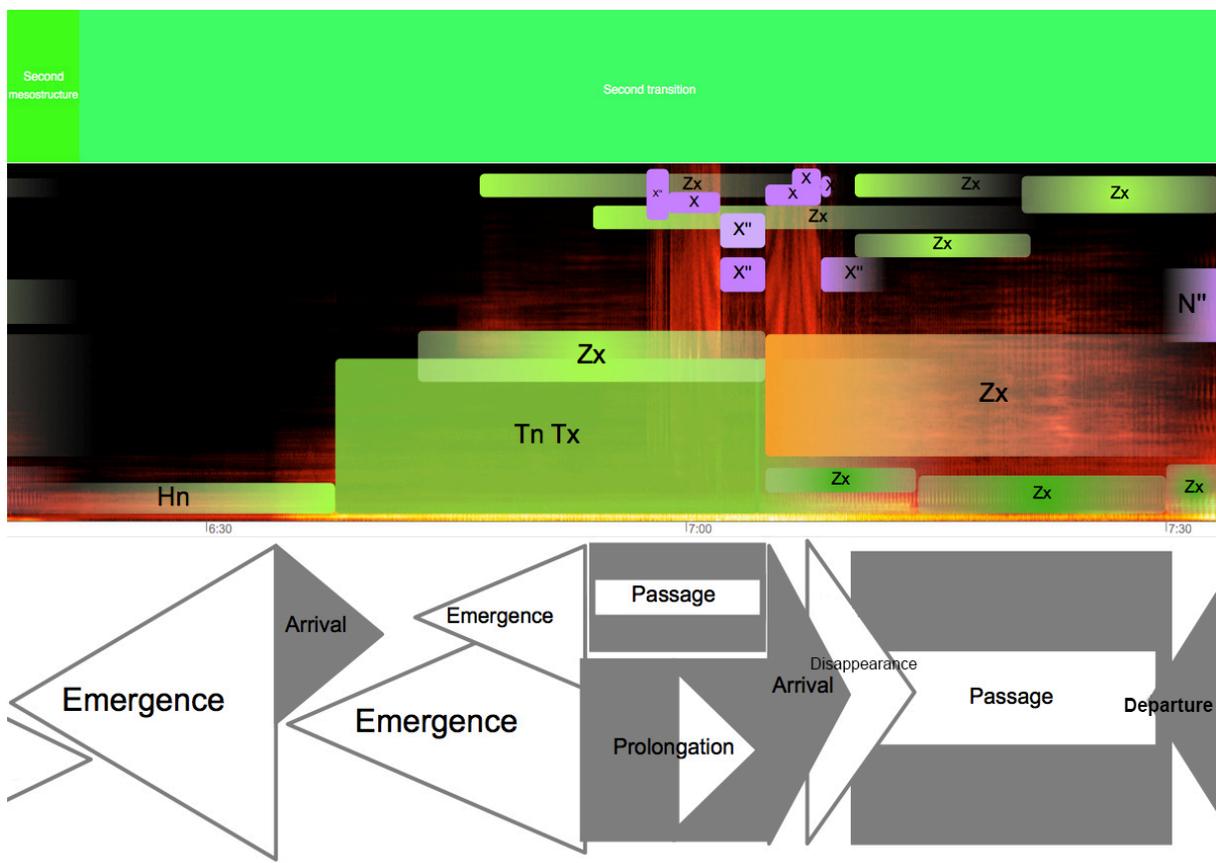


Figure 80: Sound objects and spectromorphologies for the second transition of *The Light*

The aural content of the previous *N''* is kept in the *Y* object which starts the third *mesostructure* at 07:33:35, since the last unit of the *tonic iteration* is stretched, producing a new object from the former. This *variable mass* object is, in turn, a brief articulation that prolongs the same *matter*, which is the performer's vocal *harmonic timbre*, creating a

continuum in the form of a long *Hn*; in this way the initial *departure* (overlapped with the previous transition section) is turned into a *statement* function that signals a compound of three objects (*N''*, *Y* and *Hn*), and afterwards into a *prolongation*. Similarly, a new compound with *Y''*, *X* and a *Hx* at 07:52:45, is a new gesture operating as a *statement* function that turns again into a *prolongation*, adding a high-pitched component of *complex mass* to the group of events. Then the different *sound objects* move to a *transition spectromorphology* at 08:08:98; shortly after, at 08:15:44, structural functions present a hybrid but coherent development of this continuity; a development that is presented through *passage*, *prolongation* and *maintenance spectromorphologies*, all acting at the same time. This sub-section of the *mesostructure* is constituted by a thick *T* object from 08:06:60, and this *weft* retains the spectral content of the previous *macro-objects*. Interleaved with it, three long iterations and one sample (two *Zn*, one *Zx* and one *Ex*) give variety to the progression. This development of continuous materials is interrupted by a noticeable *variable mass iteration* (*Y''*) at 08:44:75, which starts a *transition* function. This *spectromorphology* overlaps the ending of this *mesostructure* with the beginning of the following final section by means of a complex group of balanced objects (*Y*, *Y''*, *X*). This group is a compound gesture that launches the next elements which define the final section. The third *mesostructure* and its *sound objects* and *spectromorphological functions* can be seen in Figure 81.

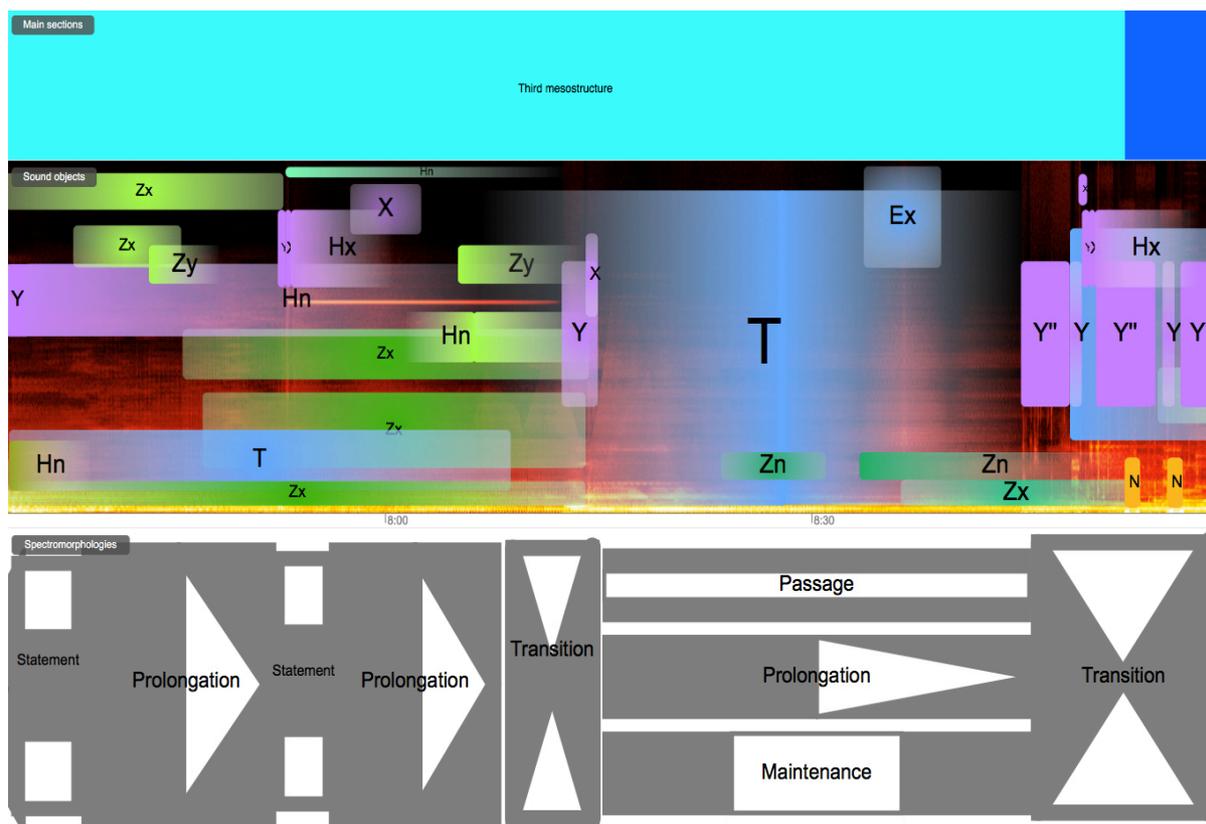


Figure 81: Third *mesostructure* of *The Light*; the image includes the beginning of the final section (blue rectangle on the first row)

The final section starts at 08:52:06; merged with the group of *balanced objects* mentioned above, a new *T* object is placed and in the very beginning of the section a sequence of low pitch *N* objects, starting an irregular pattern until the end of the piece. The rest of the section is formed by *macro-objects* similar to the already presented in addition to several *balanced objects*. All these sounds create a dynamic development which maintains the spectral content found in previous parts of the piece but add a pronounced sense of change. The pattern formed by the low pitch *N* objects, has an equivalent in a slightly high position starting at 09:24:25 and acting in response to the lower one is constituted by only seven repetitions. *Balanced objects*, and some parts of the *macro-objects*, evidence the human voice source, although most of the piece tends to non-connotative sounds.

In regard to the *spectromorphological functions*, after the *transition* connecting the previous section with this one, a *prolongation* is delivered at 08:59:14. The *continuant* characteristic of this function is retained and only varied through the appearance of other functions that operate as milestones or composite groups. This is clear in the middle of this section, just after the first *prolongation*, where is possible to see a compound of

attack, statement, prolongation, maintenance and passage. After them, a clear *departure* function moves the sounds to a final progression: a *statement*, a *prolongation* and an *arrival* that not only fades the general loudness but narrows the spectral thickness; this *arrival* leads to a group of synchronised *balanced objects* that ends the piece by means of a *closure* function defined by the detention of the predominant *macro-objects* through the *balanced objects* overlapped at the very end. These distributions can be appreciated in Figure 82.

4.2.2 Spatial distribution and structure

The *levels of spatial function* in this piece can be seen in Figure 83.

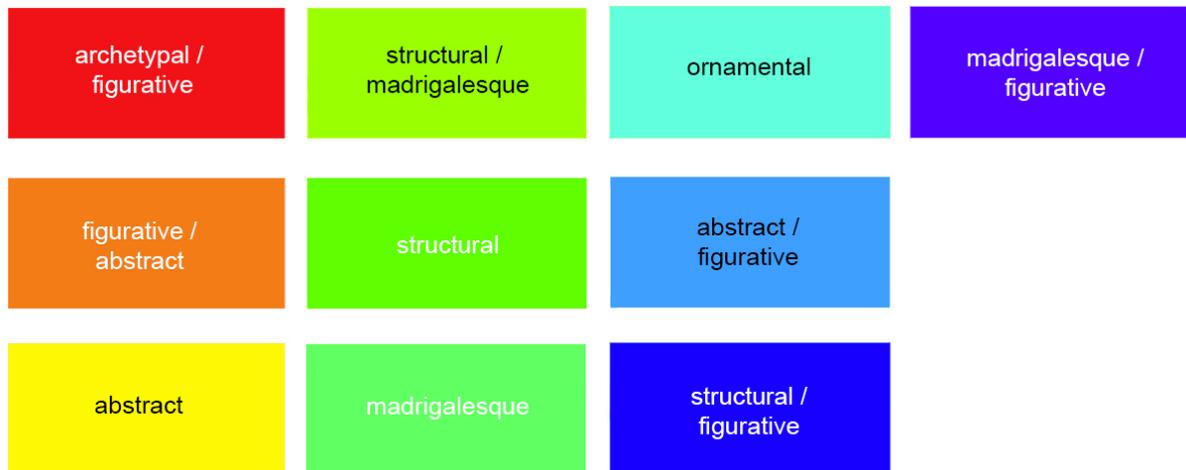


Figure 83: *Levels of spatial function for The Light*

The previous three pieces of the cycle, *Overture*, *La Lumière* and *La Luz*, have four, six and nine compound *levels of spatial function*; in comparison, *The Light* has ten with a prevalence of simple *spatial functions* (Annette Vande Gorne 2010). As can be seen throughout this analysis, within these levels there is a clear prevalence of the *abstract* level across the piece; this is because the composition is based on *sound object* and *spectromorphological* principles and not in connotative or referential sounds. This leads to a decrease in the possible presence of the *madrigalesque* function, that is to say a function caused by texts and connotations derived from them as they act in space. This condition is disrupted in last part of the final section by means of objects evidencing human voice source, provoking the appearance of two special cases: *structural/figurative* and *madrigalesque/figurative* spatial functions. In this sense, the *acousmatic-creationist* guideline of creating unexpected relationships is achieved in this piece by abstraction as main principle, both in terms of sound materials and of spatial behaviours. In fact, the piece presents only four simple *madrigalesque* functions, all of them very brief within the ten minutes of the piece (two of a second in duration and two of four seconds in duration approximately). It is worth remembering here that any category, simple or compound, within any of the analyses, operates based on the principle of preponderance of certain features above others.

The piece starts through an *archetypal/figurative* compound function, which begins to unfold the *emergence spectromorphology* from the frontal loudspeakers pair (1-2) and gradually expanding towards the sound field. At the same time, *sound objects* are exclusively delivered in specific loudspeakers pairs, for instance the *macro-objects* that appear in loudspeakers 3-4 in this initial function. The nature of this spatial level is given by the combination of an *archetypal* feature, the emergence and approaching from a distant location, and the *figurative* aspect, given by the organic growth in the number of sound materials linkable to human voice timbre in an immersive and wide space. This space function changes into a *figurative/abstract* at 00:43:73, when the *archetypal* aspect has already been established and the attention is kept in the *figurative* feature and driven to the *abstract* by means of traces and by the spatial weight moved within the eight-channel circle. At 01:05:81, the function becomes *abstract*, that is to say the space is composed through movements, traces and volumes generating a progression in the spatial composition of this section in terms of planes and spatial zones. As can be seen in Figure 84, these are the three *levels of spatial function* that form the opening section.

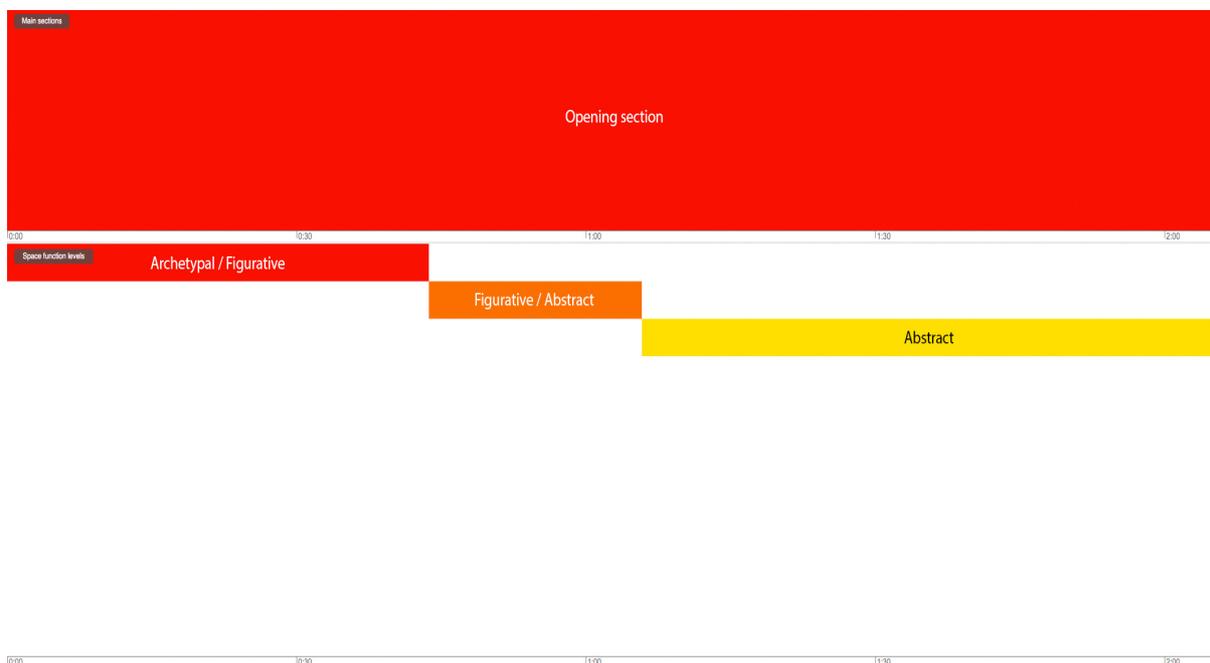


Figure 84: *Levels of spatial function* for opening section of *The Light*

The first *mesostructure* shows two functions, *structural/madrigalesque* and *structural*. The first compound level merges two features: first, marking the *structural* segmentation of the piece (*structural*, precisely starting a new section) and second, the *madrigalesque*

aspect, which accentuates the expressiveness of the vocal utterances that seem to present real speech in an unknown language. This is reduced in emphasis as the spatial composition becomes more *structurally* focused, signalling a subsection at 02:18:44 by means of *macro-objects* distributed in different planes, as can be seen in Figure 85.

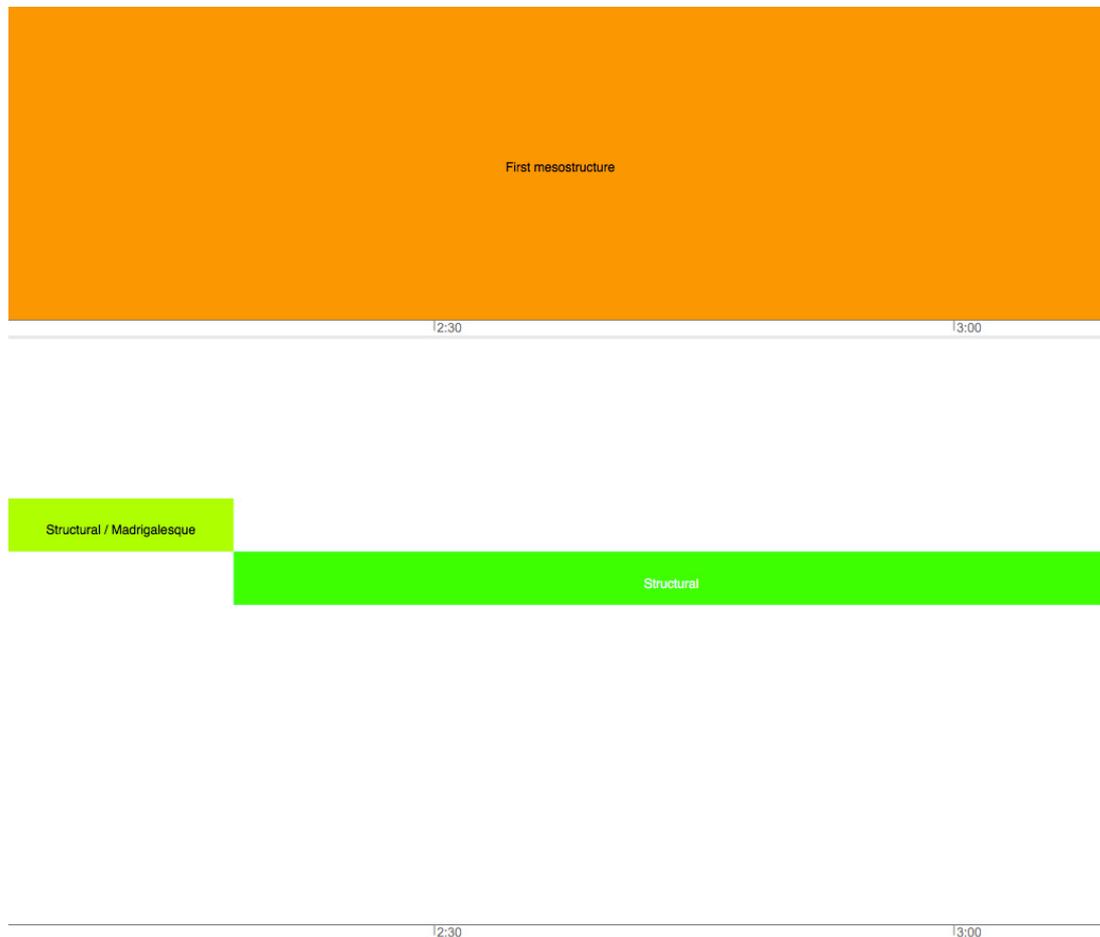


Figure 85: Levels of spatial function in the first mesostructure of *The Light*

Between 03:09:15 and 03:57:38, the first transition presents only one level which is *abstract*. In this section, traces and especially focal points prevail; these are marked through the launch of *sound objects* in different loudspeakers. The second *mesostructure* begins with a *structural* function at 03:57:32; this function is constituted by a dynamic gesture, changing the spatial design with its fast traces over the frontal loudspeakers. This gesture was triggered by the fade-in of textural sounds started briefly before at the end of the transition. Once this *structural* spatial level has accomplished its function to mark the section, the spatial composition is driven to an *abstract* level again. From this point on, starting at 04:22:54, the predominant *level of spatial function* is *abstract*,

maintained for the rest of this section, the second transition and the beginning of the third *mesostructure*. Although the graphics provided by the EAnalysis software show *abstract* level rectangles segmented by other small units, this is just a representational display. In fact, what really happens is the significant appearance of other spatial functions on top of the abstract level continuum rather than interrupting it. These appearances are described in the following paragraphs as they are presented within the piece.

The *abstract* level started at 04:22:54 is constituted by a dense weft of planes and different layers, including a very high object that is difficult to localise, accentuating the immersive nature of the sub-section. This spatial design continues adding variation by means of sounds emerging in specific points and presents a brief *madrigalesque* function at 05:02:55: a realistic sigh that stands out among the dense processed sound textures surrounding the space. This sigh, a *X sound object*, triggers a *weft (T)* and a high pitched *Zx*, all of which maintain the *abstract* function. The next salient element on top of the *abstract* function is an *ornamental* function at 06:02:72: a group of *balanced sound objects* acting as a gesture, an articulation in a *spectromorphological* perspective, but operating as a decorative element to call attention (Vande Gorne 2010, p. 165). This gives variety after a period of homogeneity in the progression of *sound objects*. Then the *abstract* function continues without interruption before entering the following section, the second transition. It is worth explaining here that the segmentation between the second *mesostructure* and the second transition is not given by the spatial composition, but by the *sound objects* presented and the *spectromorphologies* unfolding in this part⁴⁸. The *levels of spatial function* distribution for the first transition and the second *mesostructure* can be seen Figure 86.

⁴⁸ See previous analysis section: 4.2.1 *Sound objects* distribution and *spectromorphologies* structure.

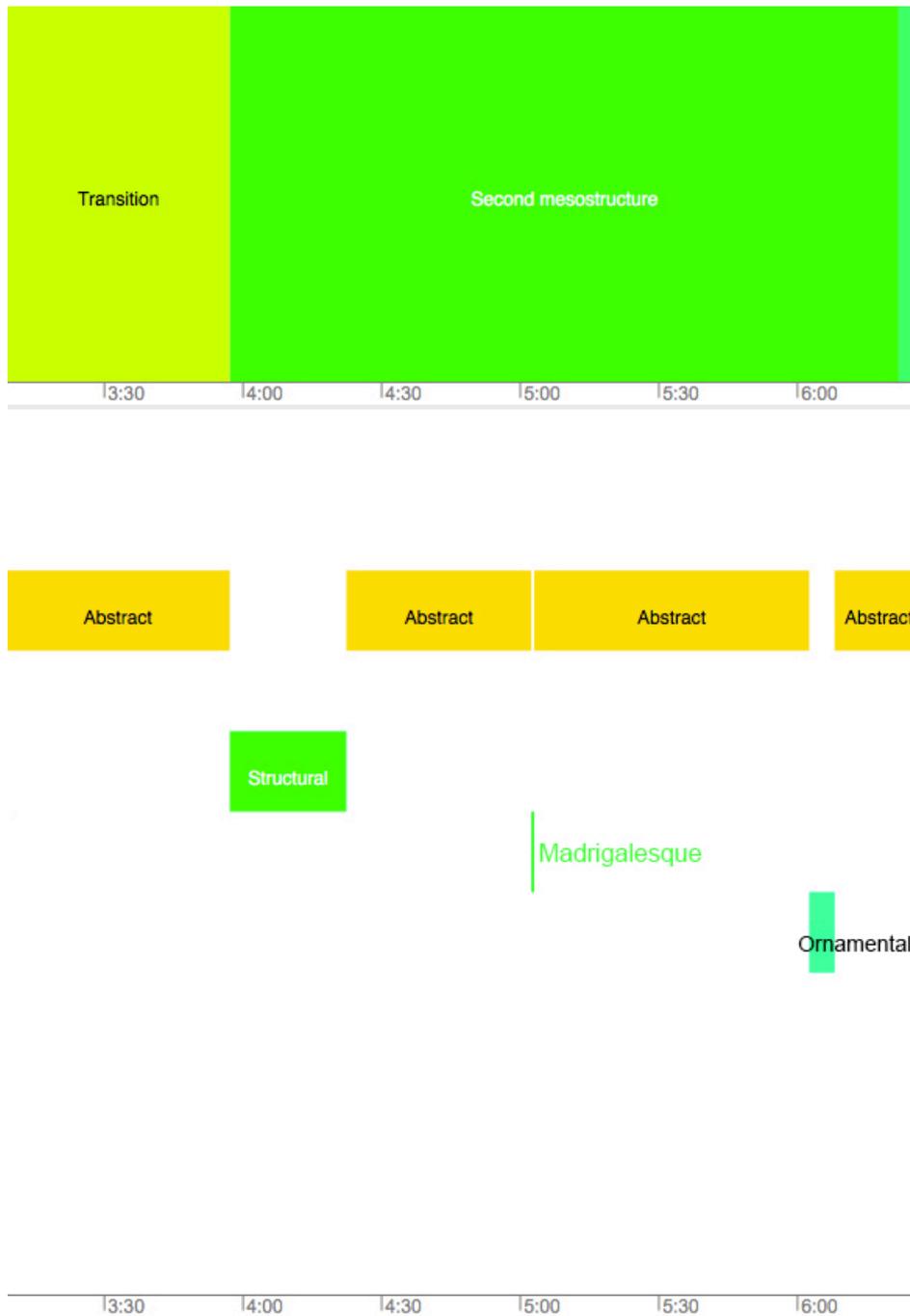


Figure 86: *Levels of spatial function* for the first transition and the second *mesostructure* of *The Light*

In this way, the second transition maintains the *abstract* function by means of spatial volumes, calm movements and planes. An accent is provided by a new salient event overlapping with the *abstract* level. In this case, another *ornamental* function at 06:57:67, a gesture that gives variety and triggers an intensification of textures, highlights the starting of a *Zx* object that heralds the ending of the section. Just before the ending of this section, at 07:29:85, a *madrigalesque* function stands out over the *abstract* spatial

discourse. This function, a vocal sound repeated, constitutes a relevant articulation between sections since, in fact, is a clear inflection in all the analytical distributions, operating as a variation or deviation (*spatial functions, voice and speech sound distributions*), as an accent (*sound object distribution*) developed into a new sound in the next section and as a departure (*spectromorphological function*) that closes the transition and launches the next part. The *levels of spatial function* in this second transition can be seen in Figure 87.



Figure 87: Second transition of *The Light*: levels of spatial function

The third *mesostructure* begins at 07:33:35 with the continuation of the *abstract* function that intensifies volumes, planes, traces, and focal points; at 07:52:45, a *madrigalesque* function (a composite realistic vocal object) changes the function into an *abstract/figurative* that starts at 07:53:34. The *abstract* features are retained and a *figurative* aspect is added, thus different spaces appear to overlap in their inherent natures of closeness, depth and reverberation. This compound spatial level covers the rest of the section until 08:44:79, when a new *madrigalesque* function appears in the form

of a new vocal gesture, highlighting a sense of a human character in an *utterance space* (Smalley 2007). This function acts as an articulation that leads to the deployment of different spatial elements through a *structural/figurative* function at 08:48:22. The *structural* aspect is clear since the space produces the segmentation connecting the third *mesostructure* and the final section (in fact it overlaps both sections). The *figurative* character operates in a similar way to the previous *abstract/figurative* function, namely by means of different elements that suggest imaginary spaces (Vande Gorne 2010, p. 165). The spatial distributions for this section can be seen in Figure 88.

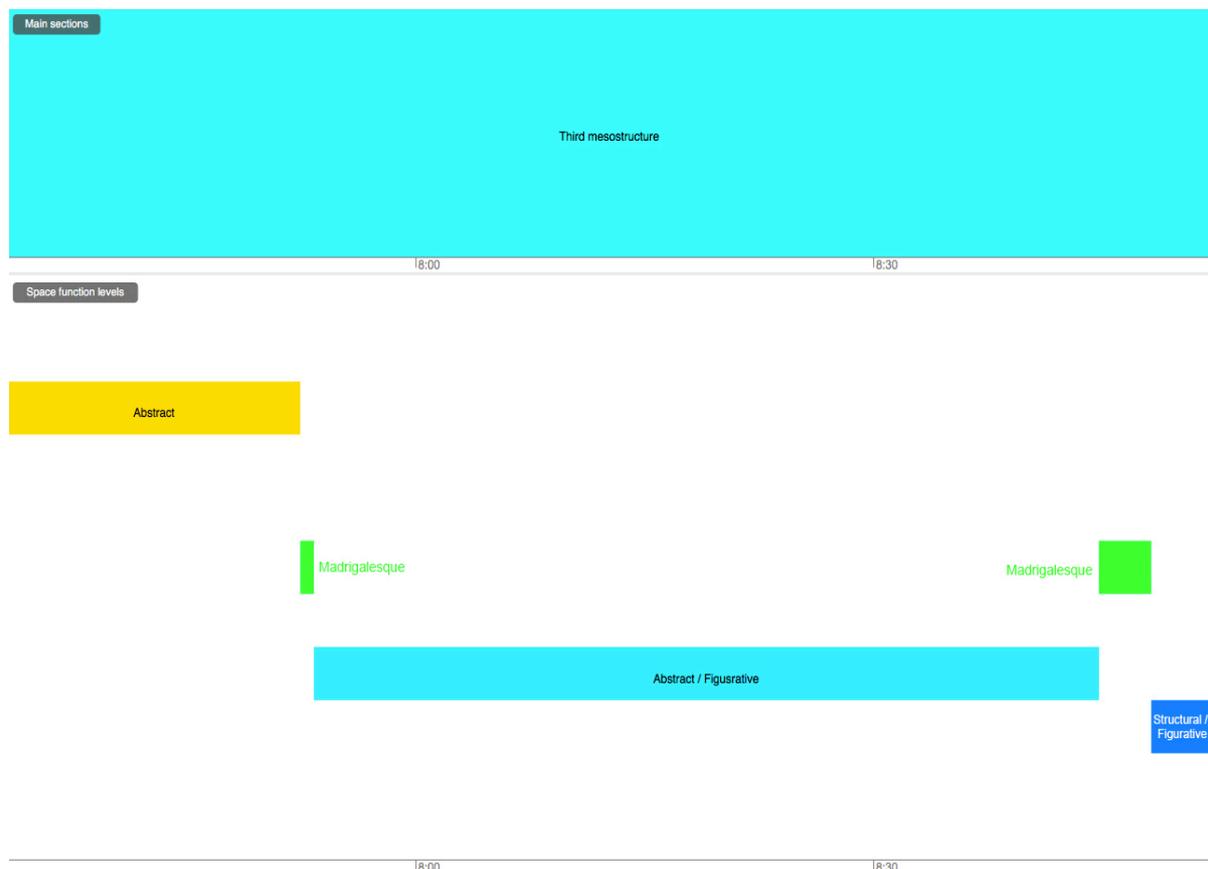


Figure 88: Third *mesostructure* of *The Light*: levels of spatial function

The final section starts at 08:52:05 and the segmentation is given by a prominent low pitch *sound object*, since the *level of spatial function* is maintained from the previous section, namely *structural/figurative*. Once the corresponding features are established, the spatial composition is focused again by way of an *abstract* function at 08:57:20. The design of spatial layers and traces is kept, although the presentation of vocal materials directs attention to the action of a human character acting in *utterance* and *behavioural*

spaces (Smalley 2010). This change presents the last *level of spatial function*, *madrigalesque/figurative* at 09:10:28 which is the only one with this feature in addition to the four brief and simple *madrigalesque* functions of the piece. This compound spatial function lasts until the end with the exception of an *abstract* accent between 09:27:20 and 09:35:36. These functions for the final section can be seen in Figure 89.

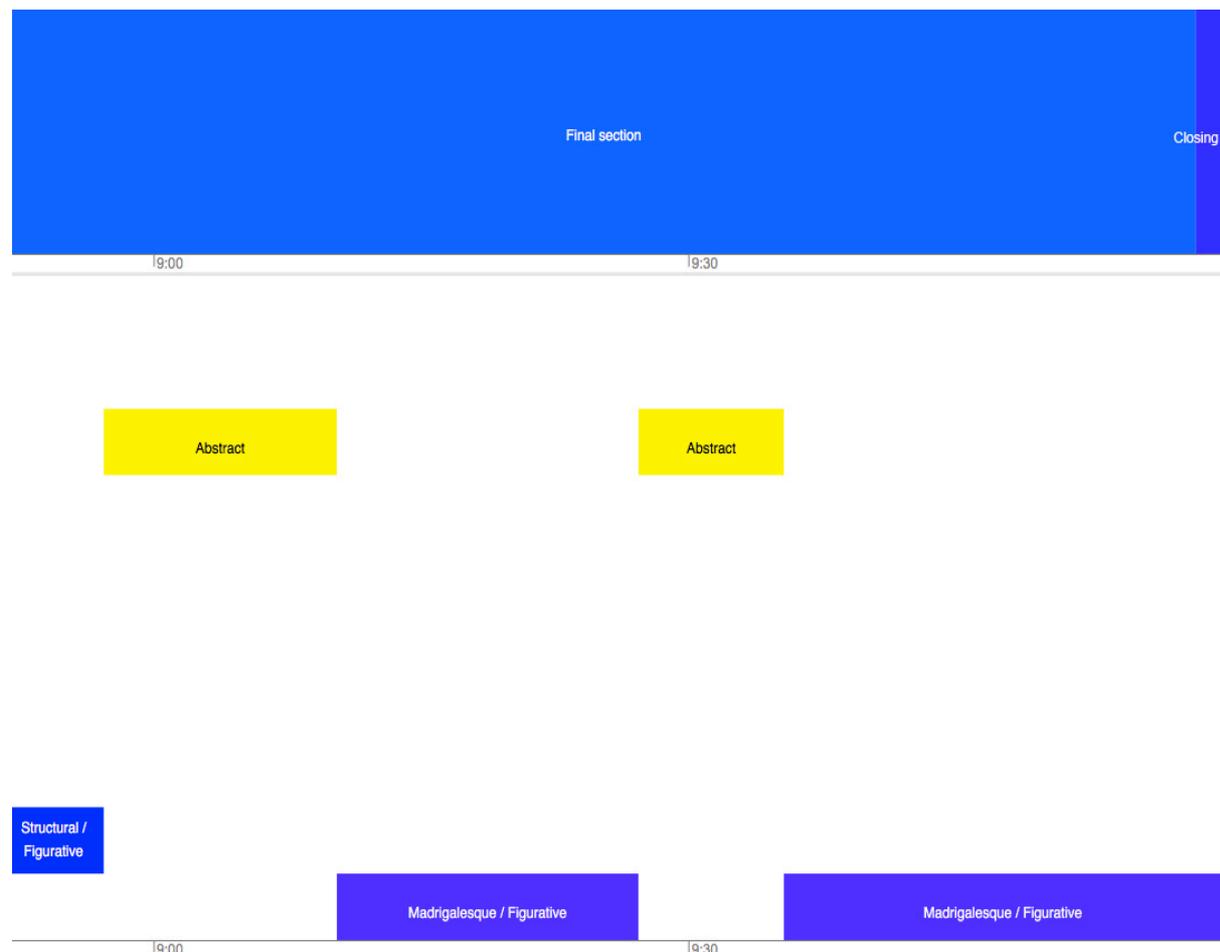


Figure 89: *Levels of spatial function* for final section of *The Light*

4.2.3 *Voice type and speech-sound type distributions*

For this piece, the fourth section of the octophonic cycle, the *voice type* and *speech-sound type* distribution categories are shown in Figure 90.

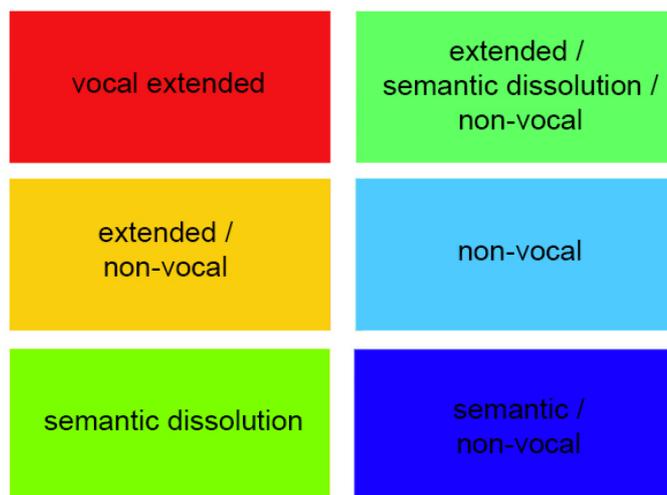


Figure 90: Voice categories for *The Light*

And the speech sound distribution categories can be seen in Figure 91.

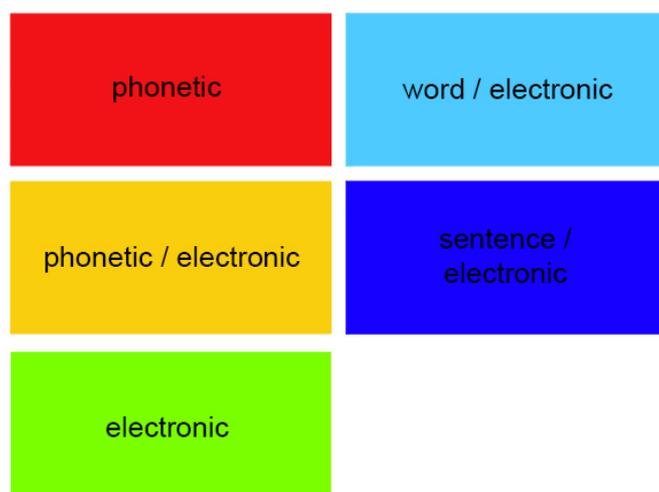


Figure 91: Speech sound categories for *The Light*

Figures 90 and 91 show that this piece has few categories in both cases: six for *voice type* distribution, just two more than the *Overture* and one less than the *La Lumière* and *La Luz*; for *speech-sound type* distribution, the piece has just five categories, few in comparison with *Overture*, *La Lumière* and *La Luz* that have twelve, eleven and fifteen respectively. The reason for this is the dense spectral layers deployed in this piece which blur the separation between *sound objects* in general and *voice types* and *speech-sound types* in particular. In this sense, these distributions are coherent with the aims defined for this piece. Also, the categories are not only few, but are compound types in most cases.

The piece starts with *vocal extended* material in the *voice type* distribution. This corresponds to a *phonetic* category in the speech sound distribution. In its short duration

of just eleven seconds it has a naturalistic quality, as somebody singing or vocalising, but ultimately, its homogeneous *matter, sustainment* and persistent *harmonic timbre* confirm its electroacoustic nature. Because of this, the *vocal extended* category is applied, which changes to *extended/non-vocal* at 00:11:10 since other sounds without a clear origin (dense textural *wefts*: *T*, *Tn* and *Tx*) are added to the initial one. Consequently, the category in the *speech sound distribution* changes to *phonetic/electronic*. Significantly, this *phonetic/electronic* category covers all the rest of the opening section until its end at 02:05:44. However, at 00:43:42 a clear and brief vocal element appears as *semantic dissolution* category. In the *speech sound distribution*, the category is constantly *phonetic/electronic* which continues throughout the opening section, the complete first *mesostructure* and most of the first transition. This homogeneity confers stability to the first third of the piece and it is supported by a few changes in the *voice type* distribution. After the mentioned short *semantic dissolution*, the *extended/non-vocal* distribution continues. The first *mesostructure*, started at 02:05:44, shows an *extended/semantic dissolution/non-vocal*. This compound category has already appeared shortly before at 02:03:91 in the final seconds of the opening section. The *extended/non-vocal* distribution returns at 02:20:47 and lasts for the rest of the first *mesostructure* and the first transition. Below, in the *speech sound distribution*, is possible to see a *phonetic/electronic* distribution throughout the first *mesostructure* and the transition until 03:46:18 when the category is replaced by *electronic*, which covers the rest of this first transition. These distributions are shown in Figure 92.

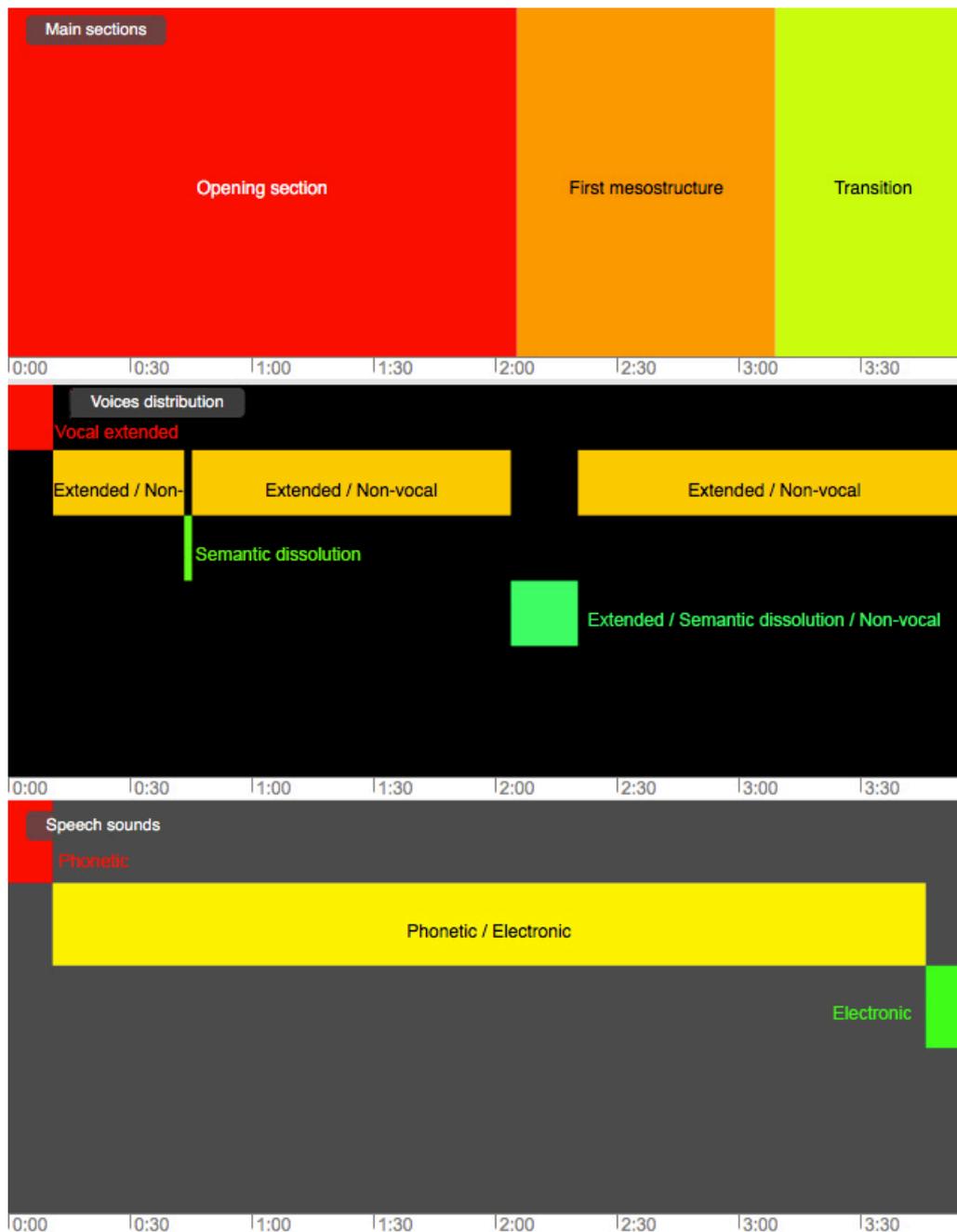


Figure 92: *Voice type* and *speech-sound type* distributions for *The Light*, opening section, first *mesostructure* and first transition

The second *mesostructure* starts at 03:57:38 with a short passage of *semantic dissolution* in the voice distribution and a corresponding *phonetic* one in the speech sound distribution. After this, the *extended/non-vocal* distribution returns, and is maintained throughout this section. This second transition has categories of short duration in both distributions. As it has been said, this may appear as an interruption to the continuity of the musical flow represented by larger coloured rectangles but are in fact accents or added features. For instance, at 05:02:49 a *semantic dissolution* element appears as an

articulation to add more layers of texture; then, almost at the end of the second *mesostructure*, at 06:02:68, an *extended/semantic dissolution/non-vocal* distribution, being a variation that enriches the compositional progression. At 06:12:67, the *extended/non-vocal* category appears once more, overlapping the end of the *mesostructure* with the following second transition and lasts until 06:57:59, when a new *extended/semantic dissolution/non-vocal* distribution acts in a similar way to the previous one. At 07:12:16 there is a brief return to *extended/non-vocal*. Shortly after, the musical flux turns into a *non-vocal* category (sounds completely unrecognisable as voices). This *non-vocal* element lasts until 07:29:87 when a new brief *extended/semantic dissolution/non-vocal* category ends the second transition, as is shown in Figure 93.

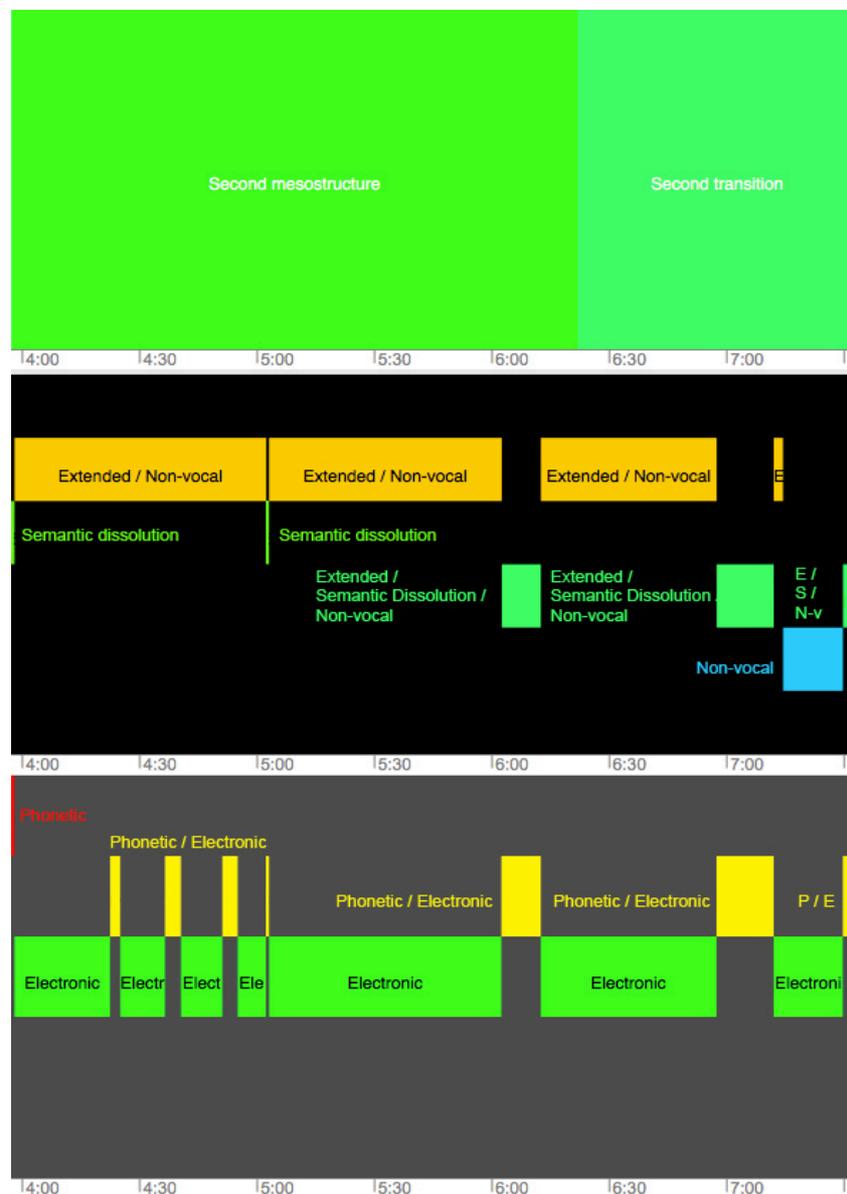


Figure 93: *The Light*, voice and speech sound distributions for second *mesostructure* and second transition

The third *mesostructure* is deployed between 07:33:35 and 08:52:04. Its development is constituted mostly by an *extended/non-vocal* distribution with three short changes: *extended/semantic*, *dissolution/non-vocal* (07:52:48 to 07:53:71), *semantic/non-vocal* (08:12:36 to 08:15:03) and a longer *extended/semantic dissolution/non-vocal* starting at 08:44:76 covering the rest of the section and the extent of the next. This predominant, by *extended/non-vocal* in the *voice type* distribution, corresponds to an *electronic* category in the *speech-sound type* distribution, denoting in this way the pre-eminence of a textural and non-realistic quality in the sounds. The three short changes regarding the *extended/non-vocal* category correspond to the *speech-sound type* distributions of *phonetic/electronic*, *word/electronic* and *phonetic/electronic* respectively. Figure 94 shows these distributions.

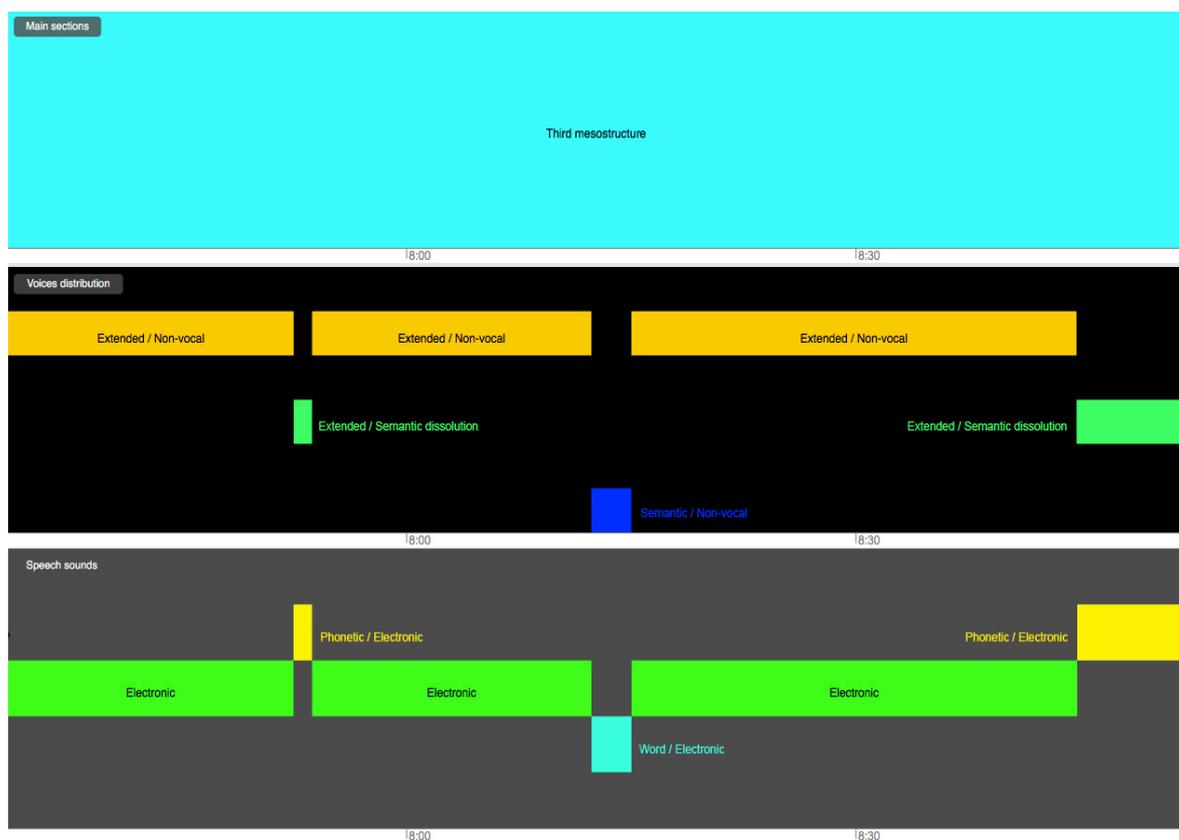


Figure 94: *Voice type* and *speech-sound type* distributions for the third *mesostructure* of *The Light*

The textural character is retained in the final section; starting at 08:52:03 with the continuation of the *extended/semantic dissolution/non-vocal* distribution that was initiated in the previous section. The piece then returns to the *extended/non-vocal*

category at 08:58:97 and nuances the progression with it; the *extended/semantic dissolution/non-vocal* distribution is placed again at 09:10:25 and lasts almost until the end of the piece. In fact, a short new category appears at 09:58:45, *semantic/non-vocal*, ending in this way the piece with its own title uttered by the performer's voice electronically processed. In the *speech-sound type* distribution row, the *extended/semantic dissolution/non-vocal* corresponds to a *phonetic/electronic* category, the *extended/non-vocal* to an *electronic* one and the final *semantic/non-vocal* to a *sentence/electronic* type.

Figure 95 shows these categories and the clear segmentation prompted by the *sentence*, which shapes the last small section, the closing.

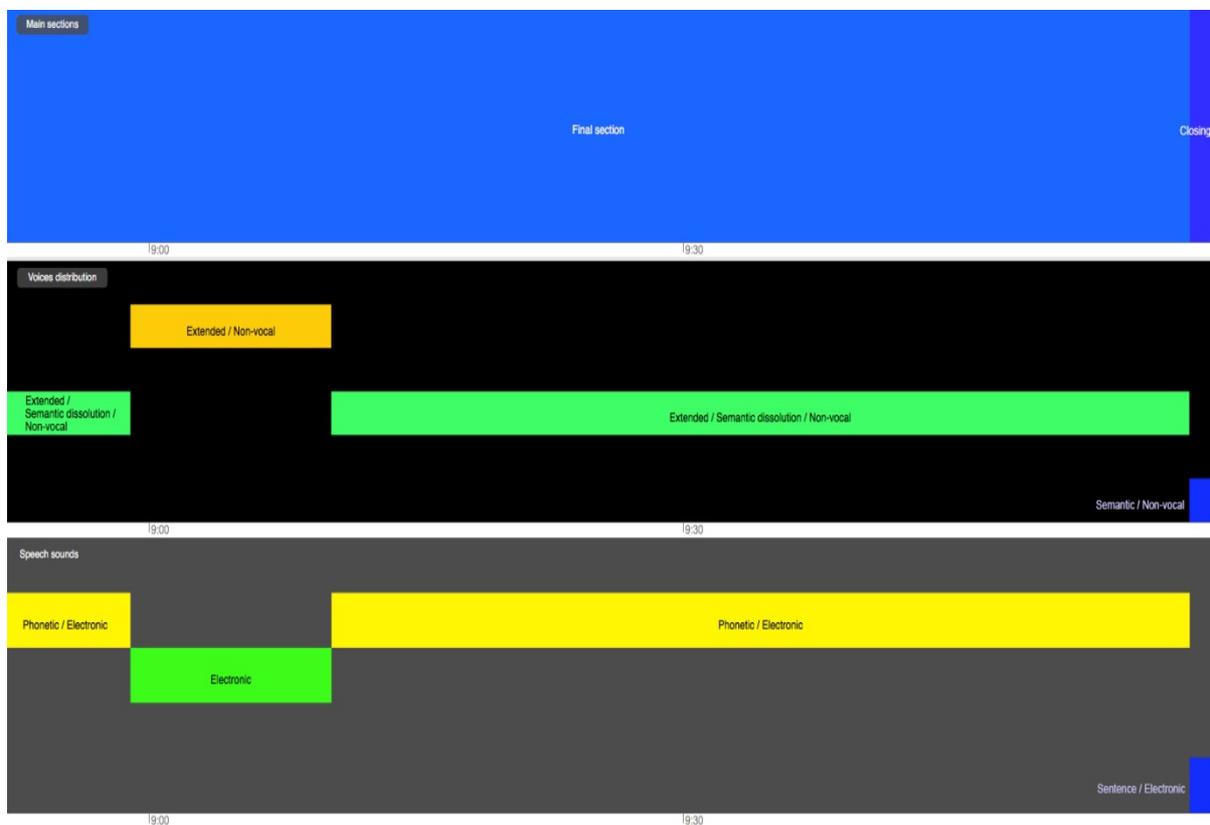


Figure 95: Voices and speech sounds in the final section and closing of *The Light*

4.3 Analysis conclusion

This piece performs a crucial role within the whole structure of the cycle; it works as a development of specific ideas proposed in the previous pieces, such as the extensive use of texture as important value, *macro-objects* as the main type of *sound objects* and great

use of *continuant spectromorphologies*. Also, one of the most relevant aspects is the use of large number of *non-vocal* and *non-semantic* materials. Although the piece corresponds to the *English section*, in fact the language in itself appears scarcely. Furthermore, its particular features are not exposed in a clear way; in contrast, the sonority of this language is extended through electroacoustic procedures, achieving the mentioned emphasis on textural states and its detachment from the source. Nevertheless, the *harmonic timbres* present in the piece are closely aligned to the small number of recognisable vocal elements deployed. The piece presents a few clear vocal sounds that are *non-semantic* materials, whose performative nature confers a link with the *sound poetry* aesthetics as is the case of most of the cycle.

In regard to the cycle as a whole, another important element is present in this piece: its form is characterised by its relatively homogeneous structural developments in despite the colour and shape progressions presented. The graphical representation shows clearly specific categories that are often repeated in the *levels of spatial function*, *voice type* and *speech-sound type* distributions. The most common categories for each of them are *abstract*, *extended/non-vocal* and *phonetic/electronic* and *electronic* respectively. It is easy to see in Figure 96 that this homogeneity is balanced by a greater diversity in the *sound object* distribution and the *spectromorphological* structure. The balance between *imagination* and *reason* is present in this case through a procedure that sought to give freedom of montage within the conditioning guidelines established during the pre-compositional stage.

Chapter 5: *Hundreds of milliseconds*

5.1 *Poietic analysis*

This is the last section of the acousmatic octophonic cycle *La lumière artificielle*. It constitutes a pivotal moment within the cycle since it is the most unusual of the set. The previous four pieces, *Overture*, *La Lumière*, *La Luz* and *The Light*, certainly differ, but they also have many similarities, such as common sound materials, the use of voice within an acousmatic compositional context and the inclusion of few but significant *semantic* units (words and sentences). In those four works, the *semantic* material used was just the words of the title (in each of the respective languages) and the general and noticeable focusing on one performer's voice per piece. Although the *Overture* presents the three voices within its structure, this is restricted, thus is not an extended feature since it is limited in amount and duration. Something similar happens with the French, Spanish and English sections; they include sounds of the other performers, but to a minimal extent and always as textures that reinforce the dominant sonority of the specific language addressed. *Hundreds of milliseconds*, by contrast, has a structure and character mostly defined by the inclusion of a substantial amount of *semantic* materials and the clear presence of the different voices and their specific timbres. These materials are the original title of the cycle and two additional texts, one about human language and another on sound recording technologies and art⁴⁹. These texts are delivered by four female voices, exploring the space between *phonetic* and *semantic* content within the electroacoustic context. As is explained in Part 1: Octophonic cycle *La lumière artificielle*, the sentences were taken from the article *Language and the brain* (Phillips and Sakai 2005) and were recorded in English by a different performer to the original three voices. The rest of the texts were recorded by those original performers in the three languages. The aims of this piece were to:

- Compose giving importance to the semantic aspect, namely a high presence of intelligible messages generating contrast with the four previous pieces in the cycle, especially with *The Light*.

⁴⁹ These texts are quoted and contextualised in the section Part 1: Octophonic cycle *La lumière artificielle*

- Create a progressive acousmatic composition, where the complexities of structures, spectral content, articulations and segmentations reflect the nature of the previous pieces but provide repetitive and minimalistic zones where the texts are delivered at several distinct points, in this way accentuating the focus on voices and the *semantic* content delivered.
- To reference some procedures used by *text-sound* composers, for instance Lars Gunnar Bodin in his piece *Cybo II* (1967) (Bodin, Laaban et al., 1992).
- Use the meaning of the texts to compose sections and shape the general discourse of the piece; at the same time, to articulate sonic behaviours to match the meaning presented through the texts.
- Combine the structural function of texts and their messages with the gradual appearance of acousmatic textures and gestures and the inclusion of a motif taken from the previous pieces, namely the 'signature object' presented in *Overture* and *La Lumière*. Through this procedure, an aim was to create coherence with the whole group of works and provide recognisable elements that help to round off and conclude the cycle.

5.2 *Neutral level analysis*

There are thirteen sections in this piece; a product of a segmentation procedure mainly driven by the meaning of the *semantic* elements included and the structural role of the spatial composition. Nevertheless, the *sound object* and *spectromorphological* elements of composition are carefully constructed providing both constructive discourse and a scaffolding on which to place the elements mentioned previously. In this case, one of the main features that points out the heterogeneity, is the contrast between sections and sub-sections with the polarity of naturalistic or *source bonded* sounds (Smalley 1997) and abstract or non-recognisable ones as main characteristic. The use of sections with very few elements which are easy to assign as figure and background, facilitates another type of contrast, in this case between naturalistic voices and abstract electronic sounds, but this time in the vertical axis, thereby operating as montaged materials.

The thirteen sections of the pieces are:

1. Opening (00:00:00 - 00:25:14)
2. First *mesostructure* (00:25:14 - 01:26:94)
3. Second *mesostructure* (01:26:94 - 02:32:22)
4. Third *mesostructure* (02:32:22 - 04:11:65)
5. Transition (04:11:65 - 04:40:04)
6. Fourth *mesostructure* (04:40:04 - 06:22:51)
7. Bridge (06:22:51 - 06:32:02)
8. Fifth *mesostructure* (06:32:02 - 07:09:61)
9. Sixth *mesostructure* (07:09:61 - 07:53:38)
10. Seventh *mesostructure* (07:53:38 - 08:58:78)
11. Eighth *mesostructure* (08:58:78 - 09:57:11)
12. Finale (09:57:11 - 10:56:82)
13. Coda (10:56:82 - 11:22:00)

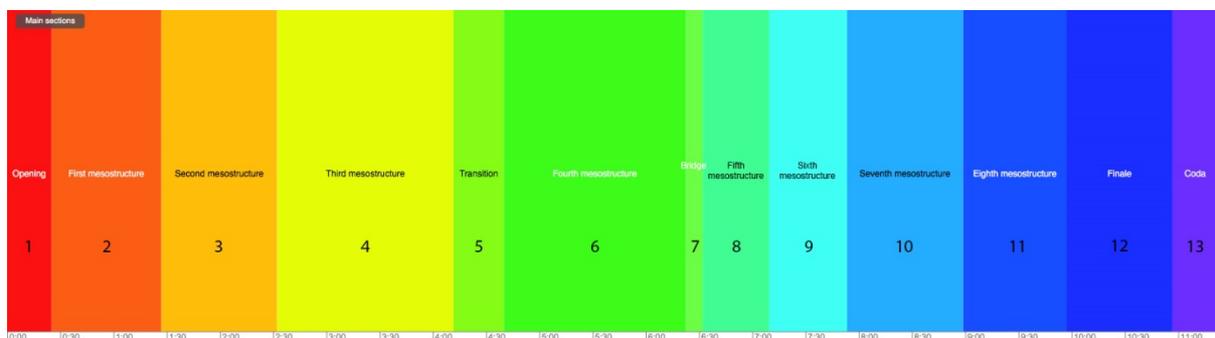


Figure 97: Main sections for *Hundreds of milliseconds*

5.2.1 Distribution of *Sound objects* and *spectromorphological* structure

The opening section begins with a very gestural delivery of materials which can be appreciated in Figure 98 which shows this section to be constituted by a group of *balanced sound objects* (X, X', X'', N, N'', Y and Y''). These *sound objects* behave as different *spectromorphologies* and although these include some *continuants*, the general sense of gestural interplay is maintained.

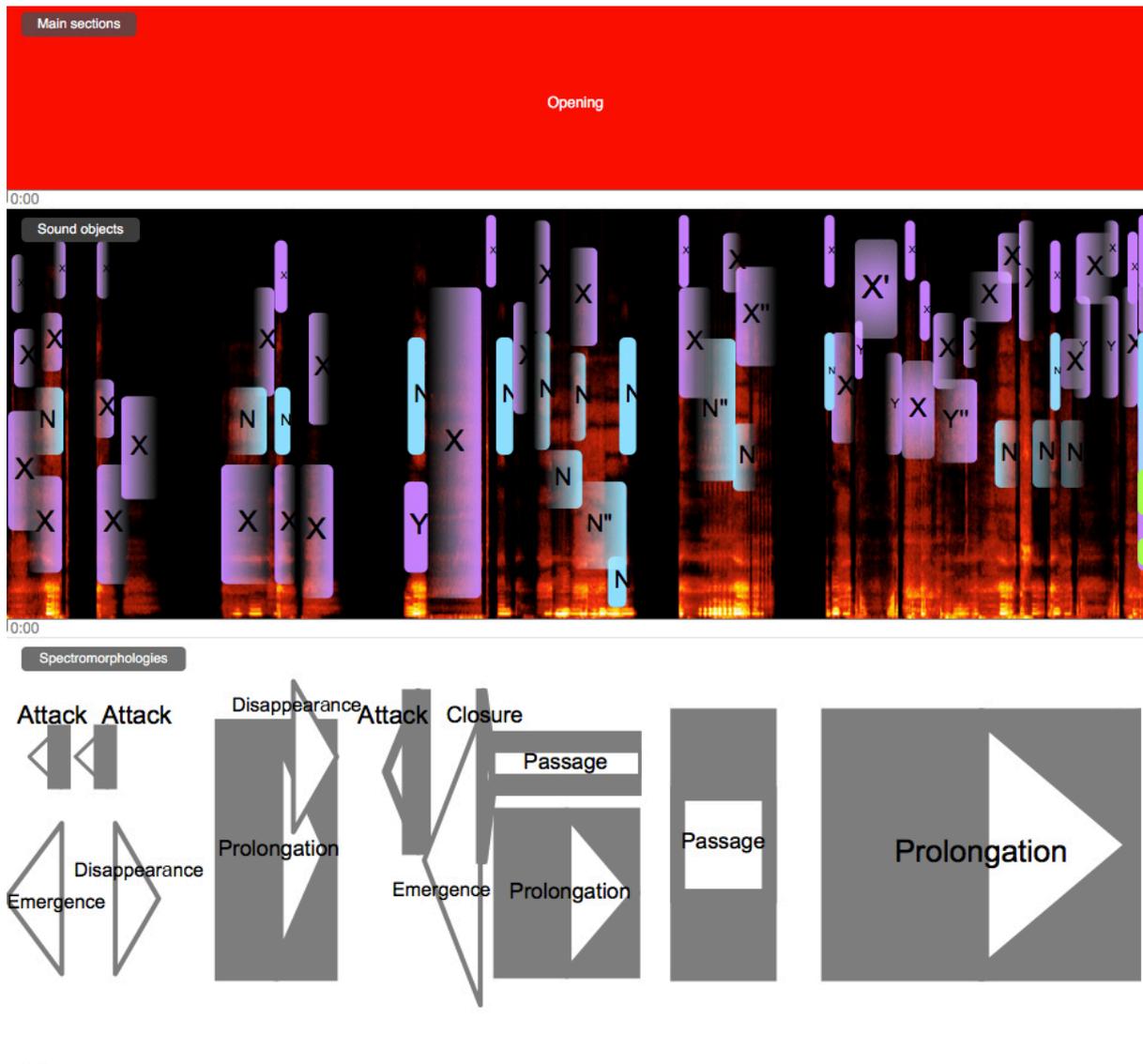


Figure 98: *Sound object* and *spectromorphology* distributions

Then, at 00:25:15, the first *mesostructure* starts with a clear change in the sonic material, prompted by a short *attack* and a *departure spectromorphology*; the *attack* function corresponds to a composite of *impulsions* and *continuous complex* and *tonic masses*; then a *departure* to a thick and longer *continuous complex mass* object (*X*) and the launching of two long *iterations* are initiated. The *iterations* are *tonic mass* and *complex mass* types (*Zn* and *Zx*); these *iterative macro-objects* persist all through this section and the following second and third *mesostructures*; they become *prolongation* and *maintenance* structural functions at the same time, operating as a base on top of which different materials are placed. In the case of this section, the materials placed on top of the base are successive

variable mass iterations (Y'') separated by spaces between them and each constituting *statement* functions. This can be seen in Figure 99.

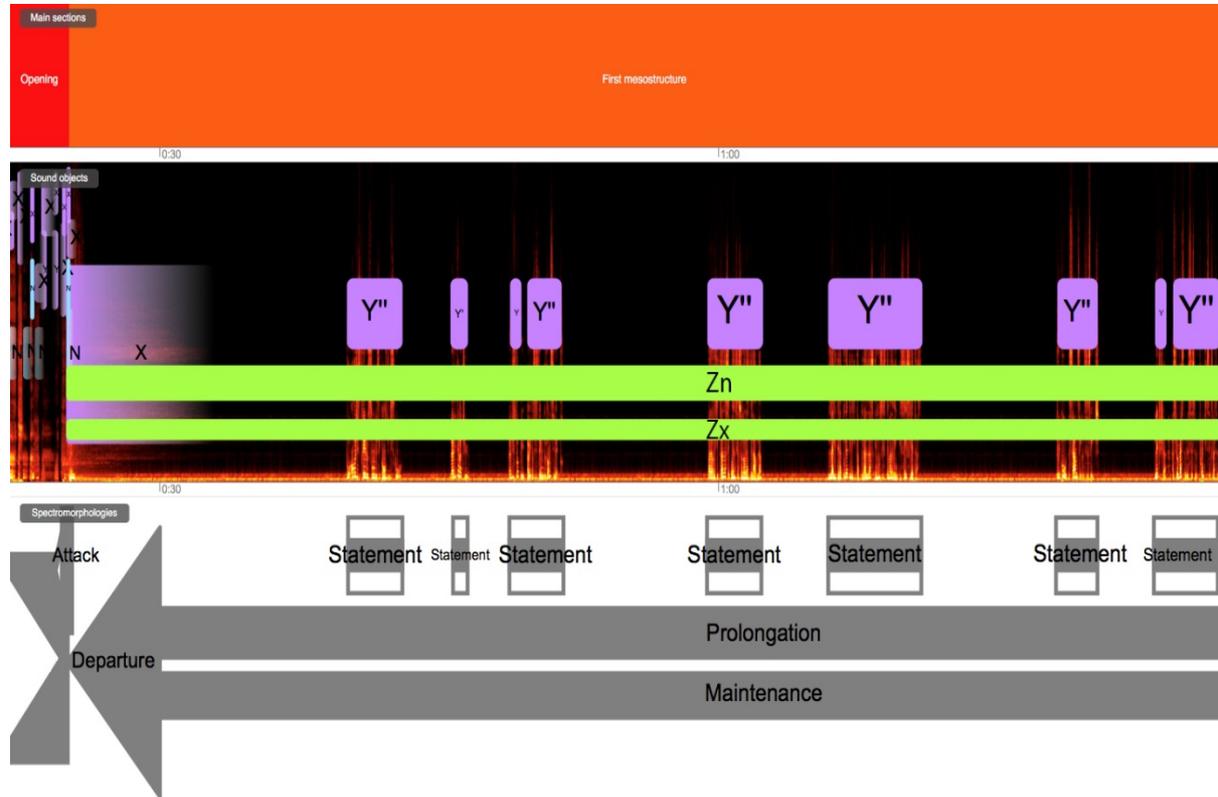


Figure 99: Hundreds of milliseconds, first mesostructure, sound objects and spectromorphologies

At 01:26:94, the second *mesostructure* is defined by a segmentation produced by a return to a similar distribution of objects found in the opening section; an articulative group of *balanced sound objects* signal the beginning in the form of a *passage* function and after a *transition* function; at 01:42:50 a new Y'' is placed, presenting a development which is in fact a combination of the distribution types of the opening section and the first *mesostructure*. The spacing between groups of *spectromorphologies* is repeated as well, adding variation through different durations. The section ends with three *variable mass iterations* and three *statement* functions. The materials in this section are shown in Figure 100.

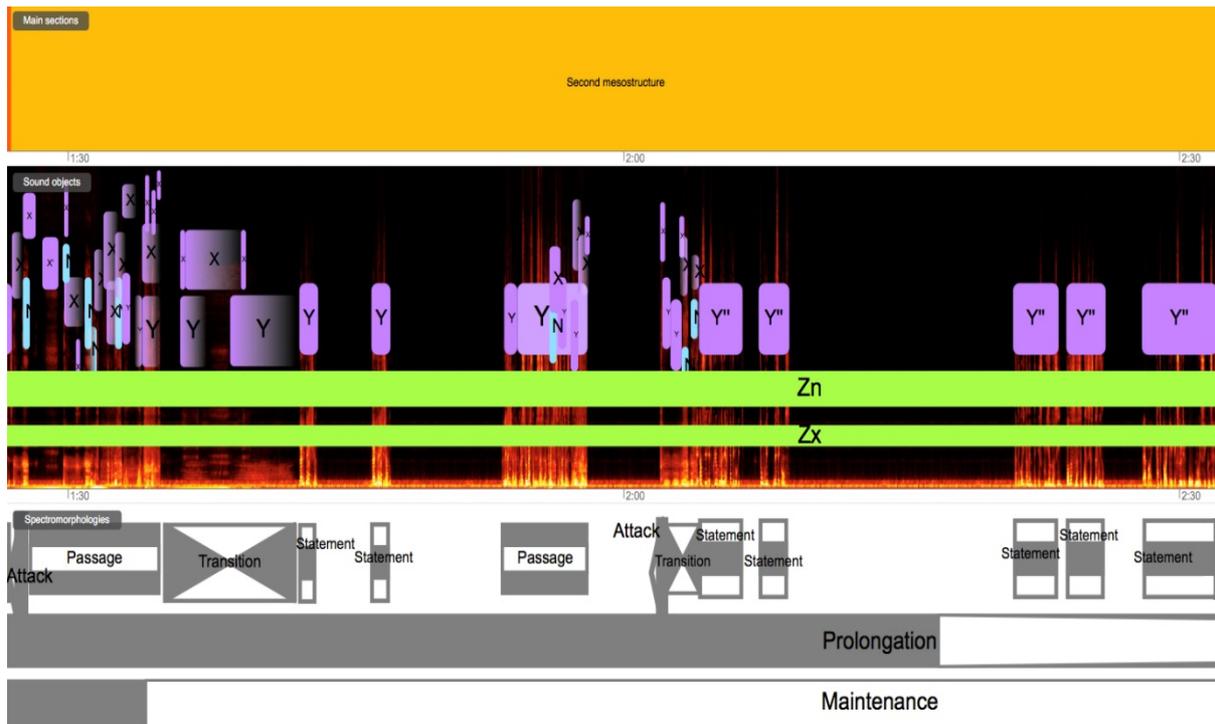


Figure 100: *Hundreds of milliseconds, second mesostructure, sound objects and spectromorphologies*

The third *mesostructure* is launched by a low pitch *variable mass continuous* object (Y) accompanied by gestural *balanced sound objects* (N, N' and X). Since *spectromorphological* functions can act as gestures even in small scales (Smalley 1997, p. 114), the Y object acts as an *attack* structural function. While the mentioned Zn and Zx objects persist, other *macro-objects* are added in this section, appearing through an *emergence spectromorphology: accumulations* (*general case, complex, tonic and variable masses: A, Ax, An and Ay*) and a *tonic mass homogeneous object* (Hn). The *prolongation* and *maintenance* functions are kept, and a new *prolongation* is added, corresponding to the new *macro-objects*; on top of these thick wefts, several *passage* functions are deployed, most of them in the form of variations of the first low pitch Y object in this section. The energy flow decays by the end of the section and is marked by three N objects; the group behaves as an *arrival* function and leads to silence as a *closure spectromorphology*. These distributions can be seen in Figure 101.

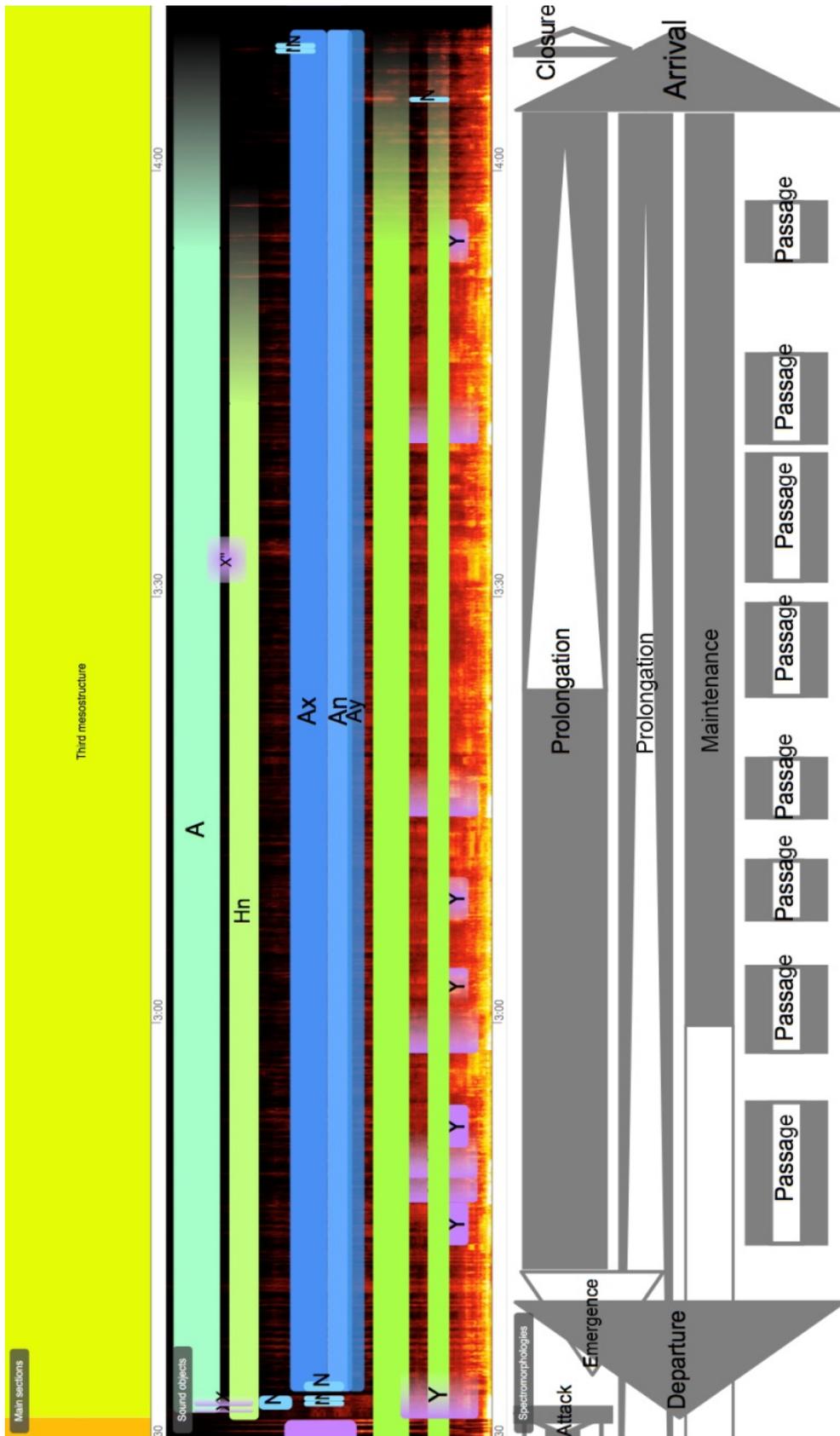


Figure 101: Sound objects and spectromorphologies for third mesostructure of Hundreds of milliseconds

After the silence, the transition section starts with an *attack* function; this restarts the sound flux with a *variable mass iteration* (Y'') and a subsequent *emergence* that turns into a *passage* function, both of which are constituted by *macro-objects*: *accumulation general case* (A), *complex mass sample* (Ex) and by the end of the section a *complex mass accumulation* and a *tonic mass accumulation* (Ax, An). Superimposed on these objects, are placed *variable mass balanced* objects, namely Y and Y'' (*continuous* and *iteration*). The last Y'' object operates as *attack* and *anacrusis* functions, launching and pre-empting the spectral material of the following section. Figure 102 shows these elements.

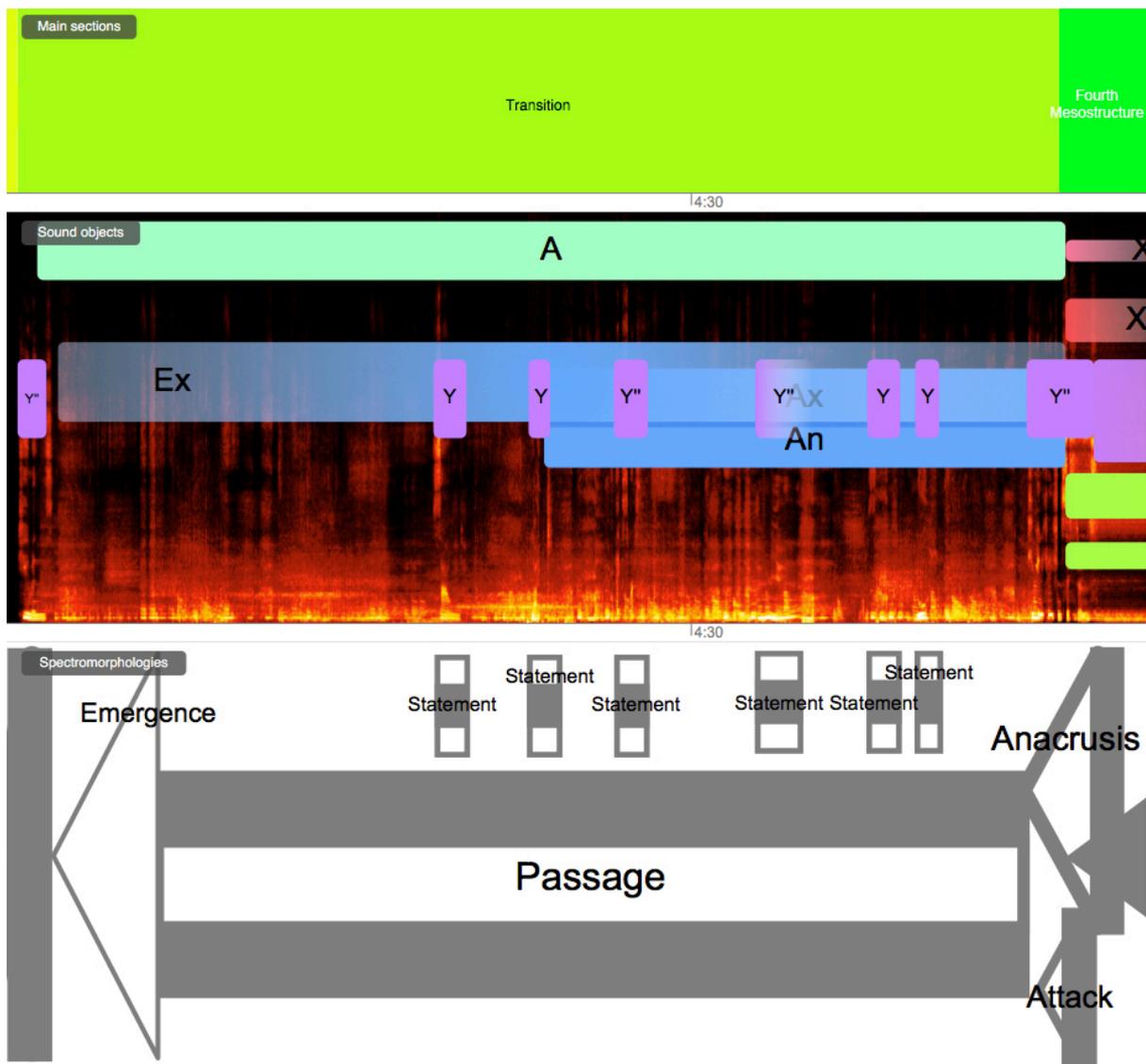


Figure 102: Sound objects and spectromorphologies, transition section of *Hundreds of milliseconds*

The fourth *mesostructure* is started by the mentioned functions and a *departure spectromorphological* function at 04:40:04. The base formed by the long *Zn* and *Zx* objects returns and is kept all through the section; a relatively regular pattern begins with the section formed by *X* and *X''* in the high part of the tessitura. A *complex mass homogeneous* object (*Hx*) started with the section as well but fades gradually to end at 05:00:08. The sonic progression is driven by a *prolongation* function which is complemented and varied with different structural functions such as *passage*, *transition* and *statements*; these *spectromorphologies* correspond to groups of *balanced* objects that are interpolated with *complex mass samples* (*Ex*); at 04:55:41, when the *balanced* objects start a new *Zn* object begins as well, this time in very low position in the tessitura, thickening the spectrum. After a noticeable *passage* function, a *resolution spectromorphology* acts at 05:37:63, signalling a pause in the previously dense sonic discourse. This prepares for the conclusion of the section and the transfer to the fifth *mesostructure* by means of a functional section, the bridge. *Balanced* objects, including the pattern mentioned above, continue in a *prolongation* function; a *transition* function prompted by a *tonic mass iteration* (*N''*) leads to new *emergence* and *passage* functions corresponding to a *complex mass accumulation* (*Ax*) and a group of *balanced* objects overlapped with a *general case sample* (*E*). From 06:06:04, only the *Ax* and the base of *Z* objects are kept until shortly after fade out in an *arrival* function with a reverberating tail. A *variable mass continuous* object (*Y*) interrupts the fade with a clear appearance as *statement* function at 06:19:69. After that, the last part of the fading tail disappears. Without pause, the next section, the bridge, is triggered by a long *Y* object at 06:22:52 and closed by a long *N* that in turn fades into the next section, as can be seen in Figure 103.

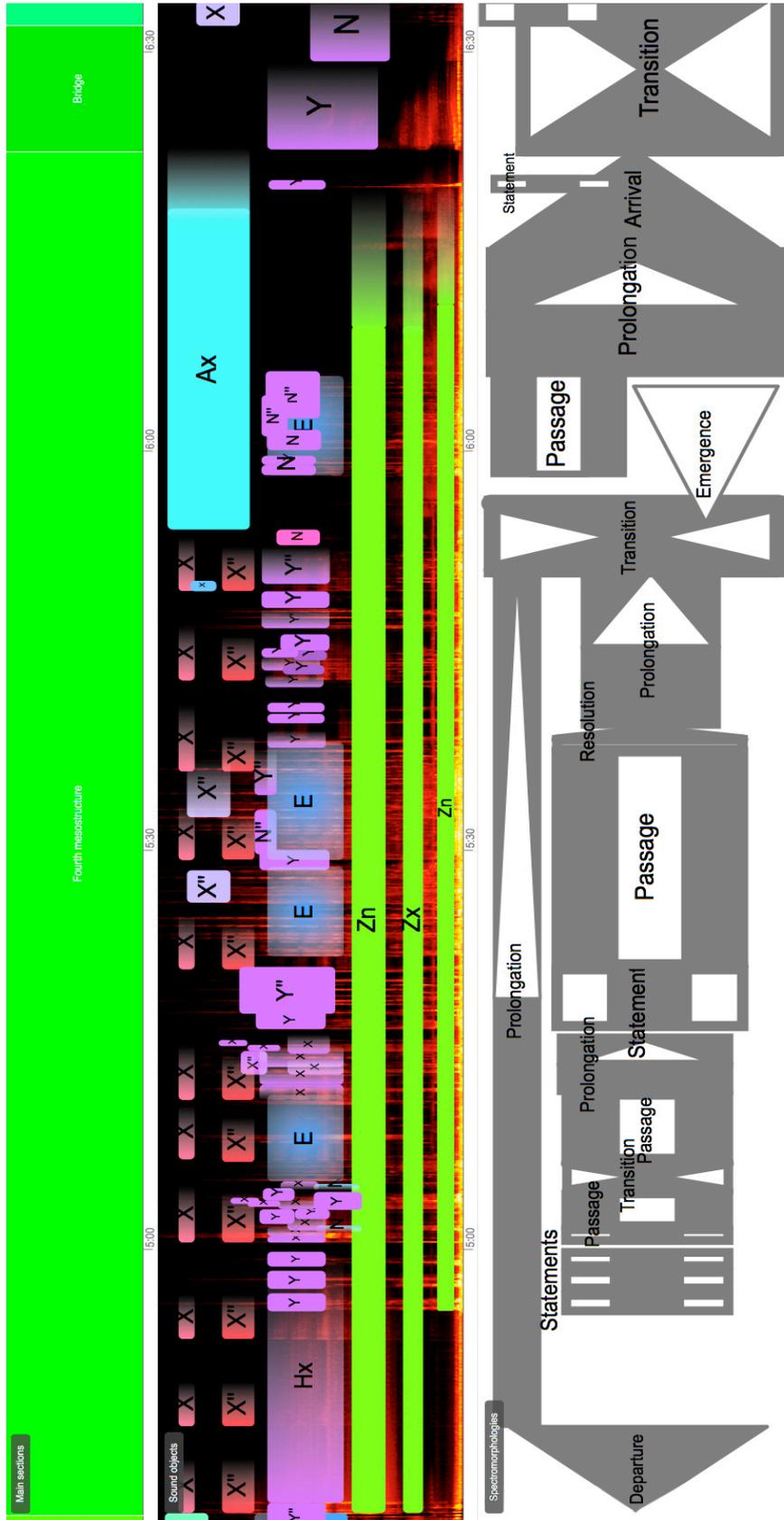


Figure 103: *Hundreds of milliseconds, fourth mesostructure and bridge section, sound objects and spectromorphologies*

The next section, the fifth *mesostructure*, begins at 06:32:02 with *complex mass iteration* objects (X'') that appear as *statement* functions, with the first of them juxtaposed with the faded N object that ended the previous bridge. At 06:40:52, an *iterated* version of this repeated object, prompts an *upbeat* function, adding in this way great dynamism and moving the sound discourse from a discrete unit type to a textural one. This textural aspect is developed afterwards by means of an extension of the spectral content with three different Zx objects superimposed with a *complex mass accumulation* (Ax) and other *balanced sound objects*. All these elements constitute a *prolongation* structural function that conclude the section with a complementary *resolution* function. This *resolution* is defined by a spectral narrowing that can be appreciated in the form of the Ax object fading out in Figure 104; the very end of this *mesostructure* is signalled by a group of *balanced objects* creating a gesture that articulates the triggering of the next section.

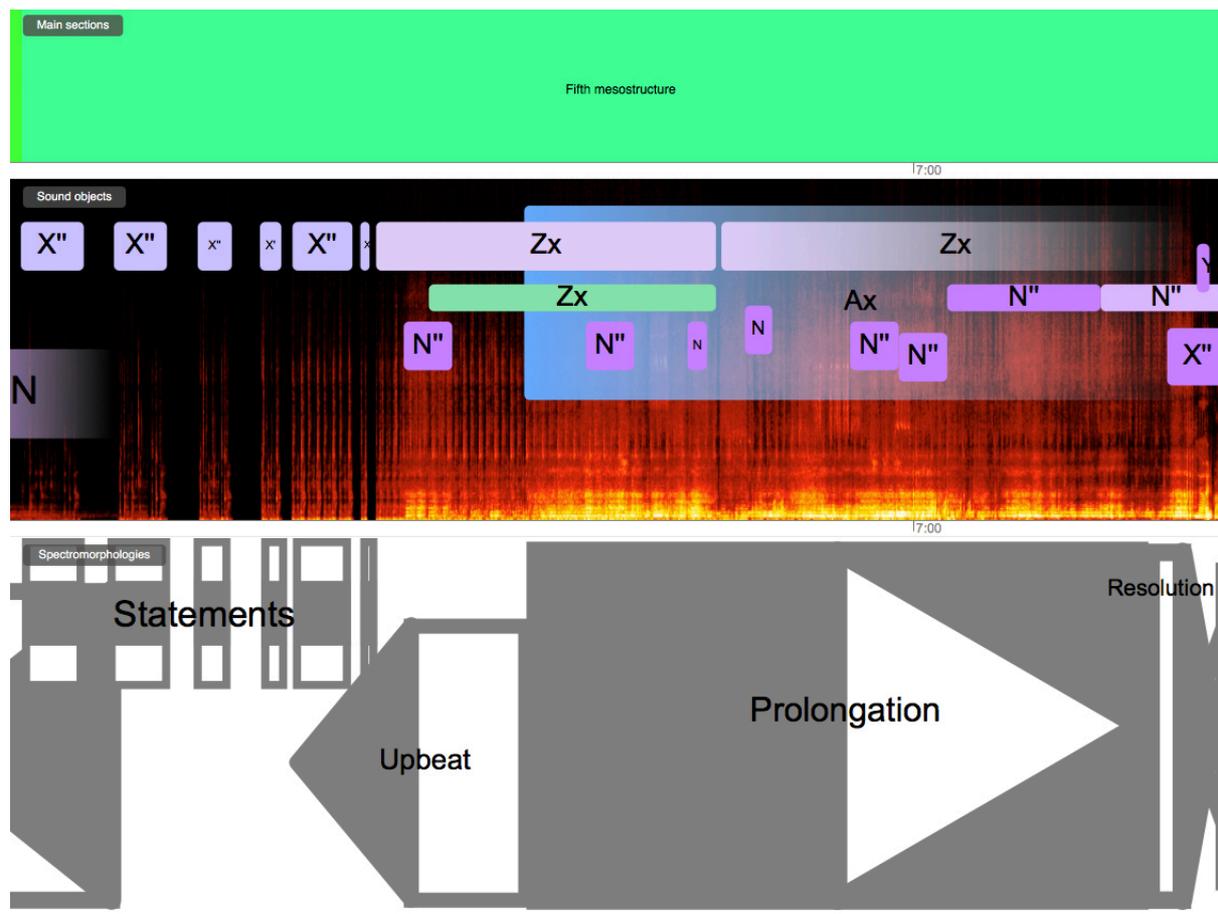


Figure 104: *Sound objects and spectromorphologies for fifth mesostructure of Hundreds of milliseconds*

The sixth *mesostructure* is a section with a mixture of rhythmic and textural elements that are placed through *emergence* and *departure* functions. The section starts at 07:09:62 significantly with the 'signature object' that appeared in the *Overture* and *La Lumière* but had been not included in the other two pieces, *La Luz* and *The Light*. This object, a composite of two *N* objects, triggers several *iterations* and other *macro-objects* which gradually move in a *passage* function to a *downbeat* function. The *downbeat* leads to a *prolongation* where various *macro-objects* are deployed (*Hx*, *En*, *Ey*, *Zn*) alongside gestures formed by *balanced* objects. At 07:38:95 a *transition spectromorphology* is presented by means of *tonic mass iterations* in different zones of the tessitura; this subsection leads in turn to a *resolution* which is a new form of the previous *iterative* quality, but now with other *sound objects*. These *balanced* objects generate a *release* function that gives way to the next section, as can be seen in Figure 105.

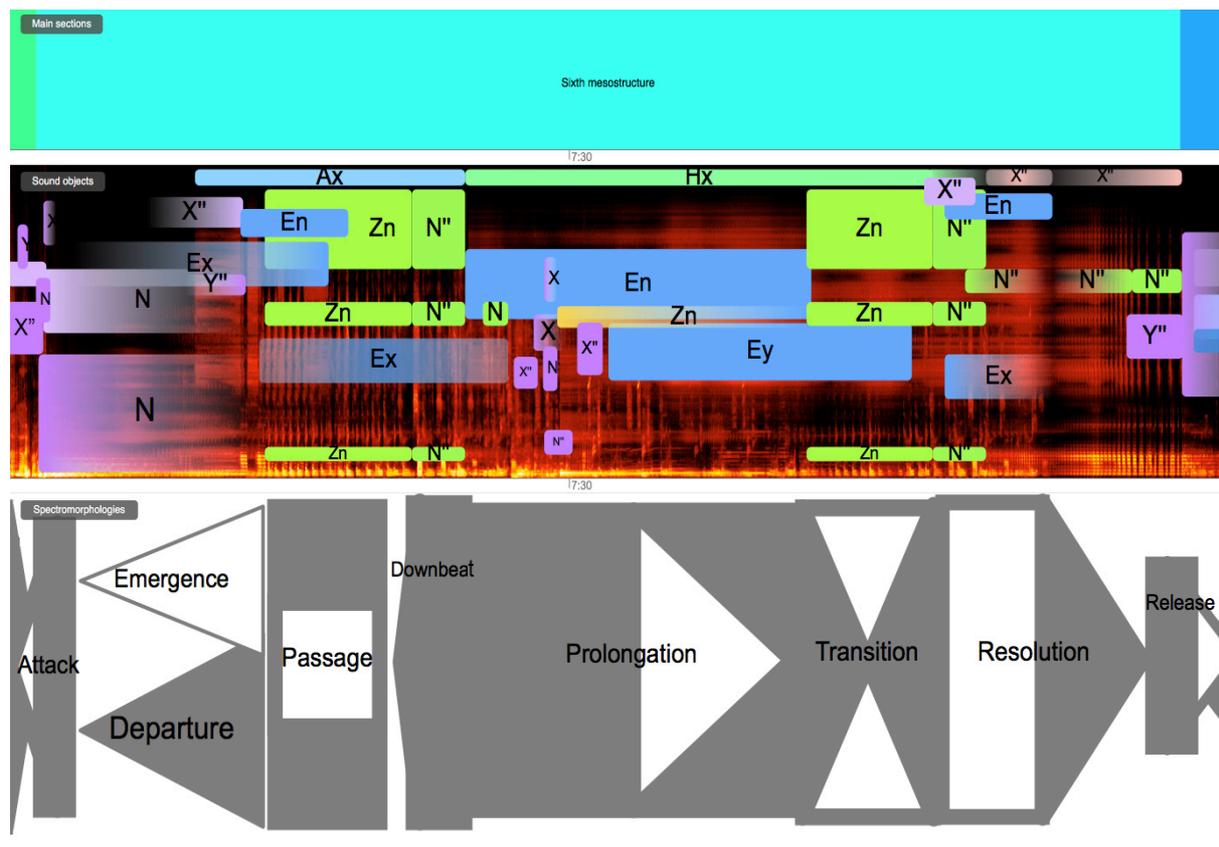


Figure 105: *Hundreds of milliseconds, sixth mesostructure, sound objects and spectromorphologies*

The seventh *mesostructure* starts at 07:53:38 with the fade out of the resonance coming from the previous section. Through a *departure* function, four *macro-objects* are installed; they shape most of this section and correspond to *prolongation*, *passage* and *maintenance*

spectromorphologies. At 08:43:78 an *arrival* function is initiated by a group of *balanced sound objects* acting on top of the textural base constituted by the *macro-objects*. These *balanced* objects (N, X, X', X'', Y, Y' and Y'') create tension by means of a progression from a reverberated space to a dry and close one; this progression triggers the following section. The distributions for this seventh *mesostructure* can be seen in Figure 106.

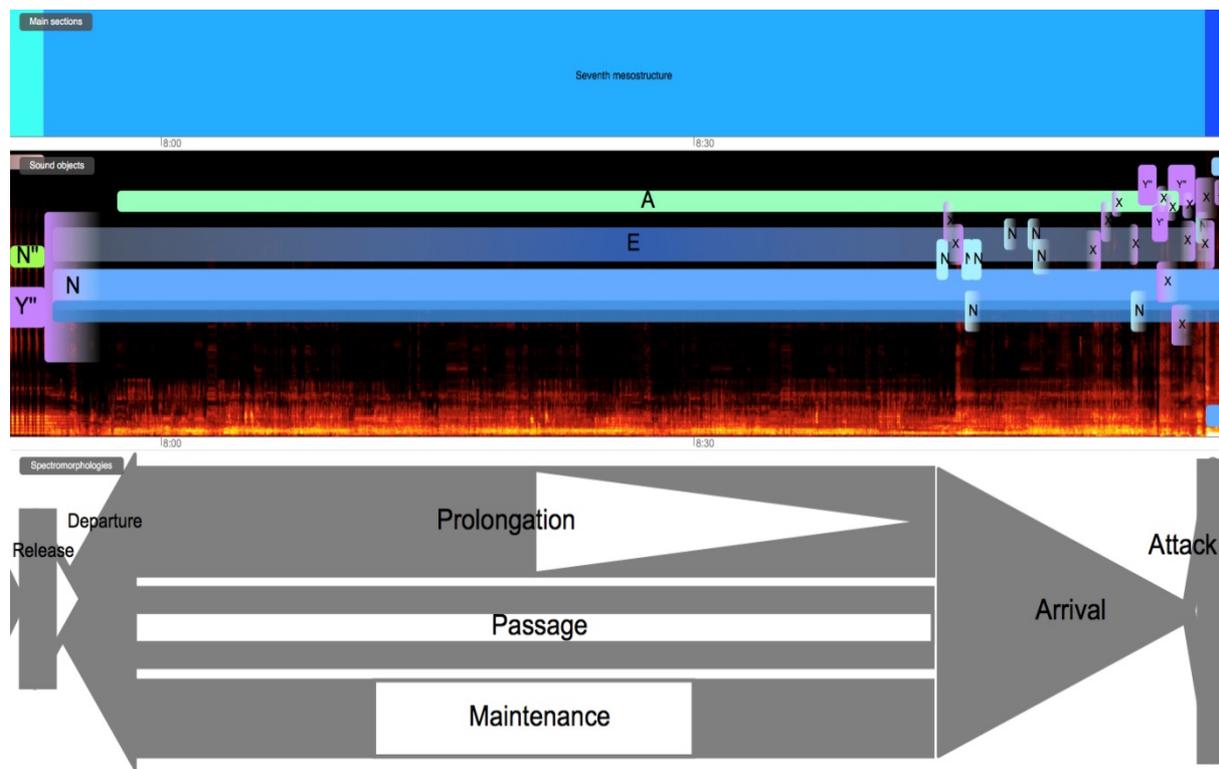


Figure 106: *Hundreds of milliseconds, seventh mesostructure, sound objects and spectromorphologies*

The eighth *mesostructure* begins at 08:58:78 with an *attack* function in the form of two synchronised *complex mass continuous* objects (X); they launch three new *macro-objects*, a high pitch A_x (*complex mass accumulation*), an E_y (*variable mass sample*) and a very low A_n (*tonic mass accumulation*). These objects are placed on top of the continuation of two *accumulations*, one with *tonic mass* and the other with *variable mass* that come from the previous section. In the *spectromorphological* section in the graphical analysis, the eighth *mesostructure* can be seen to start with a *statement* function, since the section is presented with a clear change and the introduction of new material. Then, the *continuant* feature is preminent and is represented by *prolongation* and *maintenance* functions. At the end of the section, the internal behaviour of the *macro-objects* and the appearance of

two *variable mass iterations* (Y'') act as a new *statement* function that leads to a *resolution*, in this way closing the section. Figure 107 shows these elements.

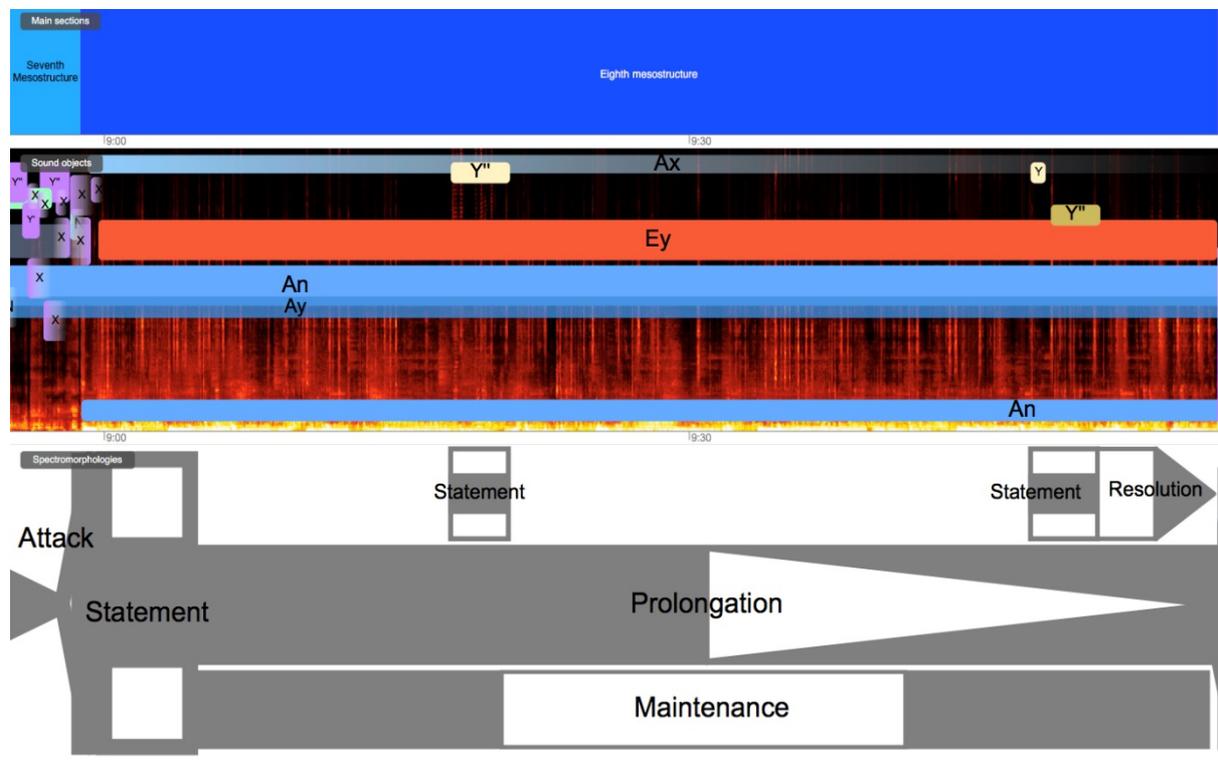


Figure 107: Sound objects and spectromorphologies for eighth mesostructure of *Hundreds of milliseconds*

The Finale section starts with an *attack* function that involves a *statement*, constituted by a variation of the 'signature object'. In fact, the section is shaped by the presence of textural *macro-objects* over which four different versions of the 'signature object' act as milestones. These elements correspond to a *prolongation spectromorphology* over which appear four *statement* structural functions. The *tonic mass* and *variable mass accumulations* which started at the beginning of the *seventh mesostructure* are still present and are added to the low pitch *An* object coming from the previous section and two new *accumulations*, a *variable mass* one (*Ay*) and a high pitch *complex mass* one, starting at 09:58:63 and 10:01:92 respectively. After the last *statement* function, the last 'signature object' in this section, the *macro-objects* begin to fade out progressively. This process starts a *disappearance* function that characterises the general quality of the rest of the piece, presenting in this way a distancing effect. This continuous fading contains one last salient element, a distant and partially diffused final 'signature object'. This last version of this element appears at 10:56:82 signalling the coda, the last section which is

formed only by this last *statement* and the fade which is accelerated delicately to end the piece and the whole cycle. The *sound object* and *spectromorphology* distributions can be seen in Figure 108.

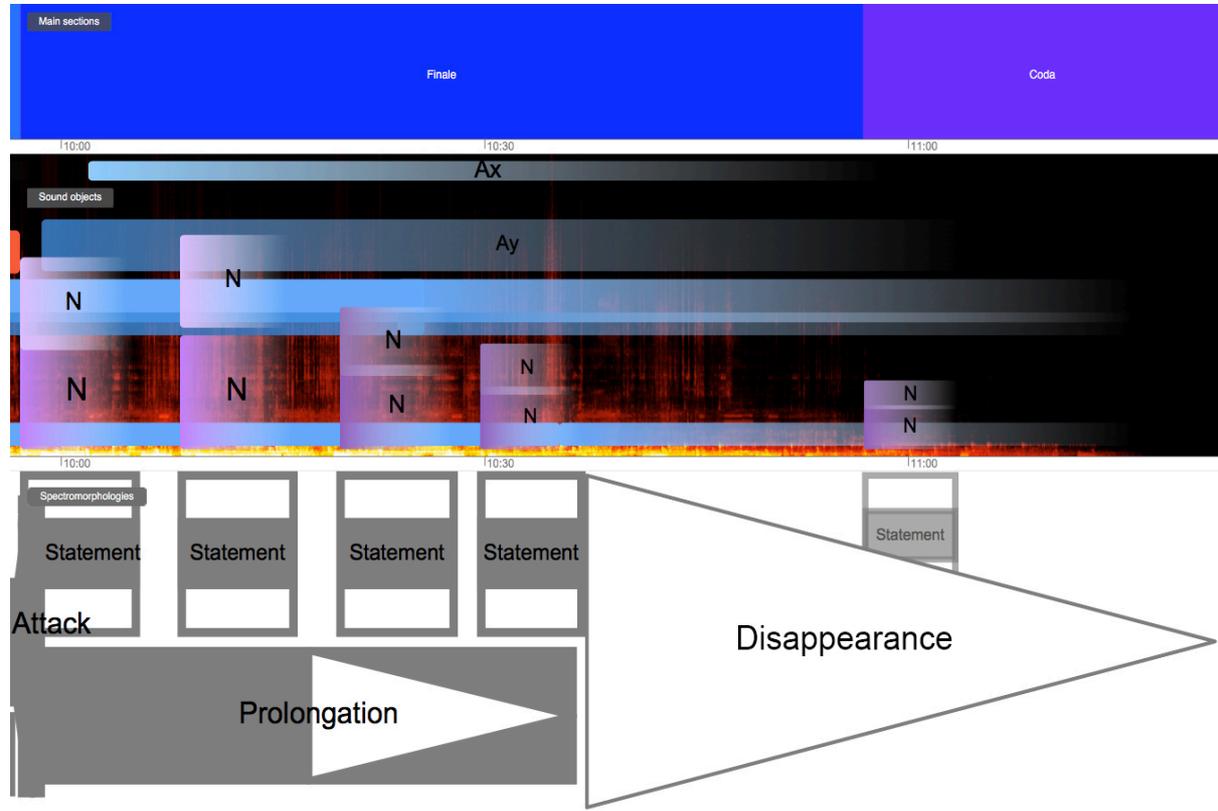


Figure 108: *Hundreds of milliseconds, finale section and coda, sound objects and spectromorphologies*

5.2.2 Spatial distribution and structure

This piece has twelve *levels of spatial function*, some of them are compound categories, since, as has been seen in the previous pieces, space has a multiple role in different moments. A noticeable characteristic is the fact that the levels presented have a relevant structural function in regard to the compositional development of the work. This is created by the inclusion of several *structural functions* (simple or compound). These functions define their sections in duration and character. Figure 109 shows the *levels of spatial function* for this piece.

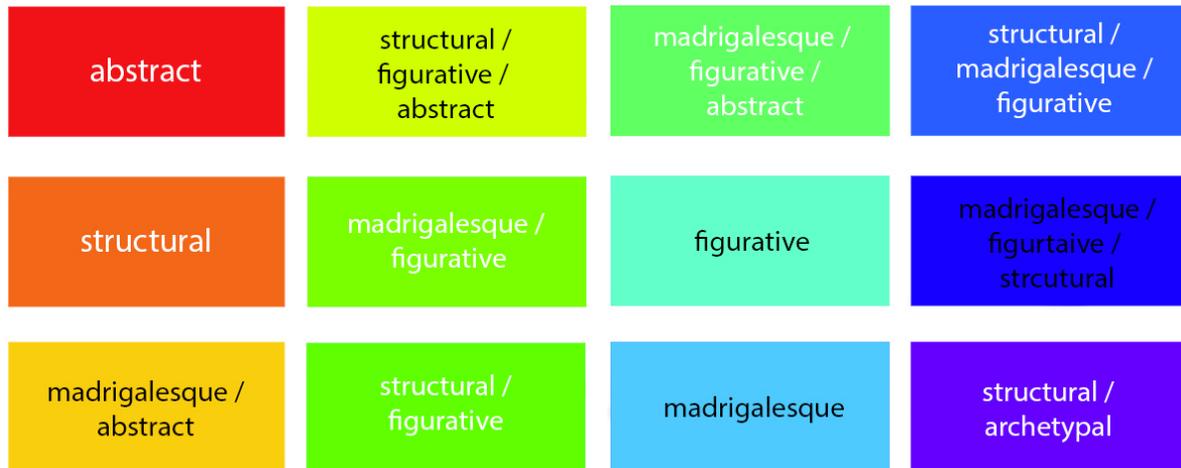


Figure 109: Levels of spatial function for Hundreds of milliseconds

The piece starts with an *abstract* function that corresponds with the duration of the opening section. This function presents trajectories crossing the space and sounds presented in focal points. Then, at 00:25:16, a *structural* function begins, changing the gestural character of the previous section to an atmospheric quality and signalling the starting of the first *mesostructure*. Once this section has been established by this *structural* level, the character changes again at 00:40:03, in this case by means of clear placement of the first semantic material of the piece. Since the voice is presented in a naturalistic way that reinforces the sense of a character speaking in front of the listener (loudspeakers 1-2). The function is a composite *madrigalesque/abstract* one, that combines spatial zones, constituted by the *Zn* and *Zx* objects located on loudspeakers 1-2 and 5-6. This function completes the first *mesostructure* as can be seen in Figure 110.



Figure 110: *Levels of spatial function, opening section and first mesostructure of Hundreds of milliseconds*

At 01:26:94, the second *mesostructure* starts launched by the *sound object* and *spectromorphological* functions. This segmentation is reinforced by a compound function that starts simultaneously, a *structural/figurative/abstract* category that gives variety by overlapping planes and traces in the space. At 01:42:56 the quality of the section focuses again on the speaking voices as characters and the geometrical traces, returning in this way to the *madrigalesque/abstract* function.

The previous behaviour is interrupted by the beginning of the third *mesostructure* by means of a return to the *structural/figurative/abstract* function at 02:32:23. This change provides a large number of figures, movements and planes that fill the octophonic space. The last thirteen seconds of this section are smoothly marked as a sort of tail or coda by means of a change in the spatial design at 03:58:47; this is achieved through a decreasing amount of spatial information and constituent sounds, thus presenting a *structural* function that ends the section.

At 04:11:62, the transition section begins; this section is entirely formed by a *madrigalesque/figurative*, where the *madrigalesque* quality emphasises the speaking voices and the *figurative* one suggests figurative spaces such as close, far and intimate. The *levels of spatial function* for second and third *mesostructures* and transition can be seen in Figure 111.

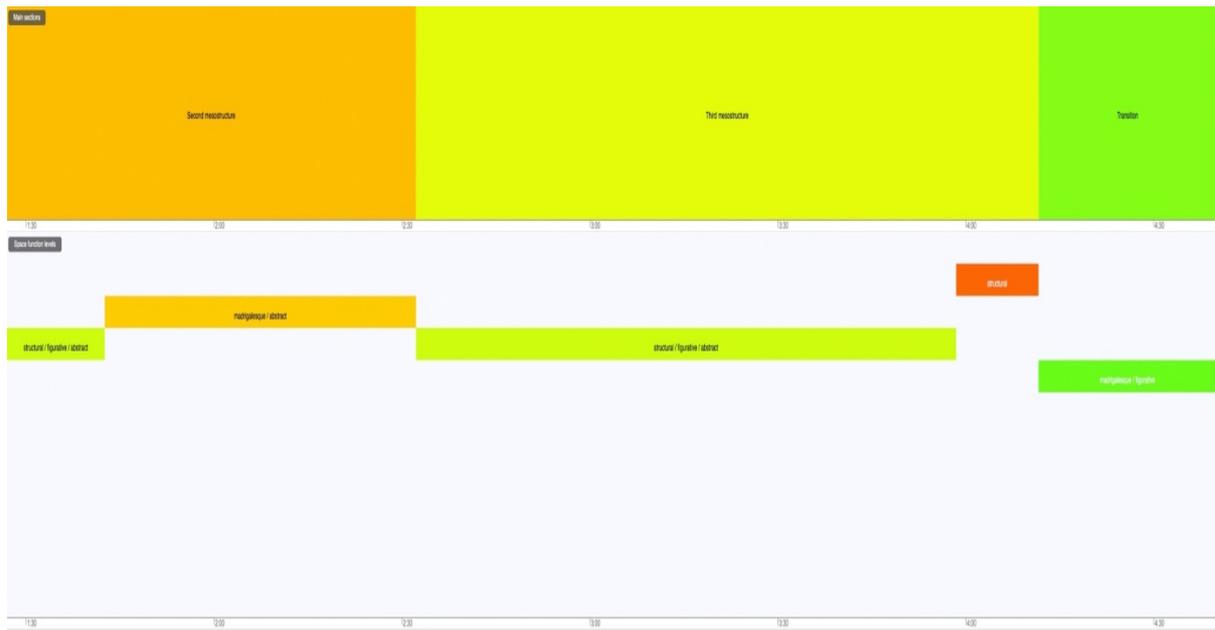


Figure 111: *Levels of spatial function* for second and third *mesostructures* and transition section of *Hundreds of milliseconds*

At 04:40:04, the beginning of the fourth *mesostructure* is accentuated by a *structural/figurative* function; fifteen seconds later, the spatial function turns into a new compound category, *madrigalesque/figurative/abstract*, that evidences the fluctuations between the *figurative* and *abstract* aspects over which the clear presence of the different performer's voices are placed. This function completes the rest of this section. The following section, a short bridge at 06:22:53, is formed by *figurative* function that manifests the evocative image proposed by the voice, namely a distant and reverberant space. *Levels of spatial function* for the fourth *mesostructure* and the bridge are shown in Figure 112.

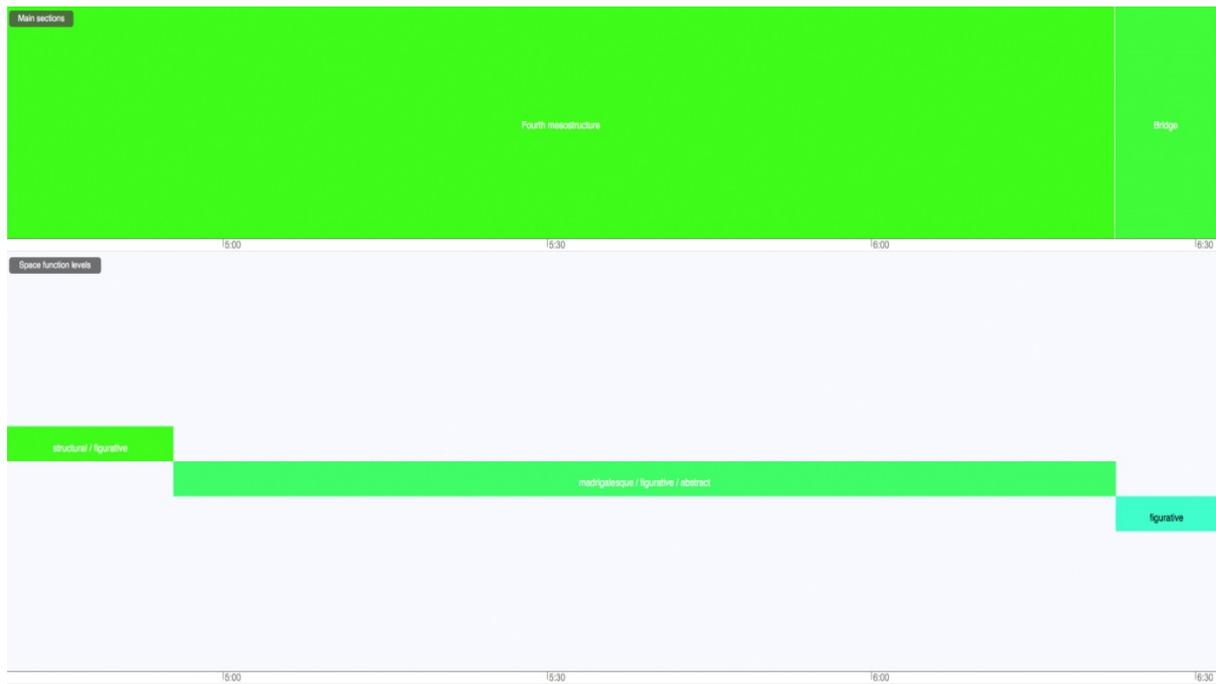


Figure 112: *Levels of spatial function in the fourth mesostructure and the bridge section of Hundreds of milliseconds*

At 06:32:03, the fifth *mesostructure* starts with a *madrigalesque* function, where a single voice whispers to define an *utterance space*. Although the vocal sample is accelerated and panned, turning it to textural material, the *madrigalesque* aspect persists, due to the link of sonority between the original and the fast version. Then, at 06:44:57 the function becomes *abstract* since the traces and lines are preponderant. The section keeps this function until its end (Figure 113) which, in turn is changed by the beginning of the sixth *mesostructure* into a *structural/madrigalesque/ figurative* function at 07:09:69. In this case, the functions within the compound are 'led' by the *structural* aspect. The complete section presents only this spatial level compound function as can be seen in Figure 113.

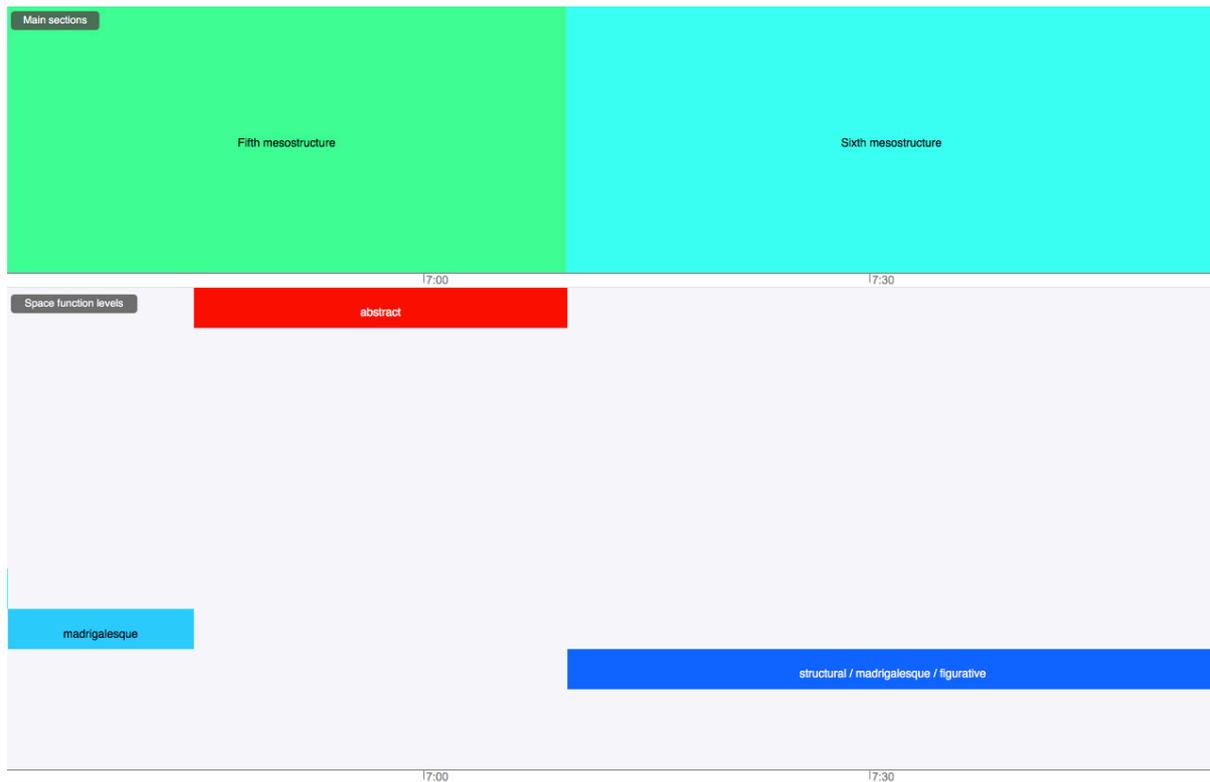


Figure 113: *Levels of spatial function for fifth and sixth mesostructures of Hundreds of milliseconds*

The seventh *mesostructure* presents one only compound function throughout between 07:53:38 and 08:58:78. This function is the same as in the fourth *mesostructure*: *madrigalesque/figurative/abstract*; although the *semantic* content is not completely clear, the sense of speech and the possibility of understanding some words makes the *madrigalesque* feature predominant within the spatial construction shaped by the *figurative* and *abstract* functions. The space articulated by them is kept through movements and layers until the end of the piece. At 08:58:78 the eighth *mesostructure* begins with a *madrigalesque/figurative/structural* function: the texts now are clearer than previously and the *figurative* aspect and other developments, such as movements and spatial planes, operate to unify the section. Figure 114 shows the *levels of spatial function* for seventh and eighth *mesostructures*.

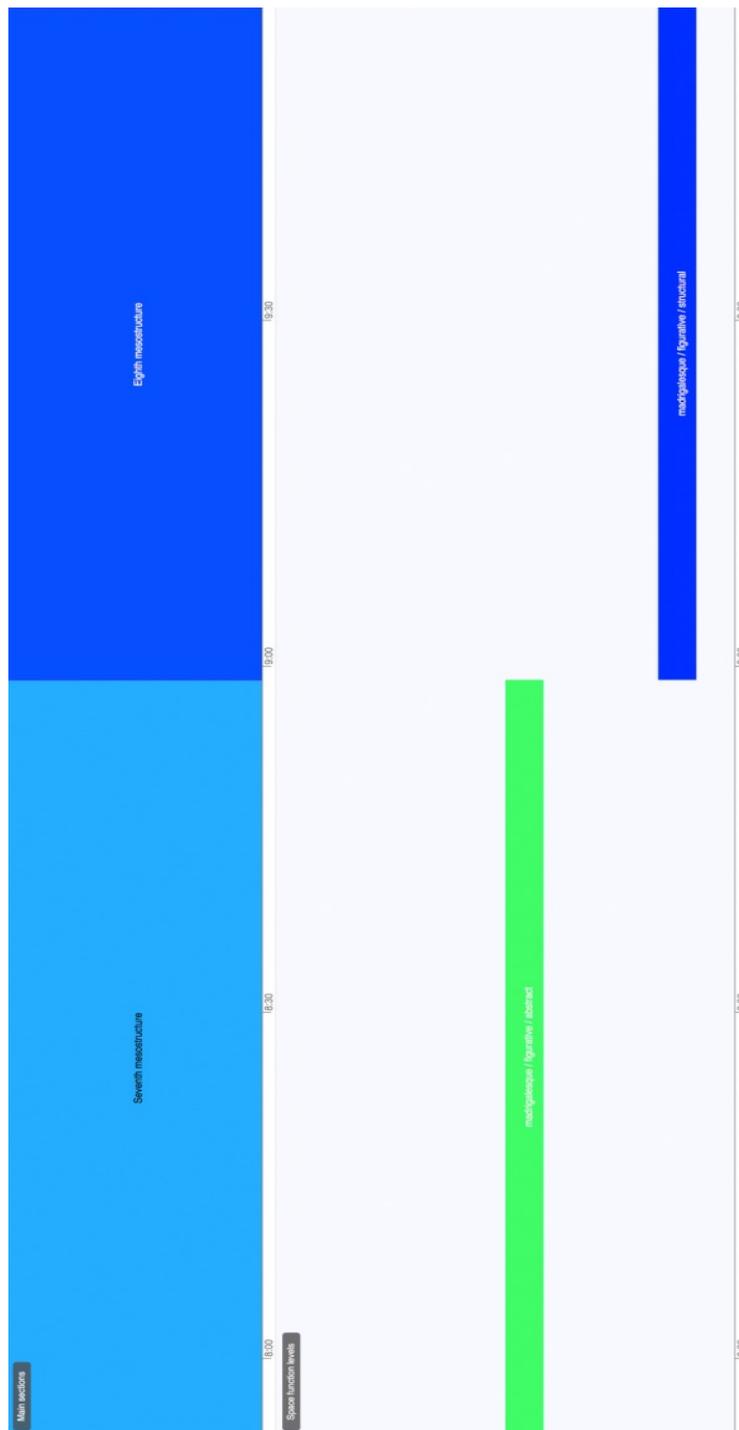


Figure 114: Levels of spatial function for the seventh and eighth mesostructures of Hundreds of milliseconds

The Finale starting at 09:57:12, marks another change, this time with a *structural/figurative/abstract* function, since the *madrigalesque* feature, notably present in the previous sections, has given way to these more formal and structural progressions. These functions remain until a last change at 10:56:85 when the coda starts with a

structural/archetypal function that signals the section and provides a sense of recession and release of energy. The functions for the Finale and the coda are shown in Figure 115.

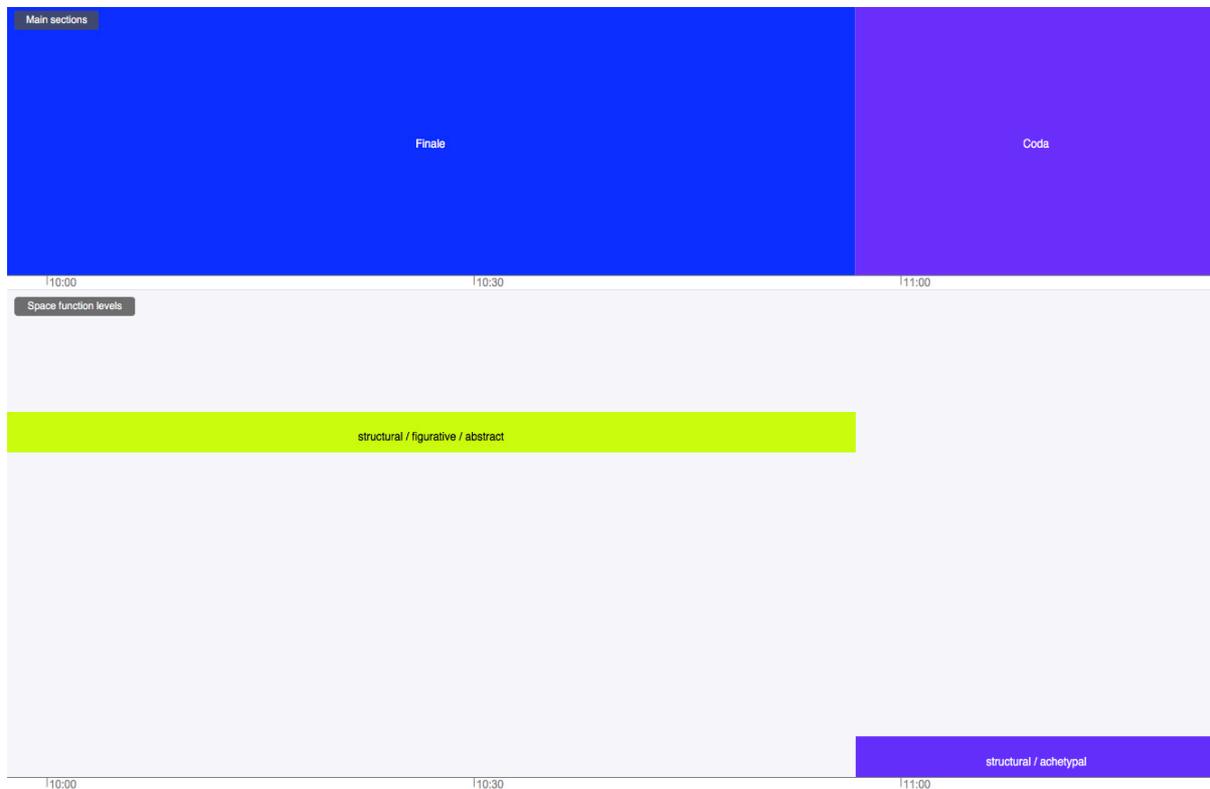


Figure 115: Levels of spatial function for Finale section and coda of *Hundreds of milliseconds*

5.2.3 Voice type and speech-sound type distributions

The voice distribution categories for this piece can be seen in Figure 116.

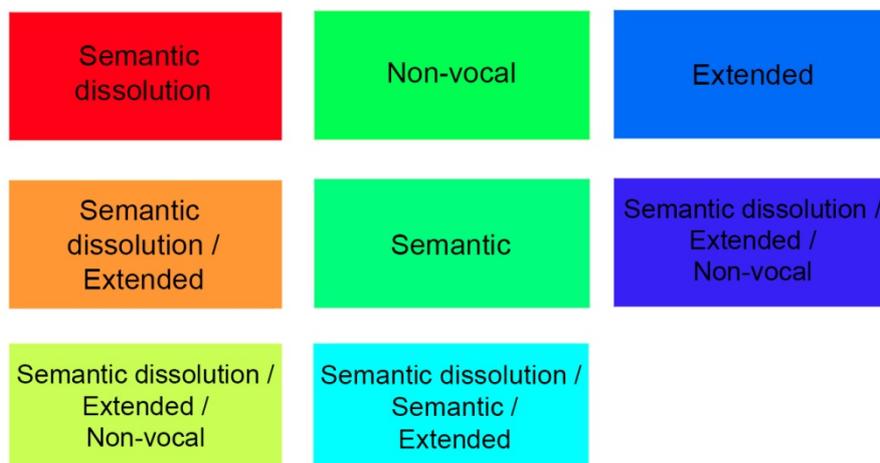


Figure 116: Voice categories for *Hundreds of milliseconds*

The speech sound distribution categories are shown in Figure 117.

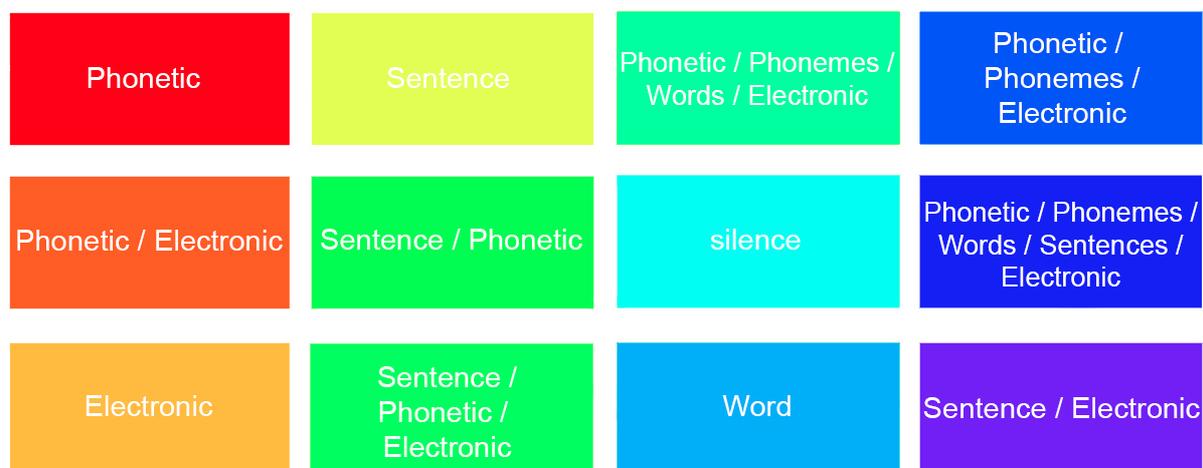


Figure 117: Speech sound categories for *Hundreds of milliseconds*

As is possible to appreciate through the analyses in the following pages, this piece contains the largest amount of *semantic* material in the entire cycle. In that sense the piece emphasizes the *sound poetry* aspect within its acousmatic composition nature. The way the *semantic* material is deployed, placed, contrasted and merged with the other sounds constitutes the form and nature of this composition.

The opening section is characterised by *semantic dissolution* and *semantic dissolution/extended* categories in the *voice type* distribution and the correspondent *phonetic* and *phonetic/electronic* categories in the *speech-sound type* distribution. This is the gestural material described in section 5.2.1, starting the piece dynamically with clear vocal material yet which is unintelligible from the *semantic* perspective. The sounds presented are mainly coming from the ‘new’ performer, namely the voice that speaks only in English and is not part of the three original voices for the rest of the cycle. To facilitate description, from now on this voice will be referred as the ‘new voice’.

After the initial seconds of the opening, the first *mesostructure* starts at 00:25:13 with a complex composite of *semantic dissolution/extended/non-vocal* corresponding to a continuation of the *phonetic/electronic* category in the speech type distribution. This quickly changes by keeping only the *non-vocal* feature at 00:33:03. The rest of the section is shaped by an intercalation of *non-vocal* and *semantic* categories in the voices row and *electronic* and *sentence* categories in the speech sounds row respectively. Due to the natural preponderance of intelligible language over a minimalistic sonic weft, the former

appears as figure and the second as background. These distributions can be seen in Figure 118.

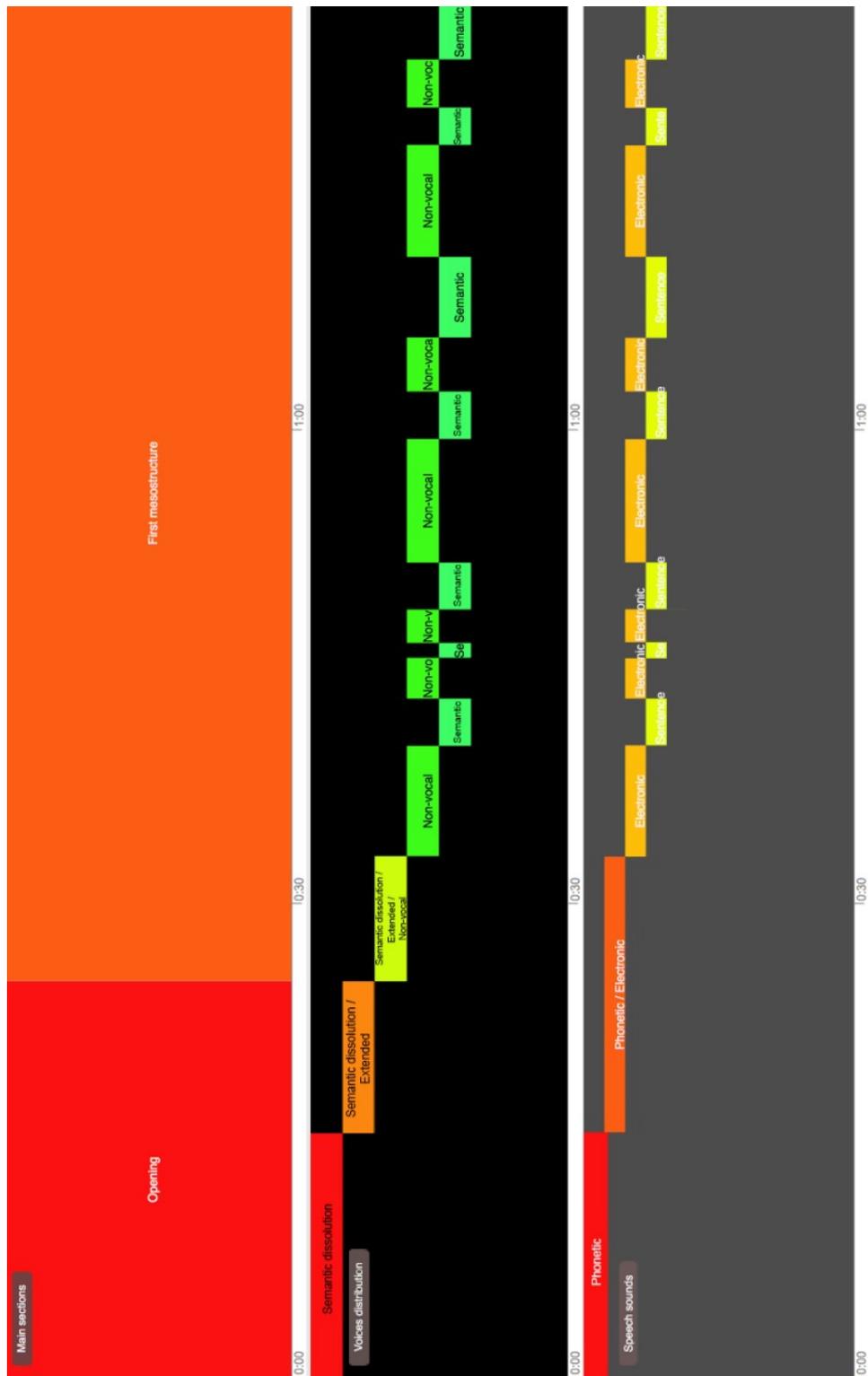


Figure 118: Hundreds of milliseconds, first mesostructure, voice type and speech-sound type distributions

Then, at 01:26:94, the second *mesostructure* starts with a *semantic dissolution/extended* category for the voices row and a corresponding *phonetic/electronic* one in the speech sounds row. At 01:42:49 a *semantic dissolution* is placed in the voices distribution, caused by the juxtaposition of *semantic* and *phonetic* contents that form a *sentence/phonetic* category in the speech sound distribution. These distributions are repeated over the *non-vocal* background (*electronic*) at 01:46:38 and 01:53:53 as can be seen in Figure 119 (red rectangles on top of the voices row). At 01:56:02 a *semantic dissolution/extended* corresponding to a *sentence/phonetic/electronic*, generates a brief and higher contrast with the *non-vocal* and *electronic* weft that still persists; following a *semantic dissolution/extended* that appeared at 02:01:93 with a *phonetic* feature in the speech sounds row, again the intercalation of *semantic* and *non-vocal* distributions is resumed from 02:01:93. This development completes the section with its equivalent *sentence* and *electronic* categories succession in the speech sounds row, as can be seen in Figure 119.



Figure 119: Voice type and speech-sound type distributions for second *mesostructure* of *Hundreds of milliseconds*

The third *mesostructure*, starting at 02:32:22, shows a complex merging of categories which is reflected in a composite category for the *speech-sound type* distribution, *phonetic/phonemes/words/electronic*. This distribution covers the complete section, except the last two seconds which are *silence*. In the voices row, this *mesostructure* corresponds to a *semantic dissolution/semantic/extended* category that is present much of the section, only changing to a *semantic dissolution/extended* at 03:57:73. Finally, the short *silence* at the end of the section is logically categorised as *non-vocal*. These distributions are shown in Figure 120.

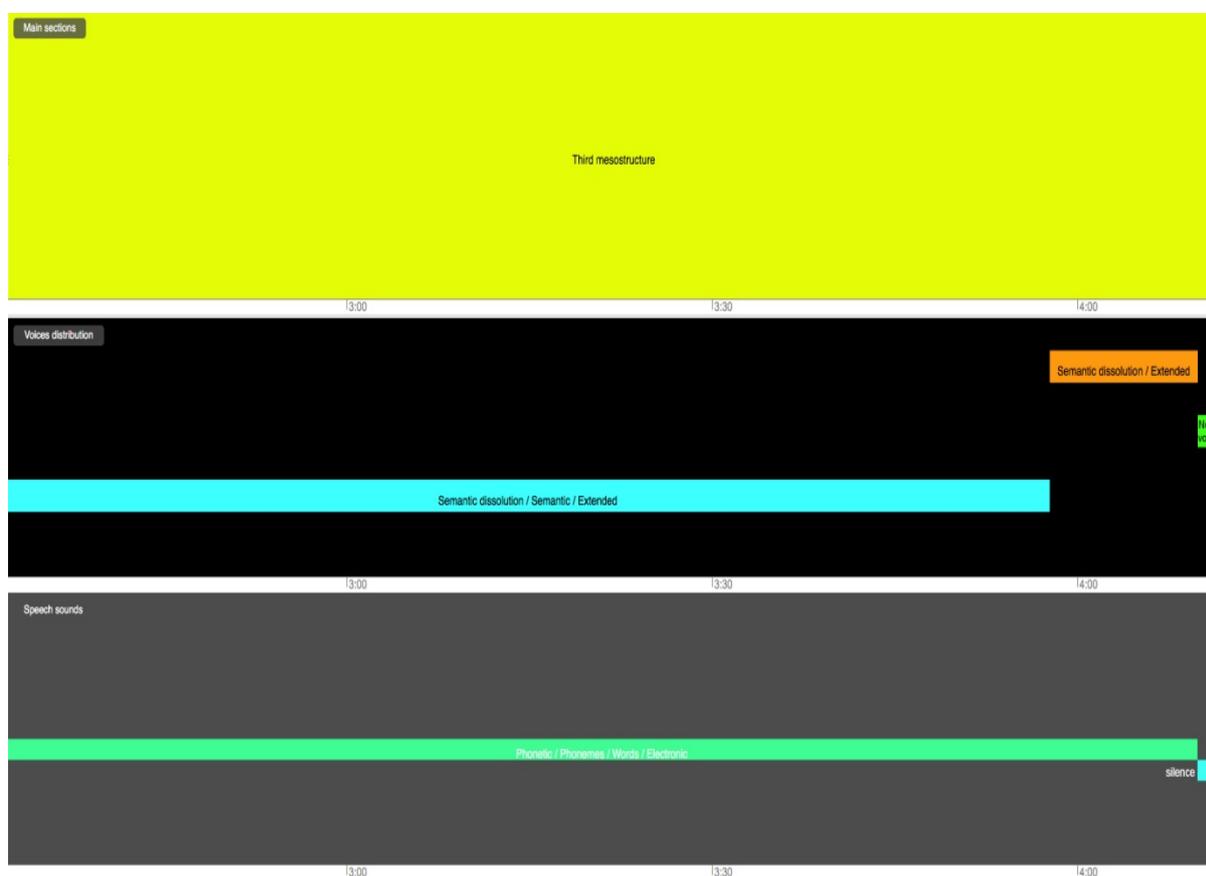


Figure 120: *Hundreds of milliseconds*, third *mesostructure*, voice type and *speech-sound type* distributions

The transition section begins at 04:11:64 and shows another type of intercalation in the *voice type* distribution. In this case is between *semantic* and *semantic dissolution/semantic/extended* categories. However, there is an exception at 04:23:92 constituted by a *semantic dissolution/extended*. This sequence is represented by greater variety in the speech sounds row, where there appears *word*, *phonetic/phonemes/*

electronic, *phonetic/phonemes/words/electronic* and *sentence* categories. The distributions for the transition can be seen in Figure 121.

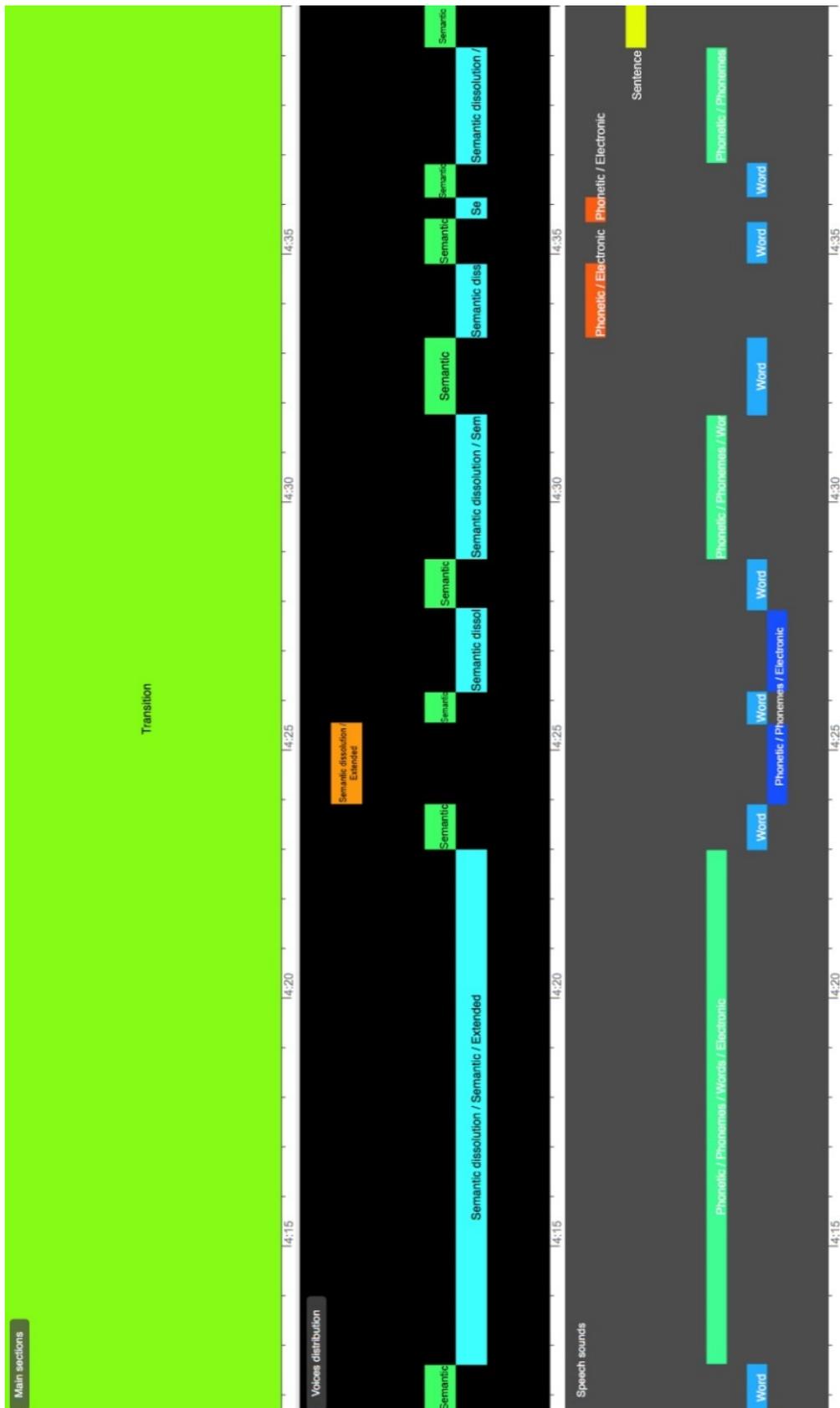


Figure 121: Hundreds of milliseconds, transition section, voice type and speech-sound type distributions

The following section, the fourth *mesostructure*, begins with *semantic* material, a *sentence* by the 'new voice', that had already started in the end of the previous transition. After this, a *semantic dissolution/extended* category creates a new background over which a compound of *semantic* and other materials is placed, turning it into a *semantic dissolution/semantic/extended*, where the preeminent element is *sentence* accompanied by *phonemes*, *words* and *phonetic* and *electronic* materials. These are grouped in a composite category in the speech sounds row (two blue rectangles) while a few specific elements stand out in some moments: *sentence* at 04:55:38 and 05:17:46, *word* at 05:16:57, 05:55:95 and 06:19:66, and *sentence/electronic* at 05:58:14. The final sixteen seconds of the section comprises predominantly *non-vocal* materials, namely *electronic* category in the *speech sound* distribution. This can be seen in Figure 122.

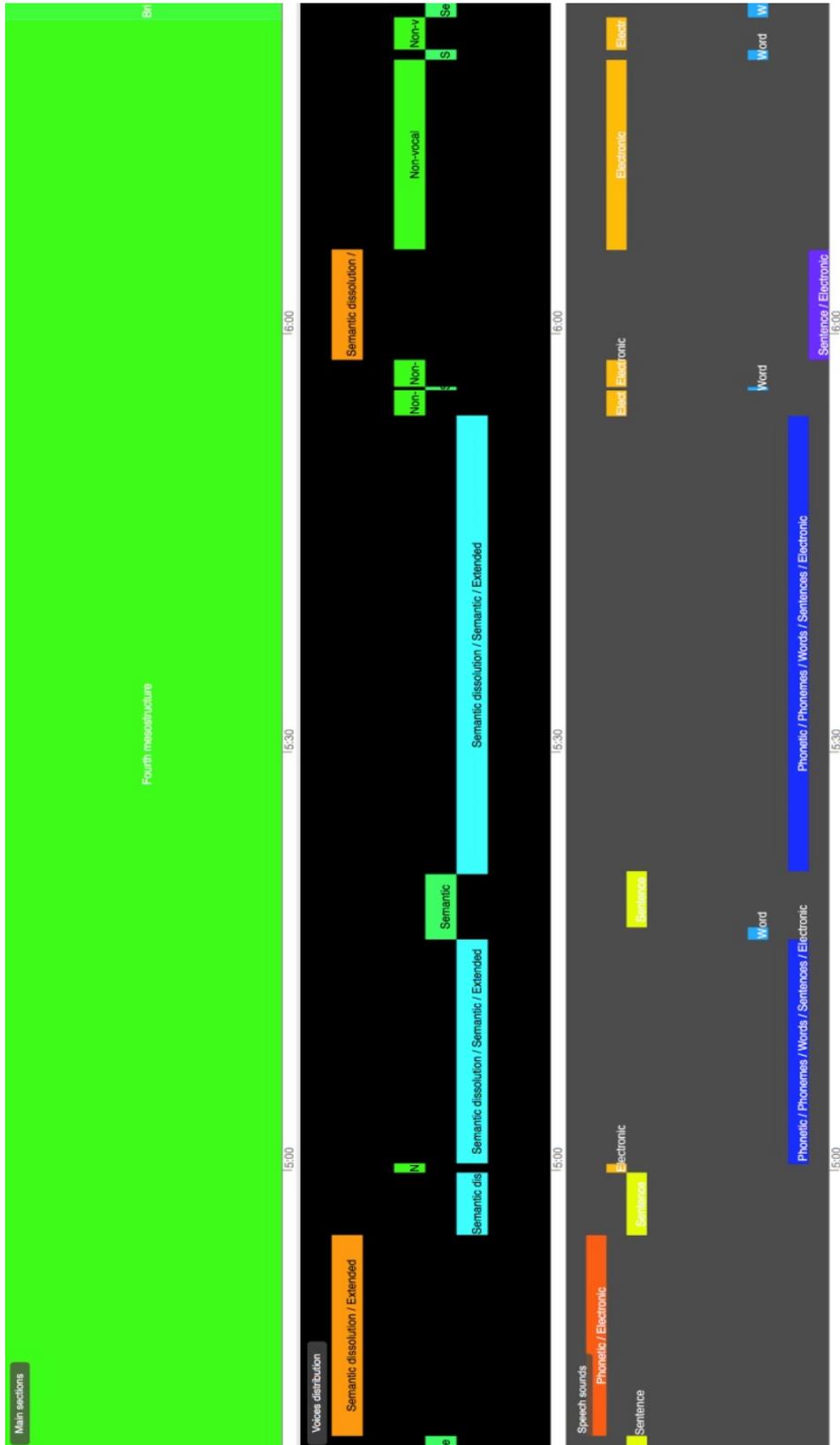


Figure 122: Voice type and speech-sound type distributions for Hundreds of milliseconds, fourth mesostructure

After this the bridge, starting at 06:22:56, evokes one category within each distribution: *semantic* and *word* for *voice type* and *speech-sound type* respectively. This sound, an elongated and slow utterance, leaves a reverberant tail over which the fifth *mesostructure* starts. The first element in the fifth *mesostructure* is a *sentence* in French that keeps the *semantic* category in the voices row. After a short *silence*, the *speech-sound type* distribution presents a *phonetic/electronic* category for almost the rest of the section. At the very end, at 07:08:61, a *semantic* element appears in a complex compound of *phonetic/phonemes/ words/electronic*, delivering a dense accumulation in a brief moment. This density of materials calls attention and releases energy into the beginning of the next section, which in fact starts with the 'signature object' that raises *extended* and *electronic* categories. At 07:17:42, the sixth *mesostructure* continues through a *semantic dissolution/semantic/extended* corresponding to a *phonetic/phonemes/words/electronic* in the *speech-sound type* distribution. These distributions for the bridge and the fifth and sixth *mesostructures* are shown in Figure 123.

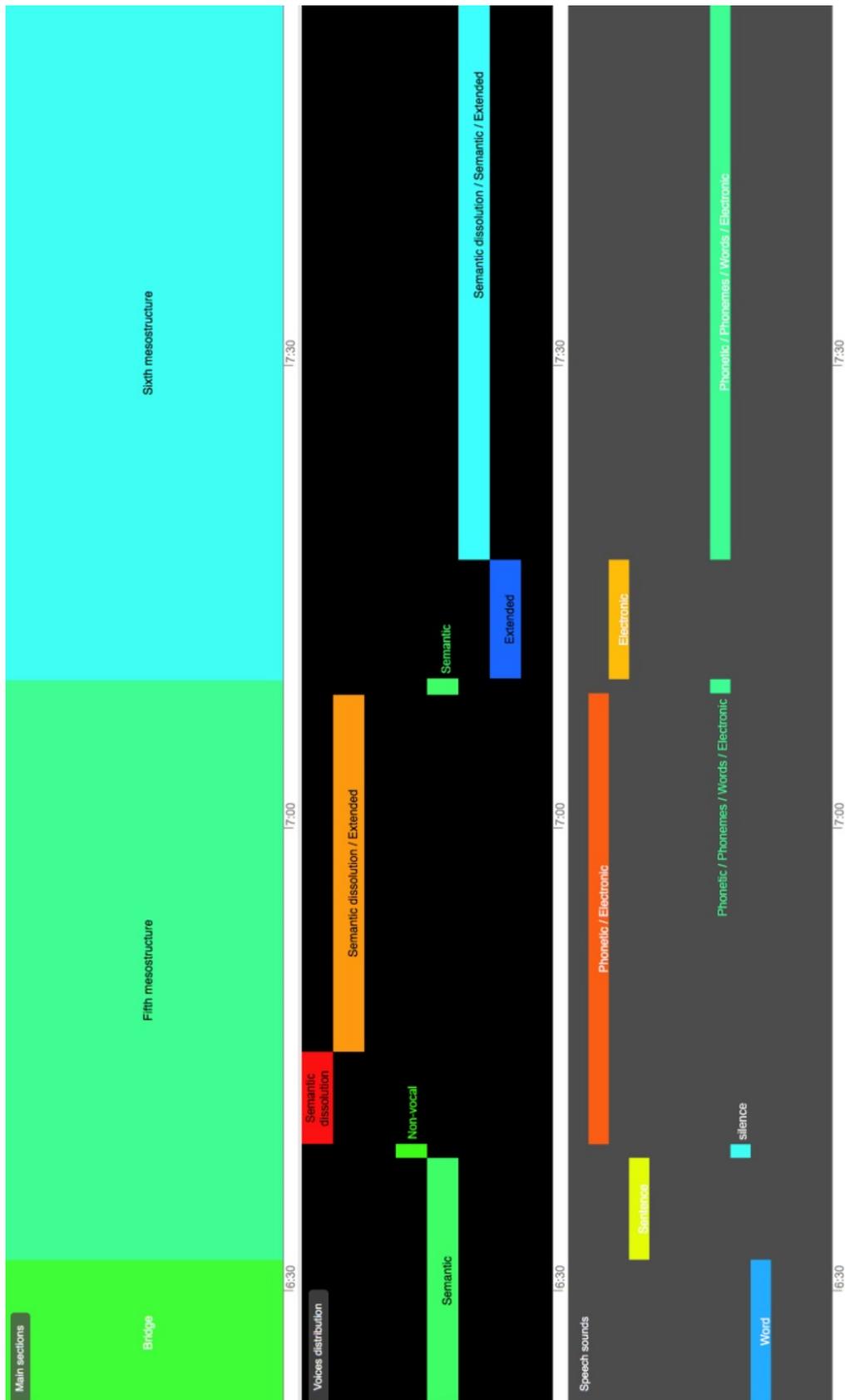


Figure 123: *Voice type* and *speech-sound type* distributions for bridge section, fifth and sixth *mesostructures* of *Hundreds of milliseconds*

The next two sections, the seventh and eighth *mesostructures* (starting at 07:53:38 and 08:58:78 respectively), share the same categories for both distributions: *semantic dissolution/semantic/extended* in the voices row and *phonetic/phonemes/words/sentences/electronic* in the speech sounds row. This shows a complex interleaving of materials where none stands out from the rest, deploying a very textural progression within which can be perceived salient elements. In fact, the segmentation between both sections is given mainly by the spectral composition and the *spatial levels*, where *sound objects* marks milestones from a morphological point of view. Along with this, the *semantic* material, *sentences*, reaches greater presence while the sense of interleaved group is kept all along the two sections, as can be seen in Figure 124.

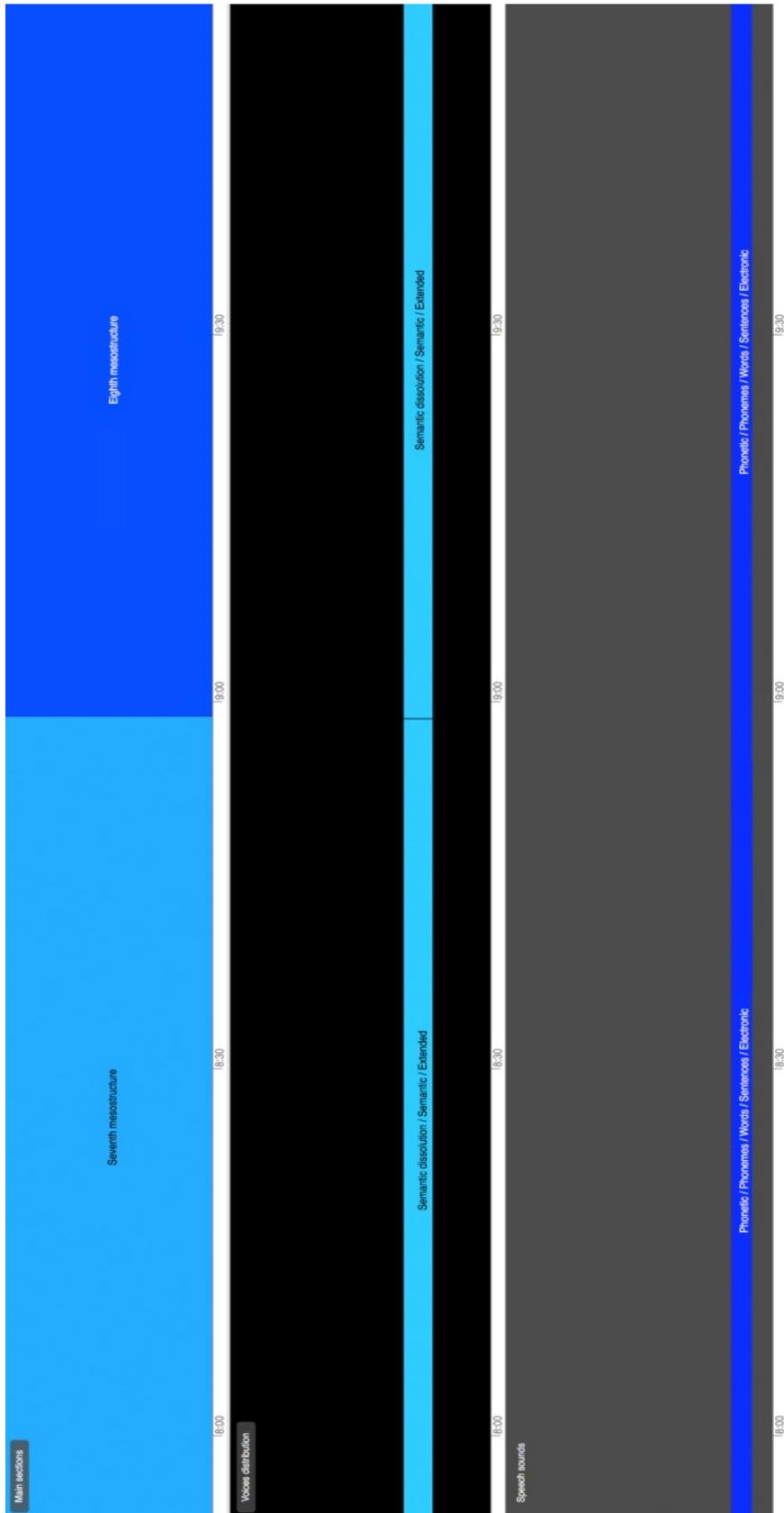


Figure 124: *Hundreds of milliseconds, seventh and eighth mesostructures, voice type and speech-sound type distributions*

The Finale section (starting at 09:57:10) maintains the *semantic dissolution/semantic/extended* and just change it at 10:41:31 to *semantic dissolution/extended/non-vocal*, an evident variation, that is prolonged into the coda (starting at 10:56:82) and lasts until the end of the piece. However, in the speech sound analysis, the distribution is only one, *phonetic/phonemes/words/electronic*, which is maintained until the end of the piece. The *semantic dissolution/extended/non-vocal* category, in the voice type distribution, is the same present in the beginning of the first *mesostructure* (yellow rectangle), but to emphasize its particular character, more complex and textural, it has been indicated with blue colour. These distributions can be appreciated in Figure 125.

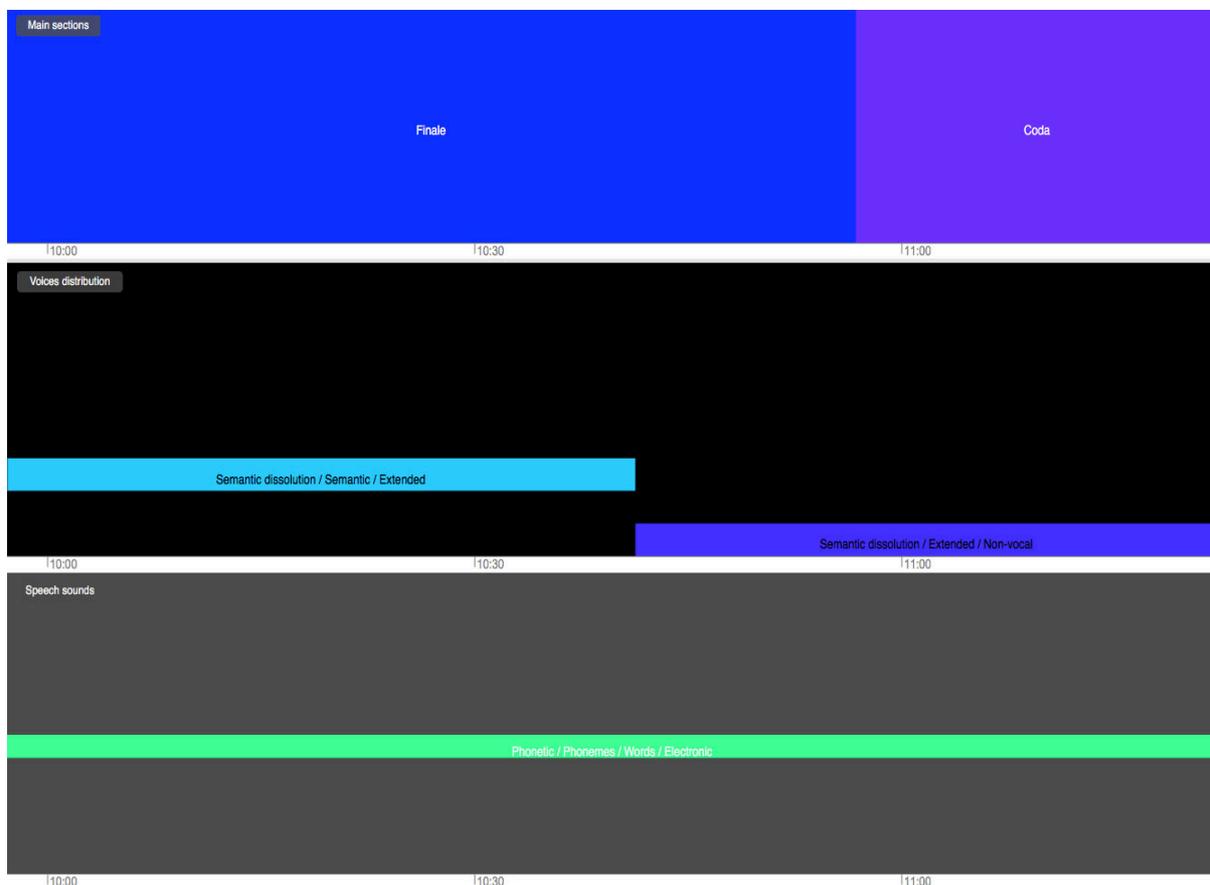


Figure 125: *Voice type and speech-sound type distributions for Finale section and coda of Hundreds of milliseconds*

5.3 Analysis conclusion

The piece is characterised by the heterogeneous colour of the different performers' voices and their electroacoustic derivatives. These materials operate as contrasting elements whose qualities are juxtaposed as *sound objects* and *spectromorphologies*, as

spatial behaviours and as vocal, speech and linguistic elements. In this regard, the presence of many and diverse *semantic* elements is significant; the reason for this is that this section of the cycle shows a detachment from the other pieces through the inclusion of a large number of *semantic* elements: *words* and *sentences* as carriers of various meanings in French, Spanish and especially English. The heterogenous development of these materials by means of procedures following the *acousmatic-creationist* ethos, is emphasised by the varied messages delivered by the voices. These texts were selected according to an intuitive procedure that sought appealing ideas in a subjective way. Together, they form a succession of sound forms with their own structural logic and the knowledge background of the listener. This is possible by using all these *semantic* contents as triggers of connections into the *nodalist* net proposed by Adkins (2014). In this final work of the cycle, gestural and textural materials, involving compositional structures based on *sound objects* and *spectromorphologies*, are merged with the *semantic* materials that, because of their explicit messages, constitute milestones for the segmentation of the piece. This combination of elements links this piece and the previous works. At the same time, this merging operates as a concluding and resolving process by presenting similar actions (sound articulations, gestures, spatial movements). The concrete and relevant appearance of the 'signature object', already presented in *Overture* and *La Lumière*, is developed into different versions in this piece.

More details of the way this piece and the other pieces work as part of the entire cycle *La lumière artificielle*, are analysed and described in the Conclusion to Part 1. Figure 126 shows the whole piece and the five analyses in a general view.

Conclusion Part 1

As has been shown, this cycle is formed by five octophonic pieces composed in the order that they are presented: *Overture* was composed first, *La Lumière* second and so on, although in most cases they overlap (i.e. when the *Overture* was in the last compositional stages, *La Lumière* was started). The process was one of intense and constant work over four years. During this time, the *acousmatic-creationist* procedure was driven by means of Vicente Huidobro's poetic production scheme and its adaptation to the acousmatic compositional process⁵⁰. As it has been explained in detail in the Compositional rationale, this scheme includes the following steps: first, the taking of elements from reality, second, their processing according to a personal system by the artist that put them in his or her subjective world, and finally, the return of them, by means of a technique, to the objective world as a new object or fact⁵¹. Part 1 of this thesis explains *poietic* process for the cycle, addressing general and specific aspects while the previous chapters focus on compositional details, procedures and aims in their respective *poietic* analysis sections. At the same time, each *neutral level* analysis section evidences the concrete way these procedures and aims are shaped within each piece.

All these outcomes derived from the process (the new facts or objects), form the pieces and furthermore, a complex network of materials and meanings that were integrated in a recursive procedure that use these outcomes as inputs within Huidobro's original scheme. This recursive action was active during all the compositional period, covering many possibilities, ranging from using sections of one piece in another to the theoretical consideration of the nature of a piece while a new one was under composition. For instance, the 'signature object' firstly presented in the *Overture*, is presented in subsequent pieces (*La Lumière* and *Hundreds of milliseconds*) and is developed into new versions within the last piece of the cycle (*Hundreds of milliseconds*). Another example are the materials created during the composition of *Hundreds of milliseconds* which were included in the *Overture*, one year after this one was completed in its main structure (Part 1, pp. 20-21). It is worth mentioning here that this recursive method is natural to the acousmatic compositional action; this explains the term *acousmatic-creationist*, coined in

⁵⁰ See Figures 1 and 2.

⁵¹ See Compositional rationale section and note 23.

the context of this thesis, that merges Huidobro's *creationist* artistic process with the acousmatic method.

The cycle is unified by the sound materials, the compositional strategies and the results described in the previous chapters. Also, the conceptual elements implied, both as poetical, philosophical and cultural meanings expressed through words and the artistic procedures used, have a role in the unification of the pieces as a whole. The analyses show these interleaved layers which include the title of the cycle, the texts by Kittler and Phillips and Sakai in the three languages used and also the artistic backgrounds and ideas implied, which are: acousmatic, *sound poetry*, *concrete music*, *concrete poetry*, *media poetry*, *simultaneism*, *several voices*, *different languages*, *juxtaposition*, *semantic*, *phonetic*, *non-semantic*, *electroacoustic poetry*, *spatial composition*, Huidobro's *creationism* and balance between *reason* and *imagination*. The concepts in this list are discussed both in the Compositional Rationale section and in the Appendix 3. Regarding these concepts, the previous chapters evidence their presence in the pieces and the whole cycle.

The variety is given by the specific shapes composed for each section of the cycle, their characteristic colour and spatial composition, that reinforce, contrast, distribute, alter, nuance the semantic elements (words' meanings) when exposed or suggested. The previous chapters have shown the structural discourse and the segmentation, both within each piece and considering each piece as a section of the cycle. In that sense, the final aspect to explain here is the structure of the cycle itself, in other words how the pieces act as sections of a larger construct.

As has been explained, the first piece, *Overture*, presents the cycle and its materials; it is a gateway to the sound world proposed and developed in the following pieces. To accomplish this role, the piece was composed according to guidelines such as introducing sound materials in a gradual way, deploying gestures, motifs and *sound objects* that are presented in the following sections and presenting little semantic content, thus allowing the creation of a further development based on increasing and decreasing these elements. This work presents for the first time the 'signature object' that constitutes a signal or sonic cue linking some of the pieces. The piece ends with a closing gesture that in fact acts as a person getting silent sharply.

The previous ending connects with the beginning of the next section of the cycle in a coherent way. This is due to the similitude of *sound objects*, both compound of

discrete vocal units. In fact, the idiosyncratic voice of the French text performer is present in the final *Overture* gestures, giving continuity.

This second section, *La Lumière*, continues some aspects of the previous piece such as the use of continuous sounds to create atmospheric parts and enhancing the spatial composition. However, the piece constitutes not only a development but a proposition of new materials and structural designs, containing some different features, including a noticeable rhythmic design and the presence of various *tonic* elements. The title of the piece, which is the title of the cycle as well, is presented not only in a clear way, but in different forms and several times. Another distinctive aspect is the inclusion of *non-vocal* referential sounds, namely the metallic rotating lid. The spatial composition is more varied, hybrid and dynamic than the previous section. The piece, as the former, ends with a closing gesture in a staccato manner.

The ending elements of *La Lumière* are melodies, clear and playful melodies sung by the performer. In contrast with this, the next section, *La Luz*, operates as a disruption of the previous state. *Overture* proposed a sound world and motifs, some of them developed and projected into new forms by *La Lumière* and now the Spanish section alters and diverts the flux, proposing a new turn. The start of *La Luz* is in fact a hit with dense spectral content; from the beginning the piece presents different *non-vocal* sounds, including materials whose sources are ambiguous but clearly *non-vocal*. Among these sounds it is possible to find synthesiser sounds and noise bands. In a sense, this section of the cycle returns to some aspects of the *Overture*: a major use of *wefts* and spectral thickness and a spatial design characterised by complex layering, taking advantage of the characteristic sonorities of Spanish language sounds. At the same time, by means of the referential *non-vocal* sounds, *La Luz* links with conceptual aspects outside the morphological ambit. If *La Lumière* makes reference to *musique concrete*, specifically to the *Étude pathétique* (1948) by Schaeffer, *La Luz* makes it to ideas of electricity and broadcasting. This piece, in contrast to the previous ones, ends with extended sounds in a long tail fading out.

The atmospheric and gradual ending of *La Luz* is mirrored by an equivalent fade in when *The Light* starts. All the materials presented energetically and dynamically that fade away in *La Luz*, are replaced by new *sound objects* in this section of the cycle. They are connected to the former piece in this beginning by this structural inverse deployment (the fade in of *The Light* equivalent to the fade out of *La Luz*) rather by aural similarity. If

La Luz has 'pulled' the *acousmatic-creationist* process towards the imagination⁵², *The Light* returns the status to a more balanced situation. This is given by a contemplative pace in general and an atmospheric quality achieved through the use of large number of *macro-objects*. The *level of spatial functions* contribute to the general stability by means of a structure marked by steadiness and the pre-eminence of one category of *spatial function, abstract*. The piece has its own developments and structure signalled by clear segmentation, although, in a way, it acts as huge passage between the previous pieces and the idiosyncratic *Hundreds of milliseconds*. This feature is demonstrated by the evident character of the piece (its shape described above) and the evidence provided by the analysis, which shows a predominance of *continuant spectromorphologies* in its discourse. Finally, the piece lacks *semantic* content although the vocal timbre is a key aspect. The exception to the lack of *semantic* content is given at the very end, when the title emerges uttered in several synchronised layers. This sentence behaves as a staccato gesture, as in *Overture* and *La Lumière*.

The following section of the cycle, *Hundreds of milliseconds*, starts with gestural materials, provided by the 'new voice' as source, that gradually increase in their complexity, both morphologically and spatially. The development of this *Finale* section of the cycle has been described in chapter 5, however, is worth pointing out here some of its general aspects regarding its nature as part of the whole pentalogy. The introductory nature of *Overture* and the particular features of the following French, Spanish and English sections have been stated: in the case of *La Lumière* and *La Luz*, their milestone nature as units in the whole, has been described, and the connective and passage quality of *The Light* has been pointed out as well. In terms of acousmatic materials and structure, many aspects of the previous pieces can be found in *Hundreds of milliseconds* too. Also, the inclusion of large number of *semantic* materials (*sentences* and *words*) confers not only a different character to this ending piece but constitutes an intensification of this aspect, manifesting a climactic function as part of the cycle. Due to their scientific and philosophical origin, the texts, that are explanatory sentences, act as concluder conceptual elements. After a compositional discourse driven by the meaning of these *semantic* elements, the piece moves to an ending conducted by a flux based on *sound objects*, thus putting an end to the complete pentalogy. Finally, although the pieces are

⁵² See Chapter 3.

interconnected in the way described above, they have been composed considering their functioning as independent units. In order to allow their performance as such, each piece's structural shape was carefully composed, as is possible to appreciate through the analysis chapters.

Part one has described how the octophonic cycle has been conceived, developed and forged into its final shape following the central notions of Huidobro's *creationism*. At the same time the convergence of several artistic notions, ranging from electroacoustic music background to *media poetry* and acousmatic music to *sound poetry*, have shown how Adkins' *nodalism* theory operates by the multi-layered intersection of cultural trends, including musical, poetic and scientific ideas, implied in these artistic notions and the texts present within the pieces. Accordingly, the idea of acousmatic composition in a multichannel format has been shown as suitable to give a concrete multi-layered structure, where the concept of *juxtaposition* has a prominent function, thus connecting this formal aspect with the theoretical background described through the key idea of heterogeneity. This concept, heterogeneity, is presented and discussed throughout the past chapters and links the *nodalist* junction of different ideas and the artistic use of this junction in order to obtain the central raw material ('*materia prima*' in Spanish) for *creationism*, namely to find unexpected relationships between ideas, forms and sounds, a creative process carried by merging *reason* and *imagination*.⁵³

On the other hand, the acousmatic approach to the vocal materials and texts has been extensively worked through a fluid movement between two poles: *semantic* and *non-semantic*. Similarly, other paired ideas were addressed in poles: intelligible/unintelligible, textural/pointillistic, naturalistic/abstract. It has been shown that alongside the electroacoustic procedures used, the pieces present techniques and aesthetic influences provided by *media poetry*.

As has been seen, there are many strategies and outcomes obtained through the cycle *La lumière artificielle* in regard to the use of voice and poetry in acousmatic music. However, other ideas remained pending, were slightly developed or not addressed, such as the use of archive materials, sampling of pre-existing sources and the inclusion of synthesiser sounds. In order to complete a wider scope and at the same time to allow the

⁵³ For further explanation of the role of these concepts in this thesis (heterogeneity, *nodalism*, *creationist* attitude that merges *reason* and *imagination* in order to find unexpected relationships), please see Introduction and Compositional rationale.

composer's creative impulse free flux, those ideas have been addressed in three stereo pieces described in the **Part 2: Three acousmatic tributes.**

Part 2: Three acousmatic tributes

Although grouped, these three pieces were composed independently from each other. They share some characteristics in the use of voice and present differences as well. The pieces are *Un regalito misterioso*, *Tom... Far... Orion... Blue* and *Sheffield 17*. They all share to have been composed as tributes to artists who has passed in recent years: Chilean visual artist Matilde Pérez, British rock artist David Bowie and Chilean electroacoustic pioneer José Vicente Asuar. Each of them uses recordings of the voices of these artists in a particular way. *Un regalito misterioso* presents the voice of Matilde Pérez in many ways, ranging from the clear utterances, thus bearing *semantic* content, to parts processed deeply by electroacoustic tools; put together with *non-vocal* sounds in a dynamic and intense composition, the whole is a dense weft of *spectromorphologies* and *semantic* content in the Spanish language. *Tom... Far... Orion... Blue...* has a different approach, presenting a dense spectral form and a rich conceptual content, but in this case the voice of David Bowie appears with minimum *semantic* and *phonetic* contents; in contrast, the voice's timbre (*harmonic timbre*) and its electroacoustic expansion, shape the colour of the piece and consequently its structure through the alliance with other sound materials. With *Sheffield 17* there is a return to the voice as a carrier of messages, since José Vicente Asuar's speech is presented with specific and clear statements; the few electroacoustic transformations of the voice have an articulatory and integrating role in this piece; however, whatever the case may be for the voice, raw or processed, it is the material with a minor presence in the work; as a matter of fact, the speeches, when they appear, act as milestones distributed in strategic locations within a macro-form mostly shaped by synthesisers sounds.

In the way these works use voice and text, it is useful to consider some ideas by Cathy Lane (2006), since they facilitate to understand nature of the pieces. According to Lane (2006, p. 4), in a first approach, it is possible to identify two main types of works using spoken word:

- “[...] works in which a semantic discourse is dominant [...]”
- “[...] works in which a more abstract discourse is dominant.”

Secondly, Lane states three types of works depending on the source material they use (Lane 2006, pp. 4-5):

1. "Works where the words are initially scripted or scored, rehearsed, read into the microphone and recorded, or performed."
2. "Works where the material is gathered from either everyday conversations or interviews."
3. "Works which use material from pre-existing archival sources".

With these ideas in mind, the pieces within this group can be classified as follows:

Table 1: Three acousmatic tributes classified following Lane's categories according to the type of sources

Piece	Dominant discourse	Source material
<i>Un regalito misterioso</i>	semantic	interview
<i>Tom... Far... Orion... Blue...</i>	abstract	pre-existing archival source
<i>Sheffield 17</i>	semantic	pre-existing archival source

Considering the previous statements, Part 2 of this thesis shows how the texts used, supposedly from non-poetic sources or which already has a poetic nature (interview and pre-existing archival sources) fit in the defined framework and how they operate as materials within the artistic position of this thesis.

The next chapters describe the pieces following the same method used in Part 1, namely *poietic* and *neutral level* analyses. In doing so, these analyses show the way the pieces tackle the problems listed above and their specific features as *acousmatic-creationist* pieces. Since these pieces are independent of each other, their aims are given separate discussion. Finally, since the following tables include large amounts of text, it has been decided to caption them, a design applied to every table in this thesis for consistency.

Chapter 6: *Un regalito misterioso*

6.1 *Poietic analysis*

This acousmatic work is a tribute to Chilean visual artist Matilde Pérez, who passed away in 2014. The piece was started at the author's personal studio in Santiago de Chile in 2014 and after a first draft with 6'23" of duration, was revised and finished at the University of Sheffield Sound Studios during 2015, the final version extending to a duration of 9'22". Pérez was a figure in kinetic art and a pioneer in the field of art and technology. The piece uses synthetic and recorded sounds, combining manual techniques and random algorithmic procedures for some structures and materials. In addition to the vocal and the synthetic sounds, other materials were captured through microphones and used as referential sound-images of objects, suggesting human action.

The aims of this composition were to:

- Use the meaningful ideas expressed by Pérez during the interview and contrasting them with an artificial sonic world provided by electronic sound materials; in this way, allowing emergence of unexpected connections, situating in this way the piece in the *acousmatic-creationist* frame of this research.
- Create dialogue between the sound materials; allowing this dialogue to act both through contrapuntal integration and juxtaposition of several layers.
- Create flux between *sound objects* and *spectromorphologies* by means of morphological connections achieved through montage or spectral processing. These procedures are common in acousmatic music, for instance, to let the rhythmic structure of a sound to be completed or continued by a similar rhythm of a different sound or by transferring the textural features of one kind of material, say, a fast *iteration*, to a smooth one, with *continuous facture*, by means of granulation or delays.
- Use the appearances of the human voice as milestones that define, mark or launch sections and sounds.
- Characterise the piece through the idiosyncratic *harmonic timbre* of Matilde Pérez's voice and, at the same time, use it to explore its sonority from a *sound object* perspective.

The main inspiration for the combination of voice and synthesised materials was Léo Küpper's electro-vocal compositions, particularly *L'enclume des forces* (1971) due to its interesting ways of putting electronic sounds and voice in dialogue, for instance in the way the *grain* of the electronic sounds provoke a contrast with the voice while both seem to lean on each other, having a complex relationship that moves between figure-ground behaviour and sounds that articulate each other. Another inspiration was the piece *Le Rêveur Au Sourire Passager* (1977) regarding the combination of words and fragments of them immersed in an electronic context, where these fragments became units pushing the sonic discourse while they can be perceived both as *sound objects* and referential vocal materials depending on the context of a given section or moment.

Regarding the specific use of synthesised sounds, the background was the own author's previous work, especially the type of materials used in two stereo pieces: *A SU Árbol Retorno* (2006) and *Concretamente* (2012) (Albornoz 2016, pp. 3-4), both works were inspired by electroacoustic music by the Chilean pioneer José Vicente Asuar, the former being a tribute to him. These works use different procedures to generate pitches sequences (serial and aleatoric) materialised into sounds provided by synthesisers. During next stages, these synthesised sounds were worked through *musique concrète* techniques, a method which was used similarly in *Un regalito misterioso*.

Matilde Pérez's voice samples were taken from an interview with Cristián Warken for his television programme *Una belleza nueva* (Rojas 2010). Pérez was a strong and paradigmatic figure in the contemporary art scene in Chile, a female figure who fought against prejudices of gender and of art stuck in the naturalistic reproduction of reality. She tackled this last issue through her pursuit for a pure abstract art and the use of technology to emphasize elements such as movement and light, leaving aside mimetic intentions or representational uses of art. Following her studies and work in Chile during the 1950s, a scholarship, allowed her to study in Paris in 1960 where she made contact with the *Group de Recherches d'Art Visuel*⁵⁴ (GRAV). Within this group of artists was the Argentinean Julio Le Parc, through whom she established contact with the Hungarian-

⁵⁴ "The Visual Art Research Group brought together visual artists from different countries who coincided in Paris in 1960 and who questioned the notion of "work of art". Among other things they were interested in research artistically the lighting, chromatic and visual effects and devising new forms of dialogue and participation of the spectator. Among the founders, Julio Le Parc, François Morellet and Jean-Pierre Yvaral stand out and who proposed a break with tradition, moving away from static pictorial work and thus approaching constant movement, actively including the viewer in the work. The group disbanded in May 1968" (Chilena:Portal 2018). Translation: A. Albornoz.

French artist Victor Vasarely (Chilena:Portal 2018). The *GRAV* had as central aims the rupture of certain artistic values which considered the artwork as “[...] unique, stable, definitive, subjective, obedient to aesthetic or anti-aesthetic laws [...]” (Harrison and Wood, p. 727). Instead the group proposed the transformation of those values by limiting the work to a “[...] strictly visual situation [...] to stress visual instability and perception time [...] (Harrison and Wood 2007, p. 727).

The notions of abstraction and motion that emerged from Pérez’s works and her artistic rationale are linked to the *GRAV* aesthetic program. The central principle of *Un regalito misterioso* was to put together these notions with Pérez’s voice, which in turn expresses in Spanish her ideas on the creative process, the omnipresent concepts of movement and change in her life and works, her artistic vocation and the role of technology in art. The selected audio clips were taken from the mentioned interview, which had a total duration of 53’52”. These clips are, in fact, a selection of a first collection of longer chunks. The denoised and edited samples form a group of sixteen initial statements which are the source for the vocal material in the piece. Table 2 shows the original texts in Chilean Spanish alongside their English translations⁵⁵. Some of these translations are explained since the Spanish originals are used in a poetical way, especially regarding the eventual double or triple simultaneous meanings, depending on the context of the words and phonemes. Where and how they appear with the different meanings will be described in the visualisation of the *neutral level* analysis.

Table 2: Spanish texts of *Un regalito misterioso*, translation and explanation

N°	Original Spanish text	English translation
1	¡Ya!	This is an affirmative expression with multiple meanings in Spanish. In the piece it is used in two ways: In the first appearance as an adverb expressing immediacy: <i>Now!</i> or alternatively, <i>Go!</i>

⁵⁵ Translation: María Jesús Inostroza / A. Albornoz.

		Later, from minute 4'30", as an expression of something finished, an adverb signalling ending or changing in the state of something; this can be translated as <i>ready</i> or <i>done</i> .
2	Porque siempre esto está caminando, esta cambiando, esta cambiando...	<i>Because this is always moving, it's changing and changing...</i> <i>Caminando</i> it has been translated as <i>moving</i> , although literally means <i>walking</i> , because here it is applied to ideas.
3	Uno nunca termina de recorrer un camino, un camino que nunca llega a su tope, a su fin.	<i>You never finish the journey of your path... And it's a path that never reaches its end.</i>
3	No sé, no sé, no sé...	<i>I don't know, I don't know, I don't know...</i> This is a decontextualization of a phoneme. Corresponds to the first two words in sentence 5, and here has this meaning, meanwhile in the original sentence it is a negative form of <i>to be</i> , indicating <i>nothing is lost</i> .
4	Recorrer	<i>Travelling</i>
5	No se pierde nada	<i>Nothing is lost</i>
6	Está viviente...	<i>It is alive...</i>
7	Espacio	<i>Space</i>

8	Sueña	<i>(he or she) dreams</i>
9	Regalito, regalito...	<i>Little treat or little present</i>
10	Una dinámica, un moverse en el espacio.	<i>A dynamic, a movement into the space.</i>
11	Una actitud mental diferente...	<i>A different mind-set...</i>
12	Niñita chica yo, de 4, 5 años, yo dije, yo soy pintora.	<p><i>Since I was a little girl, aged around 4 or 5, I said: I'm a painter.</i></p> <p>This is a very Chilean expression, which sounds a bit redundant in standard Spanish: <i>Niñita</i> means <i>little girl</i>, and <i>chica</i> is <i>little</i> in feminine form; following this, the literal translation would be <i>Since I was a little little girl...</i></p>
13	La tecnología es una técnica, no es un pensamiento, no es una creación.	<p><i>Technology is a technique, it isn't a thought, it isn't a creation.</i> This is an elusive sentence; it has been placed in this form to provoke and trigger discussions.</p> <p>Following Pérez's artistic ideas (Rojas 2010; Chilena:Portal 2018), this means that, although technology may contain value in itself, what it is relevant for the Chilean artist is found within the ideas expressed in the</p>

		structure of the perceived elements of a piece of art. This contextualisation cannot be placed in the piece and the sentence has been kept just like that with the provocative intension.
14	Regalito...	<i>Little present...</i>
15	Estoy dando...	<i>I'm giving... or I'm ceding</i> <i>This is in the sense of give a gift, a present in a free way and without expecting anything in return.</i>
16	Y si se hace pensar a otra persona, le estoy dando una especie de regalito misterioso y extraño para que viva con otras cosas...	<i>And if it makes someone think, I'm giving a kind of mysterious and bizarre little present to get her or him to live with other stuff...</i> <i>Here stuff means things or ideas in a poetical and colloquial Chilean way. The artist referred to the action of giving a spiritual and intellectual present to people through her art.</i>

Until this point in this thesis, the pieces included *semantic* content in three different languages, French, Spanish and English. From the point of view of concert presentation and considering the relevance of these materials, in terms of carriers of significant meanings, I have contemplated the preparation of a video track with subtitles for the pieces that contain either some unintelligible sections or are presented to an audience

unfamiliar with the language in the piece. This is an idea inspired by the concert version of the piece *An Angel at Mons* (2014) by John Young (2014), where the specific accent of the voice included in the work makes it difficult to understand the message for a listener not familiar with it. This idea it will be implemented in the near future for concert versions of the pieces that require it, like *Un regalito misterioso* and *Sheffield 17*. In the case of the texts included in the cycle *La lumière artificielle*, it is mainly necessary for the *Finale* section, *Hundreds of milliseconds*, since, for instance, a Spanish speaking audience could miss all the messages contained in the English sentences.

6.2 Neutral level analysis

This piece has eight sections determined by means of *sound object* composition and *levels of spatial function*. However, as can be seen in section 6.2.3 *Voice type* and *speech-sound type* distributions, there are four moments where the segmentations are either driven or complemented by semantic material. The sections are:

1. Starting section (00:00:00 - 01:19:01)
2. Bridge 1 (01:19:01 - 01:24:44)
3. First *mesostructure* (01:24:44- 02:32:55)
4. Second *mesostructure* (02:32:55 - 03:24:97)
5. Bridge (03:24:97 - 04:30:29)
6. Middle section (04:30:29 - 07:27:76)
7. Final section (07:27:76 - 09:15:73)
8. Coda (09:15:73 – 09:22:78)



Figure 127: *Un regalito misterioso* main sections distribution, graphic representation

6.2.1 Distribution of *Sound objects* and *spectromorphological* structure

The piece starts with a clear *emergence spectromorphology* that corresponds to an *Hx* object; after a *continuous complex mass object* (*X*) and a short silence, an *attack* function triggers a complex compound of *macro-objects* headed in a first moment by a single *complex mass impulsion* (*X'*). A *grosse note* (*W*) fills the spectrum giving way to a *complex mass accumulation* (*Ax*) and a *tonic mass long iteration* (*Zn*) that starts at 00:03:55; these two *macro-objects* constitutes a *passage* structural function which is variated with the appearance of several *balanced objects* at 00:25:70; these *sound objects* are mainly *tonic mass* materials, both with *continuous* and *iterated factures*; a new *attack* function acts at 00:37:99, after a succession of *iterations* (*X''*, *N''* and *Zx*); this *attack* is the same element present previously and again is launching *macro-objects*, although in this occasion these appear in greater quantity and variety, including *accumulations* with *tonic* and *complex masses*, an *homogeneous complex mass* object and afterwards a compound of long *iterations* that overlap between each other: three with *tonic mass* (*Zn*) and one with *complex mass* (*Zx*). The general behaviour of these objects is a *passage* function that is complemented by other functions that act in parallel: a *transition* starting at 00:51:18 and an *arrival* from 01:03:13 to 01:19:01 (the end of the section); the starting of the *arrival* function is marked by two *N* objects and one *complex mass sample* (*Ex*). The ending of the section is performed by a *N* and a *N''* objects.

The bridge 1 section is composed by one *sound object*, an *accumulation* with *complex mass* (*Ax*) and a short silence after which the brief section ends; this bridge presents two simultaneous structural functions: *passage* and *closure*. These distributions of materials can be seen in Figure 128.

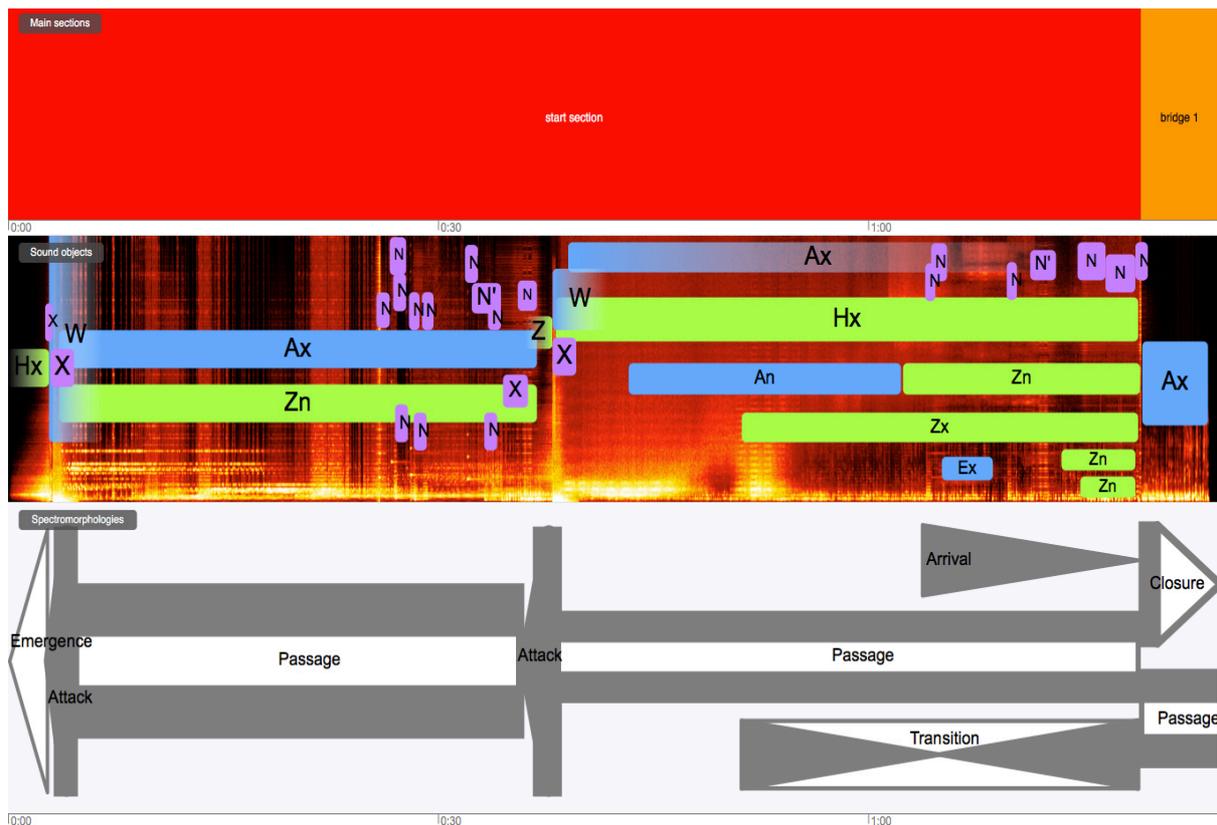


Figure 128: Sound objects and spectromorphologies for starting section and bridge 1 section of *Un regalito misterioso*

The next part, the first *mesostructure*, starts at 01:24:44 and presents one structural function in almost its entire duration: *passage*; this *spectromorphology* is shaped by a succession of short *balanced objects* that create a pointillistic flux that is nuanced by several *complex mass accumulations*, *samples (complex and tonic masses)* and two *tonic mass accumulations* by the end of the section. This structure confers a dynamic nature to the section while represent a sonic flux that could last for an indeterminate time since there is no clear resolution suggested, developed or proposed; on the contrary, *sound objects* articulate each other repeatedly giving the impression of a process that begins again and again. This continuous chain of gestures and articulations is only clearly interrupted at 02:26:72, when a high pitch *N* object give way to a *tonic mass accumulation*, in the high part of tessitura, that ends the section by means of a *release* structural function. These elements are shown in Figure 129, where it is possible to see a small group of *balanced objects* connecting this ending with the beginning of the next section.

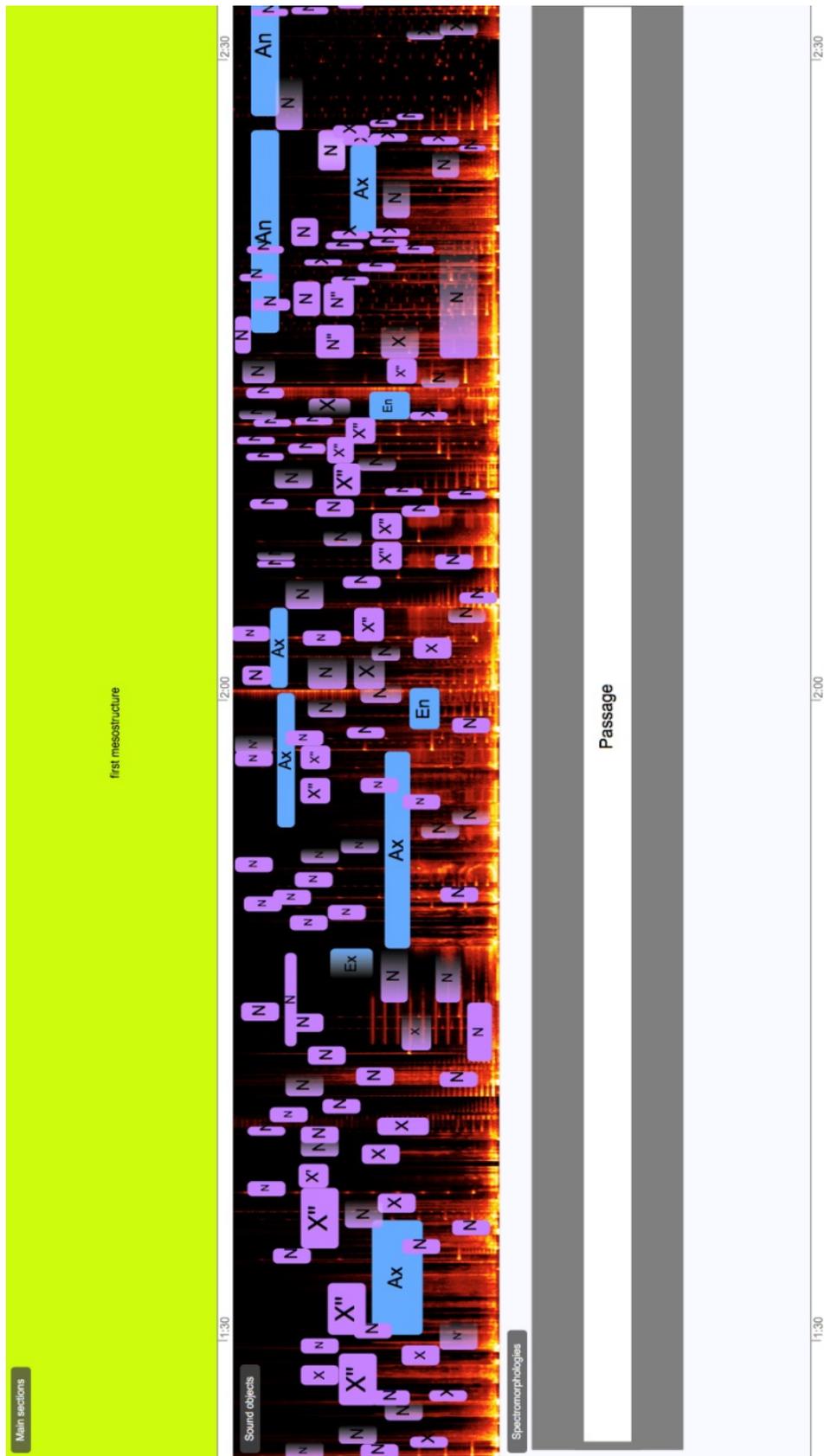


Figure 129: *Un regalo misterioso*, first mesostructure, sound objects and spectromorphologies

The second *mesostructure* starts at 02:32:55 by means of an *attack* function launched by the *balanced sound objects* overlapping this section with the previous one. This *mesostructure* presents a binary form: the first half is a variation of the previous section where the pointillistic materials are combined with *accumulations*; one is a *tonic mass* one (*An*), which in fact is a version of the *accumulation* that ends the first *mesostructure*; the other is a *complex mass* one (*Ax*), a significative material from the starting section, here re-exposed; this half of the section constitutes a *transition spectromorphology* that is interrupted by an *emergence* function in the form of an *Hx* and a *X* objects that fade in; they trigger an *attack* function which is a new presentation of the compound gesture presented in the starting section (*X'*, *X* and *W*); this element initiates the second half of the section which is another combination of parts presented in the previous sections; in this case the merging of the first *mesostructure* sound types and the energetic *accumulation* of the starting section; the *spectromorphologies* are *passage* and *transition*. The section finalises through the narrowing of the spectral thickness and decreasing of the objects amount. Until this point, the piece shows a development in the form of presentations of acousmatic materials, variations of them and re-expositions: *macro-objects* are signalled by *balanced objects* in the starting section (Figure 128) and the high density of *balanced objects* is marked and accompanied by *macro-objects* in the first and second *mesostructures* (Figure 129 and 130). The main *motion* and *growth* processes (Smalley 1997) are *ascent/descent*, *parabola* and *agglomeration/dissipation* respectively. The *sound objects* and *spectromorphologies* for this section can be seen in Figure 130.

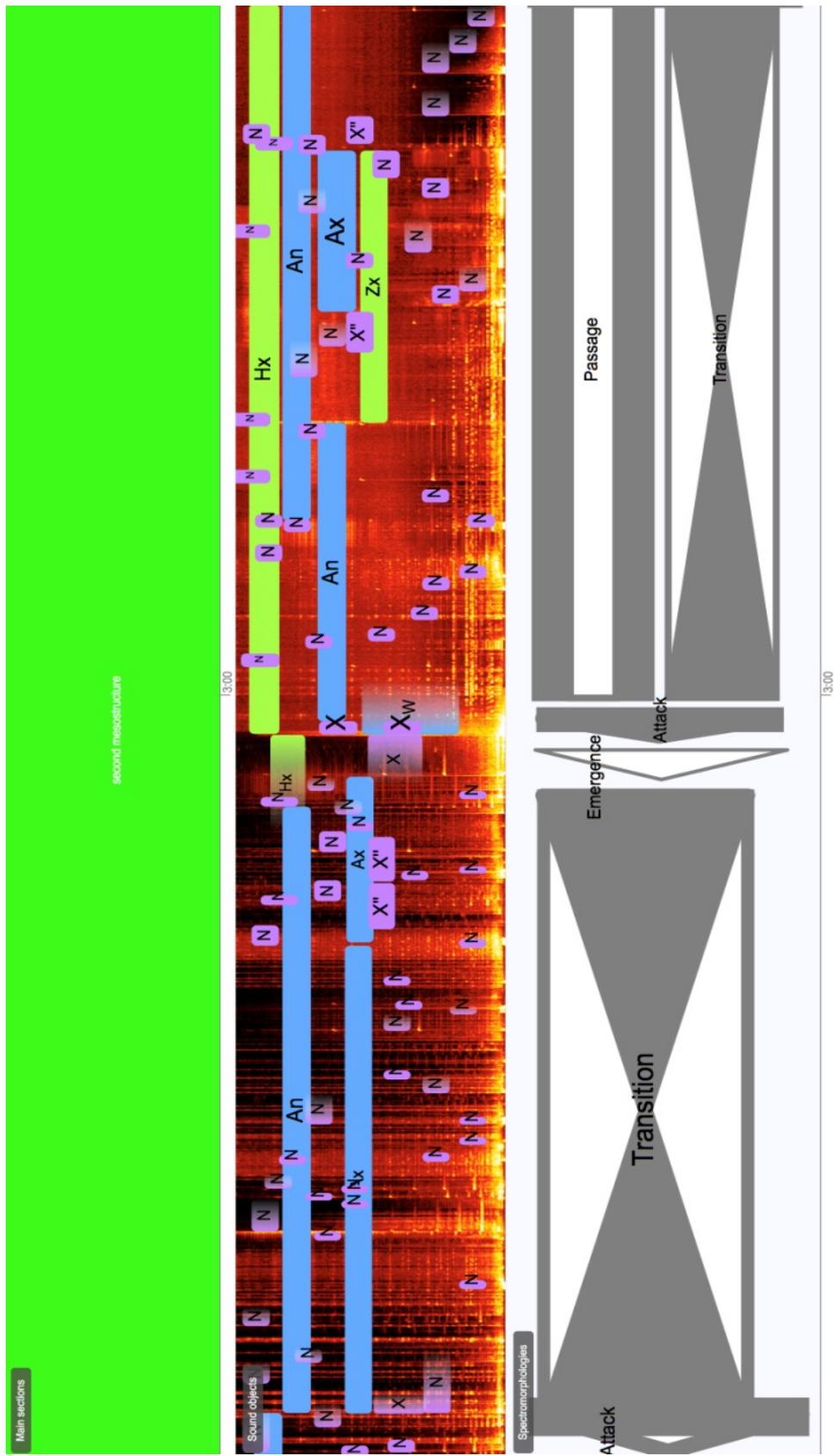


Figure 130: *Un regalo misterioso*, second mesostructure, sound objects and spectromorphologies

At 03:24:97 starts the next section, bridge 2. This bridge has a binary structure as well and although could be considered as three different units, the present analysis has considered this part of the piece as a coherent unit for two reasons: one, it is shaped by related *sound objects*, both in its own duration and regarding the previous sections and two, its function, as structural element of the piece, is to conclude the presentation and development of the sound materials exposed, opening the way to the next section which presents new sound objects, structure and pace.

This bridge has two parts connected by the mentioned pause in the middle. The first part is characterised by a *passage* structural function that exposes a group of *balanced sound objects* with great presence of *tonic mass* ones; again is a re-exposition of the pointillistic materials of the previous parts, this time with less amount of materials; at 03:49:38 a *tonic mass continuous* object (*N*) constitutes a *release* function shaping the mentioned pause in the middle, which lasts thirteen seconds, after which the second part of the section begins with a *complex mass sample* at 04:02:22. At this moment the *sample* and three *balanced objects* (*Y, X* and *N''*) form a *transition* function that give way to a clear *emergence* where a couple of *variable mass samples* (*Ey*) are central to manifest the rising nature of this *spectromorphology*. Then the last elements of the section are another *transition*, a *release* and compound of *prolongation* and *release* functions; these *spectromorphologies* are formed by *balanced objects* and *macro-objects* as well, reiterating the pointillistic structure with the presentation of a new form of *tonic mass iteration* that it is relevant in the composition of the final section. This new form is characterised by the stable repetition of very regular impulsions (*N''*). The *resolution* ends the flux of sounds which energy is released through, precisely, by a *release* function at the beginning of the next section. Figure 131 shows these elements for the bridge 2 section.

The middle section is launched at 04:30:29 by the *release* function mentioned, after of which a brief silence sets a clear moment from where the next materials start. The elements placed from this point, are mostly *balanced objects* that behave as gestures in a similar way to the previous sections where the short elements present a point type composition made of discrete units; the difference with the previous sections is the inner spectral constitution of the *sound objects*, that it is shaped by a rough *grain* in their *sustainment* and short but clear *melodic profiles*; at the same time it is very noticeable the source of these objects, human voice, which particular *harmonic timbre* is presented in a raw way and simultaneously developed by electroacoustic procedures; when the sounds form a longer block that behaves as a coherent units, these materials act as *samples* (*En*, *Ey* and *Ex*). Progressively other *macro-objects* appear, such as *iterations* (*Zx*) and *accumulations* (*Ax*, *An*) and *homogeneous tonic mass* objects (*Hn*) that are relevant since provide *tonic* traces operating both as background and links for the short objects. The majority of the *spectromorphologies* are *continuants*, conferring to the section an evolutionary character. These structural functions include *passages*, *statements*, *transitions* and *prolongations*; among these functions, there are five different that are significant: a *closure* at 05:45:73 that ends the first half of the section, a *departure*, at 05:48:23, that follows the previous function and signals a change in the materials and pace, a second *departure* at 06:24:17 that delves in the direction of the previous (intensifying the type of sounds and behaviours), an *upbeat* at 07:09:60 which increments the dynamism and tension, and an *arrival* at 07:25:32 that ends the section. In general terms, *plane* is the type of motion and growth is marked by *agglomeration* and *dissipation* processes. These distributions for the middle section are shown in Figure 132.

Then, at 07:27:76, the final section begins with the strong *attack* presented before in the starting section and the second *mesostructure*; this *attack* is characterised by the *grosse note* (*W*) covering the spectral space with a percussive resonant hit; in this way an *upbeat* function accelerates the pace while the section moves towards the end with a *departure* function and a *passage*; the following function is a predominant *prolongation*, starting at 07:48:88, that keeps the discourse presented; the *sound object* distribution is similar to the already presented, in the form of discrete units combined with longer *macro-objects*, but the difference is the accentuated presence of regular *iterations*; they give a major sense of stability to this section compared with the previous; with *tonic* and *variable masses*, the large *Z* objects characterise this final part, where, in addition, various *complex mass accumulations* (*Ax*) provide variation to the dynamic discourse; a new repetition and final *W* object at 08:55:91, generates a new *upbeat* function that leads to an *arrival* that finalises the great amount of sounds with a *closure* at 09:15:69; after this, the section has been finished and few *balanced objects* shape the coda section, where three structural functions end the piece: *resolution*, *closure* and *arrival*, all of which signalise the stop on the speech material presented. The *sound object* and *spectromorphologies* distributions for the final section and the coda can be seen in Figure 133.

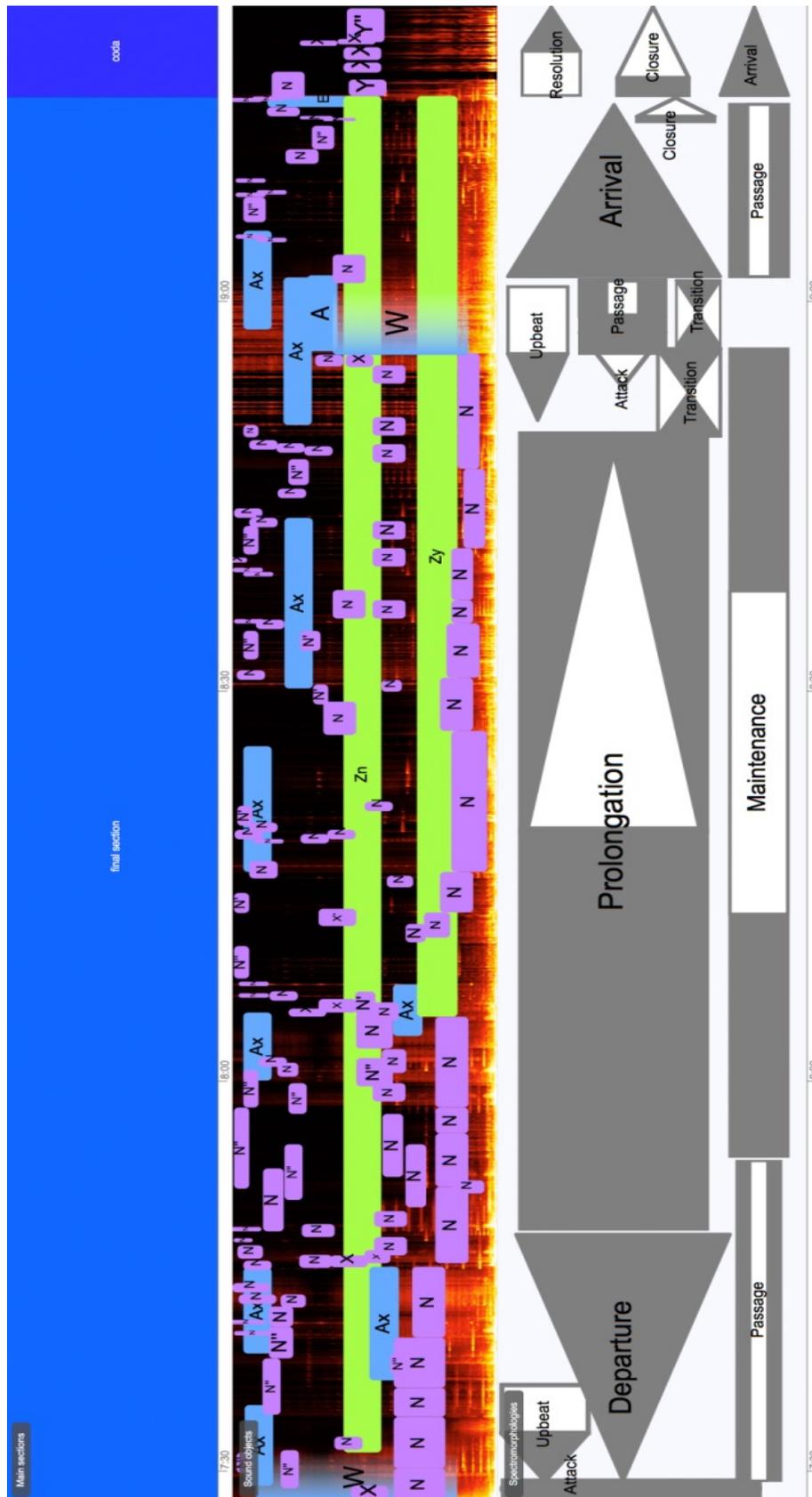


Figure 133: Sound objects and spectromorphologies for final section and coda of *Un regalito misterioso*

6.2.2 Spatial distribution and structure

Levels of spatial function for this piece are shown in Figure 134.

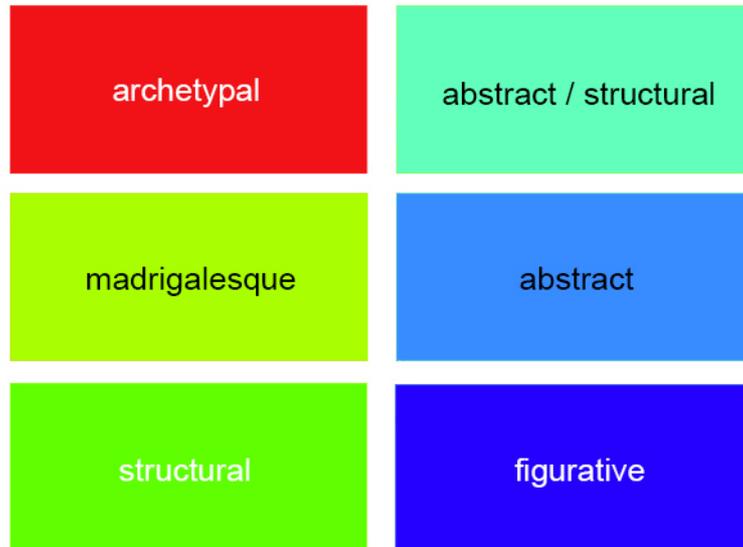


Figure 134: *Levels of spatial function* for *Un regalito misterioso*

In this piece space is composed mainly through *abstract* and *structural* functions, including a compound *abstract/structural* function. Additionally, a *figurative* function is present and *archetypal* and *madrigalesque* functions operate as markers of specific moments, providing in this way accents, junctions and trigger type units.

The piece begins with an *archetypal* function level shaped by an initial expansive behaviour interrupted by the *madrigalesque* nature of the human voice presented at 00:02:88. This material, Pérez's voice, gives way to a second *archetypal* function, this time constituted by an explosion at 00:03:11. It is evident that these elements are a group that progress quickly in a brief amount of time. Then, shortly after at 00:04:50, the spatial configuration is placed in a frontal image on the stereo field and, subsequently, the sound materials start to trace smooth movements, moving between left and right following the dynamic of the *sound objects* presented, *accumulation* and *iteration*. These elements act through a *structural* function, since a different sub-section is indicated in the EAnalysis graphical representation. On top of this spatial design, human voice appears again in a dry and frontal location, presenting in this way a *madrigalesque* function at 00:34:36 by means of an *utterance space*. After this, a short *archetypal* function (00:38:02) gives a new change by means of another explosion, triggering an *abstract/structural* function at

00:39:50. This function marks the placement of a new sub-section and at the same time a composition centred in moving lines and volumes. These functions are contained in the starting section which is ended by a *madrigalesque* function that constitutes the complete short bridge 1 section. The change is drastic at this moment, 01:19:01, since the previous elements are placed in a *perspectival space* and here the voice is placed into an *agential space* which its reverberated nature is dried out to produce an *utterance space* following Smalley's spatial category (2007). In other words, the expansive spatial behaviours are collapsed into a limited space. These spatial functions can be seen in Figure 135.

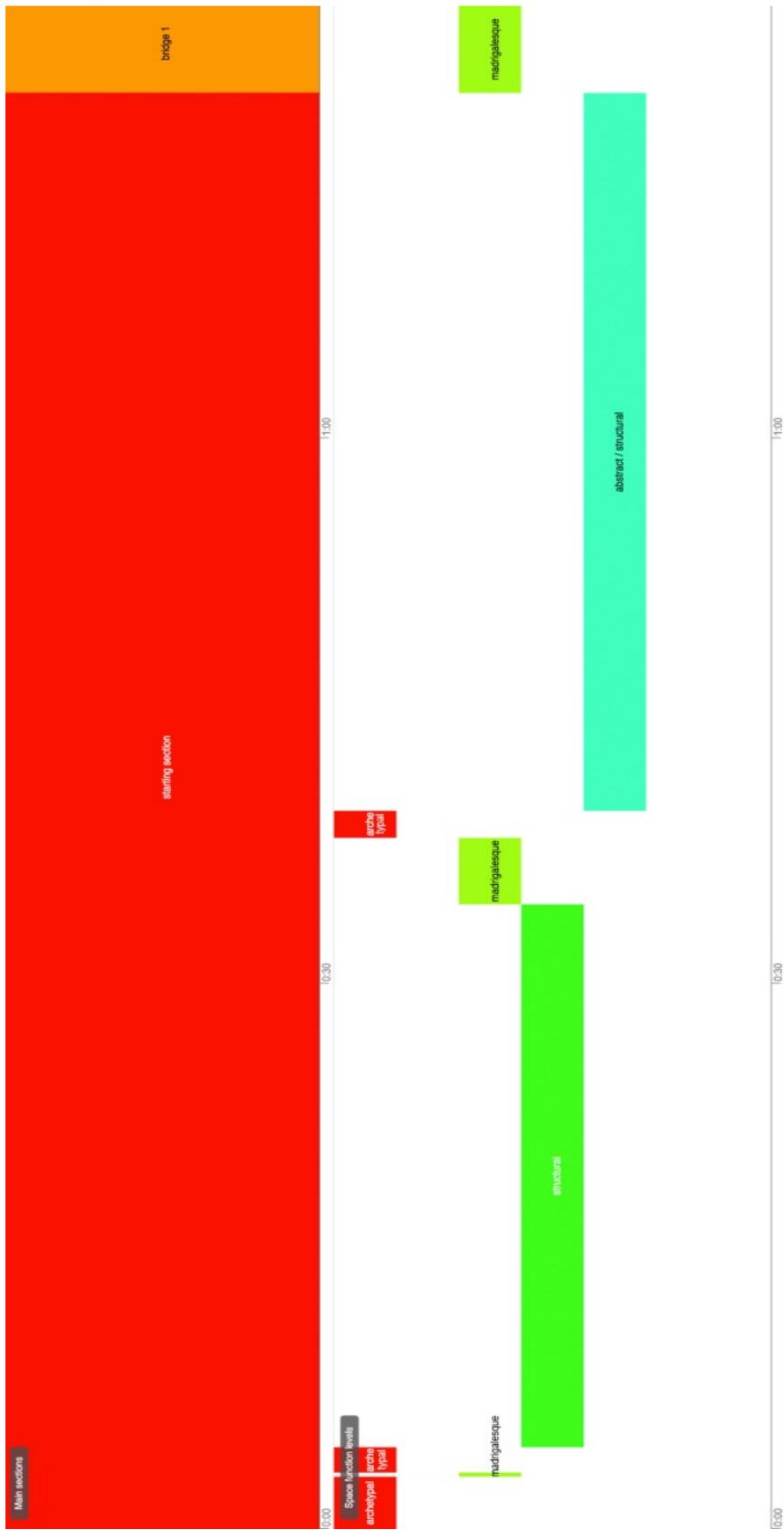


Figure 135: Levels of spatial function for first mesostructure of *Un regalito misterioso*

The first *mesostructure* starts at 01:24:44 by means of a *structural* function, thus the space defines the segmentation. Then at 01:46:48 the focus is moved towards the *abstract* with the addition of marking the sub-section having a complementary attention on the voice, all of which is summarised in a composite: *abstract/structural/madrigalesque*. At 02:00:46 a percussive hit with resonance fading out presents an *archetypal* function (distant strike of an object, a sort of weaker version of an explosion). Overlapped, the rest of spatial designs continue, but the discrete representation that can be done with the EAnalysis software forces to put a new segment at 02:02:81, in this occasion an *abstract* function characterised by a short and fast movement over the stereo panorama leads rapidly to an *abstract/structural/madrigalesque* function, similar to previous one, but with a noticeable presence of points and traces in the *prospective* space (Smalley 2007).

Then, at 02:27:29, an *abstract* function evidences the spatial composition focused in planes, points, traces, movements and lines, connecting this section with the following second *mesostructure*. In fact, this *abstract* spatial function last until 02:56:90, almost the half of the second *mesostructure*, when an *archetypal* distribution is presented through an expansive action and the subsequent explosion, similar to the one that starts the piece. The positions and movements launched by this explosion are emphasised, changing the function into an *abstract/structural* one at 03:06:11. This spatial configuration is stopped giving way to the next section. The spatial distribution for the first and second *mesostructures* can be appreciated in Figure 136.

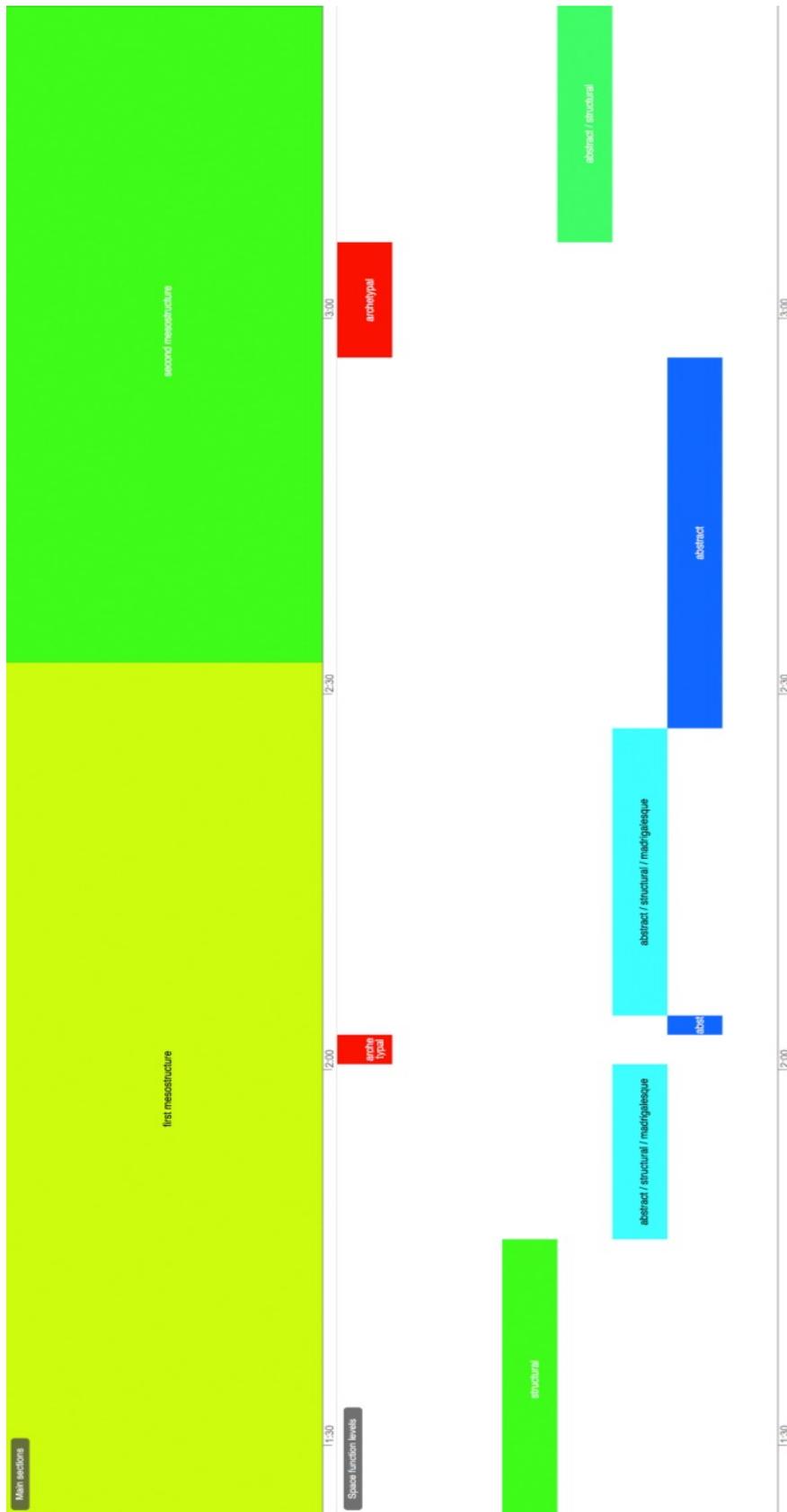


Figure 136: *Un regalito misterioso*, first and second mesostructures levels of spatial function

The following section, bridge 2, starts at 03:24:97 with an *archetypal* function (the distant resonant percussive hit), launching an *abstract* one by which the spatial composition is clearly driven by the figures and layers displayed. As in previous parts, some sounds are referential, suggesting objects activated by human action, a feature that implies an *agential* space according to the spatial glossary adopted in this thesis (Smalley 2007). The previous *abstract* distribution is changed for an *archetypal* one at 03:49:44: a long resonance that moves away within a huge and reverberating space. This sensation of distance is left behind by a *madrigalesque* distribution at 04:02:25, again through an articulation of sounds that suggest human activity, thus *agential* space. This is a short event that give way to a *figurative* function at 04:05:45 that suggest distant space and motion. Then a diversity of points and some traces place an *abstract* function that, having started at 04:14:82, closes the section, as can be seen in Figure 137.

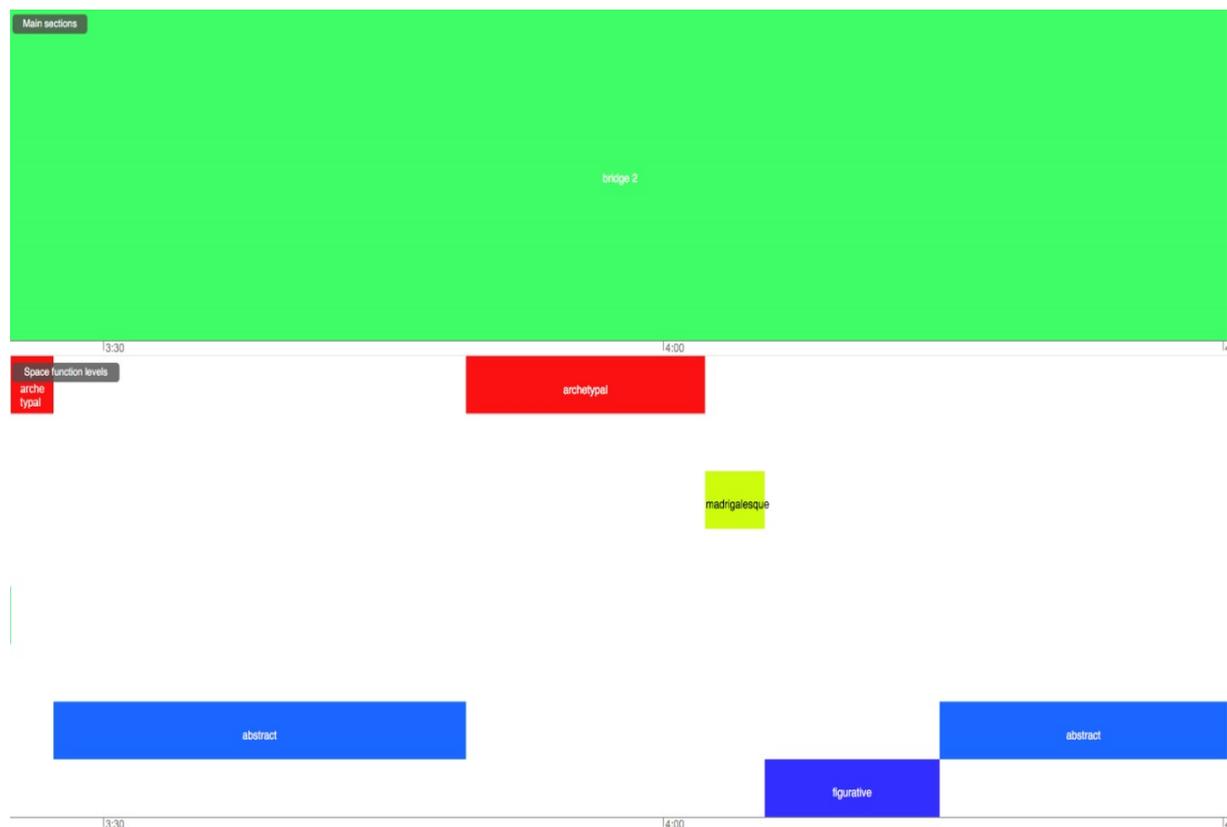


Figure 137: Levels of spatial function for bridge 2 section of *Un regalito misterioso*

The middle section begins with an *archetypal* distribution: a high pitch sound that fades into a distant space. After a short silence, the *level of spatial function* presented at 04:35:96 is *figurative*, since evokes a close space, dry and small and where actions happen

in a limited way. Then at 05:48:41 the distribution changes into a compound *abstract/structural* through a combination of sounds in a wider space in addition to the presented previously in the *figurative* distribution. In a short gap, at 06:32:03, the voice appears, speaking in a closer space, thus the attention is guided to text and the *utterance* space presented. After this, at 06:36:30, a new *abstract* function begins by means of a juxtaposition of spatial layers and few movements over the stereo panorama. After this configuration, two new *madrigalesque* distributions are presented: the first one presents text in a similar way to the previous at 07:17:01 and then at 07:24:64 the second shows a behaviour similar to the *madrigalesque* function in the bridge 2 section, presenting sounds and space activating the sensation of human activity or agential space. These two *madrigalesque* functions are separated by a short moment constituted by a composite: *abstract-structural* function. The *levels of spatial function* for the middle section can be seen in the following Figure 138.

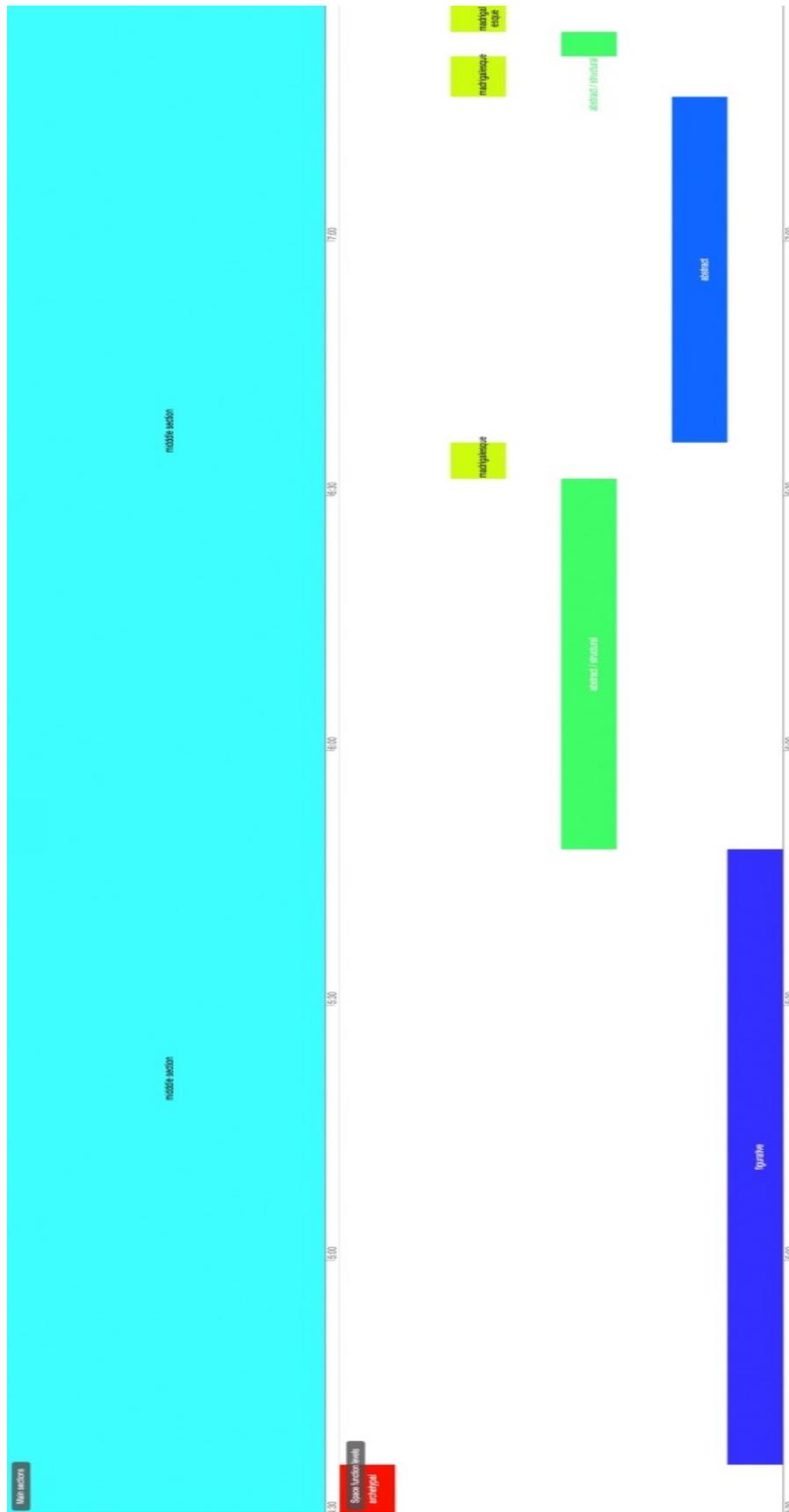


Figure 138: *Un regalito misterioso*, middle section levels of spatial function

The final section starts in a contrasting manner through an *archetypal* distribution at 07:27:76: a strong explosion that launches the section. In fact, the space seems to be an expansion of this triggering element. The configuration placed at 07:29:89 is the composite *abstract/structural* that, practically, completes the section, since a new *archetypal* function at 08:55:96 appears as a momentary deviation. This is a final explosion overlapped to the flux of layers, points, traces and large surrounding movements within the stereo field. This is a *prospective* space that ends the final section when its interrupted by coda, a short moment (09:15:79 – 09:22:00) where Pérez's voice says a *sentence*, generating a final *madrigalesque* function characterised by an *utterance* space. These distributions can be seen in Figure 139.

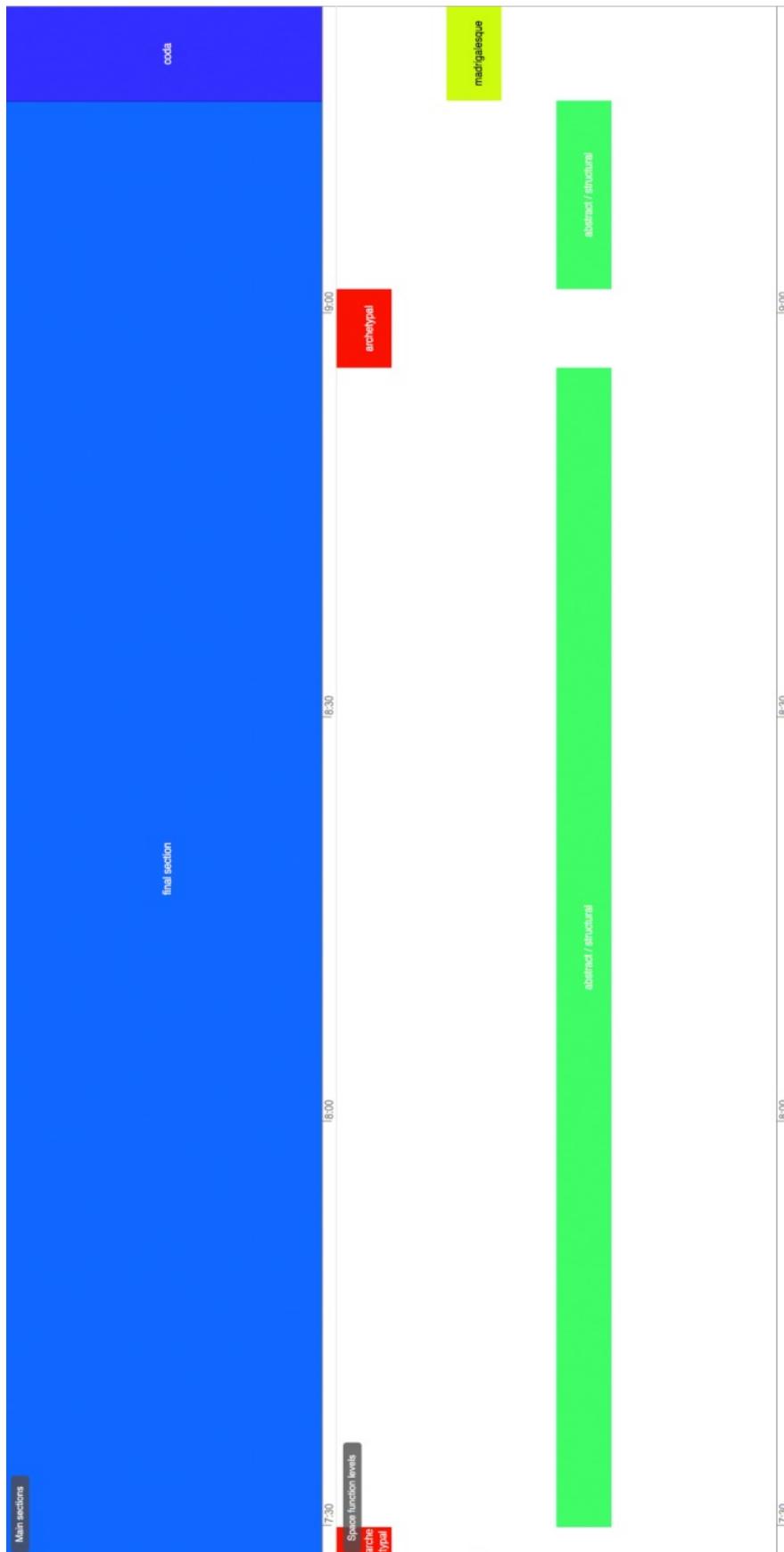


Figure 139: Levels of spatial function for the final section and coda of *Un regalo misterioso*

6.2.3 Voice type and speech-sound type distributions

Un regalito misterioso presents three main categories for the *voice type* distribution, that can be seen in Figure 140.



Figure 140: *Voice type* categories for *Un regalito misterioso*

Regarding the *speech-sound type* distribution, the piece has fifteen different categories and includes an additional special one, *silence*, for greater clarity in the graphic representation, as Figure 141 shows. This denotes a large number of complex elements that are merged, which is the reason for the presence of several compound categories in this part of the graphical analysis.



Figure 141: *Speech-sound type* categories for *Un regalito misterioso*

The piece starts with a *non-vocal* predominance in the *voice type* distribution, corresponding to an *electronic* category in the *speech sound-type* distribution. This is only interrupted by the *semantic* content provided by the Spanish syllable 'ya' at 00:02:78, corresponding to a *phoneme* in the *speech sound-type* distribution. This distribution is maintained until 00:34:41, when the *non-vocal* distribution is interrupted again by a *semantic* element, this time corresponding to a *sentence* in the *speech sound-type* analysis. This way of placing the *semantic* materials is preeminent in the piece, showing variation through complex categories in the *speech sound-type* distribution. This procedure is coherent with the compositional rationale: the abstract sonic world and its abstracted components too (vocal sounds processed with electroacoustic techniques) produce unexpected intersections with the naturalistic presence of human voice and, at the same time, meaningful encounters, all of which is produced by appearances, connections and junctions that articulate the sonic flux, more or less fluidly. This process, consequently, balances *reason* and *imagination*.

After the mentioned *sentence*, there is a return to the *non-vocal* and *electronic* distributions at 00:37:99 that give way to *semantic dissolution* and *electronic/phonetic* categories. These noticeable processed vocal materials in combination with other synthetic sounds, produce a high contrast when a new *semantic* unit is placed at 01:18:99, a *sentence*, creating in this way the first segmentation of the piece matching with changes in the other distributions as well (*sound objects, spectromorphologies* and *levels of spatial function*). The section is bridge 1, a short part that promptly leads to the next, the first *mesostructure*, that begins at 01:24:44 with *non-vocal* and *electronic* distributions respectively. The *voice type* and *speech sound-type* distributions for the starting section and bridge 1 section can be seen in Figure 142.

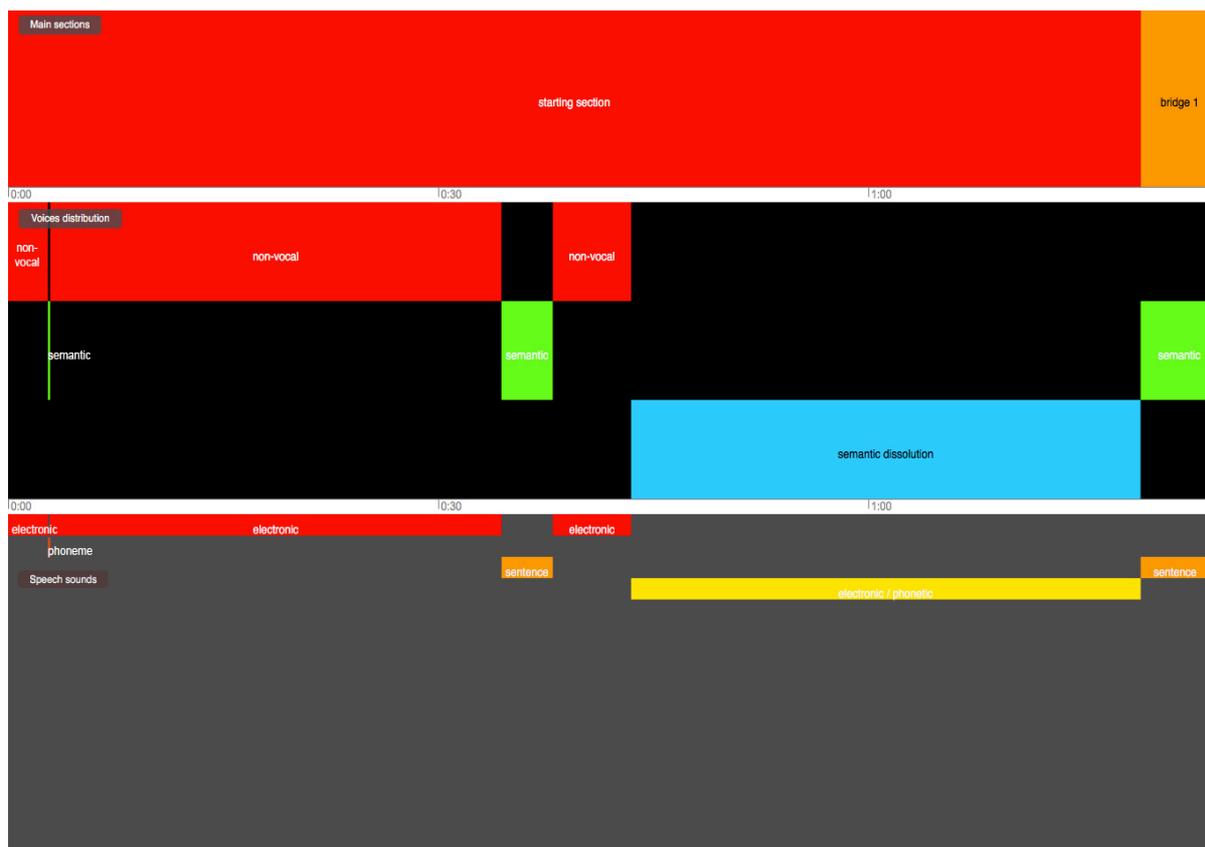


Figure 142: *Voice type and speech-sound type distributions for Un regalito misterioso*

The first *mesostructure* have started with *non-vocal* and *electronic* distributions. Shortly after, at 01:26:40, the categories are changed to *semantic* and *sentence/word* for *voice type* and *speech-sound type* distributions respectively. In this case these categories are accompanied by *non-vocal* materials that are not annotated since they act as ‘background’ for the relevant *semantic* ones that constitute the salient elements or ‘figures’.

The following development is characterised by the change of categories that take turns between them: *non-vocal* and *electronic* at 01:41:46, *semantic* and *sentence/word* at 01:48:40, *semantic dissolution* and *phonetic/phonemes* at 01:53:35, *non-vocal* and *electronic/phonetic* at 01:58:69, *semantic/dissolution* and *phonetic/extended* at 02:02:92, a brief *semantic* and *sentence* unit at 02:05:33, *semantic dissolution* and *phonetic extended* again at 02:06:08, *semantic* and *word* at 02:09:61, a discrete unit of *non-vocal* and *electronic* at 02:11:54 (a short *tonic impulsion*), then *semantic* and *phonetic/words* at 02:11:73, *semantic dissolution* and *phonetic/extended* at 02:14:16, *semantic* and *word* at 02:16:52. Once more *non-vocal* but this time with *electronic/words* at 02:17:23, *semantic* and *word* at 02:19:50 and finally *non-vocal* and *electronic* at 02:21:91 that ends the section. This progression in turns, showing a sort of sway or *undulation* (Smalley 1997)

matches with the *passage spectromorphology* that defines this *mesostructure*, emphasising the sense of flow or chain of events that do not show a clear destination at the first listening. This structure can be seen in Figure 143.

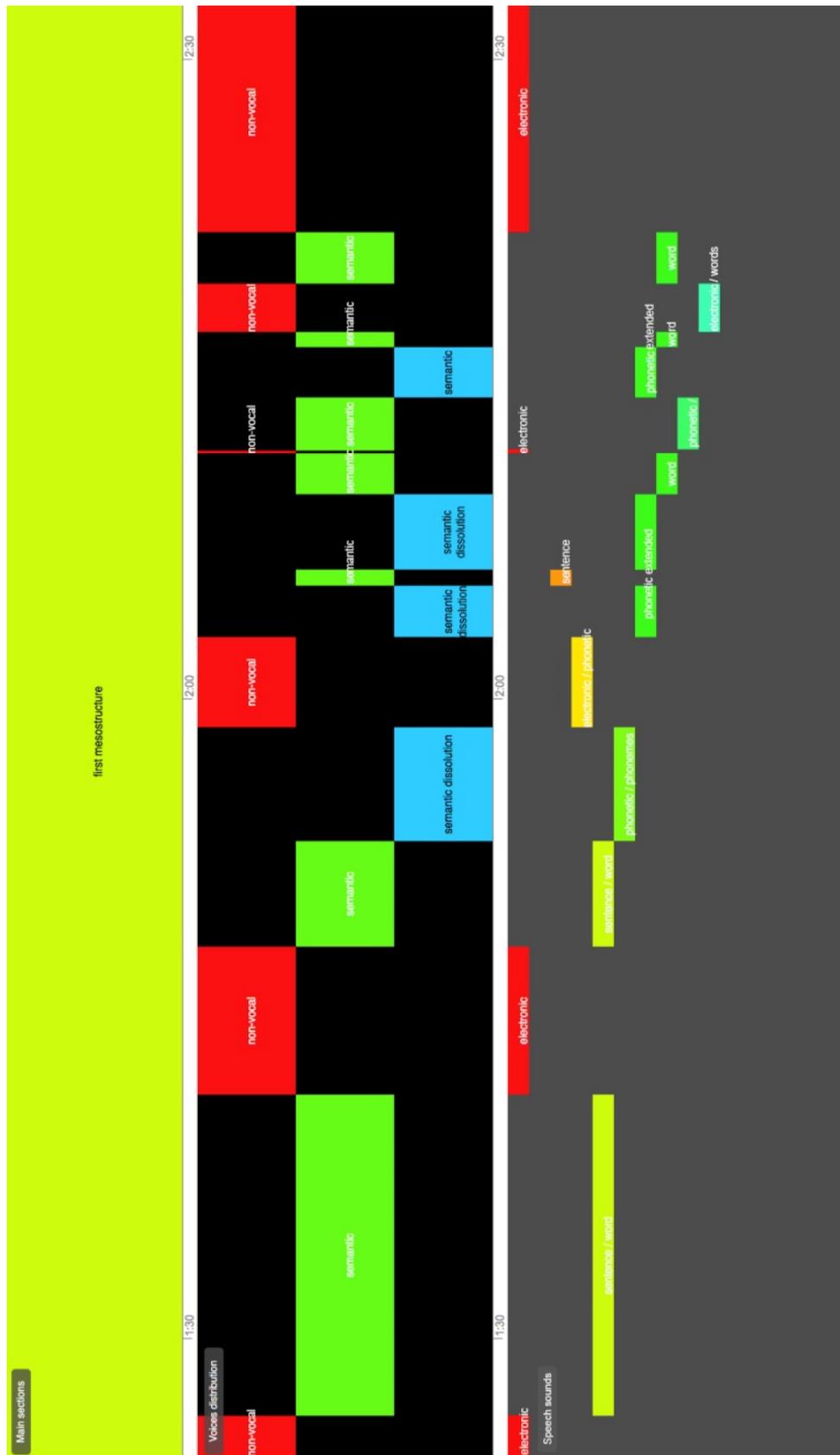


Figure 143: *Un regalo misterioso*, first mesostructure, voice type and speech-sound type distributions

The second *mesostructure* starting at 02:32:55 and bridge 2 section starting at 03:24:97, present a more stable distribution both in *voice type* and *speech sound-type* analyses, conferring a sense of decrease in the sonic activity, a process coherent with the predominance of *continuant spectromorphologies*. As is possible to see in Figure 144, the second *mesostructure* has two blocks of *non-vocal* and *electronic* distributions and two blocks of *semantic dissolution* and *phonetic extended* distributions. The last part of this section has *non-vocal* and *electronic* elements that overlap into the bridge 2 section where they last until its end.

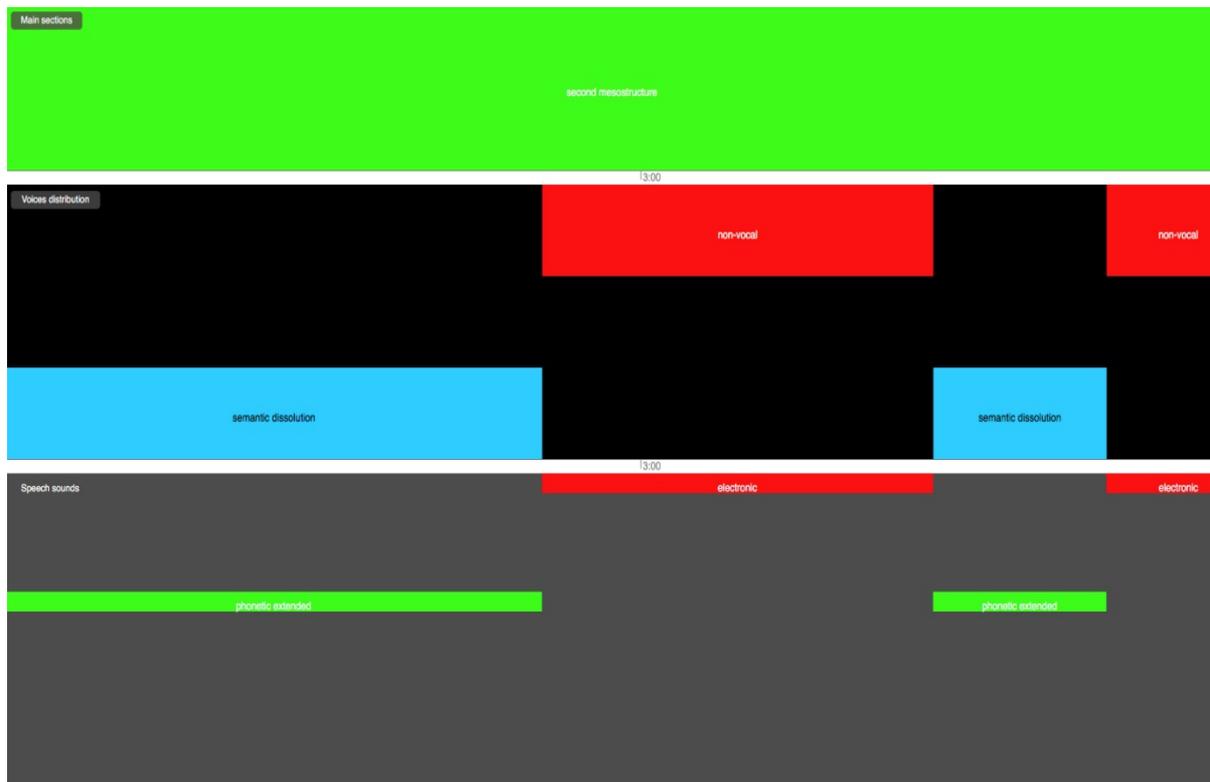


Figure 144: *Un regalito misterioso*, second *mesostructure*, *voice type* and *speech-sound type* distributions

In contrast, the first half of the following middle section, has a majority of vocal materials manifested in many *semantic* and *semantic dissolution* distributions with the correspondent categories of *phoneme*, *phonetic*, *phoneme/phonetic*, *phonetic/phoneme*, *word*, *phonetic extended* and *sentence* in the *speech-sound type* distribution. These categories are intercalated from the starting of this section at 04:30:29 until 05:47:91, when a *non-vocal* and *electronic* distributions appear signalling the second half of the section with a several *non-vocal* elements. In fact, the *non-vocal* and *electronic* categories cover most of the section and the *semantic* elements act as in the first *mesostructure*,

namely as materials that emerge or are highlighted among the other electronic or processed sounds. This behaviour accentuates the relevance of meanings presented through the *semantic* units: *sentences* at 06:32:02, 07:17:01 and 07:19:28. Within the vocal materials in this section, have a relevant expressive function those that explore some specific features derived from Chilean Spanish speech: *nasal*, *fricatives* and *roll* sounds emphasised by certain roughness of Pérez's voice timbre. The distributions for the middle section can be seen in Figure 145.

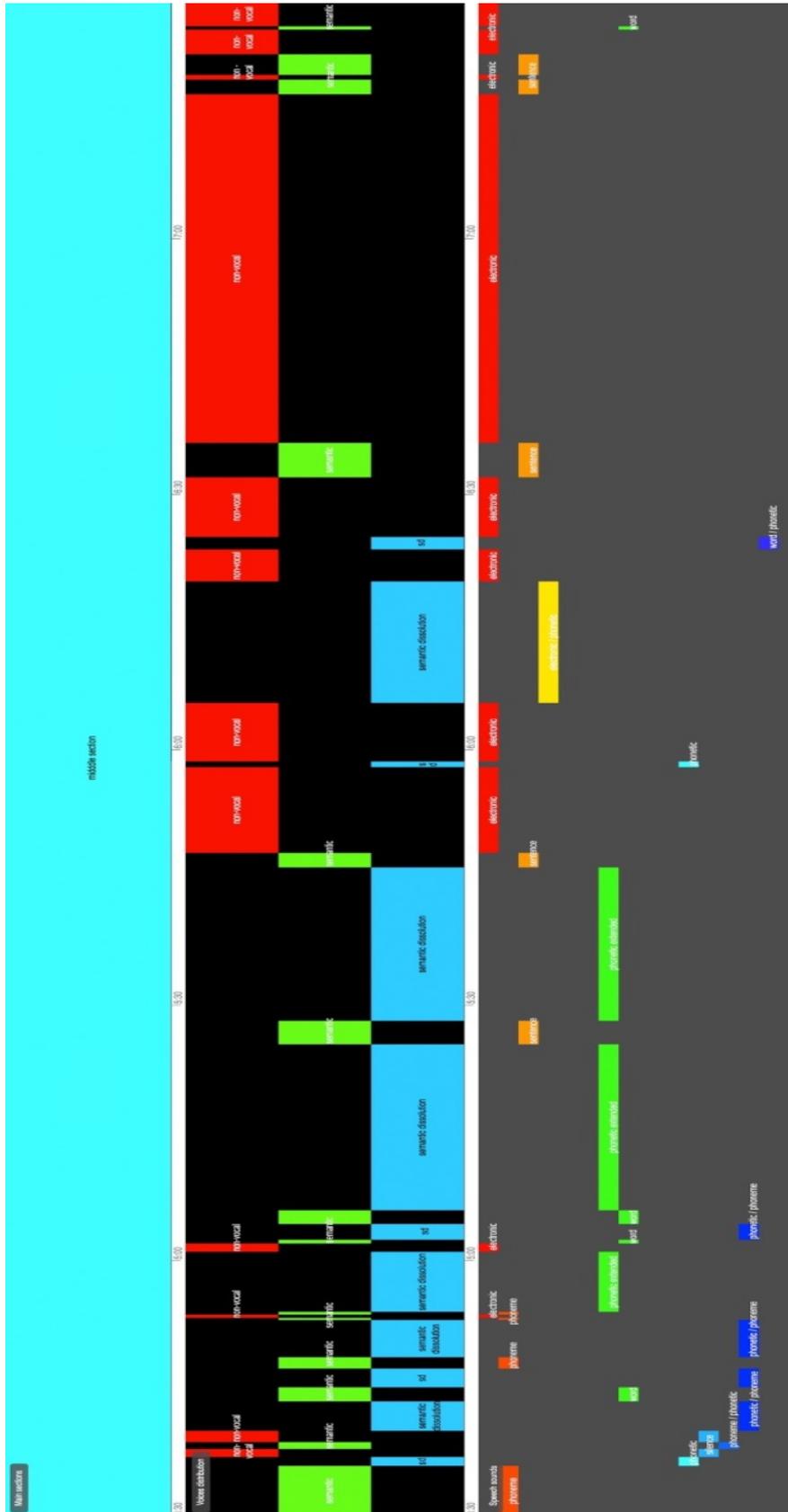


Figure 145: Voice type and speech-sound type distributions for middle section of *Un regalito misterioso*

Then at 07:27:76, the final section is launched by the *W sound object*, corresponding to *non-vocal* and *electronic* categories for *voice type* and *speech-sound type* distributions respectively. Promptly, at 07:31:46, a *semantic dissolution* and *electronic/phonetic* begin and are kept until the end of the section, operating as the dominant categories that are punctuated by five discrete *semantic* units that present different categories in the *speech-sound type* analysis: *word* at 08:05:48, *sentence* at 08:19:88, *allophone* at 08:37:88 and 08:39:98 and *sentence* again at 08:43:90. Then all the sonic flux is stopped by the final categories that shape the coda section at 09:15:77, *semantic* and *sentence*. These distributions are shown in Figure 146.

6.3 Analysis conclusion

This piece combines sound sources of very different origins, namely voice recording from an interview and sound structures created with synthesisers; these sources prompted compositional problems such as the suitability of pitch-based material from synthesis in an acousmatic context and the sonic development of the voice material, considering it was taken from a low fidelity source.

To tackle these issues, various compositional strategies were applied, including the mentioned treatment of the synthesisers sequences as acousmatic materials, as has been done in many examples from the repertoire⁵⁶. These materials can be worked from a *sound object* perspective as any other sound can be; in regards of voice, besides the cleaning and editing of the units, the charismatic speech of Pérez facilitated the task of find interesting units and gestures from an acousmatic perspective; in fact, where the voice presented salient traces in terms of *melodic profile* and *harmonic timbre*, a selective procedure was applied and subsequent work with simple techniques (pitch shifting, speed changing) allowed to obtain significant and expressive materials, which in turn were distributed through all the piece and have a central role in the middle section as can be seen in the previous analysis.

The analysis shows as well, how the materials are integrated following a compositional 'writing' that places elements according to different degrees of similarity and difference. This procedure uses as its main element the assemblage of sequences of discrete units (pointillistic) and more continuous *macro-objects*. Is easy to see through the analysis how *accumulations* (long granular traces) interact with *impulsions* and *iterations* transiting from rhythm to texture or sharing sections and sub-sections. These interactions and superpositions have a significant role in the integration of synthetic materials and *sound objects* derived from voice, producing contrast, alliance or in other words, encounters and divergencies.

In itself, these morphological and structural issues produce a dynamic piece where the discourse is rich in variations of pace, rhythm, colour and spatial design. All of this is coherent with the position established in the compositional rationale. However, there is one more element that is not traceable in the *neutral level* analysis, but it is deducible from the *poietic* analysis: adhering to the artistic programme followed by Pérez

⁵⁶ For instance, Pierre Schaeffer's *Le Trièdre fertile* composed in 1975.

it would have implied the avoidance of any representational element, namely naturalistic or referential materials. In a noticeable contrary action, this piece presents a very strong referential element: the artist's voice in itself. This contradiction, in a new turn, is totally acceptable for the composer, since is considered proper of the *acousmatic-creationist* approach and presents a tension produced by an assembling action, a link that bring together these artistic elements according to the *nodalism* principle. Furthermore, this assemblage manifests the intention of placing this thesis and broader practice in the line of the exploratory spirit of certain artistic endeavours in the Chilean culture of 20th century and forwards, which, among many authors, includes Vicente Huidobro, Matilde Pérez and José Vicente Asuar, who is the last artist addressed in a tribute, as is shown below in Chapter 8. Figure 147 shows the general view of the five analyses for this piece.

Chapter 7: *Tom... Far... Orion... Blue...*

7.1 *Poietic analysis*

This piece is a tribute to David Bowie, who passed away in 2016. Actor, song writer, rock star, is widely known all over the world by his extended musical and artistic production. Bowie, an icon of British pop culture, had a great influence in forging the personal taste of the author of this thesis in rock and pop music. However, within the present context, what is relevant is the artistic ethos of Bowie, which was particularly marked by his exploration of many different aesthetic elements and their combination in various manners. In general, this tendency toward exploration and hybridisation is an aspect of great influence for the composer of this portfolio; besides this, from a specific perspective, the famous Bowie's procedure of creating conceptual pieces is a direct notion addressed in this acousmatic work, especially when this implies the construction of narrative or storytelling feature; consequently, these elements are present in the prospected aims for the piece, which were to:

- Create a piece with a strong sense of narrative, where the presented vocal material, with or without *semantic* content, acts as signalling element of human presence and progression of a story.
- Present, once more, a combination of different sounds, giving importance to referential ones in order to confer a naturalistic feature to some sections or sub-sections, in this way reinforcing a certain narrative aspect.
- Use the other acousmatic elements, such as electroacoustic sound processing and spatial design, to support the previous intentions.
- Compose in stereo format in order to facilitate the diffusion of the piece beyond the concert, including its presentation through broadcasting or online platforms in internet.

Among the most remembered elements within the conceptual pieces by David Bowie are the topics of outer space, extra-terrestrial life and interstellar journey. There are albums and songs by the English artist related to these topics, although it was selected one song and subsequently one of his characters: *Space Oddity* and *Major Tom*.

The song *Space Oddity* was recorded on 20th June 1969 (Trynka 2012, p. 97) and released as single on 11th July and in the album *David Bowie* on 4th November the same year (Welch 2011, pp. 16-17). The song introduces an idiosyncratic character, the *Major Tom*, an astronaut who, travelling in his spaceship, is lost in outer space without any chance to get back to Earth; the lyrics present the communication between *Tom* and Earth based crew for the mission and the irrevocable astronaut's detachment and isolation from the rest of humanity.

This song and its topics inspired some simple poetic concepts for the acousmatic piece discussed in this chapter. As metaphorical elements, two ideas were considered at the pre-compositional stage: one, the widely spread notion of death as transit from our quotidian reality to a new one, beyond the former, and two, the idea of space journey as a transgression of our normal space-temporal universe. The first one is part of several cultural backgrounds and it has its foundations in the main religious beliefs of the world; the second is a concept inspired by the film *2001 Space Odyssey* by Stanley Kubrick, in which final part of the story, the main character, the astronaut Dave Bowman, is launched into a journey by the deep space that finally leads him to a metaphysical trip. This last element is already implied in the song itself, since Bowie recognised the film as a major influence for his artistic production at the time (Welch 2011, p. 14)

Combining those inspirations, relating them to the passing of Bowie and guide them according to the aims proposed for the piece, the composition started by creating the initial sound pallet and drafting gestures and motifs.

The sound sources included:

- Only two monosyllabic words taken from the isolated vocal track of the song *Space Oddity* (Bowie Vocals 2012). These words are *blue* and *far*. This samples are under the category of 'fair use' because they do not imply a substantial amount of the original work, they were subjected to several transformations and they are used within an academic environment without commercial purpose, being used in a different context were the original is used and will not be released in a commercial edition⁵⁷.

⁵⁷ For further explanation on the use of copyrighted material according to fair use, visit: <https://www.copyrightservice.co.uk/ukcs/docs/edupack.pdf>

- Individual notes produced by guitar strings pulsed without any gestural or performative action, playing the notes and let them fade away naturally. These sounds were produced during a special session in the studio. The pitches used were selected randomly and without any consideration of the notes included in the song.
- Synthesised sounds.
- Samples of buttons, switches and levers being pressed or activated.
- The sample of a deep breath.
- And special samples of sonification of radio waves from the distant Orion Nebula, which were captured and transferred to sound by the radio astronomic observatory Atacama Large Millimeter/submillimeter Array (ALMA) in the Atacama Desert, Chile. These sounds are available to any musician and sound artist thanks to the *Alma Sounds* project, accessible at <http://almasounds.org>

As is usual, these materials were processed with electroacoustic techniques, ranging from cut, paste, inversion and pitch shifting, to more sophisticated ones like extreme time stretching and time variable delays. The assembling of these materials was done considering how they fit together and how they contrast in terms of their morphological constitution, allowing in this way to articulate them and consequently to generate the sonic flux of sections and the whole piece. At the same time, the referential aspect of certain materials, gradually gives way to a predominance of non-referential sounds as the piece progresses, thus the voice being the only constant recognisable element until the end.

7.2 *Neutral level analysis*

This piece has twenty sections, showing a highly marked segmentation which, in turn, demonstrates the articulative nature and certain narrative feature of the work: there are several stages where the sonic discourse, progress; this allows to perceive a flux of moments and evolution. In fact, this is the piece with the larger number of sections in the portfolio, only followed by *La Lumière* with seventeen sections. The sections in this piece are:

1. Starting section	(00:00:00 - 00:17:96)
2. Transition 1	(00:17:96 - 00:47:84)
3. First <i>mesostructure</i>	(00:47:84 - 01:21:12)
4. Transition 2	(01:21:12 - 01:41:90)
5. Second <i>mesostructure</i>	(01:41:90 - 02:01:76)
6. Bridge 1	(02:01:76 - 02:03:97)
7. Third <i>mesostructure</i>	(02:03:97 - 02:23:94)
8. Transition 3	(02:23:94 - 02:31:41)
9. Fourth <i>mesostructure</i>	(02:31:41 - 03:11:86)
10. Pause	(03:11:86 - 03:13:80)
11. Fifth <i>mesostructure</i>	(03:13:80 - 03:27:25)
12. Transition 4	(03:27:25 - 03:29:66)
13. Sixth <i>mesostructure</i>	(03:29:66 - 03:57:83)
14. Transition 5	(03:57:83 - 04:07:52)
15. Seventh <i>mesostructure</i>	(04:07:52 - 04:29:92)
16. Bridge 2	(04:29:92 - 04:32:22)
17. Eighth <i>mesostructure</i>	(04:32:22 - 06:54:10)
18. Ninth <i>mesostructure</i>	(06:54:10 - 07:30:35)
19. Tenth <i>mesostructure</i>	(07:30:35 - 08:17:92)
20. Finale section	(08:17:92 - 08:28:00)

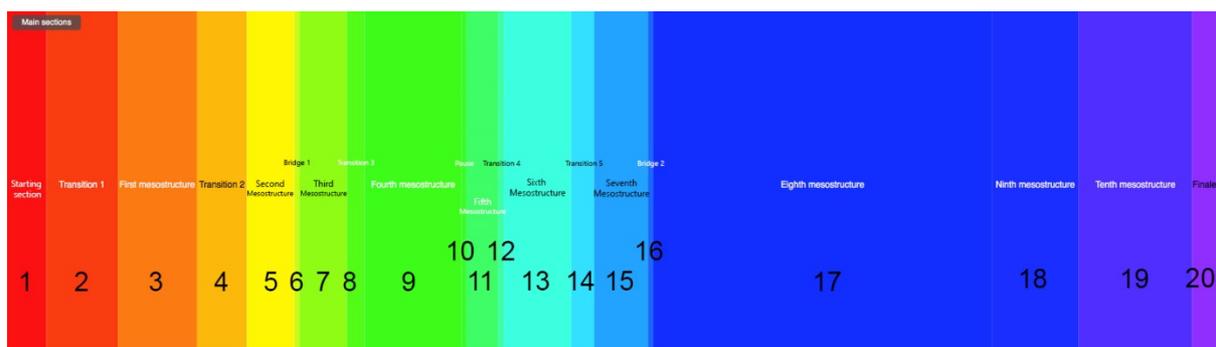


Figure 148: Main sections of *Tom... Far... Orion... Blue...*

7.2.1 Distribution of *Sound objects* and *spectromorphological* structure

The piece begins with a group of *balanced sound objects*, including *complex mass iterations* and *continuous sustainment* objects, besides a couple of *N* objects that evidence a low

pitch content at 00:07:84 and 00:08:18. From the *harmonic timbre* perspective, these elements are similar between them. As *spectromorphologies*, they show a dynamic behaviour, marked by a progression through lines, points and extensions in the form of an *emergence* function for the very beginning and the following *releases*, *attacks*, *prolongations* and a complementary *passage* function; this starting section ends with a *release* function that projects a reverberated tail into the forthcoming part, transition 1, as can be seen in Figure 149.

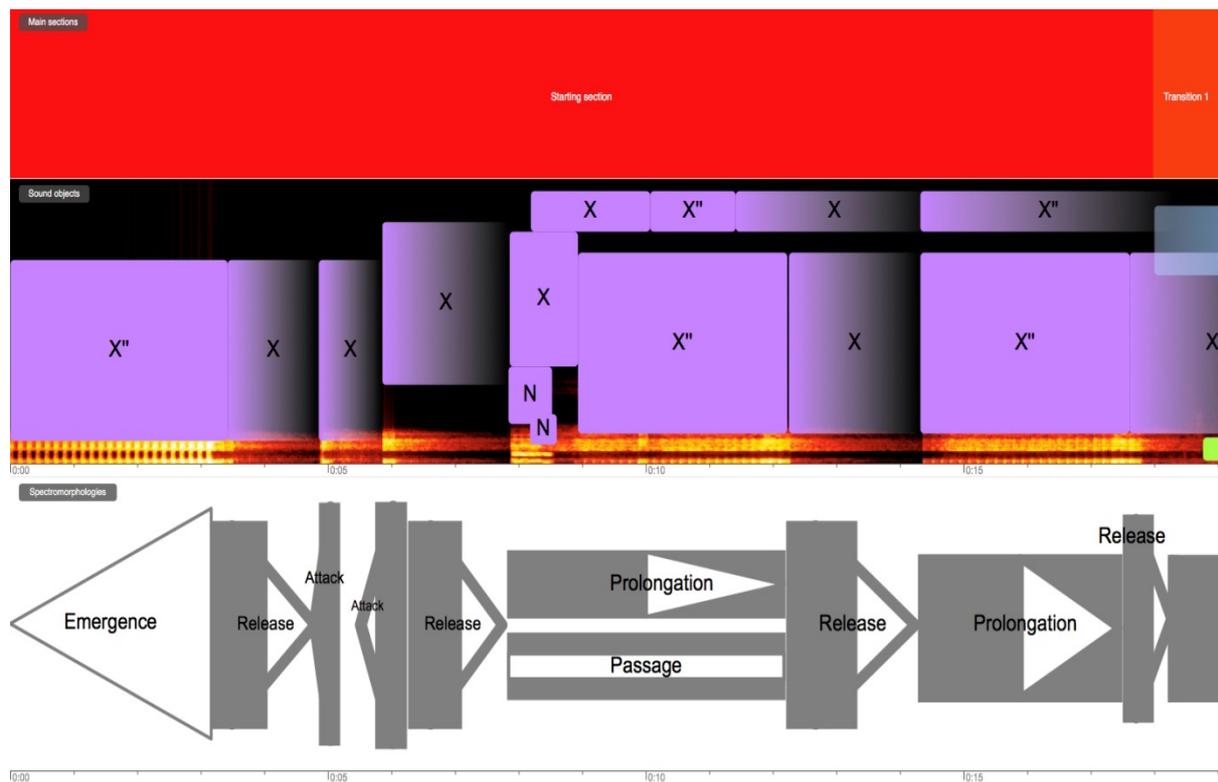


Figure 149: Sound objects and spectromorphologies for the starting section of Tom... Far... Orion... Blue...

The transition 1 section, started at 00:17:98, matches integrally with a *transition* structural function, due to its transitory character leading to the next section. The objects are few of the *balanced* type that operate as punctuations within a context dominated by *macro-objects*. These *macro-objects* are two *complex mass accumulations* (Ax), two *tonic mass homogeneous* (Hn) and a *complex mass iteration* (Zx). The section ends with a *tonic mass iteration* that overlaps this ending with the first *mesostructure*, as Figure 150 shows.

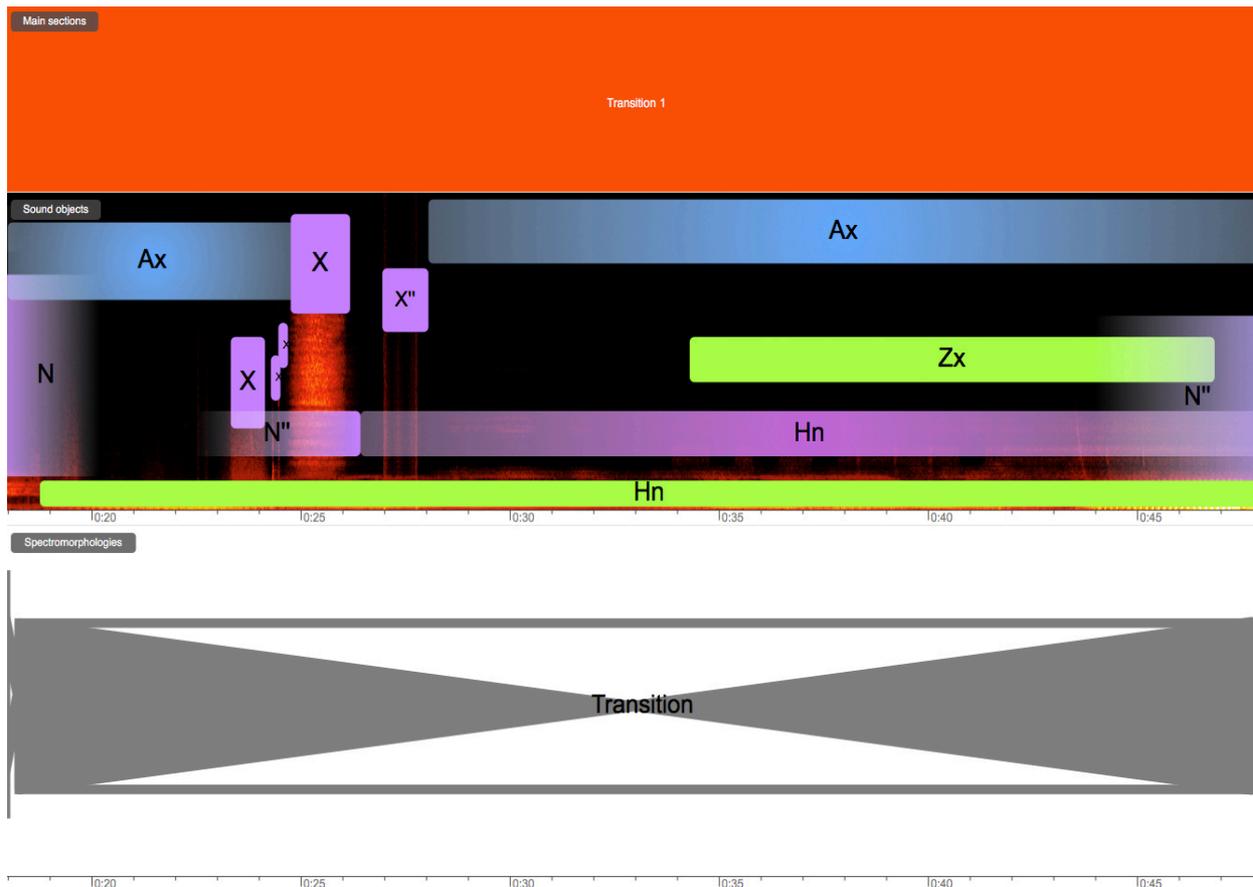


Figure 150: Tom... Far... Orion... Blue... transition 1 section sound objects and spectromorphologies

The first *mesostructure* starts at 00:47:84 with an articulatory compound gesture, including *impulsion*, *continuous* and *iterations* objects with *complex masses* (X' , X , X''). These *balanced objects* give way to a sub-section with other *balanced objects*, three *samples* with *complex*, *variable* and *tonic masses* respectively, and four *tonic mass homogeneous* objects (Hn). Within the *spectromorphologies* analysis, the materials deployed are straightforward and start with an *arrival* function that concludes the previous section conducting the aural content to this new one. Then an *emergence* function places the *homogeneous* objects (H) which *harmonic timbre* constitutes a motif in the piece: this colour, derived from vocal samples, is presented and developed in next stages of the composition. The emerged shapes are extended by means of a *prolongation* function to then be faded out through a *disappearance spectromorphology*. This *disappearance* is started in this section but is performed mostly in the next part, transition 2, being in this way an integral part in its whole. The transition 2 is shaped by the H objects fading out and the presence of a faded *complex mass iteration* (Zx) and a succession of *complex mass continuous* and *iteration* objects that persist into the second

mesostructure, which in turn transits by means of a *passage* function to end with an *arrival* one. The distribution of these elements can be seen in Figure 151.

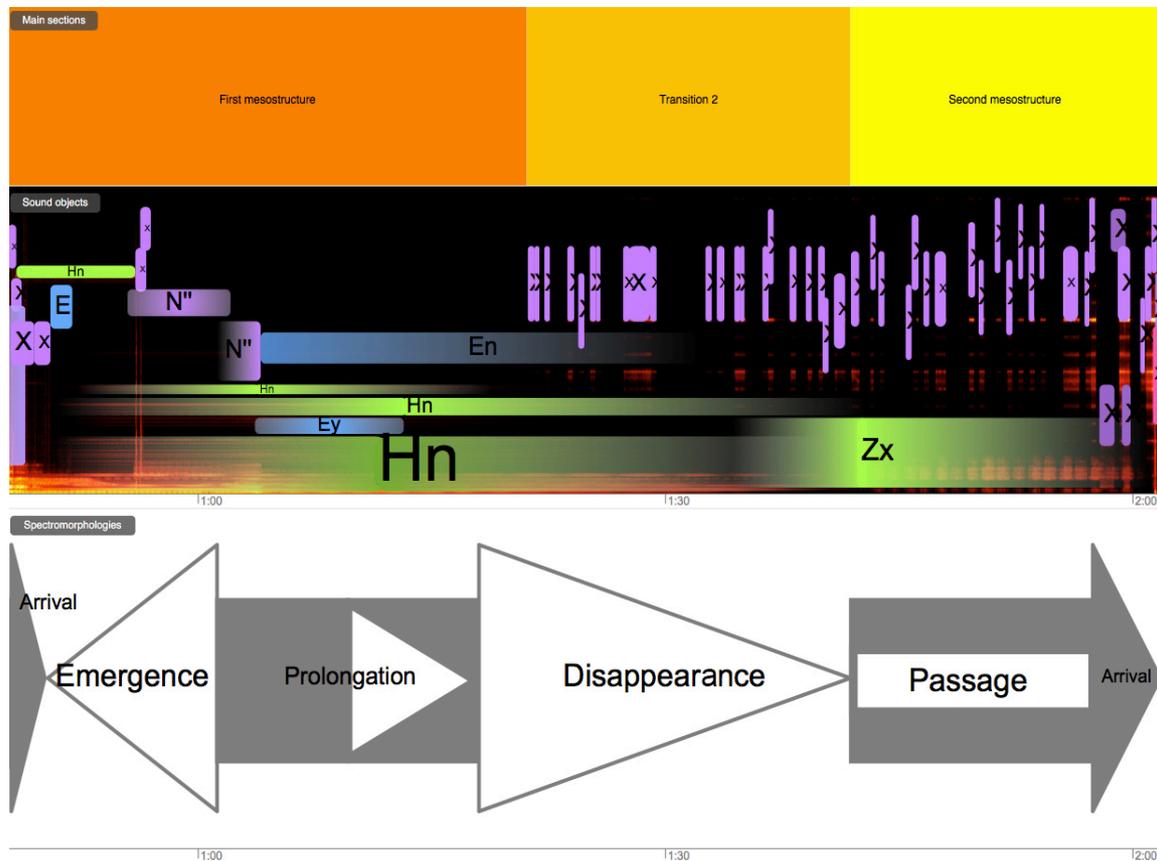


Figure 151: *Sound objects* and *spectromorphologies* for first *mesostructure*, transition 2 and second *mesostructure* of *Tom... Far... Orion... Blue...*

Until this point the *motion* processes are intercalated *ascents* and *descents*, while the *growth* processes are *dilation/contraction* and *agglomeration/dissipation* (Smalley 1997).

The *arrival* function at the end of the second *mesostructure*, leads to the short bridge 1 at 02:01:76, which is a brief *transition* function formed by balanced *complex mass* objects. This bridge leads to the third *mesostructure* at 02:03:97, which begins with a short *complex mass* impulsion that triggers a long *Hn* (*homogeneous tonic mass*) shaped by the mentioned vocal colour motif presented before in the first *mesostructure*. While this *macro-object* fades out, a sequence of *complex mass continuous sustainments* and *iterations* started at 02:11:14, progress on top of the *Hn* object. Five *Y* objects are added to the sequence at 02:19:50. The *plane motion* is performed through an *agglomeration/dissipation growth* process. The *spectromorphological* functions are clear:

attack for the starting, *maintenance* for the first part of the *Hn* object and then *disappearance* and a final *anacrusis* function that presents materials (the last *X''* object) shaping the next section, transition 3.

Transition 3 starts at 02:23:94 with an *attack* function, a *complex mass impulsion* (*X'*) that launches a high pitch *Hn* (02:24:27) which is accompanied by low pitch *Hn* already initiated in the previous section by a fade in presentation. The structural functions are *emergence* and *maintenance*; the textural materials are complemented by complex mass *balanced* objects (*X, X''*) which are the anticipated materials of the previous *anacrusis* function. The transition 3 is ended by a *complex mass impulsion* (*X'*) that is replied by a similar one at the beginning of the fourth *mesostructure*.

The fourth *mesostructure* starts at 02:31:41 with an *attack* function formed by a compound gesture that includes the mentioned *X'* and two *N*, a *X* and another *X'*. This gesture is an articulation that opens the way to a *maintenance* function formed by two *homogeneous objects*, one with *complex mass* (low pitch) and other with *tonic mass* (middle pitch), *Hx* and *Hn* respectively. The *plane motion* is interrupted by a punctuation in the form of a new *attack*, a *complex mass impulsion* at 02:39:78, that launches the same *Hn* object presented in the third *mesostructure*, but this time accompanied by a very low pitch *Hn* that thickens the spectral space. In this way the *maintenance* structural function returns. The rest of the section is shaped by the addition of several *macro-objects*: four more *Hn* objects in different positions of the tessitura, a *X*, three *X''*, a *Zx* and a *sample general case* (*E*). After the second *maintenance*, the *spectromorphologies* driven are *disappearance*, *passage* and *emergence*. The *emergence* function is articulated by an increment in the loudness and a *growth* process of *agglomeration* that ends when the next short section, the pause, is presented through a *release* function constituted by a single *tonic mass continuous* object that fades out. These distributions of elements for bridge 1, third *mesostructure*, transition 3, fourth *mesostructure* and the pause, can be seen in Figure 152.

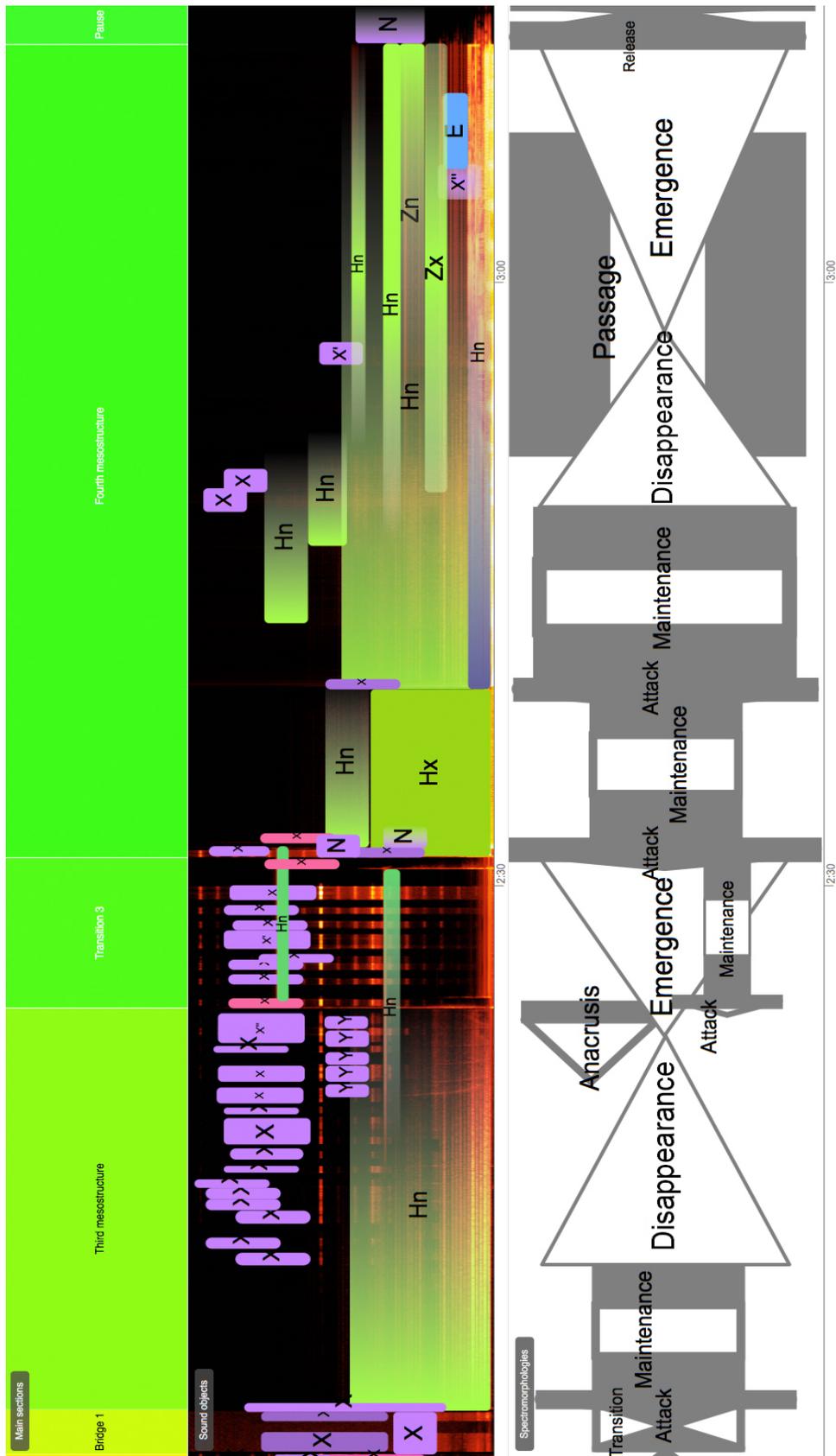


Figure 152: *Sound objects and spectromorphologies for bridge 1, third mesostructure, transition 3, fourth mesostructure and pause section of Tom... Far... Orion... Blue...*

At 03:13:81 the fifth *mesostructure* begins with an *attack* function started with a *N* object and placing a *complex mass homogeneous* object (*Hx*). On top of this *Hx*, three *samples* (two *Ex* and one low pitch *En*) start synchronised with *passage* and *maintenance* functions. The section has a connective nature, but has been considered enough coherent, long and with structural development to not be classified as transition. In this sense a relevant role has the *allure* of the internal *sustainment* of the *samples* objects (*E*). At 03:24:61 an *Ex* ends the section and overlaps into the first moments of the next part, transition 4, which in turn, starts at 03:27:26 and it is formed by a *emergence spectromorphology* constituted by a *complex mass iteration* (*X''*) and a *complex mass continuous* object (*X*) that fades into the following sixth *mesostructure*.

The sixth *mesostructure* starts at 03:29:67 with a *disappearance* function which is complemented by an equivalent *emergence* by the middle of the section in a *parabola motion process*. This *parabola* is shaped by the evolution of the loudness (decrease/increase). The general behaviour corresponds to a *passage* structural function defined by a low pitch *Hx* object. While this *homogeneous* object is passing, a sequence of short *iterations* and *continuous* objects is performed: they have *variable mass* (*Y*, *Y''*). There is no substantial *growth* process. This calm section is ended by the starting of the transition 5: a prominent *N* object in an *attack* function that fades as a *disappearance* while the rest is formed by a *transition* function carried by two *samples* with *complex* and *tonic masses* respectively. This short section (03:57:84 - 04:07:52) is followed by the seventh *mesostructure*, started by a composite of *attack* and consequent *release spectromorphologies*, that are a *Y* and a *Y''* objects. A new *attack* function similarly formed by a new *variable mass iteration* and a *continuous* object (*Y*, *Y''*) give way to the rest of the section, a prolongation *spectromorphology* with a *passage* feature that is formed by a group of *balanced objects*, among which, *variable mass* ones are the most salient elements. This section is connected to the following eighth *mesostructure* by the bridge 2 section (04:29:93), a short section defined by *emergence* and *attack* functions formed in turn by the tail of the last *Y* object from the previous section, a *X*, a *X''* and an *Ax* object. The distributions of elements in all these sections can be seen in Figure 153.

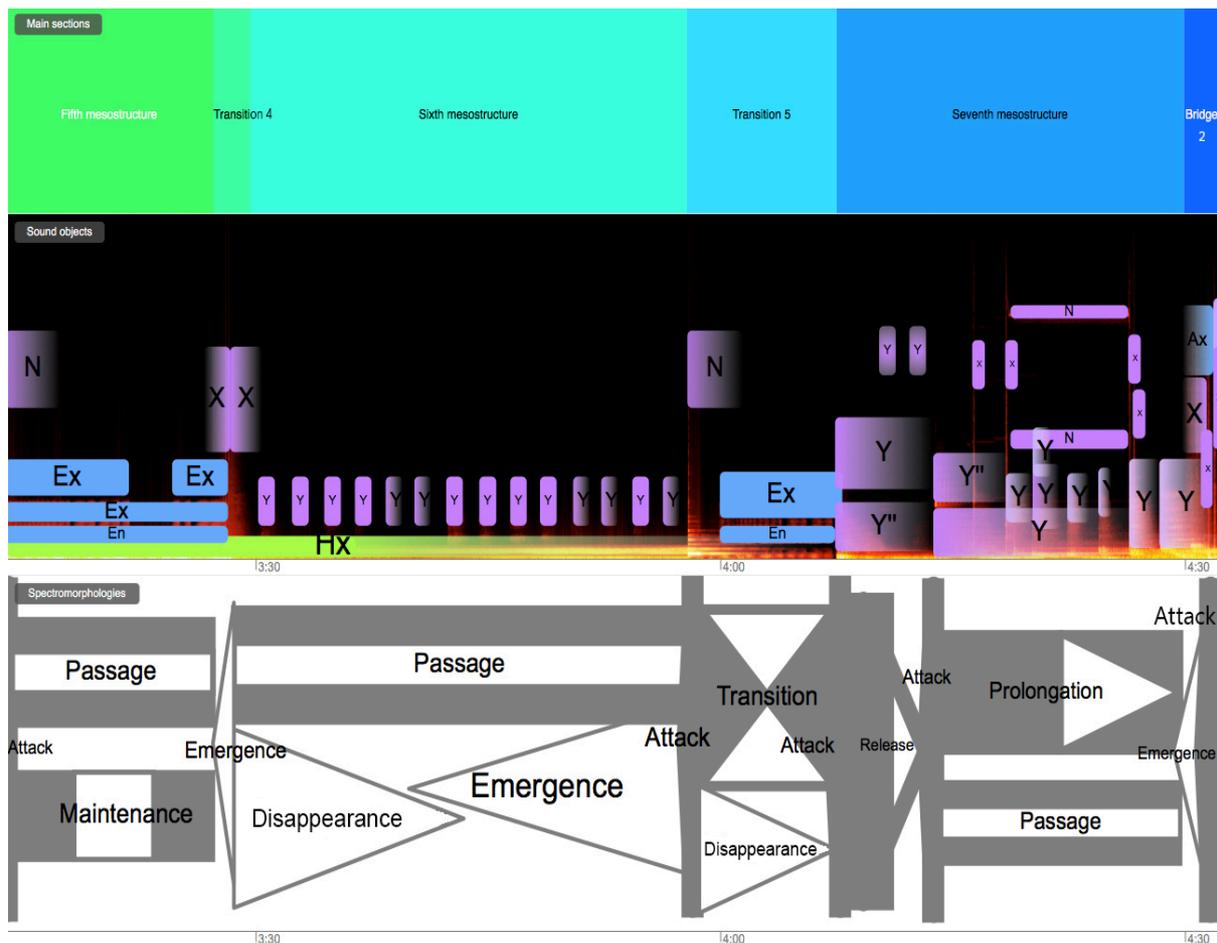


Figure 153: *Tom... Far... Orion... Blue...* fifth mesostructure, transition 4, sixth mesostructure, transition 5, seventh mesostructure and bridge 2, sound objects and spectromorphologies

The eighth *mesostructure* is started at 04:32:22 and lasts until 06:54:10, being the larger in the piece. The *attack* function, in the previous bridge section, triggers an *upbeat* function manifested in the accelerating *complex mass iterations* that begin the section. The rest of the section has a *continuant* nature from the *spectromorphological* perspective: the general feature is a *passage* function which has a first half marked by a *prolongation* sub-feature and a second half by a *transition* one. In the *sound object* analysis, the first half of the section has a character defined by discrete elements, mainly *X* and *X''* accompanied by other balanced objects that act on top of two *Hx* macro-objects, one in middle of the tessitura and the other, larger and longer in low pitch zone. The low pitch *Hx* is kept in the second half of the section where it starts to fade; this subsection is a complex weft of textures constituted by *accumulations* changing all over the tessitura, indicated here as a large *Ax* beginning at 05:26:85. This large *Ax* is complemented by others salient units of the same type (*Ay*, *Ax*, *A*), *Hx* and two *Zy*. Just before the ending of

the section, a very low *tonic mass* object (*N*) sounds just to give way to the *emergence* that shapes the ninth *mesostructure*.

The ninth *mesostructure* begins at 06:54:10 with that *emergence* which is a noticeable *variable mass iteration* (*Y''*). The spectral content is narrowed and is shaped by the previous textural materials fading out in a compound of three *spectromorphologies*: *prolongation*, *arrival* and *disappearance*. During this *continuant* and *termination* structural functions, two new versions of the idiosyncratic *Y''* are presented, being the second one, the shorter, a gesture that articulates the beginning of the tenth *mesostructure*. Figure 154 shows these distributions.

Then, at 07:30:37, tenth *mesostructure* starts with an *attack* function formed by a *complex mass continuous* object (*X*), a *variable mass continuous* (*Y*) and a new *tonic mass homogeneous* (*Hn*) with more *harmonic timbre* provided by vocal source material. These objects are accompanied by a *complex mass accumulation* (high pitch) and a *tonic mass iteration* (*N''*), all of which form a *disappearance* and a *departure* function that tensions the sonic discourse with a reverberated sound, fading away in a manner not presented before. After that, an *emergence* function is shaped by several objects appearing gradually or suddenly in different grades, evidencing a process of *agglomeration*. Those objects, mainly *balanced*, are complemented by *macro-objects* that complete the interleaved textural and punctuated sonic progression. Among these *sound objects*, those which evidence their vocal origin, stands out and due to this, form a *statement* function at 07:56:07. The rest operates through *prolongation* and *maintenance* functions. The section is ended by a noticeable *tonic mass iteration* accompanied by a thick *variable mass continuous* object (a rough glissandi). These objects act as an *emergence* function which tension is released through a *N* and *X* objects that shapes the finale section from 08:17:93: they are a *prolongation* structural function that is ended by a *closure spectromorphology* in the form of a *tonic mass iteration* (*N''*), finishing the piece in this way. These elements can be seen in Figure 155.

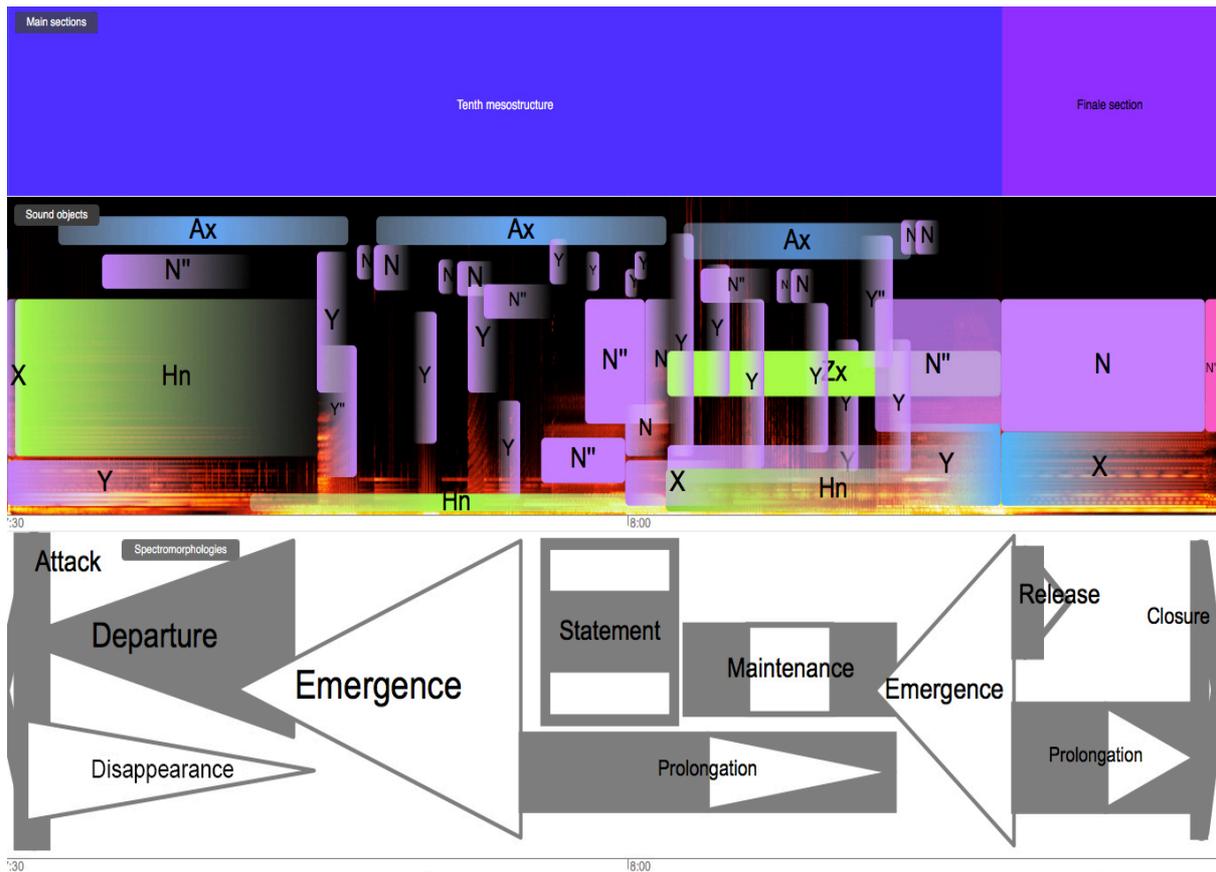


Figure 155: *Sound objects and spectromorphologies for tenth mesostructure and finale section of Tom... Far... Orion... Blue...*

7.2.2 Spatial distribution and structure

The piece has a spatial composition which supports the narrative and structural development. The *levels of spatial function* for the piece are shown in Figure 156.

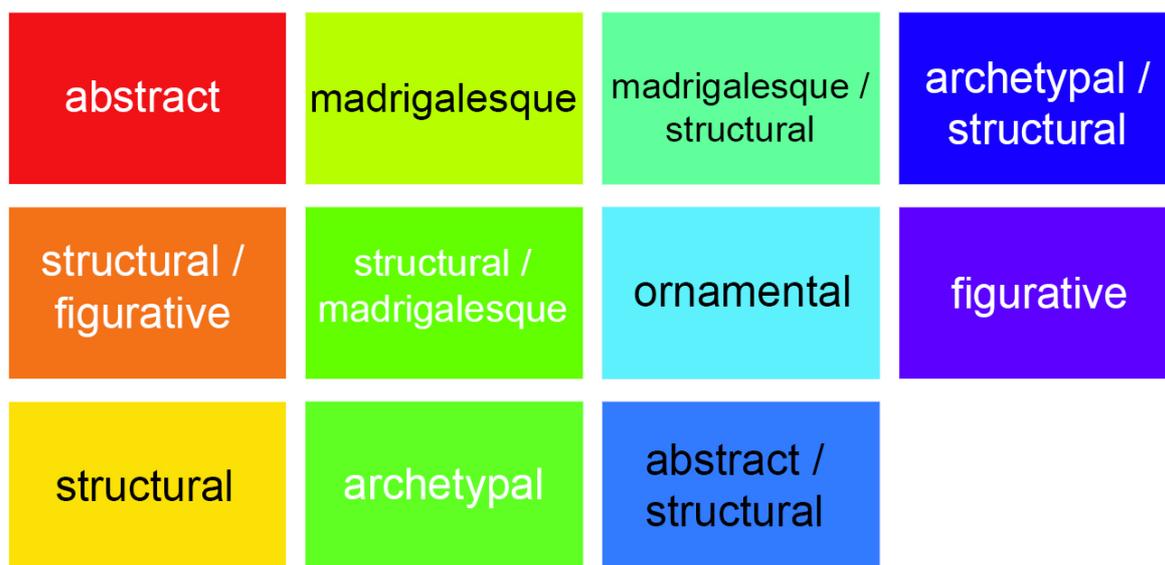


Figure 156: *Levels of spatial function for Tom... Far... Orion... Blue...*

The starting section of the piece presents three levels. Begins with an *abstract* function that is shaped by traces through fast panning in the stereo field. At 00:03:29 the materials present a stereo image that suggest a metaphoric distant and reverberating space and, in doing so, marking the sub-section. That composition corresponds to a compound level: *structural/figurative*. Shortly after, at 00:07:90, the type of spatial material is kept but the action is mainly perceived as a definition of the sub-section, thus the *spatial function* is a *structural* one. Then, at 00:17:97, the level return to a *structural/figurative*, since the spatial configuration marks the entrance of the new section, transition 1, once more suggesting a spatial image. This image evokes a distant event and a radio transmission which moves unrealistically or surrealistically. Over this space is juxtaposed a breathing which seems to be close to the listener and made by a person through a breathing mask: this sound is close, inserted in the *egocentric* space (Smalley 2007) and corresponds to a *madrigalesque* function according to the classification by Vande Gorne (2010). Within the same transition 1 section, after the breathing, the level is returned into an *abstract* function again at 00:28:10. In this case, the *abstract* function presents planes or volumes in addition to traces on the stereo panorama. These distributions can be seen in Figure 157.



10:00 10:30
Figure 157: Levels of spatial function for starting section and transition 1 of Tom... Far... Orion... Blue...

The emergence of gestures corresponding to an *agential* space (Smalley 2007), leads all the spatial configuration to operate as *structural* level function. In fact, this event at 00:47:84 starts the first *mesostructure*. Since the sections has been established clearly by means of the *sound object* and *spectromorphology* structuring, a brief *agential* space event is considered as a closure for the previous function and as starter for the following *spatial level*, an *abstract* function that completes the section with volumes and layers. Furthermore, this function is kept and defines the spatial design of transition 2 and the second *mesostructure* entirely. Consequently, the segmentation between the sections is given by *sound objects* and *spectromorphologies*. The level changes after a decrease of loudness which gives way to a *madrigalesque* function that presents a noise band articulated with a strong link to referential images (radio and television devices). This function shapes the short bridge 1 section at 02:01:74. Then at 02:01:76 the function shows a *structural/figurative* action, presenting a structural mark and a strong imaginary image of human presence. This compound function corresponds to the whole third *mesostructure*. These levels of spatial function can be seen in Figure 158.

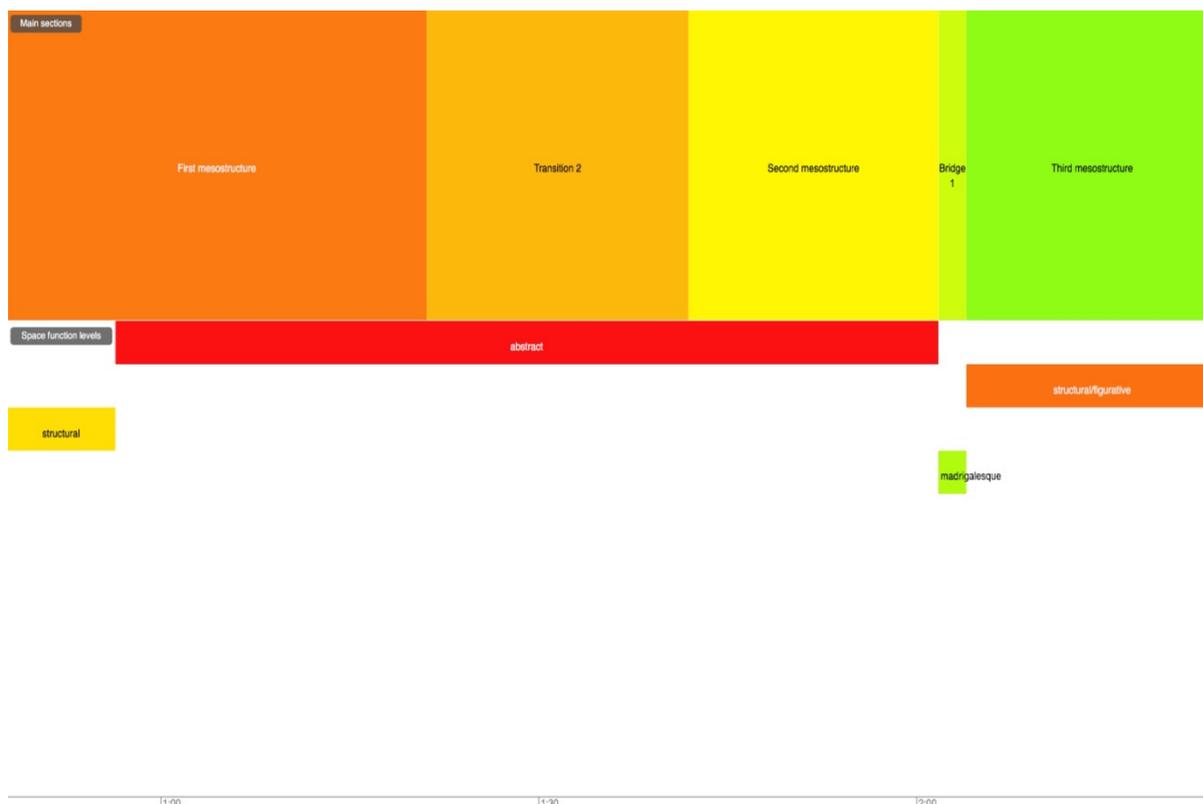


Figure 158: *Levels of spatial function for first mesostructure, transition 2, second mesostructure, bridge 1 and third mesostructure of Tom... Far... Orion... Blue...*

Then at 02:23:94, the transition 3 section is developed through a *structural/madrigalesque* function: the spatial change marks the new section and the content refers to an imaginary *agential* space in which communicational devices (radio transmission) act. At 02:31:41 the *level of spatial function* is a compound again, marking the new section, the fourth *mesostructure*, and suggests images and motions. The section ends with an interruption in the sonic flux and the reverberating tail shapes the brief pause section. This pause is a reverberating *sound object* that suggest a distant space, thus, it is an *archetypal* function.

At 03:13:81 the fifth *mesostructure* is defined by a *madrigalesque/structural* function where the guitar note implies a musical and cultural context in addition to the sonic composition of the piece. The rest, *complex sound objects*, acts as spatial layers and movements that shape the section. The spatial elements composed for transition 4 (03:27:25) and the following sixth *mesostructure* (03:29:66) present different configurations, developing planes, layers and positions, all acting as reinforcements of the segmentation. In this way, a *structural* function covers these two sections completely,

as can be seen in Figure 159, that shows the distributions for transition 3, fourth *mesostructure*, pause, fifth *mesostructure* and transition 4 as well.

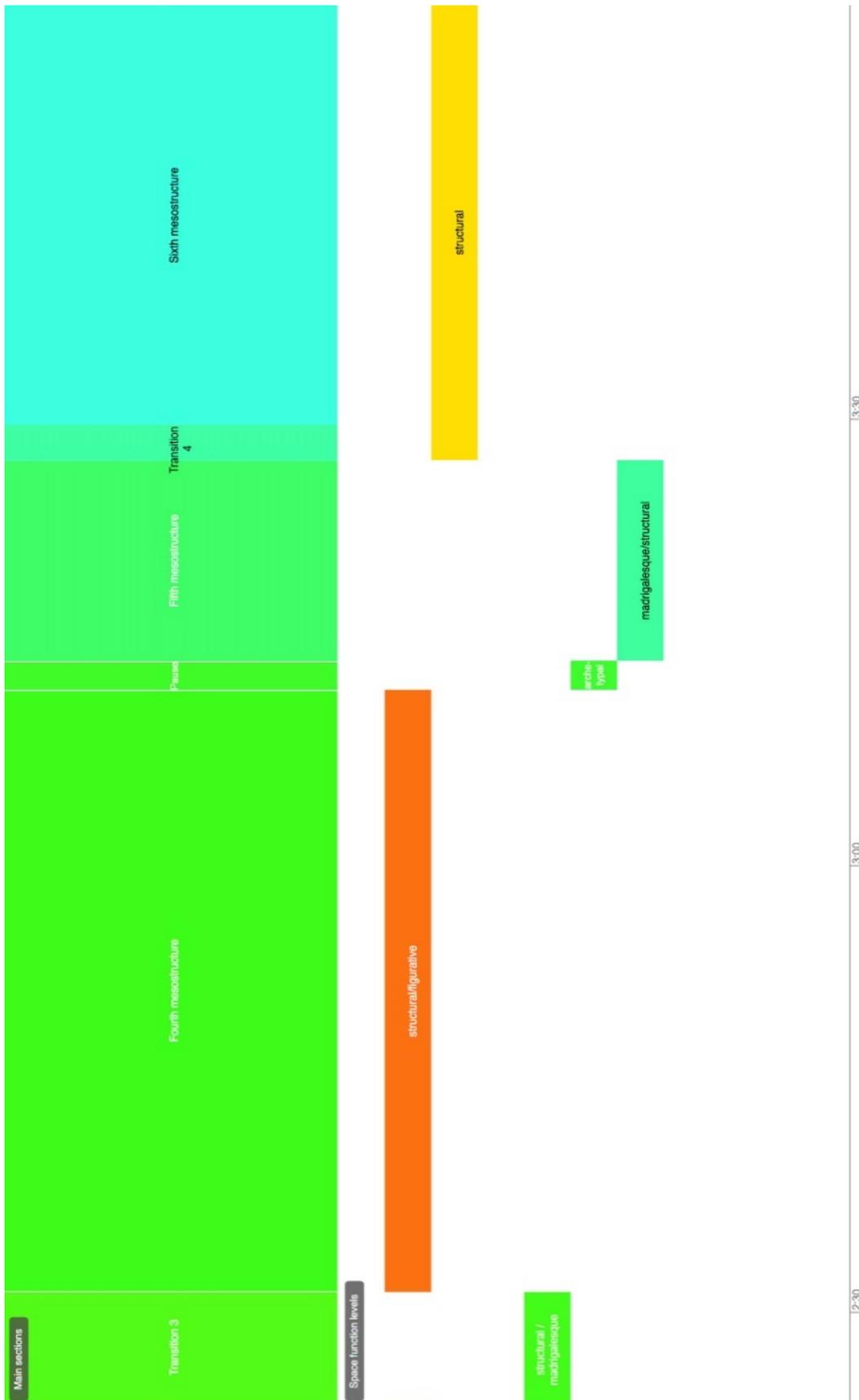


Figure 159: Levels of spatial function for transition 3, fourth mesostructure, pause, fifth mesostructure, transition 4 and sixth mesostructure of Tom... Far... Orion... Blue...

At 03:57:83, transition 5 section presents the same *level of spatial function* than the fifth *mesostructure*, *madrigalesque/structural*, using the same sound materials for the same purposes. The function for the seventh *mesostructure* is *abstract*, since the preeminent component is the composition of volumes and movements and its spatial gestures, that expands the *internal space* of the work (Chion 2017, p. 35), can be located in what Smalley (2007) calls *prospective space* which contrasts with the frontal focus of the *agential space* produced by the guitar sound in the previous transition 5, thus acting as reinforcement of the segmentation. This section, between 04:07:52 and 04:29:92, keeps this spatial function until a brief element acts as the bridge 2 section: a naturalistic sound (somebody opening or closing a door or a hatch) that presents an *ornamental* function through an *agential space*, “reinforcing its interest or momentary function” (Vande Gorne 2010, p. 165). In this case, the *ornamental* function supports the articulation generated by the *spectromorphologies* acting in this bridge, that consequently open the next section. The *levels of spatial functions* for these three sections can be seen in Figure 160.

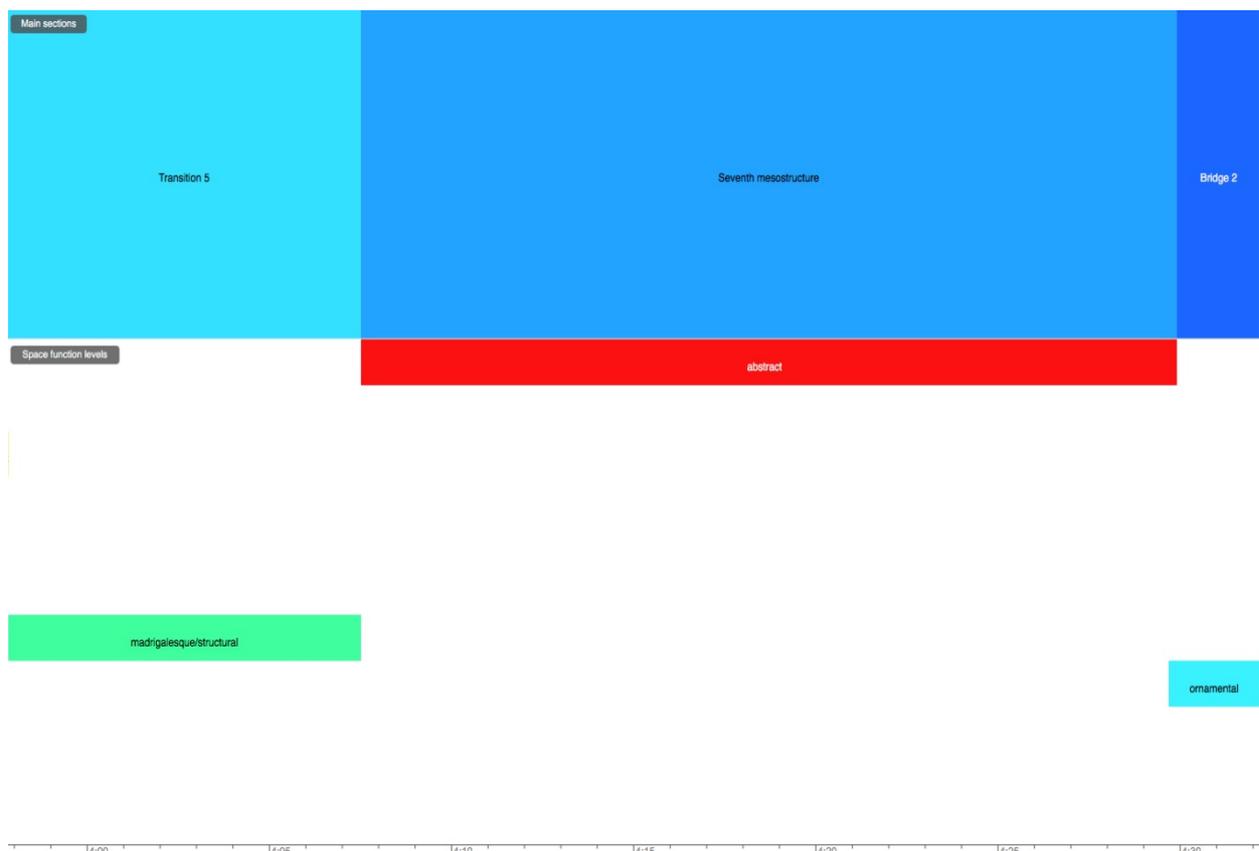


Figure 160: Levels of spatial function for transition 5, seventh mesostructure and bridge 2 of Tom... Far... Orion... Blue...

At 04:32:22 the eighth *mesostructure* is started and presents an *abstract/structural* function: the spatial design delimits the section and shows a spatial configuration driven by different planes layered on the stereo field, movements and focal points. Several movements perform a panning pattern analogous to the rhythmic pattern of the given *sound objects*. This compound *level of spatial function* lasts all the section and covers part of the next one. In fact, the segmentation of the ninth *mesostructure* is defined by a noticeable sound *object, Y''*, at 06:54:10. Then, at 07:03:57, the same *Y''* object presents a spatial expansion by means of reverberation at its ending tail. This reverb changes the spatial conditions, signalling a new subsection, thus the *level of spatial function* is a *structural* one. This is maintained the rest of the section until 07:30:36, when the tenth *mesostructure* is launched through the significant *Hn* object (*vocal harmonic timbre*). This compound function, *archetypal/structural* defines the new section (*structural* feature) and presents an idiosyncratic event through the *archetypal* aspect: the human presence, the voice, is thrown away into an immense and distant space. Then, from 07:45:11 on, the *abstract* function returns, delivering movements and traces. This function is kept and it is nuanced by *figurative* functions intercalated twice, at 07:55:85 and 08:11:85. These *figurative* levels are images of *agential* and *utterance* spaces, being the second one the ending element of the section which give way to the finale section.

This final part prolongs the *harmonic timbre* of the previous vocal materials and focus the attention in the spatial morphological nature of it by moving it across the stereo field. This movement configures an *abstract* function that last until 08:27:63, when the human presence is evidenced and Bowie's voice appears in an *utterance* space through the *madrigalesque* function that finishes the piece. These distributions are shown in Figure 161. The detail for the short *madrigalesque* function at the end of the finale section, is shown in Figure 162.

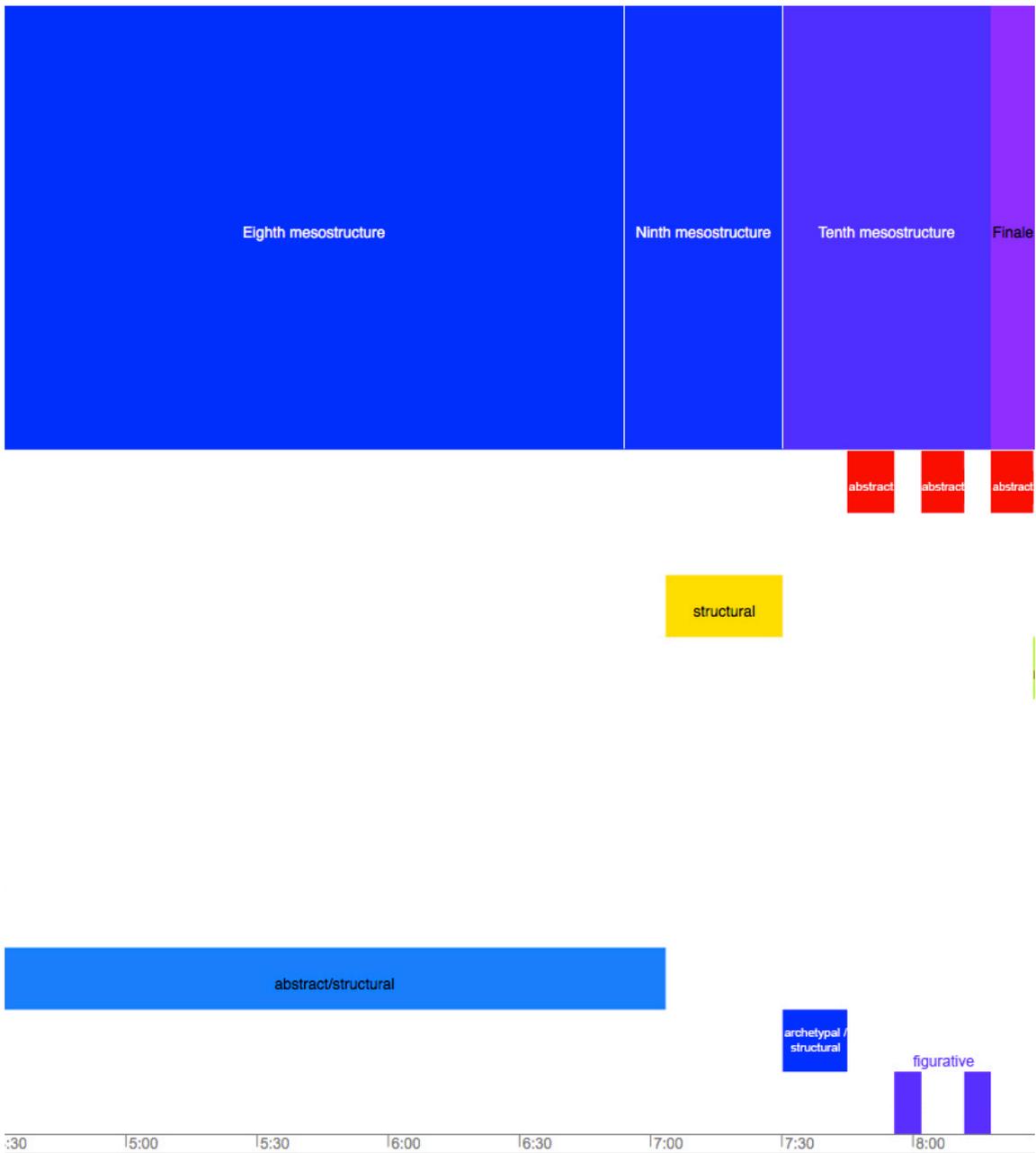


Figure 161: *Levels of spatial function for eighth, ninth and tenth mesostructures and finale section of Tom... Far... Orion... Blue...* The last level of spatial function, *madrigalesque*, is almost invisible in this figure due to the scale (a thin green line at the end); to check it, please see Figure 162



Figure 162: Ending levels of spatial function of *Tom... Far... Orion... Blue...*

7.2.3 Voice type and speech-sound type distributions

The *voice type* distribution categories for *Tom... Far... Orion... Blue...* are seven and can be seen in Figure 163.



Figure 163: *Voice type* distribution categories for *Tom... Far... Orion... Blue...*

In the *speech-sound type* distribution, this piece presents six categories, as Figure 164 shows.



Figure 164: *Speech-sound type* distribution categories for *Tom... Far... Orion... Blue...*

These amounts, six and seven categories for each distribution type, denotes the few vocal materials present in the work. This implies a composition based on *non-vocal* materials. In relation with those *non-vocal* sounds, the few and specific speech sounds (or those derived from vocal sources) act as milestones or punctuations of great importance.

The piece starts with *non-vocal* and *electronic* distributions, covering the starting section and the transition 1 section. The only different element is presented at 00:24:81, a *non-semantic* short unit that corresponds to a *phonetic* element: is, in fact, breathing, but corresponds to a *fricative* or *sibilant* (Crystal 1995, p. 157) from the *phonetic* perspective. The first four seconds of the first *mesostructure* keep the same distributions, but at 00:51:21, the categories change to *vocal extended* and *phonetic/electronic* for the *voices type* and the *speech-sounds type* analyses respectively. This is a sound element which timbre can be perceived as electronic and similar to vocal material. These categories are maintained all over the section and covers the transition 2 section as well. From this point, the previous categories are intercalated: *non-vocal* and *electronic* for the second *mesostructure* and the *bridge 1* section, *vocal extended* and *phonetic/electronic* for the third *mesostructure*, *non-vocal* and *electronic* for the transition 3 and finally, once more *vocal extended* and *phonetic/electronic* for the fourth *mesostructure* and the pause section. These distributions can be seen in Figure 165.

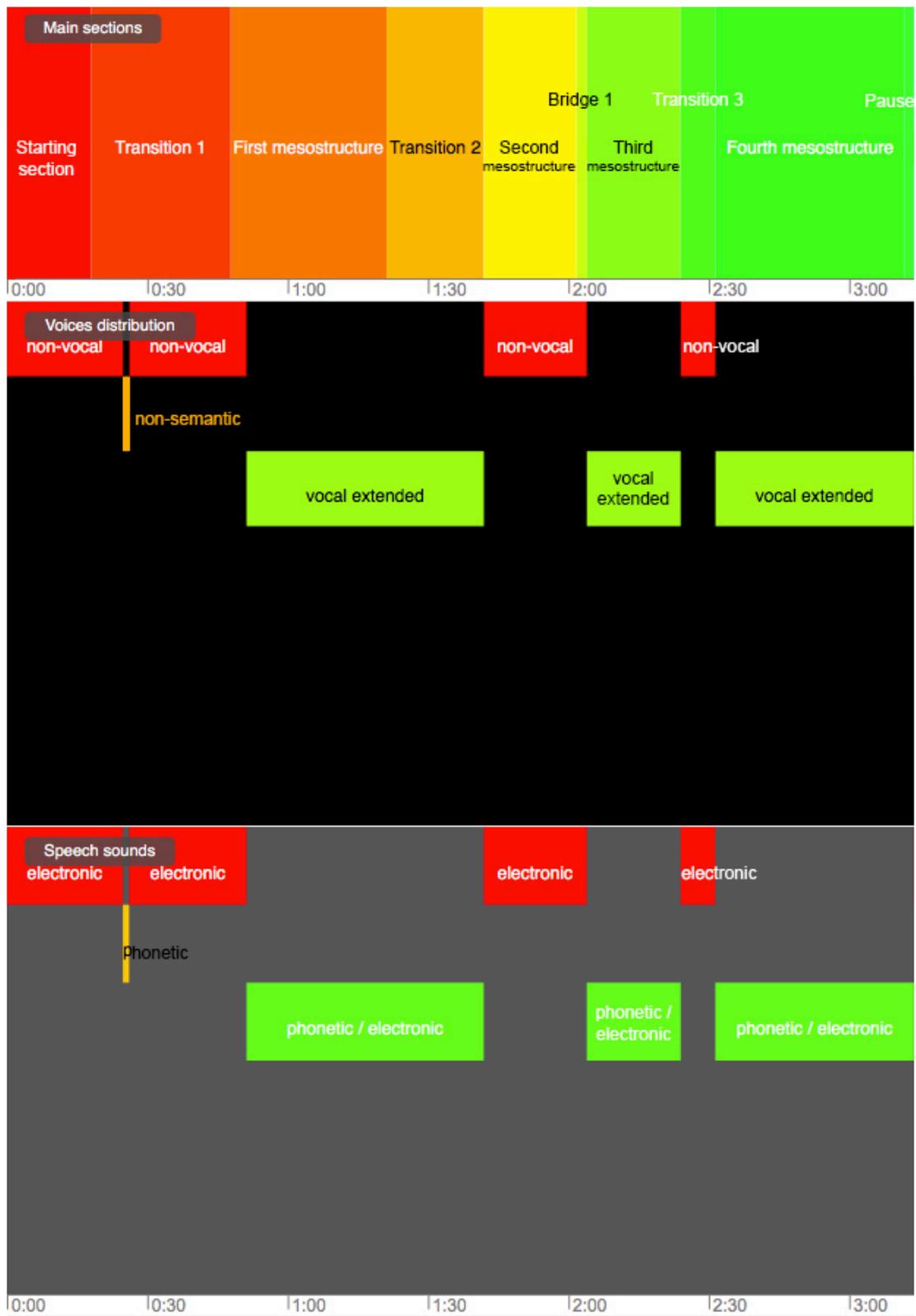


Figure 165: *Tom... Far... Orion... Blue...* voice type and speech-sound type distributions, from starting section to pause section

Then, at 03:13:80, with the fifth *mesostructure*, starts a long period where the categories are just one for each distribution, *non-vocal* and *electronic* for *voices type* and the *speech-*

sounds type analyses respectively. This covers most of the piece and includes the fifth, sixth, seventh, eighth and ninth *mesostructures*, and transitions 4 and 5 and the bridge 2 section.

Evidently, this section, without vocal or speech materials, is structured by means of the *sound object* and *spectromorphological* composition and the spatial strategies associated. These distributions can be seen in Figure 166.

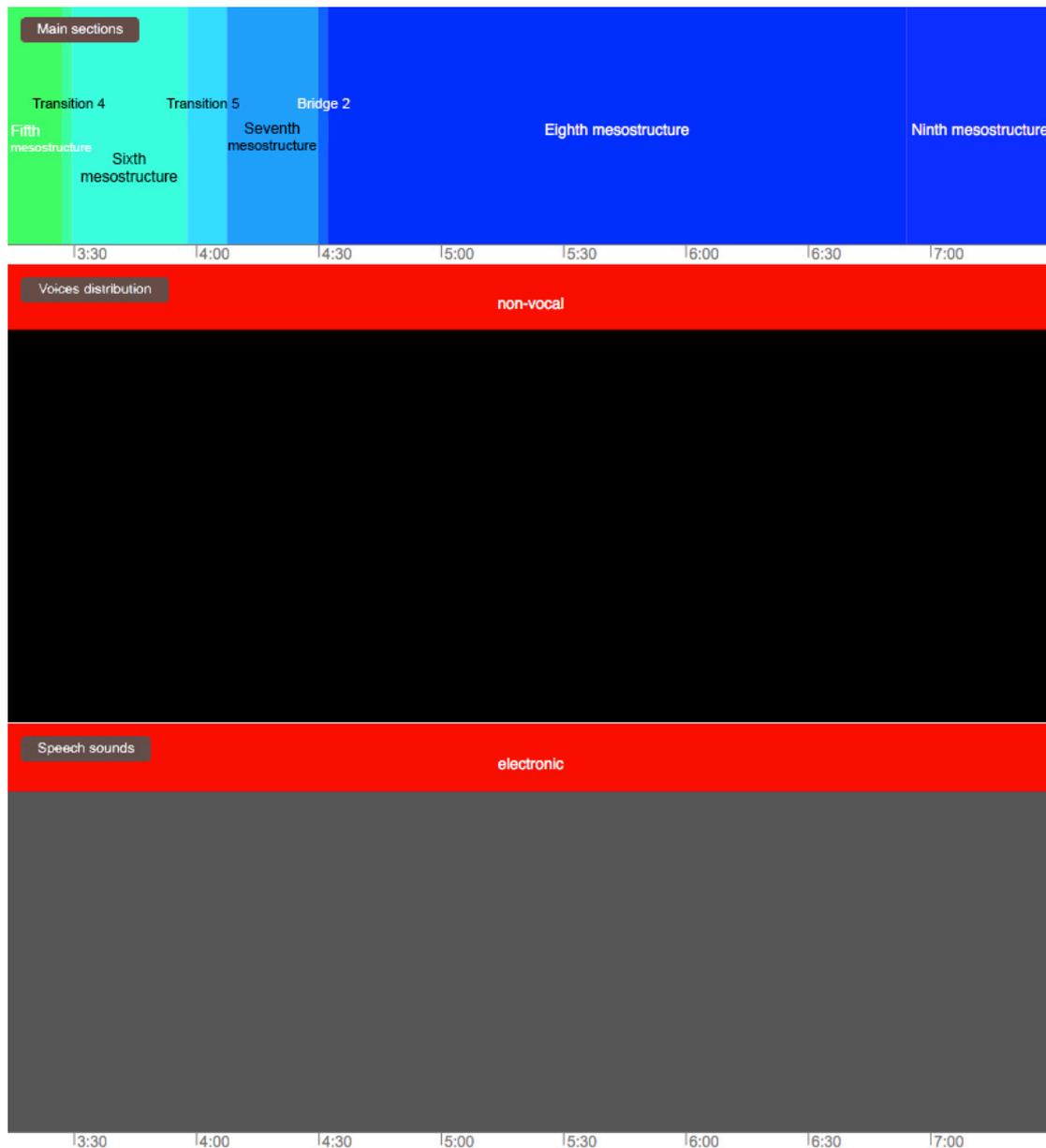


Figure 166: The non-vocal and electronic distributions covering from fifth *mesostructure* to ninth *mesostructure* of *Tom... Far... Orion... Blue...*

In this way, the resolution of the piece is reinforced through the placement of vocal materials in the tenth *mesostructure* (07:30:35 - 08:17:92) and the final section (08:17:92 – 08:28:00). The tenth *mesostructure* is initiated by a *semantic* unit, the *word* ‘far’ which, in spite of the extreme time stretching, it keeps its vocal colour (*harmonic timbre*) and the *semantic* content is preserved as well (‘faaaaaaaaaaar...’)⁵⁸. The distributions return to *non-vocal* and *electronic* at 07:45:18 and then give way to *semantic & extended* and *word/electronic* at 07:55:87 that are presented as a *word*, ‘blue’, iterated and pitch shifted. Once more the materials back to *non-vocal* and *electronic* at 08:02:04 to then change to *semantic & extended* and *word/electronic* at 08:11:89 by means of a new version of the iterated *word* ‘blue’, ending the section in this way.

Then, at 08:17:92, the final section is started, and the vocal timbre is elongated in the same way the *word* ‘far’ was in the previous section. In this case, the vocal origin is given by the morphological connection with the previous iterated *word*, since by itself, the sound is less natural due to the filtering and panning applied to it, corresponding to *extended* and *phonetic/electronic* categories. At the same time, the utterance is recognisable thanks to the last particle of the *word*, a *phoneme* unit, the last *vowel* sound of ‘blue’. By itself, this element corresponds to a *semantic dissolution* category, but is linked to the previous materials, and because of this, completes in this way the *word* and closes the piece. These distributions can be seen in Figure 167.

⁵⁸ This is possible thanks to the high quality of the spectral transformation provided by the tool *Hold* within the *Composers’ Desktop Project (CDP)* software.

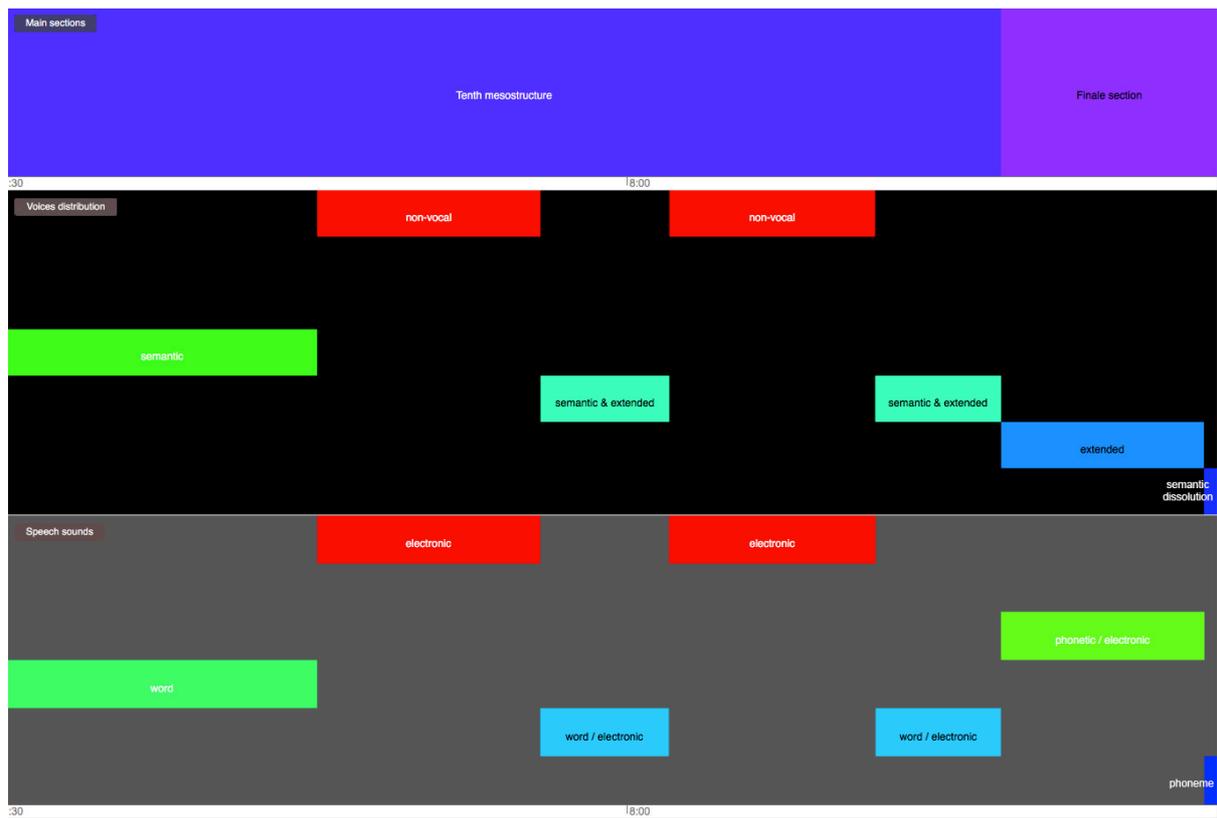


Figure 167: *Tom... Far... Orion... Blue...* tenth mesostructure and finale section, voice type and speech-sound type distributions

7.3 Analysis conclusion

In contrast with the previous tribute piece, *Un regalito misterioso*, this piece has a smaller number of vocal materials and, among them, a predominance of *extended* and *non-semantic* elements. In this way, the piece focuses on vocal timbre and locates the few *semantic* and *phonetic* materials as milestones that signalise sections or punctuate moments. In this sense is possible to trace a parallel between this work and the English section of the cycle *La lumière artificielle, The Light*. At the same time, the piece has a large number of sections which are defined by different types of articulations and transitions, many of them as compound elements that reinforce their morphologies and structures: those features intensify each other. This structure is highly developed in terms of sections and sub-sections, manifesting a certain narrative feature in the work, a characteristic accentuated by the presence of evident referential sounds. Both, referential and abstract materials are situated in different spatial contexts and subjected to movements and placements; those spatial constructions show a relatively simple composition of the *internal space* of the piece in global terms, but very substantial as structural elements in local terms. Figure 168 shows the general view for the five analyses of this piece.

Chapter 8: *Sheffield 17*

8.1 *Poietic analysis*

This is the last piece included in the present portfolio and it is also tribute, an homage to José Vicente Asuar, Chilean composer and engineer who passed away in January 2017. He was a pioneer in electroacoustic and computer music in Latin America, both as creator of technological tools and as an internationally renowned composer (Fuentes Bravo and Schumacher 2018, p. 2). Along with other young composers, he initiated electroacoustic music in Chile during the second half of the 1950s and composed the first piece entirely created with electronic sounds in 1959 (Schumacher 2005, pp. 18-36). During the 1970s he started to develop technical and musical strategies to work with computers; during 1971, Asuar took a residency at Buffalo campus of the University of New York, specifically at the Electronic Music Studio supported by a Fullbright scholarship. This permitted him

[...] to research on controlling analogue synthesisers by digital computers with the supervision of Lejaren Hiller, thus realising diverse experiences and tests, described in the technical report *Programmed Control of Analog Sound Generators by a Digital Computer* (Asuar & Hiller, 1973). His work at the studio had another outcome, an acousmatic piece made with synthesis source materials: *Buffalo 71*, one of his most remarkable compositions (Albornoz 2015, p. 6).

He completed this research while creating a computer assisted composition system for instrumental music. This led him to create the *Research group in sound technologies* at the University of Chile and subsequently to compose *Formas I* (1971), the first orchestral work created with the help of algorithms processed by an IBM 360 computer (Albornoz 2015, pp. 5-6). His knowledge and ideas were focused towards a new project (started around 1975); the creation of a computer specifically designed to create music. This was completed in 1978 (Schumacher 2005, p. 65). The machine, named *COMDASUAR*, Spanish acronym for *Asuar Digital-Analogic Musical Computer*, combined digital and analogue synthesis in a small and in-expensive device that operated through bespoke software that included an operating system and tools for algorithmic composition (Albornoz 2015, p. 8). This computer was the core tool for all his production until the late 1980s (Fuentes Bravo and Schumacher 2018, p. 3). Unfortunately, without

[...] the academic, artistic and financial support, and being conscious of the fast obsolescence of his machine, Asuar didn't persist in the project, [...] The sad and unfortunate situation was that the cessation of activities not only had affected the computer project but all the electroacoustic music research and creation by Asuar, who by the end of the 80's will never compose or investigate again (Albornoz 2015, p. 10).

From that point, the Chilean composer isolated himself and cut off all relations with the artistic world. Since the 1990s, even his whereabouts remained unknown for a while (Schumacher 2005, p. 69). The reason for his abandonment and isolation are not clear and has been subject of interdisciplinary research (Fuentes Bravo and Schumacher 2018). Around 2005, Chilean Electroacoustic Community (CECh)⁵⁹ and Chilean composer and researcher Federico Schumacher finally contacted Asuar. Schumacher and others, including the author of this thesis, developed a series of activities to rescue and promote Asuar and his works. During this period until 2014, a friendship was born between the Chilean pioneer and the composer of this portfolio. In 2006, a tribute piece was composed and subsequently performed during October in the Electroacoustic Music International Festival of Chile *Ai-maako* 2006. The work, entitled *A SU Árbol Retorno*, is a stereo acousmatic piece whose synthetic sound material was

[...] used with acousmatic criteria and techniques, having as a mandatory condition the avoidance of sounds recorded with microphone. A structure with paths from *pointillisms* towards gradual accumulations of tessituras, becomes a sonic travel enhanced by the internal spatiality (Albornoz 2016, p. 3).

Alongside these characteristics, the piece presents a special feature: "The first twelve seconds [...] are a free version, but identical in timing, of the first twelve seconds of *Guararia Repano* (1968)" (Albornoz 2016, p. 3), the most famous piece by Asuar⁶⁰. These twelve seconds copy gestures, articulations and timing of the original, but using different sounds, while the rest follows the description quoted above. The piece was premiered in a concert with the presence of Asuar.

⁵⁹ CECh is an association of Chilean composers working in the field of electroacoustic music; as part of the CIME, this Chilean federation advocates for the diffusion of Chilean composers, working for the expansion of this artistic domain in broad context. See www.cech.cl

⁶⁰ With several releases and innumerable performances and broadcastings, this piece was awarded with the first prize of the Institut international de musique électroacoustique de Bourges (IMEB) 1975 competition (Schumacher 2005, p. 31).

The following years were marked by a kind and friendly communication between Asuar and Albornoz, including exchanges about music and other topics. One of those topics was the beginning of the present doctoral research. August 27th, 2014 was the last meeting between Albornoz and Asuar, before the author of this thesis travelled to the United Kingdom in 2015. Asuar passed away at eighty-four in January 2017.

After a month of planning, the piece *Sheffield 17* was conceived as a project to be finished before October, since that was the month for the homage concerts for Asuar to be performed during the *Ai-maako* festival in Chile. The aims of this piece were:

- To create a piece that includes synthetic sounds arranged in sequences and patterns in a similar way to *A SU Árbol Retorno*. Subsequently, to work with those materials using acousmatic techniques, such as cut and paste, time stretching and pitch shifting.
- To use samples of one piece by Asuar. *Buffalo 71* is exemplary of his work as computer music researcher and composer. The title of the piece included in this portfolio is a word game that includes the name of a city and a year.
- To merge digital sound production and synthesised sounds from the 1970's.
- To use Asuar's voice, thereby situating the work in the context of the present PhD research. The voice samples are creative commons licensed⁶¹. These samples are recordings of Asuar explaining, in Spanish, some aspects of computer music. These texts were taken from the LP album *Así habló el computador (So spoke the computer)* (Asuar 1979).
- In contrast to *A SU Árbol Retorno*, create a more playful and luminous work, since the 2006's piece is vital and energetic but denser and more serious.

These guidelines were followed through the *acousmatic-creationist* approach. The recursive *acousmatic-creationist* production scheme⁶² was applied to the context of the piece and allowing to include the previous compositional output of the author. This is done by including some sections of the previous tribute piece, *A SU Árbol Retorno*. This action of auto-sampling constitutes another form of the recursive *acousmatic-creationist* procedure proposed in the compositional rationale. Finally, table 3 presents the original

⁶¹ For more details, see Appendix 5: Works data sheets.

⁶² See figure 2 in the Compositional rationale section.

texts by Asuar in Spanish and their English translation. The English translation row in this table, presents relevant insight on Asuar’s artistic ideas.

Table 3: Spanish texts of *Sheffield 17*, translation and explanation

N°	Original Spanish text	English translation
1	El computador puede ayudarnos a componer música.	<p><i>The computer can help us to compose music.</i></p> <p>‘Computador’ is an Anglicism widely used in Latin America since the proper word for ‘computer’ in Spanish is ‘ordenador’, similar to the French word ‘ordinateur’. This sentence expresses the way Asuar understands the role of computer and algorithms in music and art, which is as a helping tool. His ideas regarding this notion are explained in the record LP itself where the sentences were taken (Asuar 1979) but, were developed in several articles, for example claiming the computer as means to amplify human imagination (Asuar 1972, pp. 45-50). This thesis assumes creative process as central in Asuar’s artistic programme, this is specifically as a process in search of new forms and expressive media. To achieve this aim, close to Huidobro’s <i>creationism</i>, Asuar proposes a human-machine alliance (Asuar 1972, p. 45) in order to amplify human imagination.</p>
2	El computador... Computador...	<i>The computer... Computer</i>

3	Hay muchas maneras distintas de obtener melodías, ritmos o armonías por medio de cálculos hechos por un computador.	<p><i>There are many different ways to obtain melodies, rhythms or harmonies by means of calculations made by a computer.</i></p> <p>This is an allusion to the different techniques studied and developed by Asuar in order to generate musical materials. His research covered a wide range of methods, including the electronic performance of classic pieces of western tradition and original algorithmic compositions (Asuar 1972; 1979; 1980).</p>
4	Pero no olvidemos que el computador no es si no una prolongación del ser humano, quien es, en definitiva, el que toma las grandes decisiones y da la orientación y significación de lo que con estos medios puede realizarse.	<p><i>But let's not forget that computer is just an extension of human being, who is, ultimately, the one who makes the big decisions and gives the orientation and meaning of what can be done with these means.</i></p> <p>A more substantial statement regarding the role of computers and algorithms as tools which help and expand human creativity. At the same time is a call to keep in mind the central role of human being within the creative process.</p>

8.2 *Neutral level analysis*

This piece has eleven sections, each of which is clearly signalled by a gesture, an attack, a launching or a text. In its seven minutes and ten seconds of duration, the sections are:

1. Introduction (00:00:00 - 00:16:97)
2. First *mesostructure* (00:16:97 - 00:48:51)
3. Continuation (00:48:51 - 01:18:54)

- | | |
|--------------------------------|-----------------------|
| 4. Second <i>mesostructure</i> | (01:18:54 - 01:46:09) |
| 5. Third <i>mesostructure</i> | (01:46:09 - 02:37:21) |
| 6. Pause | (02:37:21 - 02:54:12) |
| 7. Fourth <i>mesostructure</i> | (02:54:12 - 03:48:02) |
| 8. Middle section | (03:48:02 - 04:55:12) |
| 9. Fifth <i>mesostructure</i> | (04:55:12 - 05:49:54) |
| 10. Sixth <i>mesostructure</i> | (05:49:54 - 06:51:55) |
| 11. Finale | (06:51:55 - 07:10:00) |

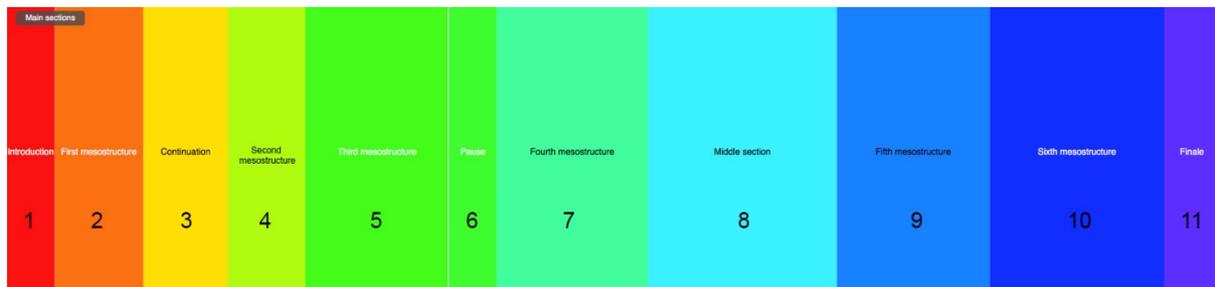


Figure 169: *Sheffield 17* main sections distribution, graphic representation

8.2.1 Distribution of *Sound objects* and *spectromorphological* structure

The piece starts with a group of *balanced objects* and *iterations*, both with *variable* and *complex masses*. These *sound objects*, constitute a dynamic flux in the introduction section, placing the following succession of *spectromorphologies*: *attack*, *statement*, *prolongation* and *statement*. This last *statement* is a synchronised group of three objects, *Zy*, *Ax* and *Ey*. After that, a new *attack* function triggers the first *mesostructure* at 00:16:96 causing a *departure* structural function by means of the noticeable introduction of two *macro-objects* with *complex masses*, an *iteration* (*Zx*) and an *accumulation* (*Ax*) at the same time a group of *tonic mass impulses* is deployed through successive appearances. Because they are perceived both as groups (or lines in time) and individual points, they have not been classified as *iterations*. These types of elements are abundant in the piece and shape the general aspect of it. At the same time, they can be understood as melodies in the traditional musical sense, but their pitches were obtained randomly, not analysed to extract their exact position in the tessitura and placed following only the aural guidance based in their appreciations as *sound objects*. These *impulsions* are represented in the graphical analysis with a special figure in pink, orange and purple rectangles. These

rectangles are placed in different heights to represent the pitch variations, but there is no exact determination of any note of the chromatic scale. As it has been pointed out before, they constitute an important element throughout the piece; their interaction with *macro-objects* and particular *balanced objects* placed in specific locations, create the different but unified sections and sub-sections of the piece. The first *mesostructure* presents a combination of materials in the form of a *prolongation* structural function, projecting in time the *tonic impulsions* and several *accumulations* and *iterations* both long and short. A noticeable percussive attack, a *complex mass continuous object*, starts the continuation section at 00:48:50. This is a variation of the first *mesostructure*, characterised by different combinations of the same type of objects. *Spectromorphologically*, behaves as *passage* and *transition* toward the next section. These elements, for the three first sections of the piece, are shown in Figure 170.

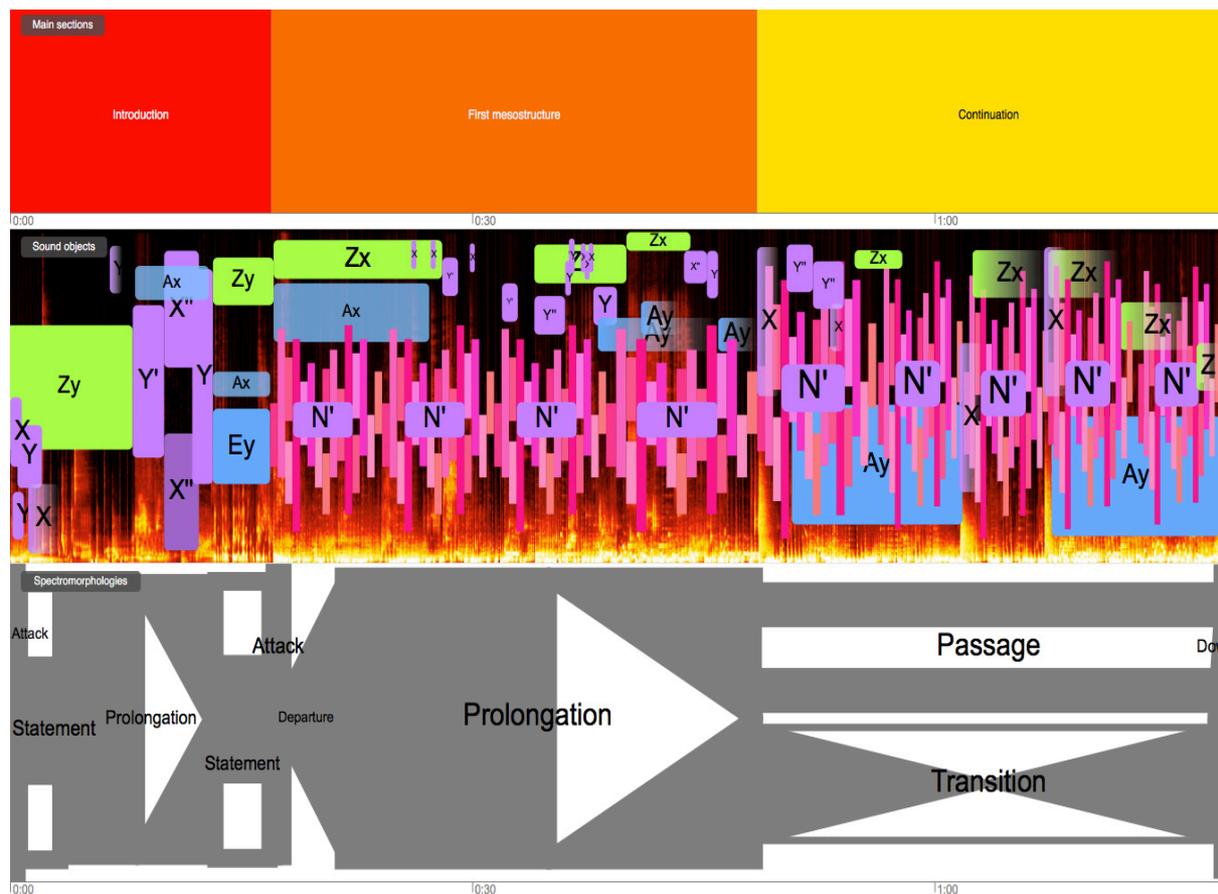


Figure 170: *Sheffield 17*, introduction, first *mesostructure* and continuation section, *sound objects* and *spectromorphologies*

At 01:18:54, the second *mesostructure* begins with an *attack* function, again a percussive attack (*X*), now leading to a *downbeat* function that decelerate a bit the general pace. The flux of *tonic impulses* persists accompanied by *accumulations* with *variable masses* (*Ay*) and *variable mass samples* (*Ey*). These *samples* are relevant since their *harmonic timbre* stands out from the rest of objects and, although this is a *sound object* analysis, at this point is impossible not to reference their vocal nature that distinguishes them. The *spectromorphologies* are *continuants, prolongation, statement, maintenance, passage*; they point out the progressive nature of the section. At the very ending of this section, an *emergence* structural function appears in the form of a fading in *X* object that launches the following third *mesostructure*. This section starts at 01:46:08 with a new *attack* function (a compound of *X* and *N* objects) activating an *upbeat* function that accelerates the pace and projects the energy through a *departure* function: in other words, the sonic flux is reinstated and projected to a new instance of the piece. The structural functions are *prolongation* and *passage* again with the presence of *variable mass iterations* and one *accumulation* (*Zx, Ay*). This development is paused by means of a *release* function which starts, precisely, the pause section at 02:37:21. This short part is formed by few elements with a similar configuration to the elements in the introduction section, in this case *Zy* and *Ay* objects once more alongside a *complex mass impulse* (*X'*) and a *variable mass iteration* (*Y''*), all of which act as a *downbeat* function that decelerate again the pace. The elements described for second and third *mesostructures* and the pause section, can be seen in Figure 171.

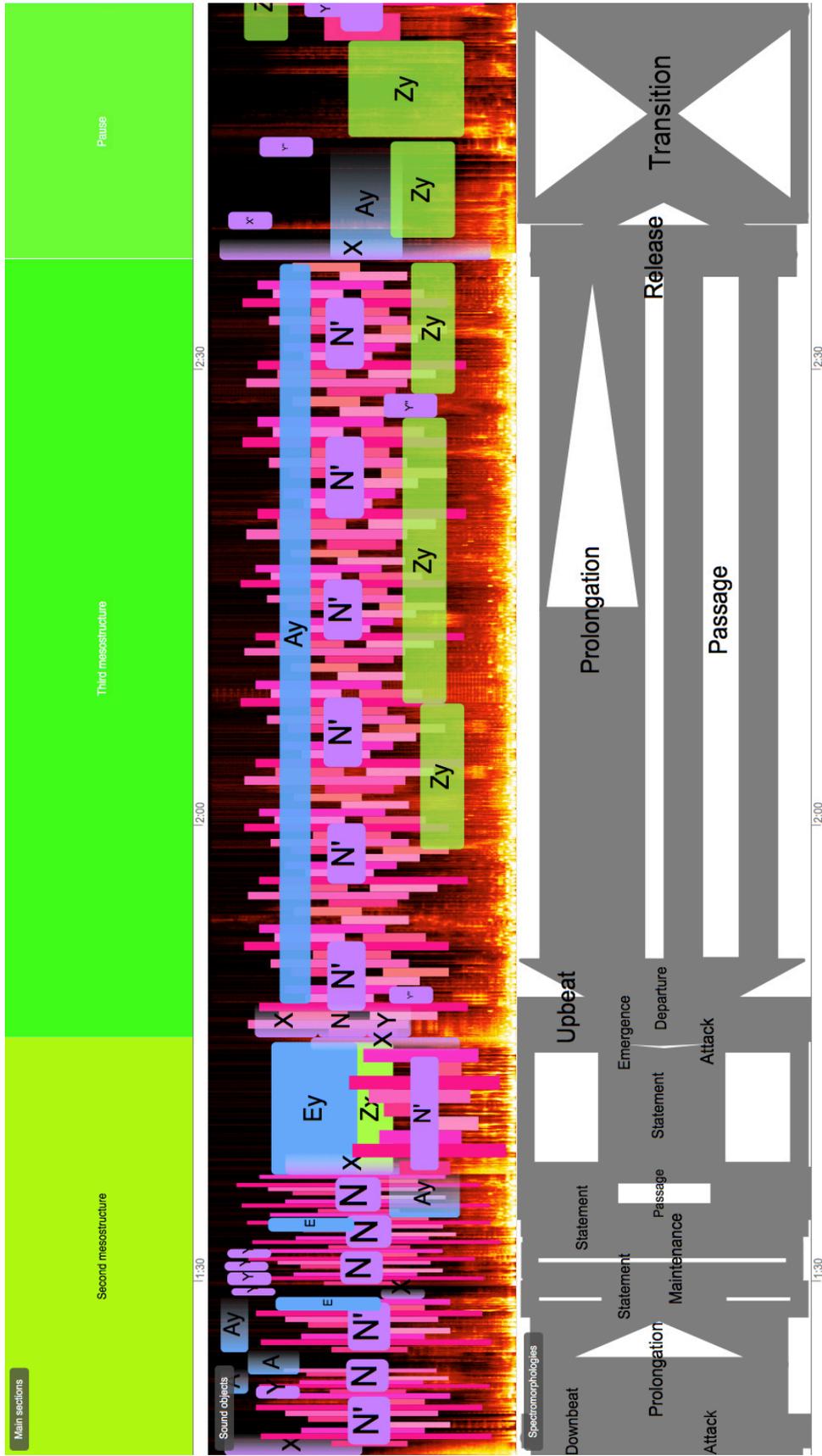


Figure 171: Sound objects and spectromorphologies for second and third mesostructures and pause section of Sheffield

Then, at 02:54:11, the fourth *mesostructure* begins with a steeper deceleration, by means of a new *downbeat* function in the form of a new version of the percussive attack (*X sound object*). The organisation of *sound objects* is the same in general terms: the succession of *tonic mass impulsions* accompanied by *macro-objects* and few individual *balanced objects*. After the *downbeat* and a *transition*, immediately a *statement* function is placed through a *variable mass accumulation* (*Ay*), shortly after accompanied by a *Hn* object. Those *macro-objects* lead to an *upbeat* function that persist with the characteristic *impulsions* and project them with a *prolongation spectromorphology*. The appearance of new *balanced sound objects* generates a *statement* function with a gestural feature that give way to a calmer sub-section, a *passage* structural function that prepares the sonic flux for the change delivered by the forthcoming middle section. After the final element in this section, *variable mass iterations* operate as an *emergence* function, as can be seen in Figure 172.

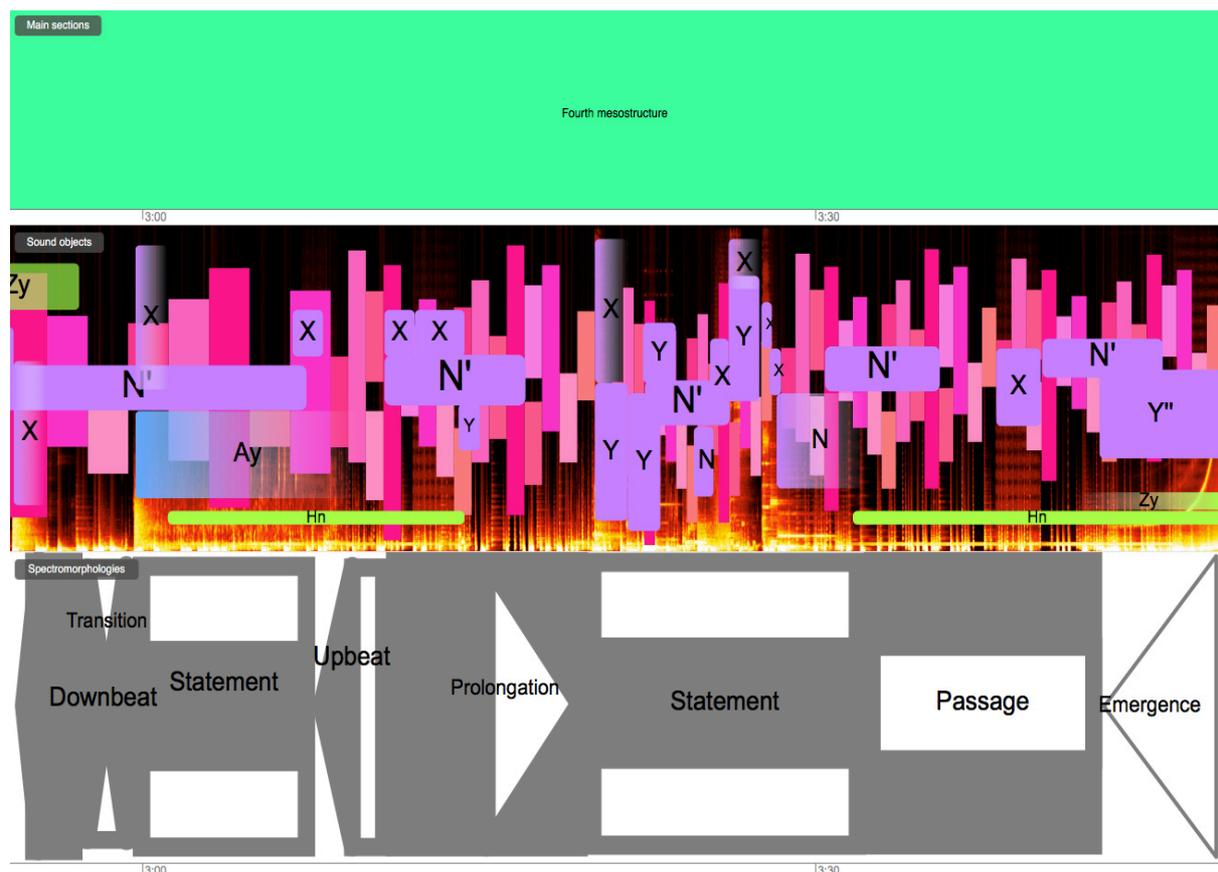


Figure 172: *Sheffield 17*, fourth *mesostructure*, *sound objects* and *spectromorphologies*

The middle section begins at 03:48:02 with a *release* function constituted by a hit (*X*) and a resonating *tonic mass continuous object*, which fading tail leads to a *downbeat* function. This *downbeat* is formed by similar objects (*N*, *X* and *X''*) that in fact are perceived as versions of the first material of the section, with which share *harmonic timbre* in different positions in the tessitura. The colour and character are maintained afterwards: from 04:09:50, the *spectromorphologies* are *continuants*, reflecting this behaviour: *maintenance*, *passage* and *prolongation*. The *tonic mass impulses* return now alongside the resonating objects presented previously in the first part of the section. The *mesostructure* is completed by the addition of a high pitch *Ay* object and a *Hn*. These elements can be seen in 173.

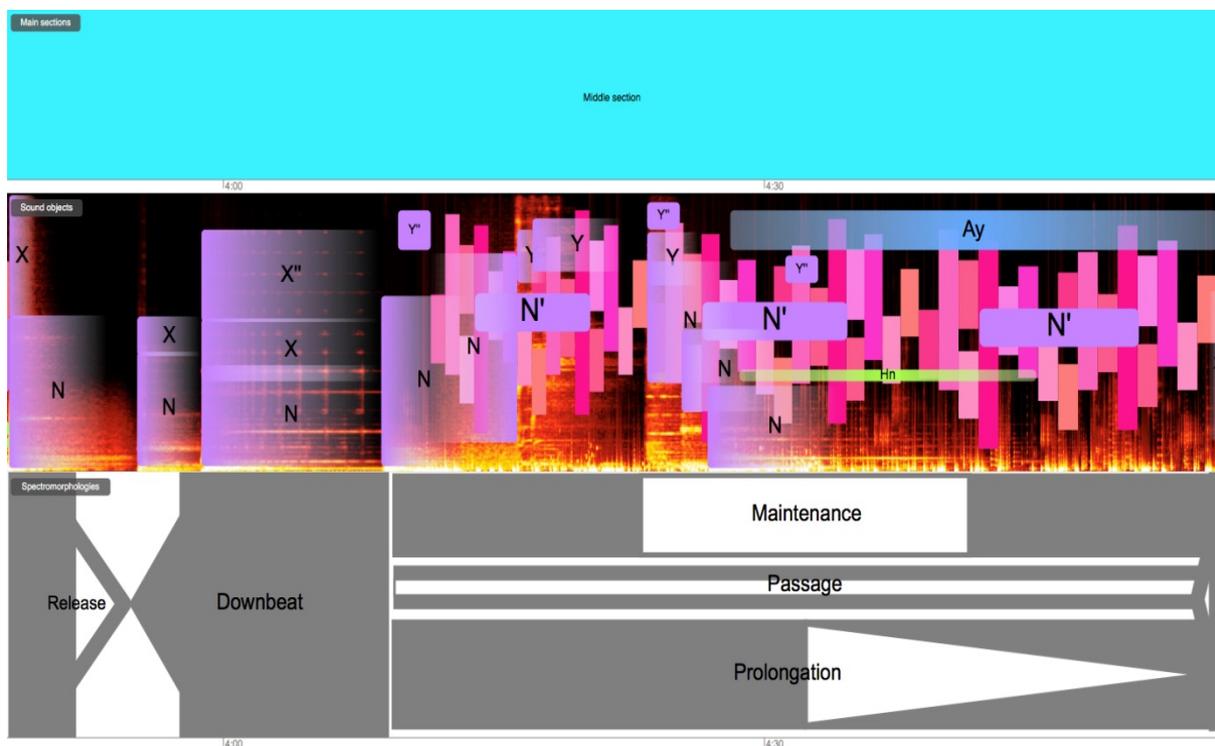


Figure 173: Sound objects and spectromorphologies for the middle section of *Sheffield 17*

The fifth *mesostructure* starts at 04:55:11, constituting a variation of the dominant configuration in the piece, this time combining the *tonic impulses* with *accumulations* (*Ay*, *Ax*). The variation aspect can be better appreciated in the *spectromorphologies* analysis, where different *continuant* functions are intercalated with *attacks* which punctuate the sonic discourse. This compositional structure is kept when the following sixth *mesostructure* is launched (05:49:54) by an *attack* function through the resonant

object presented first in the middle section, followed by series of *tonic impulses* and the addition of few other elements (*Zx, Hn*). Versions of this material are presented all across this section in different pitch positions. This section is marked by a *prolongation* function, since maintains the general arrangement of *sound objects*. The distribution of these elements is shown in Figure 174.

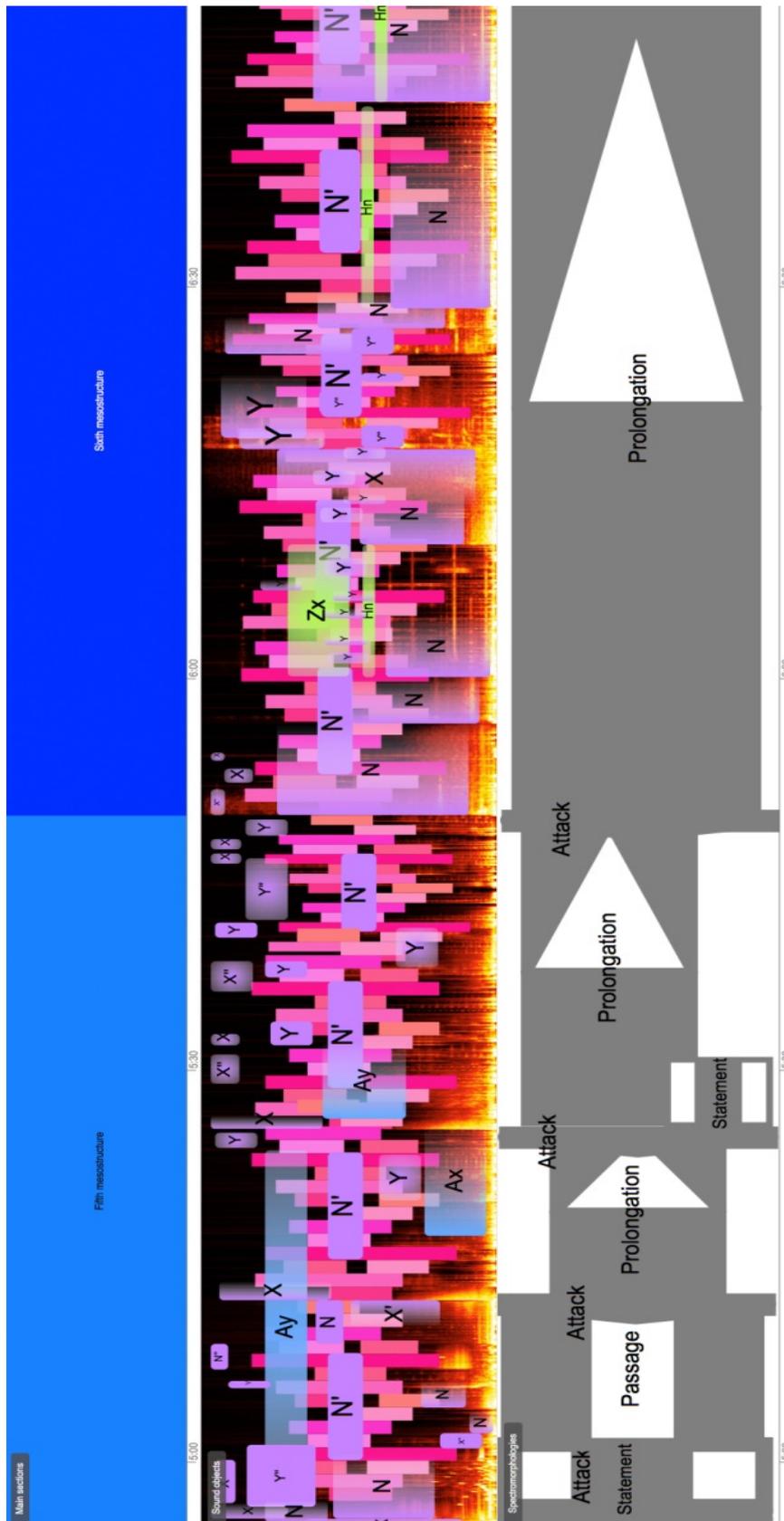


Figure 174: *Sheffield 17*, fifth and sixth mesostructures, sound objects and spectromorphologies

The finale section, started at 06:51:54, only rests the resonating N objects and adds the final *variable mass sample* (Ey) which is vocal material in the form of a *statement* function. This *sample* operates as an *arrival* function that in dialoguing with the *tonic impulses*, structures the ending of the piece through a *closure* function shaped by a gesture created by the interaction of the *impulsions* and the last elements of the *sample*, as Figure 175 shows.

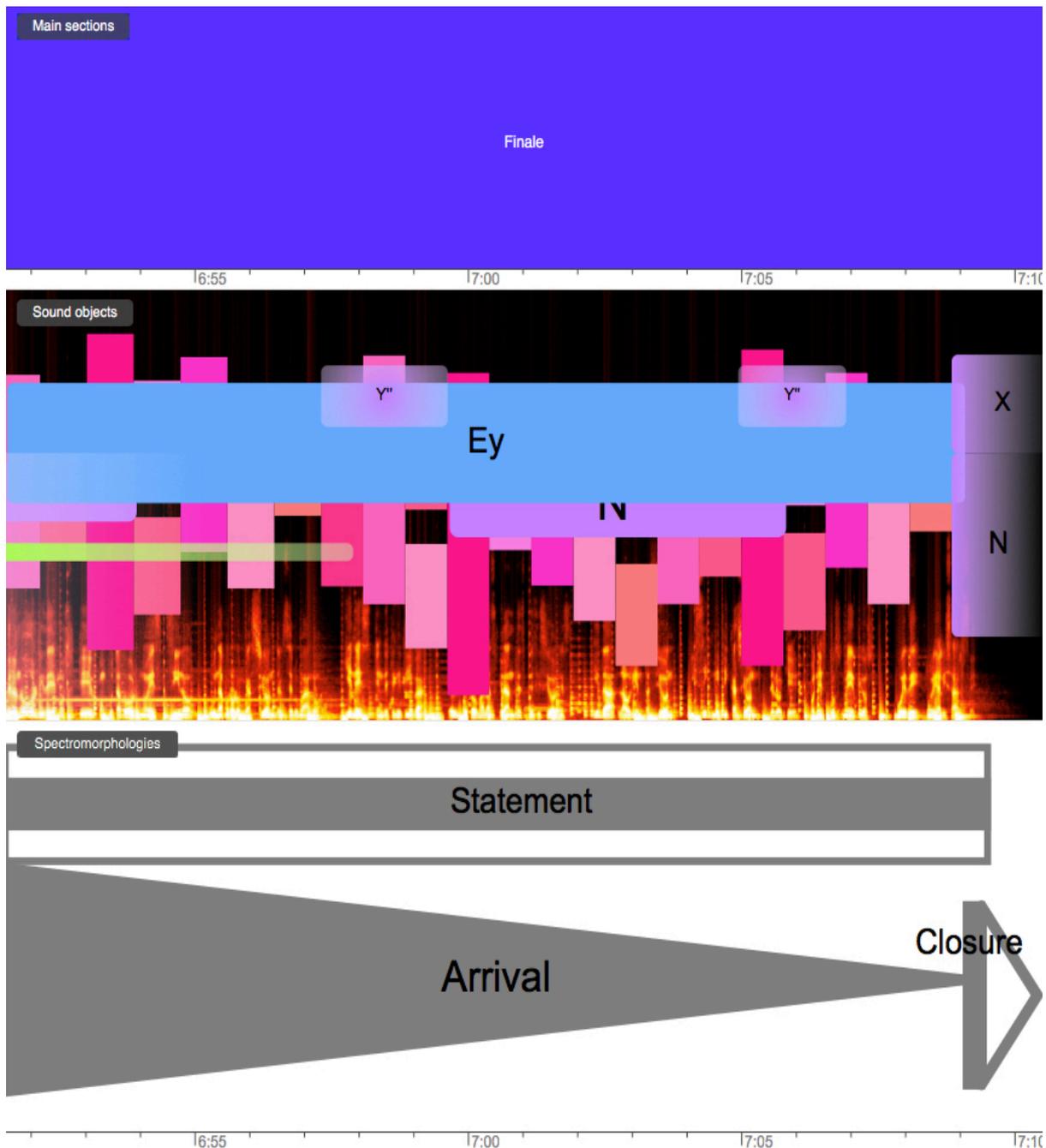


Figure 175: *Sound objects and spectromorphologies for the finale section of Sheffield 17*

8.2.2 Spatial distribution and structure

In general terms, the spatial composition in *Sheffield 17* is simple and it does not have important variations in its deployment across the piece, presenting an homogeneous *prospective space* (Smalley 2007) characterised by a strong frontal image varied through focal points within the stereo field and panoramic movements between the two channels, left and right. Following Smalley's spatial glossary⁶³ (2007), the *spectral space* is one of the most noticeable types. The most relevant contrast is given by the junction of the *prospective space* mentioned above and an *utterance space* provided by the speaking voice. Nevertheless, it is possible to appreciate changes throughout the piece which can be understood as *levels of spatial function* according to Annette Vande Gorne's definitions (2010). The *levels of spatial function* present in this piece are shown in Figure 176.

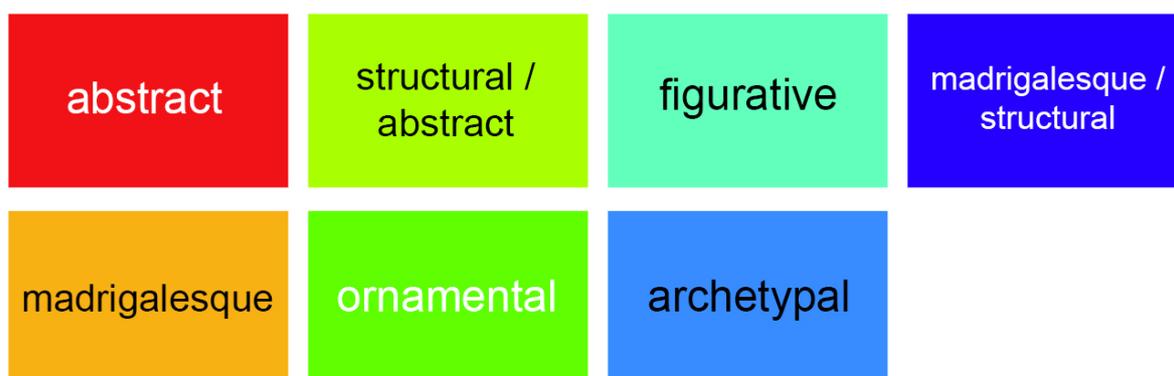


Figure 176: *Levels of spatial function for Sheffield 17*

Among these seven types, there is a clear predominance of *structural* and *abstract* function levels. They are present in the form of compound distributions, as can be seen in the following images. The piece starts with an *abstract* function covering most of the introduction section until 00:13:33, when the *utterance space* delivered by the speech drives the attention to the text, thus generating a *madrigalesque* function that closes the section. At 00:16:95, the first *mesostructure* begins with a return to the *abstract* aspect and consequently signalling a change through a *structural* aspect. This spatial behaviour is maintained all through the section and follows in the continuation section (00:48:50 - 01:18:54) while the segmentation is given by the *sound object* and *spectromorphology*

⁶³ See Appendix 2.

distributions; this compound level, *structural/abstract* persists in the second *mesostructure* as well, where is intercalated with the *madrigalesque* functions the speaking voice place in it. These distributions can be seen in Figure 177.



Figure 177: *Sheffield 17*, introduction, first *mesostructure*, continuation section and second *mesostructure*, levels of spatial function

Then, at 01:46:08, the third *mesostructure* presents again the *structural/abstract level of spatial function*, which is developed through focal points and mainly by movements and traces on the stereo field. This function is stopped with the pause section at 02:37:23, that presents an *ornamental* distribution characterised by planes and two clear focal points provided by *accumulations* hard panned in to the left and right channels respectively; this is present in the whole pause section. At 02:54:11 the level is changed into a *figurative* one when the fourth *mesostructure* begins with its sounds in reverberated spaces connoting distance and depth. Shortly after at 02:59:66, the hard-panned *accumulation sound objects* place an *ornamental* function again, that, in a smooth transition, give way to an *abstract* level that covers the rest of the section, as can be seen in Figure 178.

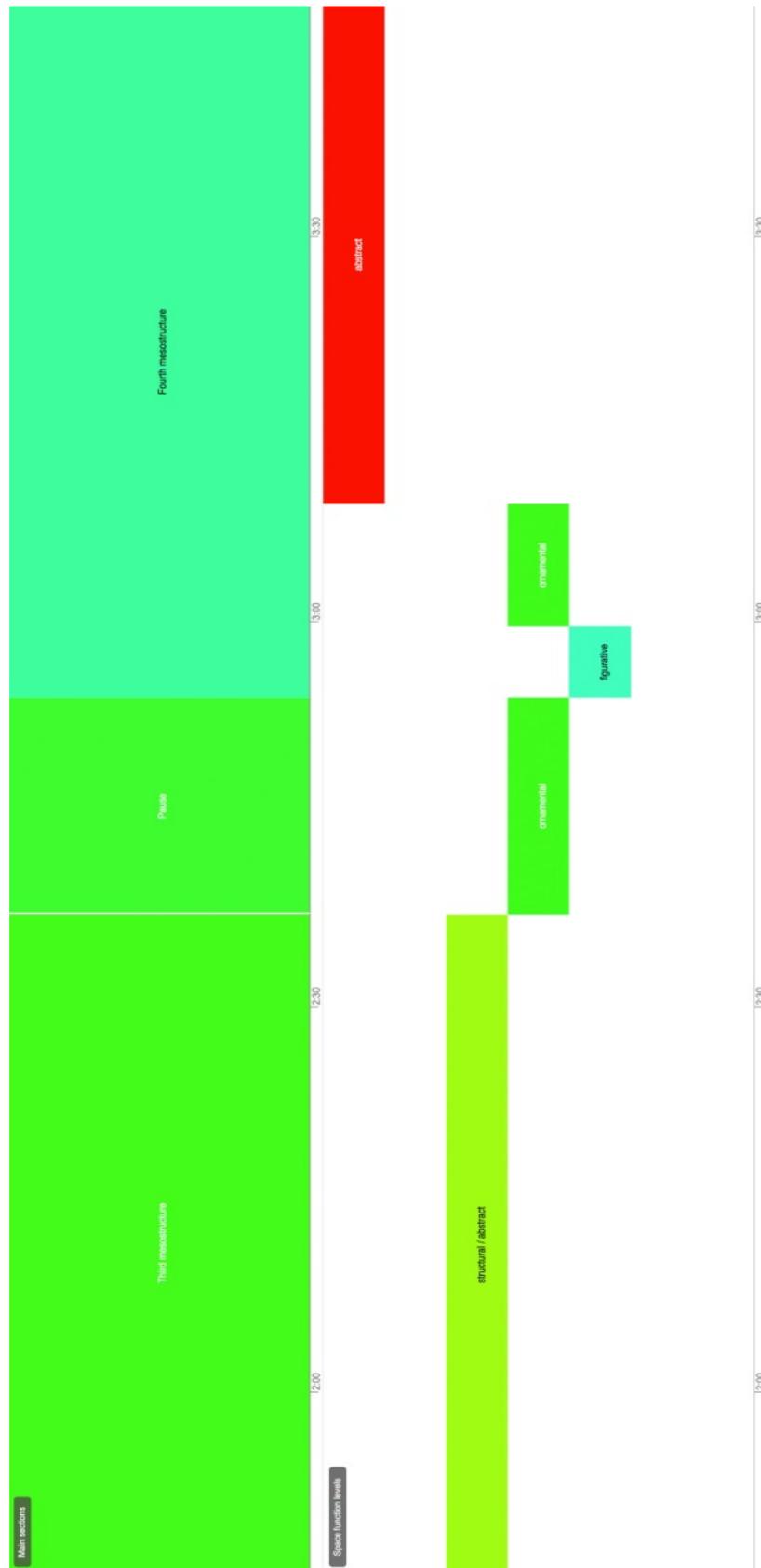


Figure 178: Levels of spatial function for third mesostructure, pause section and fourth mesostructure of Sheffield 17

The middle section is initiated by an *archetypal* function at 03:48:02; this structural function is an expansive blast that projects its tail into the distance. The subsequent resonating elements are projected further in the section. With the addition of other elements, the spatial design returns once more to the compound *structural/abstract* at 04:10:80, marking a sub-section. This function completes the section and follows into the fifth *mesostructure*, which is defined as such by the *sound object* distribution. Around the middle of this *mesostructure*, at 05:26:32, variation is added through an *ornamental* function in the form of the mentioned hard-panned accumulations. Briefly after the section ends by means of an *abstract* function shaped by focal points and planes. These distributions can be seen in Figure 179.

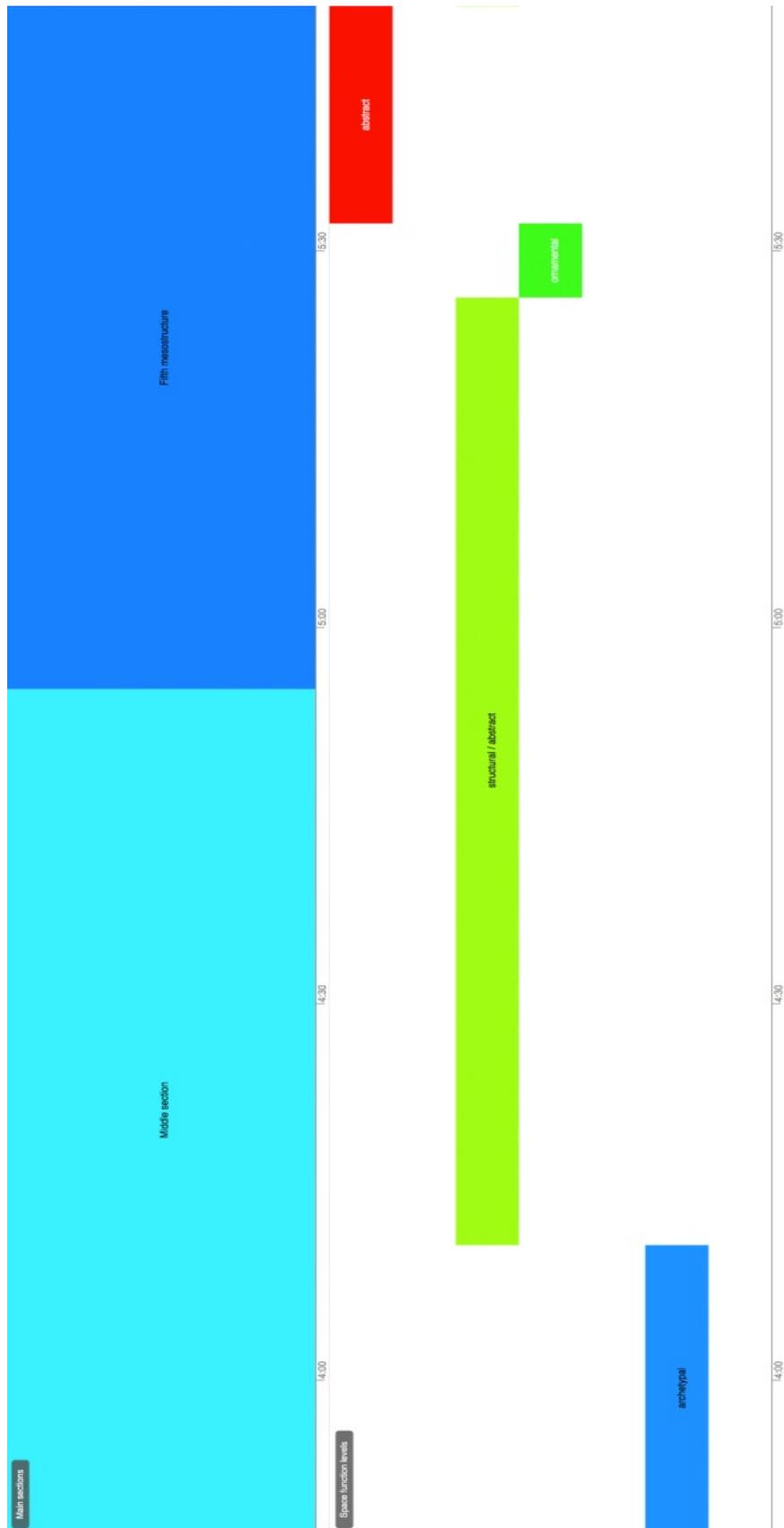


Figure 179: Sheffield 17 middle section and fifth mesostructure, levels of spatial function

Finally, at 05:49:54, the *level of spatial function* is *structural/abstract* for the last time, covering the sixth *mesostructure* entirely. This function defines the section and presents traces, layers and focal points. The finale section is presented with a compound function, *madrigalesque/structural*, which is characterised by the strong presence of the speaking voice and its *utterance* space and defines structurally this ending section. These two final distributions can be seen in Figure 180.

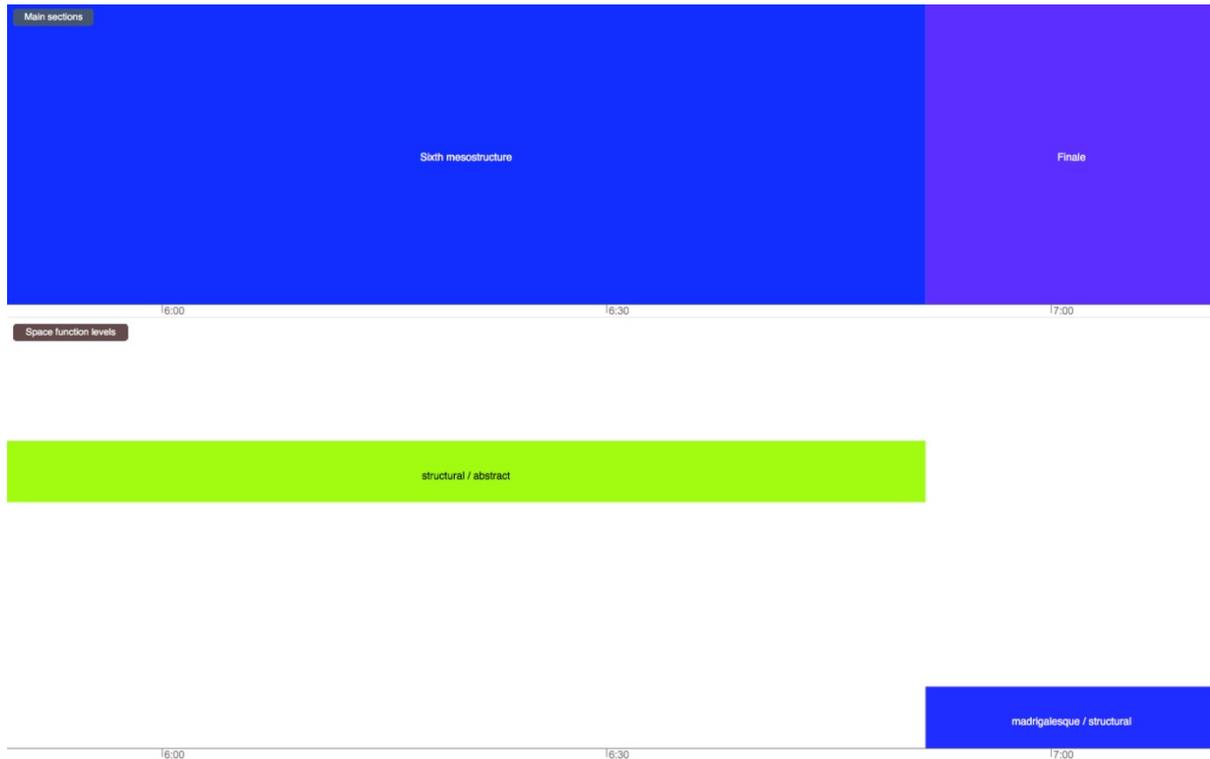


Figure 180: *Levels of spatial function* for sixth *mesostructure* and finale section of *Sheffield 17*

8.2.3 *Voice type and speech-sound type distributions*

For this piece the *voice type* distribution categories are shown in Figure 181.



Figure 181: *Voice type* distribution categories for *Sheffield 17*

And the *speech-sound type* categories are shown in Figure 182.



Figure 182: *Speech-sound type* categories for *Sheffield 17*

As can be seen, the number of categories is minor than the previous tribute pieces, *Un regalito misterioso* and *Tom... Far... Orion... Blue...*, that have three and sixteen, and seven and six, respectively. In this case are three for the *voice type* distribution, as in *Un regalito...*, and just four for the *speech-sound type* distribution, thus less than the two previous works. This is due to the preponderance of *non-vocal* materials in the piece and to the main presence of pure speech sections, samples of Asuar's voice, and just few processed vocal elements.

The piece starts with a *non-vocal* and *electronic* distributions, two categories that constitutes the central configuration for the whole. The first *semantic* element, a *sentence*, is delivered at 00:13:12 as end of the introduction section and trigger for the first *mesostructure*, which keeps the *non-vocal* and *electronic* distributions all its duration, covering the continuation section entirely and part of the second *mesostructure*. In a particular design, shown in Figure 183, this section intercalates the *non-vocal* and *electronic* categories with *semantic* (two *words* and one *sentence*) and *semantic dissolution* (*phonetic/electronic*). The meaning of the Spanish text refers to the musical possibilities of computer technology⁶⁴, and, in this placement, have a structural role: they open the way to the central body of the piece, presenting some of those possibilities. As a matter of fact, these meaningful speech elements end the section, after of which are present only two categories in the *voice type* and *speech-sound type* distributions respectively. Covering from the third *mesostructure* to the sixth *mesostructure*, the predominant are *non-vocal* and *electronic*, only complemented by *semantic dissolution* and *phonetic/electronic*, which have a structural and articulating function within the whole. This large part of the piece and its distributions can be seen in Figure 184.

⁶⁴ See Table 2.

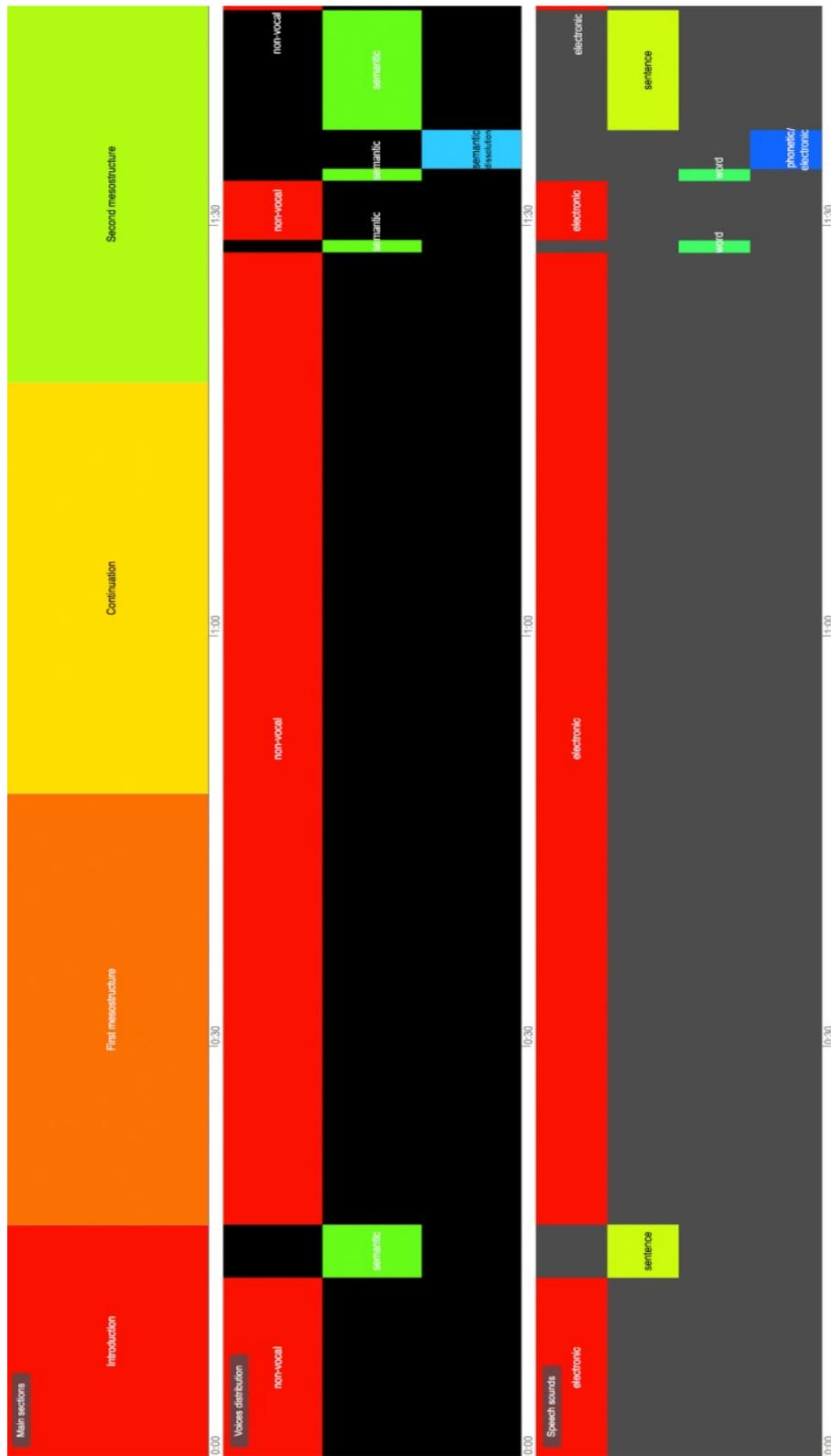


Figure 183: *Sheffield 17*, introduction, first *mesostructure*, continuation section and second *mesostructure*, voice type and speech-sound type distributions

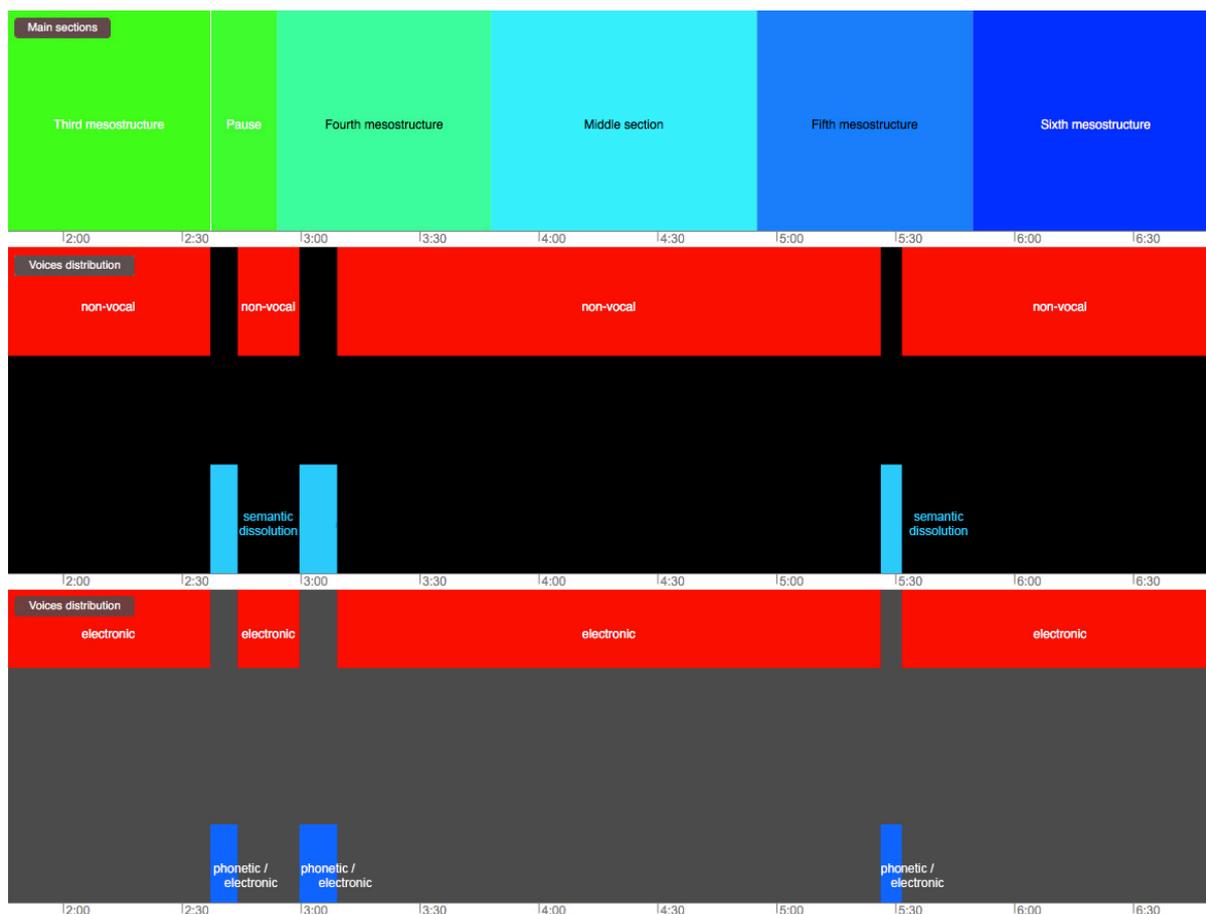


Figure 184: *Voice type* and *speech-sound type* distributions from third *mesostructure* to sixth *mesostructure* of Sheffield 17

Finally, although accompanied by *non-vocal* materials, the strong presence of the conclusive sentence in the finale section, gives *semantic* and *sentence* categories to this ending section, closing the piece. Figure 185 shows the unique categories for this section.

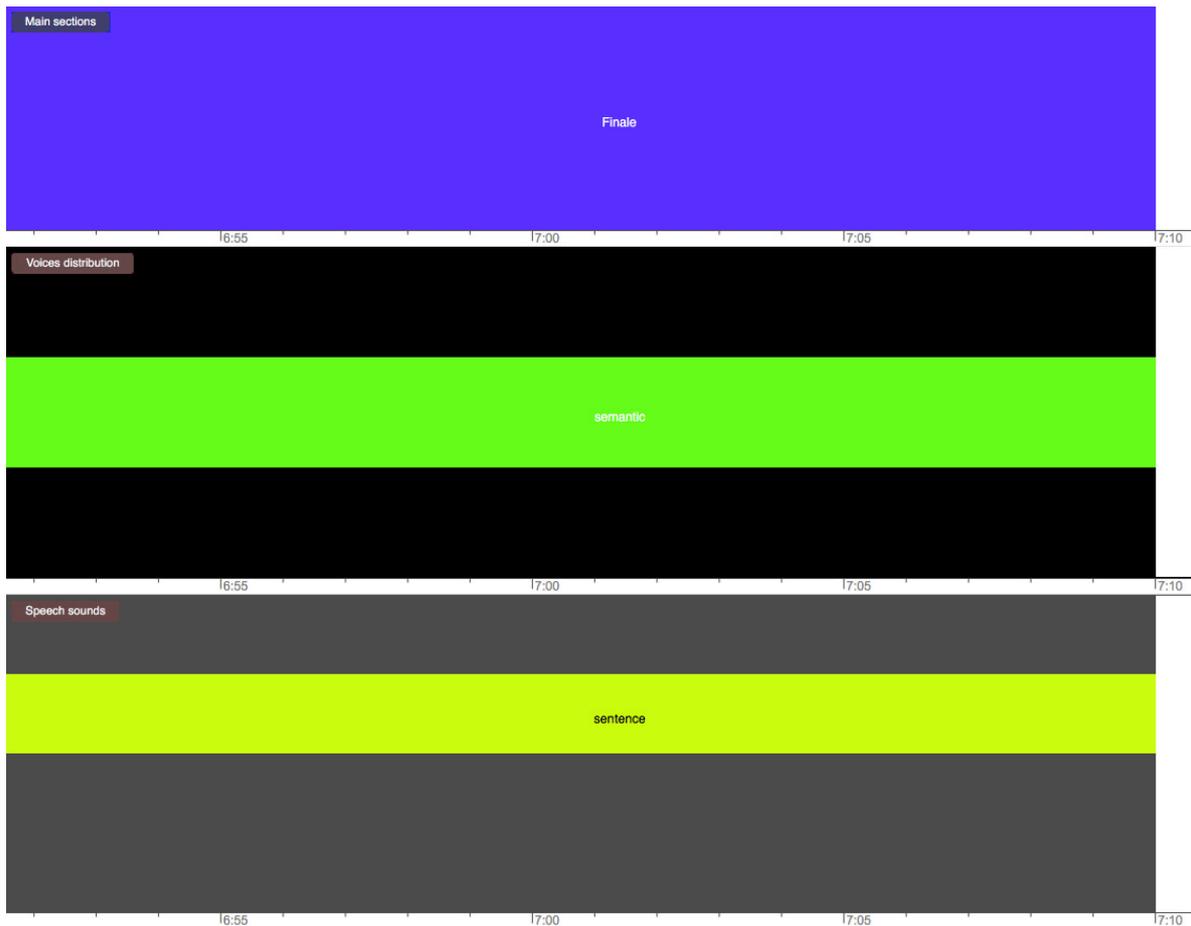


Figure 185: *Sheffield 17*, finale section *voice type* and *speech-sound type* distributions

8.3 Analysis conclusion

The piece is characterised by the electronic elements, namely sounds produced by synthesis. They have a noticeable *tonic* component; although this component could be considered in a first listening as composed with a premeditated intention of using melodic lines in a tonal way, very soon this is discarded: the pitches are not part of any tonal structuring procedure. This can be perceived and it is pointed out in this chapter as well. In other words, all the sounds were located through an aural and acousmatic procedure.

The *semantic* and *semantic dissolution* distributions, operates as milestones and articulatory elements respectively, allowing the piece to shape the tribute itself by the abstract sound quotation to Asuar's pieces. Within this mainly synthetic world, the voice is the human latent presence that emerges in significant moments to manifest itself and explain directly with words its role as conductor of musical technology. Within this group of three tributes pieces, where the voices act as bearers of meanings and the presence of

a particular person, *Sheffield 17* has more similitude with *Un regalito misterioso* than with the piece dedicated to David Bowie. The reason is both have large presence of synthesis sound materials and being the voice treated in similar. However, in *Un regalito misterioso* the presence of processed speech is greater.

Regarding the structural aspect, the piece presents a continuous flux of materials that is signalled by articulations and specific events, showing in this way a very cohesive shape that is deployed through a linear discourse with great dynamism. Figure 186 shows the five analyses in the general view.

Conclusion Part 2

Although these three works are independent of each other, they are grouped together in this thesis because they address the same notion: the tribute or homage to an artist who has passed away. These artists, two Chilean and one British, have been part of the personal and artistic background of the author of this portfolio. The three of them are linked in one way or another to the compositional rationale proposed for this thesis, since they have worked in search of either new pieces of art that avoid traditional *mimesis* or propose ideas that push the traditional boundaries of the art of their respective cultural and social environments. Each of them has a particular position that can be summarised thus: Pérez, the avoidance of *mimesis* and the search for an art focused on pure abstract forms through the use of painting and technology; Bowie, the pursuit of an intermedia artistic programme that linked many nodes of artistic, cultural and social content (*nodalism*); Asuar, the search for a music that leads to new experiences and unexpected relationships, giving a central role to technology as a means to amplify the creative process of human beings.

In regards to the way non-poetic texts in *Un regalito misterioso* and *Sheffield 17* are used within the thesis, a recontextualisation process is central; this process allowed the creation of poetic material by unexpected relationships between elements and the extraction of the expressive potential of sentences and words once they were isolated. This relocation and isolation were made by selecting the *semantic* units, cutting and pasting them in different orders after repeated listening in order to select the final units to be used. As a *creationist* procedure, the selection was guided by a hybrid attitude, searching for coherent material but at the same time picking them by intuition.

As suggested in the previous chapters, these ideas are connected to the *acousmatic-creationist* framework defined by this thesis. These pieces were composed to address this rationale and at the same time to pay tribute to these artists, linking their importance, their particular works and artistic programmes and the present thesis in a non-linear way: a recursive and *nodalist* (Adkins 2014) system of ideas and sounds.

Conclusion

The aim of the present doctoral thesis was to explore the use of voice and poetry within acousmatic music by means of an integrated process, fusing artistic creation and theoretical research. Following the form of a research and practice scheme, the thesis included two components, the portfolio of original compositions and the written text.

The pieces were composed in acousmatic format, both in octophonic and stereo. They act as individual works and groups at the same time. One group is the octophonic cycle *La lumière artificielle*, containing five works linked to each other by theme, sound materials and a structure that allows one to listen them all together due to a global compositional approach. However, as the analyses provided have shown, they are self-sufficient and can be listened to and performed in isolation because of their consistent macro-forms, which in turn are shaped by clear structures that evolve, develop materials and end with clear resolutions. The other group is constituted by three stereo pieces that are not directly related, nor were composed at the same time as part of an integrated strategy. Nevertheless, they have been grouped in this text for the reasons given above.

The text describes and analyses the pieces, the compositional rationale adopted, and the compositional strategies used, establishing a wide range of topics addressed by the acousmatic works and the different influences that are present within them. Among them, ideas and procedures from electroacoustic music and the creative area known as *media poetry* were described and contextualised; in doing so, similitudes, parallels and shared foundations were demonstrated. This applies particularly to a couple of paired notions found during the process, namely *electroacoustic music/electroacoustic poetry* and *musique concrete/concrete poetry*. These paired concepts encompass the artistic area addressed by the author, which in turn has acousmatic music as starting point.

From that starting point, the thesis incorporated not only those concepts from *media poetry* but addressed poetry as a topic and as an aesthetic directive. This was achieved through the inclusion of artistic influence and aesthetic theory of Chilean poet Vicente Huidobro. As is explained in the compositional rationale and throughout the chapters, his theory, *creacionismo*, was adopted and adapted to the acousmatic scope, generating the notion *acousmatic-creationist* to define the works and the creative spirit from where they were composed.

The five pieces included in the octophonic cycle *La lumière artificielle* have as a triggering element a small text by Huidobro, the title of the cycle, which refers to an uncompleted project and suggests the entire pentalogy and several of its constitutive structural elements. At the same time, as has been pointed out above, Huidobro was also an influence for the procedure and artistic animus to compose these works, specifically as source to develop the *acousmatic-creationist* procedure.

This procedure has been defined as creative process which allows to the composer to select elements from real world according to a personal system, characterised by the artist's subjective world, subsequently transforming and combining them through techniques appropriate for their nature, the aesthetic intentions and the expected final form of the composition. Finally, the resulting piece is delivered back to the real world under the shape of a *new fact* (Huidobro and Goic 2003, p. 1312). To be carried out, this process considers as a central condition the intense merging of *reason* and *imagination*, a procedure established by Huidobro in order to propitiate the appearance of unexpected relationships that make possible to a *new fact* to be precisely new. This creative process is integrated and assimilated to general acousmatic compositional method which implies the selection of sounds and subsequently their merging through an approach that usually includes a recursive action, that is to say using as inputs for the process its own outputs. Since acousmatic music, like other artistic practices, depends on particular approaches and methods by the composer, these methodologies can include, in many cases, actions strongly guided by preconceived structures, ideas and rules, even if there are intuitive operations within the process. In contrast, *acousmatic-creationist* process seeks to balance *reason* and *imagination* all the time. In this way the *acousmatic-creationist* method is a new artistic strategy which emphasize the equilibrium between rationality and intuition in acousmatic composition while includes recursive acousmatic action in the original *creationist* scheme by Huidobro.

Regarding the free intersection and union of different ideas and materials from the real world, which includes the merging of different cultural and artistic units, this combination of elements from different sources demonstrates how *nodalism* theory complements the conceptual frame of this thesis, assuming the non-linear connection of cultural nodes as natural for the *acousmatic-creationist* procedure.

The stereo acousmatic pieces, grouped as *Three acousmatic tributes*, although dealing with other inspirations and compositional tasks, were created following the *acousmatic/creationist* strategy.

In order to provide a broad perspective, besides the artistic reasons for the selection of spatial formats (octophonic and stereo), their inclusion manifests the different possibilities of each. The main aspect to highlight here is the prominent complexity of structural features within the multichannel format. Although stereo composition allows a detailed, rich and powerful deployment of spatial designs, the spatial composition in a multichannel format, like octophonic, concedes the substantial chance to overlap a dense weft of space environments and movements, creating a massive convergence of elements, but, at the same time allowing the clarification of sound materials when is necessary.

All these features explained above are demonstrated in the analysis of each piece. The details provided by the five analyses within the *neutral level* analysis (*sound objects, spectromorphologies, levels of spatial function, voice type distribution categories and speech sound-type distribution categories*), support the conclusion for each piece and the conclusions for Part 1 and Part 2. In this way, the characteristics for the works presented in this final conclusion can be traced in the previous chapters and substantiated coherently.

This thesis has shown the *poetic delirium* or *superconsciousness* method proposed by Huidobro has been performed. This is demonstrated by the complex multi-layered nature of the entire research presented: both the portfolio of pieces and the written text are at the same time focused, expressive and analytic.

The thesis has been raised as an artistic position from which theories and outcomes (aesthetic aims and final pieces) are interleaved in a recursive and self-referential system, which, at the same time, is open to the vast network of the field described. As is proposed by this thesis, to allow this position to act and to achieve these results, the convergence of *imagination* and *reason* through an intense fluctuating movement is necessary. This convergence proposed by Huidobro (*poetic delirium*) has defined this doctoral research. The author expects to apply this method in further projects, allowing to the theoretical and artistic contents presented operate as new nodes in the network, leading to new outcomes combined with new elements taken from the real world.

Finally, the main characteristic emerged during this doctoral process was an integrated and constant procedure which allowed the practice to inform the theory and vice versa. This *acousmatic/creationist* system places poetry not only as a theme but as a driven creative rationale in the use of voice in acousmatic music while can be applied to any other cultural and artistic element as well.

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Appendices

Appendix 1: The tripartite model by Nattiez/Roy and Schaefferian typology

Conceptual foundations

As has been explained in the thesis, the notions of *poietic level* and *neutral level* analyses have been adopted to organise the corresponding analysis of the pieces included in the portfolio of compositions. These notions have been taken from the *tripartite* model proposed by Jean-Jacques Nattiez in his book *Music and Discourse: Toward a Semiology of Music* (Nattiez 1990); in addition, various related terms and ideas developed by Stéphane Roy (Roy 2004) have been considered as well.

Nattiez proposes three dimensions in which the symbolic phenomenon (and by extension the artistic phenomenon) can be understood (Nattiez 1990): the *poietic dimension*, related to the creation process, the *esthesis*⁶⁵ *dimension*, related to the assignment process of meanings and values by a *receiver*, and the *trace dimension*, related to the materiality of the symbolic form or piece of art. For the *trace* aspect, Nattiez mentions the name proposed by Molino, *niveau neutre (neutral level)* (Nattiez 1990, p.12). These three dimensions or levels in which a piece of art is understood are taken by Roy as foundations to propose different strategies to analyse electroacoustic music works. According to Roy, Schaefferian lexicon (*typomorphologie*) is a suitable implement within an analysis based on the tripartite model:

La typo-morphologie proposée par Pierre Schaeffer peut devenir un outil de description adapté à l'ANN⁶⁶ comme aux analyses poïétique et esthétique. Parmi les traits typo-morphologiques qui composent un son, par exemple, certains seront retenus parce qu'ils seront jugés pertinents à

⁶⁵ Here it is important to state that the original French term *esthésique* used by Molino, Nattiez and Roy, and translated as *esthesis* by Abbate, should be understood within the specific frame of the semiological theories applied to music by the three authors mentioned; this applies to the way it is defined in this text, leaving aside the possible translation to English as *aesthetic* or *esthetic*, which would involve the philosophical meaning of the word, related to philosophy of art, including different aspects such as ontology of art, perceptual studies on artistic phenomenon or art as communication among others (Shelley 2017).

⁶⁶ ANN: *Analyse du niveau neutre*, namely *Neutral level analysis*, corresponding to the *Trace* or *Neutral level*.

l'égard d'une stratégie d'analyse donnée, qu'elle vise le neutre, la poétique ou l'esthétique (Roy 2004, p.60)⁶⁷

In his *Traité des objets musicaux (TOM)* (Schaeffer 1966), Pierre Schaeffer proposed a research programme on music and sound based on an interdisciplinary approach to establish a new discipline that he called *L'acoulogie*⁶⁸. As Roy states:

L'un des objectifs fondamentaux de l'acoulogie est de livrer bataille contre les erreurs issues de corrélations hâtives entre la mesure des phénomènes physiques et leur évaluation perceptive⁶⁹ (Roy 2004, p.48).

In this way, the analysis avoids both physical measurements of sonic phenomena and terms and ideas broadly applied in the context of the Western musical tradition. Instead, the approach defined by Schaeffer, *le système expérimental*⁷⁰, involves five operations (Schaeffer 1966, pp. 497-498):

1. *La typologie*: identification of *sound objects* from the *articulation/support* criteria⁷¹, determining their types.

⁶⁷ "The typo-morphology proposed by Pierre Schaeffer can become a descriptive tool adapted to the ANN and to the poetic and esthetic analyses. Among the typo-morphological features that compose a sound, for example, some will be retained because they will be judged relevant to a given analysis strategy, whether neutral, poetic or esthetic". Translation: A. Albornoz.

⁶⁸ This term it has been translated to English as *acoulogy* in the related literature, e.g. in *Understanding the art of sound organization* by Landy (2007).

⁶⁹ "One of the fundamental aims of acoulogy is to fight against errors resulting from hasty correlations between the measurement of physical phenomena and their perceptual evaluation". Translation: A. Albornoz.

⁷⁰ The experimental system proposed in the *Traité des objets musicaux* to carry out a new musical research in opposition and complementation to the *système traditionnel* (traditional system) also called *système conventionnel* (Schaeffer 1966, pp. 360-385), what it is defined above as a research programme.

⁷¹ Articulation and support are criteria borrowed by Schaeffer (2002, pp. 395-397) from phonetics and are applied both to spoken language and to any sound or event in music. Articulation is defined as the rupture of the continuum of a sound, sonic event or musical event. On the other hand, support is defined as the continuum or prolongation of a sound. In the recent English translation of the *Traité des Objets Musicaux* by Christine North and John Dack, the original French for support *appui* has been translated as *stress*, probably to emphasize its origin within Phonetics, where stress is a well spread concept (at least in the texts in English language) related to how words are spoken, defined as the "property of a syllable that serves to make it relatively more prominent" (Reetz and Jongman 2009, p.210) and also which would be a way to point out the idea of a salient aspect within a sonic (in this case spoken) flux. Nevertheless, it seems to be more suitable for this context the translation as *support* which, on purpose, is coincident with the Spanish translation, *apoyo* (Schaeffer 2003, pp. 220-222); this translation allows to follow the idea of a later generalization of the concept proposed by Schaeffer and in turn it matches not only with *intonation*, but with the *sustainment* criterion, due to the implicated notion of prolongation; in this way is preserved the shared meaning of both Romance languages linked to definition of a primary structure acting as base for a sustainment (Española 2014).

2. *La morphologie*: qualification of *sound objects* according to their *contexture*⁷², according to criteria of *form* and *matter*, which include the morphologic criteria of *mass*, *sustainment*, *dynamic* and *variation*. These criteria will be explained below.
3. *La caractérologie*: creation of *sound families*, in terms of their combination and characteristics.
4. *L'analyse*: description of criteria structures within a musical perceptual field, that is an ordering of the *morphologies* in the perceptual field that could correspond to points in a table. The criteria referred are aspects of sounds as perceived objects (*sound objects*) and not properties of sound as phenomenon of physics (Schaeffer 1966, p. 501).
5. *La synthèse*: creation of *musical objects* from the emergence of values among the *sound objects* collections.

These five operations are described in the *TOM*, although just the first two (*typologie* and *morphologie*) are explored in depth, the third is addressed summarily, a proposition for the fourth (*analyse*) is presented and the last (*synthèse*) is not addressed (Roy 2004, p. 49).

In order to analyse and describe the works within this portfolio, the lexicon proposed within the *TOM* was both interesting and useful, especially to describe *sound objects* using the *typologie* and *morphologie* (typology and morphology). To accomplish this, is necessary to understand and keep in mind the ideas of *sound object*, *reduced listening* and the associated concepts of the acousmatic situation and acousmatic *music*.

A central idea within the Schaefferian system is the notion of *écoute acousmatique* (*acousmatic listening*). This is, the action of listening sound(s) without the influence of visual stimuli which can correlate with auditive perception or act as an index to the sound source. Acousmatic is derived from an ancient Greek term that defines this listening situation (Schaeffer 1966, pp. 91-99). According to legend, the *Akousmatikoi* was a group of students in the Pythagorean philosophical and mathematical school, who listened to the lessons of Pythagoras while he was hidden behind a curtain (Schaeffer 1966, p.91), “[...] afin que ses disciples ne soient pas distraits par sa présence physique et puissent

⁷² *Contexture* is French for texture, consistency or appearance of a surface or substance. Following the procedure to compare the word to its Spanish equivalent, *contextura*, it is possible to find the same meaning: texture or weave, consistency of a matter or material (Española 2014).

concentrer leur attention sur le seul contenu de son message”⁷³ (Dhomont 1993). Nowadays, the *acousmatic listening* situation is made commonplace by the technologies of sound recording and reproduction over loudspeakers. According to Michel Chion, the acousmatic situation produces a dissociation between sight and hearing, “[...] favorisant l’écoute des forms sonores pour elles-memes [...]”⁷⁴ (Chion 1995, p.19) and the reproduction and repetition of recorded sound encourages listening that is particularly focused on the sounds themselves and their specific shapes (Chion, 1995); in this way, sounds are *understood* as abstract forms and non-bearers of meaning or reference to their causes. Regarding *acousmatic music*, Francis Dhomont states as well:

Thus, this music — or better: Acousmatic Art (Denis Dufour) — was conceived from its beginnings to be heard without the use of visual intervention. It does not involve any instrumentalist on stage — with the exception of the person who projects the work during a public performance in order to maximize the use of the given space. It organizes morphologies and sonic spectra, “images of sound” (François Bayle), coming from a multiplicity of sources, but that the absence of visual identification makes anonymous, unifies and prompts a more attentive listening (Dhomont 1991).

The consequences of *acousmatic listening* situation point towards the basic notions of *écoute réduite* (*reduced listening*) and *objet sonore* (*sound object*), which were developed over a period of several years by Schaeffer and are covered in depth in his central theoretical work, the *Traité des objets musicaux* (*Treatise on musical objects*) (Schaeffer 1966).

The approach, followed by Schaeffer, is based on the philosophical discipline known as Phenomenology, particularly the theories by Edmund Husserl (Kane 2014, pp.18-19), which is widely addressed in the *Livre IV Objets et structures* of the *Traité*, within a section entitled *Réduction à l’objet* (Schaeffer 1966). Within Husserl’s Phenomenology, *intentionality* has a central role as part of his study of first-person consciousness and its structures; from this perspective the conscious experience it is an active action; in other words, this experience is always intentional and constitutes an action directed towards an object, which in turn is accessed by means of *epoché* (Smith

⁷³ “[...] so that his disciples were not distracted by his physical presence and could concentrate their attention on the sole content of his message” Translation: A.Albornoz.

⁷⁴ “[...] favouring listening to the sound forms for themselves [...]” Translation: A.Albornoz.

2018) or *phenomenological reduction*, a method to focus in the phenomenon itself, reducing reality to the appearance, without assuming or presuming nothing. As Husserl states:

Above all, what is decisive consists of the absolutely faithful description of what is actually present in phenomenological purity and in keeping at a distance all the interpretations transcending the given (Husserl 1983, p. 218).

As is demonstrated below, these are ideas can be found in the Schaefferian theory and as matter of fact its own vocabulary is based on Husserl's concepts (Schaeffer 1966, pp. 261-274)⁷⁵.

The *Traité des objets musicaux* proposes four listening modes, *les quatre écoutes*, which are in fact described as listening functions, "fonctions de l'écoute", and organised graphically in four sectors: *écouter* (to listen), *ouïr* (aural perception), *entendre* (to understand) and *comprendre* (to comprehend)⁷⁶ (Schaeffer 1966, pp. 112-128). Following the conceptual path of the *Traité*, is possible to find not only different degrees of intentionality within these four listening functions, but different types of them (Schaeffer 1966, pp. 121-128); these types can be summarised in *causal* and *semantic*, in other words some paying attention to the causes of sounds and others to the meaning carried by sounds. Discerning each of these modes or functions is an analytical task in the centre of Schaeffer's research, however himself establishes this is just on purpose of a logical description of the process, since in the perceptual act, the four modes are overlapped (Schaeffer 1966, p.117). This is significant for the compositional rationale adopted for the portfolio, because the pieces were created considering that this overlapping is possible to be addressed by the listener in a continuous process of shifting, allowing to change the conscious focus of attention quickly during the experience, sometimes intentionally, sometimes not or embracing more than one function at the time.

⁷⁵ Brian Kane has clearly stated the 'Husserlian' nature of Schaeffer's ideas (Kane 2014)

⁷⁶ These terms have been translated from the perspective of Spanish, a language closer to French and not as can be found in the English translation of the 'Traité des Objets Musicaux' by Christine North and John Dack (Schaeffer, North et al. 2017). The translation proposed here, preserves the idea of different grades of intentionality, where 'ouïr' is the simplest and less focused (coinciding with the Spanish 'oír'), 'écouter' is intentionally pay attention (in Spanish 'escuchar', which has the same meaning), 'entendre' with the same meaning shared with the Spanish 'entender' (to understand) and finally 'comprendre' which means to understand in a deeper way, like the Spanish 'comprender' and which is considered by the translator near to the English 'comprehend' in the sense of embrace, comprise and encompass. Translation: A.Albornoz.

As it has been expressed in the thesis, the pieces included in the portfolio were composed considering the presence of sound materials to be perceived exclusively as non-semantic and others as semantic materials; furthermore, the movement between these two aspects, constitutes a structural guideline for pieces, sections, sounds, articulations and groups of pieces⁷⁷. As Schaeffer states: “Le déchiffrement de la perception s’effectue instantanément, même lorsque les quatre quadrants son en jeu”⁷⁸ (Schaeffer 1966, p. 117). How this was used in the portfolio pieces, taking into consideration both compositional and listening aspects, is covered in Chapters 1 to 8, precisely by means of the descriptive and analytical tools pointed out in this appendix; this addresses musical results in the different levels within the works, including *causal* and *semantic* functions. Nevertheless, with respect to the understanding of Schaefferian theory and *acousmatic music*, there are two interrelated concepts that are necessary to explain here: *écoute réduite* and *objet sonore* (*reduced listening* and *sound object*). Based on Husserl’s *epoché* or phenomenological reduction, Schaeffer coined the term *écouté réduite* to define a particular mode of listening which consist in intentionally pause the normal listening functions, which in turn are contained in the four listening sectors. This pause or suspension is carried out in order to focus in the sound itself, its features and shapes without regard to any causal or semantic aspect. Just as Husserl’s *epoché* generates the *object* of this action (Kane 2014, p. 19), Schaeffer’s *écoute réduite* generates the *objet sonore*. *Reduced listening* is an artificial and voluntary action (Chion 1999, p.299) and the *sound object* as such is perceived as a coherent unit, regardless its causes or meanings, which is listened through the correlate of *reduced listening* (Chion 1995, pp.34-35).

This introduction has provided the basic conceptual foundations of the Schaefferian theory; these notions are necessary to understand how Pierre Schaeffer have catalogued sounds and developed an extensive lexicon to describe them; the catalogue of sounds and the criteria to describe them are presented in the *typology of sound objects* and the *morphology of sound objects* respectively. The next two sections cover these topics.

⁷⁷ See the **Compositional rationale** and **Part 1: Octophonic cycle *La lumière artificielle***.

⁷⁸ “The deciphering of perception it is done instantaneously, even when the four sectors are involved”. Translation: A.Albornoz.

The *Typology of sound objects*: brief introduction

To accomplish a deep description of *sounds objects*, Schaeffer developed an extended study of forms and structures, using many ideas and tools borrowed from Gestalt theory, phonetics and other disciplines. This allowed him to achieve a wide classification by means of morphological criteria in the form of a *Typology of sound objects*⁷⁹.

As has been explained in the **Part 1: Octophonic cycle *La lumière artificielle*, General aspects** section, the analysis has been carried only in the *poietic* and *neutral* levels; the *esthetic* level has been discarded since it would imply a study focused in the reception of the pieces, leading to the design of a different type of research.

Therefore, to focus the analysis on the *poietic* and the *neutral* levels, it is necessary to review and briefly outline the basic terminology from the Schaefferian lexicon, namely the basic classification criteria of *sound objects* and the basic *typology*. To do it, the original text of the *Traité* is used alongside further explanations by Michel Chion, an authoritative voice on this topic. As it has been stated, according to Schaeffer, the *sound object* (*objet sonore*) could be analysed and described through a *typology*, which in turn is based on *morphological* criteria. The criteria that will be used mainly in this text are *masse* (*mass*, the occupation of the pitch field by the sound) and *entretien* (*sustainment*, the way sound persists within the duration, which defines its *facture*) (Schaeffer 1966, pp. 401, 402). The crossing of these two main criteria gives a group of sounds displayed in the *Tableau récapitulatif de la typologie* (Schaeffer 1966, p. 459)⁸⁰, a chart where sounds are classified using letters as symbols for different types of *mass* and *sustainment* and with some words to detail specific cases. These nomenclatures are used to describe the sound materials of the pieces in the *ANN* level of analysis and in the *poietic* level when is needed.

There are three basic cases of *mass*; *ordinary note*, *complex note* and *varied note* (Schaeffer 1966, pp. 446-447)⁸¹, defined as well by Chion as *tonic mass*, *complex mass* and *variable mass* (Chion 1999, pp. 309-310).

⁷⁹ A clear and practical description of the morphological criteria and types of *sound objects* is provided below in this appendix.

⁸⁰ 'The typology summary table'. Translation: A. Albornoz.

⁸¹ In the original text in French: *note ordinaire*, *note complexe* and *note variée*.

The first type, a *sound object* with *tonic mass* has a recognizable note in the scale of pitches (the traditional notion of musical note). The second type, *complex mass*, is a sound which cannot be clearly located but shows itself in a fixed position within the tessitura, and the third type, *variable mass*, is a sound whose mass evolves in the tessitura in the course of its duration (Schaeffer 1966, pp. 446-447). Each of them is indicated with a letter: *tonic mass* = *N*, *complex mass* = *X* and *variable mass* = *Y*.

Also, Schaeffer defines the *unpredictable mass* (*masse imprévisible*) (Schaeffer 1966, p. 459) as a variation of mass which has a heterogeneous and constantly changing behaviour, also known as *any mass* (*masse quelconque*) (Chion 1995, p. 146).

Regarding *facture*⁸², there are three basic types of *sustainment* for sounds: *continuous* (*active sustainment*), *not at all* (*percussion*) and *repeated percussions* (*iterations*) (Schaeffer 2002, p.444)⁸³. Respectively, Michel Chion describes these three types of sustainment as *continuous*, *impulse* and *iteration* (Chion 1999, p. 310). Each of them is indicated with an apostrophe (') for the impulsions, a single quotation mark (") for the iterations and no symbol for the continuous sustainment (Chion 1999, p. 310; Schaeffer 2002, pp. 444-448). Besides these three basic cases, also there are two more types regarding sounds outside of the central zone of the *Tableau*, which are *null facture* (*facture nulle*) and *unpredictable facture* (*facture imprévisible*) (Chion 1995, p. 118).

Considering the three basic *mass* cases and three basic *sustainment* cases, their intersection generates the basic nine sound types: *tonic continuous*, *tonic impulse*, *tonic iteration*, *complex continuous*, *complex impulse*, *complex iteration*, *variable continuous*, *variable impulse* and *variable iteration*, represented in the table 4.

⁸² *Facture* is the criterion defined by Schaeffer as the way a sound is maintained during its duration, in other words the form of its *sustainment*, with Schaeffer's own words: "la façon don't l'énergie est communiquée et se manifeste dans la durée, en relation étroite avec l'entretien" (Schaeffer 1966, p. 432) ("the way in which energy is communicated and is manifested in the duration, in close relation with the sustainment" Translation: A. Albornoz). From this notion, it is possible to imply the compositional task of using directions and forces, derived from a given set of *factures*, in order to create interactions between sounds with musical structuring purposes.

⁸³ In the original text in French: *constamment* (*entretien actif*), *pas du tout* (*percussion*) and *repetition des percussions* (*itérations*).

Table 4: *Balanced objects basic typology*

Mass criteria	Facture criteria (sustainment)		
Tonic mass	N	N'	N''
Complex mass	X	X'	X''
Variable mass	Y	Y'	Y''

These nine types are what Schaeffer called *Typologie des objets équilibrés*⁸⁴, considered by him as the most suitable for musical endeavours:

Cest objets ont en commun de présenter une bonne forme, c'est-à-dire d'être soudés par une unité de facture indéniable, laquelle correspond à un temps optimum de mémorisation de l'oreille, exception faite pour la colonne du milieu (objets brefs pouvant aller jusqu'au micro-objet) (Schaeffer 1966, p.443)⁸⁵

However, this *Typology of balanced objects* is just a part of the complete *Typology summary table*, being at the centre of the latter which, in fact, includes around thirty cases. Consequently, all of the sounds classified in the complete summary table are considered as unsuitable for music since they are of excessive or insufficient length, *null* or *unpredictable facture*, becoming in this way too original or too redundant according to Schaeffer. It is interesting to note that many of the sounds considered by Schaeffer as unsuitable for musical purposes are frequently used by acousmatic composers, and by extension by composers of both contemporary music and audiovisual practices (Chion 1999, p. 312). Because of that, this is probably one of the more noticeable points in Schaefferian theory that cannot be generalised as a *sine qua non* condition for contemporary acousmatic composition. In similar way, the implied abstraction in addressing sounds through *écoute réduite* is just part of compositional and analytical endeavours like the present thesis, being common a mixed approach allowing to many composers and scholars consider other aspects of sound such as its causal and semantic

⁸⁴ *Typology of balanced objects*. As can be seen in the analysis chapters, these objects are referred with this name in English. Translation: A. Albornoz.

⁸⁵ "These objects have in common that they present a good form, that is to say they are welded by an undeniable unity of facture, which corresponds to an optimum time for memorization by the ear, exception made for the middle column (brief objects until the micro-object)" Translation: A. Albornoz.

contents. Nevertheless, in the context of this research, Schaefferian terminology has been useful to draw attention to the sonic compositional structure of the pieces and because of that it is useful to review them briefly, as such materials are widely present throughout the portfolio:

Échantillons (samples): Precisely a sample of a continuous sound, which denotes the “persistence d'un même agent”⁸⁶ (Schaeffer 1966, p. 453) in the deployment of the sound itself, having enough defined shape to be considered as a unit, despite its more or less inner formal incongruity. Their facture is unpredictable:

En: Tonic mass sample

Ex: Complex mass sample

Ey: Variable mass sample

E (cas général⁸⁷): Unpredictable mass sample

Prolonged redundant sound objects (not very original): These sounds are classified as “macro-objets”⁸⁸ (Schaeffer 1966, pp. 448-449), having a null facture and excessive length:

Hn: Tonic mass homogeneous

Hx: Complex mass homogeneous

Zn: Tonic mass iteration homogeneous

Zx: Complex mass iteration homogeneous

Pédales particulières (particular pedals or ostinato) (Schaeffer 1966, pp. 449-450):

Zy: Variable mass iteration pedal: a Y” reiterated continually.

P (cas général): Pedal or Ostinato⁸⁹: more complex versions of Y or Y” reiterated continually.

⁸⁶ “[...] persistence of the same agent [...]” Translation: A. Albornoz.

⁸⁷ “General case”.

⁸⁸ “Macro-objects”. Translation: A. Albornoz.

⁸⁹ In the “*Traité des objets musicaux*” Schaeffer define this as Pedal (probably because its permanence as main feature), but it has been translated to English as “ostinato” by John Dack and Christine North in their version of Michel Chion’s

Accumulations (Schaeffer 1966, p. 453-454): Other case of “macro-objets”, with excessive length and unpredictable *facture* (discontinuous *sustainment*), they are constituted by a great agglomeration of individual elements (*iterations* leading to sound clouds):

An: Tonic mass accumulation

Ax: Complex mass accumulation

Ay: Variable mass accumulation

A (cas général): Unpredictable mass accumulation

Trames particulières and *grosse note* (*particular wefts* and *large note*) (Schaeffer 1966, pp. 455-457): close to *Hn* and *Hx* but with a major content of mass, excessive length:

Tx: Complex mass weft

Tn: Tonic mass weft

T (cas général): Weft: a great thickness in its mass with excessive length.

W: Large note (“Grosse Note”): sound object of proportioned or measured duration with a great variety in terms of mass (giant thickness).

Finally, very short *impulsion* and *iteration*, *fragment* and *cellule* respectively:

φ : *Fragment* (Schaeffer 1966, p. 455): Although brief, its main feature is not its short duration, but rather to show a disruption in its development as sound deployed in time; the idea of have been cutted is present and clear.

K: Cellulle: Cell: A short fraction of an iteration with lively variations of mass (Schaeffer 1966, pp. 454-455).

The previous section has reviewed all these sound types, the *typology*; the detailed description by Schaeffer has been summarised to give a brief but clear and substantial

“*Guide Des Objets Sonores*”, probably because this type of *sound object* does not have a sustained nature necessarily and it can be constituted by iterations or repeated patterns (Prise de son creative 2013).

understanding of them; beside this description, they have specific criteria to describe their constitutive aspects; these criteria are useful to understand how they behave and consequently to point out their shapes, their *morphology*.

Morphology of sounds objects: criteria lexicon

Within the analytical approach of the *Traité des objets musicaux*, *morphology* is a sector of the *système expérimental*; it corresponds to the analysis of *sound objects* according the way they are constituted (their *contexture* in French⁹⁰). According to Chion, the morphologic criteria are “[...] défini comme des caractères observables dans l’objet sonore, des «*traits distinctifs*» ou des «*propriétés de l’objet sonore perçu*»” (Chion 1995, p. 142)⁹¹. In light of previously revised ideas in the introduction to this appendix, it is important to remember that these morphological criteria, as well as the typological criteria, are defined by Schaeffer’s investigations through aural analysis, that is by means of *écoute réduite* (*reduced listening*) and do not correspond to the measurable acoustic phenomenon. In other words, they do not point out aspects such as frequency, loudness, or dynamics, all of which are sound’s features as a physical phenomena, in the way that acoustics address it. In Schaeffer’s own words “[...] les critères sont des propriétés de l’objet sonore perçu, corrélat de l’*écoute réduite*, et non des propriétés mesurables du son physique”⁹² (Schaeffer 1966, p. 501). Similarly, some of these aspects are not addressed from the perspective of Western musical notation, that is to say as musical notes or musical figures (or rhythmic figures) in the case of pitch and duration or rhythm respectively. Instead, Schaefferian terminology proved to be useful in this research to carry out an analysis of pieces precisely not composed following western musical notation.

In theory, these criteria could be of infinite number. Despite this, they have been limited to seven and can be grouped in four types (Chion 1995, p. 142): *matter criteria*, *sustainment criteria*, *form criteria* and *variation criteria*.

⁹⁰ Again, this French word, *contexture*, is not related here to the *contextual* aspect which could be inferred by a superficial approximation to the word translated into English. It is more related to the ideas of inner consistency, substance or constitutive material and texture.

⁹¹ “[...] defined as observable characteristics in the sound object, «*distinctive features*» or «*properties of the perceived sound object*»”. Translation: A.Albornoz.

⁹² “[...] the criteria are properties of the perceived sound object, the correlate of *reduced listening*, and not of the measurable properties of the physical sound” Translation: A.Albornoz.

Matter can be understood as the inner constitution of the sound in terms of its location in the tessitura, its internal texture and the way it travels through its duration, what would come to be its *form*; in other words, *form* is the possible trajectory of *matter* in time, the way *matter* is unfolded in its duration, particularly its *dynamic* (Schaeffer 1966, p. 400); its *sustainment* is the characteristic manner the sound behaves in its duration in terms of *contexture*; *variation* is the certain changes a sound undergoes in time, manifested through *mass profile* and *melodic profile*. This may be seen in table 5, with the morphologic criteria grouped according to types and including a brief definition (Schaeffer 1966, pp. 389-597):

Table 5: Morphologic criteria

Matter Criteria	Mass	The way the sound object occupies the pitch field
	Harmonic timbre	Timbre (for short) a sub-criterion of mass criterion (a complementary criterion), representing “[...] le halo plus ou moins difuss et, d’une façon générale, les qualités annexes qui semblent associées à la masse et permettsent de la qualifier” ⁹³ (Schaeffer 1966, p. 516). This is an elusive concept. If the mass is tonic, this harmonic timbre can be perceived clearly and matches the traditional notion of timbre (like in the comparison of a same note played in two different musical instruments). To the extent the mass becomes complex, this criterion starts to be indissociable from the former. It is very useful when describing tonic sounds, i.e. harmonic timbre is different in two separate human voices.
Sustainment criteria	Grain	Micro-structure of the matter manifested in its sustainment in the sense of surface or texture outspread, analogous to the tactile grain of a

⁹³ “[...] the more or less diffuse halo, and in a general way the annexed qualities which seem to be associated to the mass criterion and allow us to describe it”. Translation: A. Albornoz

		textile, a mineral or any other material (Schaeffer 1966, p. 548). It is linked to the matter criteria.
	Allure	It is a characteristic oscillation or vibrato of the sustainment of a sound, and it is linked to the dynamic (form criterion).
Form criteria	Dynamic	Evolution of a sound within the intensity field, corresponds to its particular intensity trace in its duration (Schaeffer 1966, pp. 529-546)
Variation criteria	Melodic profile	The way the evolution of a sound in the tessitura traces a general profile. It is the general fluctuation within the pitch field, as a melody in traditional terms.
	Mass profile	General profile given by the inner mutations of a sound in terms of its mass. It is the inner fluctuation of the mass in the pitch field, changes in the thickness of it.

As is easy to infer, these criteria are interweaved in every *sound object* and act simultaneously, and this classification of four types is based on the predominance of each criterion in a certain type. This does not mean some of them operate in other groups as a secondary or tertiary aspect, as is the case of *allure*, which can be considered as *form* criteria as complement of *dynamic*, or the case of *grain* as complement of *matter* criterion (Chion 1995, p. 159).

This appendix has described the concepts used in the analysis chapters of the presented thesis; the text has covered specifically the notions used in the study of the pieces within the *neutral level* analysis of the *sound objects* distribution.

Appendix 2: Structural analysis: Form and structures in time and space

Spectromorphology: brief introduction as analytical tool in this thesis

This appendix provides definitions and a lexicon used to study time and space as structural aspects of the compositions presented. The *structural functions* defined by Denis Smalley in his paper “Spectromorphology: explaining sound-shapes” (Smalley 1997) are used as analytical tools in the analysis chapters of the thesis. *Spectromorphology* is a concept inspired by Schaeffer’s theories and it is a group of analytical tools based on aural appreciation. According to Smalley, they regard:

[...] the interaction between sound spectra (*spectro-*) and the ways they change and are shaped through time (*-morphology*). The *spectro-* cannot exist without the *-morphology* and *vice versa*: some-thing has to be shaped, and a shape must have sonic content (Smalley 1997, p. 107).

This notion is a set of defined shapes and morphological functions which operate in the scale of *mesostructures* (Roads 2015, p. 306). If the *sound object* is assumed as the minimum unit with a sonic value (the smaller meaningful formal unit), then, following Roads (2015, pp. 286-289), the organisation of a piece in several levels of interrelated materials can be understood as scales of more or less segmentation, ranging from *sound object* to the *macroform* (the whole piece form) going through phrases, subsections and sections, these last three being *mesostructures*⁹⁴ (Roads 2015, p.305). Here it is very important to clarify that the analytical tools used, the *structural functions* defined by Denis Smalley as descriptive instruments, do not necessarily have a constant *hierarchical* configuration, a notion which applies to electroacoustic music in general and even to specific pieces (Smalley 1997, p. 114), and corresponds to the *heterarchical* nature of acousmatic music; the *heterarchy* concept it can be understood as “a complex of simultaneous hierarchies” (Roads 2015, p. 288); in other words, since acousmatic music

⁹⁴ According to the online Oxford dictionary (Oxford University Press 2018), *meso* means “middle” or “intermediate”, and *structure* means “The arrangement of and relations between the parts or elements of something complex”. Combined, these two words imply consequently a *structure* of intermediate range within a whole or *macroform* (*macrostructure*). The spelling used by Roads has been adopted, which does not use the hyphen between the two components of the word (Roads 2015).

is created through complex sound structures that cannot be reduced to only detached elements, neither cannot be divided in clear structural terms, in Smalley's words:

Electroacoustic gestures and textures cannot be reduced either to note or pulse; the music is not necessarily composed of discrete elements; nor can we find that (consistent) measure of minimum movement density. Therefore it cannot be conveniently segmented, and indeed often resists segmentation (Smalley 1997, p. 114)

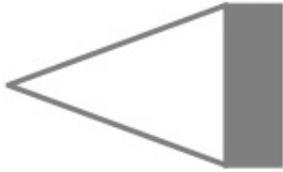
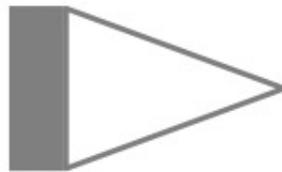
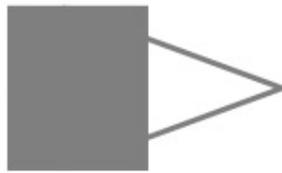
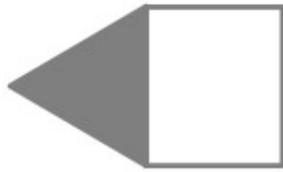
Smalley suggests these functions can operate at any levels of a work, from short *sound objects* to larger units like textures, and as a type of "motion or growth process, depending on our focus of attention", metaphors which are suitable for electroacoustic music, since a rhythmic analysis carried in a conventional way is:

[...] inadequate to describe the often dramatic contours of electroacoustic gesture and the internal motion of texture which are expressed through a great variety of spectromorphologies (Smalley 1997, p. 115).

It is interesting to note that the notions of directionality and expectation, basic ideas of most musical creations in western culture, are manifested through these aspects of motion and growth in time, in addition to other characteristic sonic behaviours.

The structural functions are divided in three groups: *onsets*, *continuants* and *terminations* (Smalley 1997, p. 115), which can be overlapped or can change their nature during their development, since they can be "[...] double or ambiguous" and because "[...] There is no clear temporal border between the three functions-types" (Smalley 1997, p. 115). Table 6 shows the structural functions, ordering them in three columns, each of which corresponds to a one of the three types; each type is shown with its correspondent graphical representation according to the EAnalysis software (Couprie 2014) visual library. The nomenclature is very explicit.

Table 6: *Spectromorphologies* (structural functions)

onsets	continuants	terminations
<p>departure</p> 	<p>passage</p> 	<p>arrival</p> 
<p>emergence</p> 	<p>transition</p> 	<p>disappearance</p> 
<p>anacrusis</p> 	<p>prolongation</p> 	<p>closure</p> 
<p>attack</p> 	<p>maintenance</p> 	<p>release</p> 
<p>upbeat</p> 	<p>statement</p> 	<p>resolution</p> 
<p>downbeat</p> 		<p>plane</p> 

Since these functions can be applied to “higher and lower levels” (Smalley 1997, p. 115), it is interesting to note the notion of *singularities*, proposed by Roads, that are types of “events that never recur exactly the same way” (Roads 2015, p. 287), special cases which operate ‘no strings attached’ to a unique level of the *heterarchical* sonic construct. Hence, these *singularities* can be a small *sound object*, acting in a specific moment, or passing from one state or level to another in an abrupt or gradual fashion.

In addition to the structural functions listed above, Smalley lists processes of motion and growth, which operate like metaphors to describe temporal sonic activities.

Regarding motion, three types are defined: unidirectional, reciprocal and cyclic/centric. In respect of growth processes, there is one category, bi/multidirectional, which group couples of opposite terms (Smalley 1997, p. 116). Here they are presented in two tables, 7 and 8 respectively.

Table 7: Smalley's *motion processes*

unidirectional	reciprocal	cyclic/centric	
ascent	parabola	rotation	vortex
plane	oscillation	spiral	pericentrality
descent	undulation	spin	centrifugal motion

Table 8: Smalley's *growth processes*

	bi/multidirectional		
agglomeration	dilation	divergence	exogeny
dissipation	contraction	convergence	endogeny

According to Smalley (1997, p. 116), the motion functions of *unidirectional* category are referred to the external contour of the sonic event and its global shape; these functions are the containers of particular textural features the sonic event, being for this reason a category that is significantly gestural. *Reciprocal* is related to a pendular movement, going in one direction and gets an equivalent returning movement, being possible to find it, in terms of internal textures, in *oscillation* and *undulation*. In the other hand, *parabola*, with a gestural nature, is a type of curved sonic trace, allowing continuous movements through varied spaces. *Cyclic/centric* category regards rotating sonic events, which includes

rotation, a circular trajectory surrounding a central point, others, derivations of *rotation*, with clear directionality like *vortex* and *spiral*, which contrast with *pericentral*, the simple rotation around a central point. *Spin* and *centrifugal* are described just as part of a “related group” (Smalley 1997, p. 116) alongside with the previously mentioned *spiral* and *vortex*, but it could be assumed as rotating cases with a particular energy intensity and a pushing force from the centre to outside respectively⁹⁵. The rotating action of these events it could be obtained by *spectromorphological* fluctuations and spatial activity as well.

Types of space as structural elements

In this section different spatial types or cases of space forms, regarding general or particular cases, will be described. A very clear and useful way to describe the spatial aspect of an acousmatic piece, is the categorization by Denis Smalley, who provided a coherent and practical glossary of terms (Smalley 2007). As in his *spectromorphology*, these definitions sprout from aural analysis. A basic notion is what Smalley calls *composed space* (Smalley 2008), referring to the composer’s creation of space within a piece, a structural element constitutive of the *internal space* (Chion 2017, p. 35) of a given acousmatic work. This space can be understood as different configurations of spatial sonic structures according to what type of experience it can trigger. These types of space are mainly sonic configurations, which operate within the *internal space* of the piece, but Smalley’s definitions consider the listener positions and conditions in many of the cases, at least in a general way. This is due to the undeniable process by which the *composed space* is transferred to a *listening space* (Chion’s *external space*⁹⁶), giving rise by this coalescence to a *superimposed space* (Smalley 2008); however, this third instance changes from one listening situation to another, either private or public as in a concert and finally, and no less importantly, another factor is the particular situation of individual listeners, who may be located more or less close to the point of ideal composition, usually denominated as the *sweet spot*, just in the centre of the loudspeaker orchestra. In this way, Smalley’s concepts allow to address the description of several spatial cases within

⁹⁵ According to the online Oxford dictionary, ‘spin’ is a “turn or cause to turn or whirl round quickly” and ‘centrifugal’ is an action which implies “moving or tending to move away from a centre” (Oxford University Press 2018).

⁹⁶ (Chion 2017, p. 35)

an analysis of a piece. Regarding the *spectromorphological* framework studied above, it is crucial to understand its connection with the spatial aspect, as Smalley (2008) states: “Musical space is not empty and cannot be separated from its sounding content”. From this notion emerges one of the definitions taken in consideration in this methodology, *spatial texture*, which:

[...] concerns the articulation of topological content, and is inseparable from spectro-morphology: the spectral makeup and shaping of sounds in themselves may suggest spatial experience (Smalley 2008).

With this in mind, a selection of Smalley’s spatial glossary is listed below, constituting a basic lexicon (Smalley 2007); these notions are used in the analysis of the portfolio to complement the *spectromorphological* descriptions and the spatial functions by Vande Gorne (2010), that are covered following Smalley’s ideas:

- Spectral space: “[...] is concerned with space and spaciousness in the vertical dimension – up, down, height, depth, along with infill and clearing”.
- Perspectival space: “[...] the relations of position, movement and scale among spectromorphologies, viewed from the listener’s vantage point”.
- Prospective space: “[...] the frontal image, which extends laterally to create a panoramic space within the range of vision [...]”.
- Panoramic space: “The breadth of prospective space extending to the limits of the listener’s peripheral view”.
- Circumspace: the extension of prospective/panoramic space, allowing the movement of sound around, above and through the space occupied by the listener.
- Vantage point: “The position from where the listener views perspectival space, and perceives and receives the acousmatic image. The vantage point may be fixed, variable or peripatetic”.
- Egocentric space: “The personal space (within arm’s reach) surrounding the listener”.
- Source-bonded space: “The spatial zone and mental image produced by, or inferred from, a sounding source and its cause (if there is one). The space carries with it an image of the activity that produces it”.

- Agential space: “[...] articulated by human (inter)action with objects, surfaces, substances, and built structures, etc. Combines with utterance space to create enacted space”.
- Enacted space: “[...] produced by human activity – a space within which humans ‘act’. See also ‘agential space’ and ‘utterance space’”.
- Utterance space: “[...] produced by vocal sound. This may be an intimate, personal, or social space, and in communicational contexts can also be regarded as a behavioural space. Combines with ‘agential space’ to create ‘enacted space’”.
- Behavioural space: “A zone of perspectival space produced by the interaction of sounds which, spectromorphologically and texturally, indicate collaborative, group identity. See also ‘signal space’”
- Signal space: “A type of behavioural space produced by the signal calls of the participants, either to communicate with each other, or to communicate their presence to other inhabitants. See also ‘behavioural space’”.

These are part of a list which includes forty-four terms in total, an extensive glossary with spatial descriptors proposed by Smalley for analytical purposes. As practical tools, only these thirteen have been selected, since they cover general aspects that are useful as complement for some parts of the analysis. Though this does not prevent some of the other terms being used as complementary definitions, being explained when it is necessary. Reviewing the terms proposed by Smalley (2007), it has been considered necessary to use other definitions as well, this is regarding more general features within a given work. The benefit of this approach is to permit an analysis of *mesostructures* and the *macroform* considered as spatial structures. In this way, the analysis will describe global characteristics and sectional elements through their spatial behaviour in different levels, allowing one to refer them through proper general adjectives, comparing and contrasting them. At the same time, these additional definitions will avoid the analysis getting stuck in just one approach. Annette Vande Gorne, in her thorough practice and investigation on space as musical element, has defined different levels of functionality which can be conferred to the space by a composer (Vande Gorne 2010, p. 165)⁹⁷:

⁹⁷ Translation by A. Albornoz from the original in French (Vande Gorne 2010, p. 165):

- Niveau abstrait de l'espace pensé par plans, volumes, mouvements ou figures géométriques

- Abstract level (Niveau abstrait): “the space conceived as planes, volumes, movements or geometrical figures”. A given material can be exposed through variations allowed by spatial differentiations, always from a perspective focused in spatial sound shapes as pure forms.
- Structural level (Niveau structurel): “space used as valorization of sections, transition or remembrance”. Spatial dispositions and motion help to highlight moments or articulations and to clarify specific shapes or *mesostructures*.
- Ornamental level (Niveau ornemental): “the space, often in motion, added to an event to reinforce its interest or momentary function”. The given spatial configuration operates as an accent which could be not strongly related to the other spatial structures, being rather a decorative element to call attention in a particular moment.
- Figurative level (Niveau figuratif): “Figurative level of a relation of space to the imaginary, to a characteristic feature, to the metaphor”. Space as bearer of images, evoking and recreating real or imaginary spaces, locations and motions.
- Archetypal level (Niveau archétypal): “spatial figures obvious for all, like the wave (rocking), the circle (isolement), the explosion”. Specific ideas and contexts are communicated by movements which recall evident archetypes founded in different situations in real life.
- Madrigalesque level (Niveau madrigalesque): “Renforcement of expressive elements which are external to the music in itself (text, image...) by figures, movements, appropriate spatial situations”. Here, Vande Gorne refers to a specific feature of the Italian Sixteenth Century musical genre, the ‘madrigal’, which has an expressive and direct way of using texts to reach the listener, often in a naive way. The Belgian composer claims to have been developed the same procedure

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- Niveau structurel de l’espace utilisé comme valorisation des sections, transition, rappel
 - Niveau ornemental d’un espace, souvent en mouvement, ajouté à un évènement pour en renforcer l’intérêt ou la fonction momentanée
 - Niveau figuratif d’une relation de l’espace à l’imaginaire, au trait caractéristique, à la métaphore
 - Niveau archétypal de certaines figures d’espace évidentes pour tous, comme la vague (bercement), le cercle (enfermement), l’explosion...
 - Niveau madrigalesque du renforcement expressif d’éléments extérieurs à la musique même (texte, image...) par des figures, mouvements, situations spatiales appropriées.

regarding motion and spatial illusions to generate a direct connection with the audience.

This appendix has described the lexicon used to address the structural aspects of the compositions, including Denis Smalley's *spectromorphologies* and *growth* and *motion* processes and, as a complement, Smalley's spatial terms. Also covered the *levels of spatial function* by Vande Gorne; these notions are extensively used to address the analysis of the spatial composition within the portfolio. The reason is that these functions are suitable to appreciate the structural operation of space and how it works alongside the *sound object* and *spectromorphological* aspects of the composition to generate the particular shape and musical discourse of each piece.

Appendix 3: Voice and sound poetry conceptual foundations

Two types of analysis were developed by the author in order to address vocal materials within every piece included in the portfolio. These types of analysis are ***voice type*** and ***speech-sound type***, being the first one focused on the inclusion or absence of semantic content in the vocal materials and the second one on the specific type of semantic materials included or on the type of speech-sound when semantic aspect is absent.

Voice type includes the following categories:

Semantic: Clear presence of any semantic material.

Semantic dissolution: Material which appears as clearly produced by voice which any possible semantic content has been blurred or altered by means of electroacoustic procedures or is possible to perceive as an altered version of a semantic material previously presented.

Vocal extended: a term proposed to point out a type of material which, although it has a vocal nature, it has been so extensively processed by electroacoustic music techniques, that it can be approached as either *semantic* or *semantic dissolution*. In some instances, hybrid cases such as *extended & semantic dissolution* has been presented, in order to acknowledge a compound distribution.

Speech-sound type includes the following categories:

Phonetic

Phoneme

Allophone

Word

Sentence

Extended

Non-vocal or electronic

The first five categories are based in notions provided by Phonetics and are explained in the section **Voice lexicon: speech production** below in page XXVI. ***Extended*** is a category which focus on phonetic aspects that have been noticeably expanded in

duration, intensity (loudness) or accentuated in some constitutive feature (such as a type of phoneme within a word) by means of actions by the vocal performers or by means of electroacoustic techniques. And finally, *non-vocal* or *electronic* are categories referred to the complete absence of human voice or recognisable human speech or the only presence of electronic sounds or other types of sounds which are not voices.

All these notions, both within *Voice type* and *Speech-sound type*, are used following the conceptual guidelines provided by the next sections of this appendix, **Sound poetry definition** and **Voice lexicon: speech production**, where additional relevant information is presented to support the definitions as well.

Sound poetry definition

It is important to state a definition of *sound poetry* since it is a concept that it is widely used across this thesis. Feinsod (2012, p. 1327) defines this artistic domain in this way:

If poetry is the verbal art in which sound and sense are arranged in ideal tension, sound poetry [...] alters this relationship by multiplying, reducing, or denying semantic reference, while amplifying the phonetic and aural properties of language. [...] Sounds poems challenge the limits of natural languages and produce the illusion of language before, beyond or after meaning [...]

Considering this, *sound poems* can have a written version which is perform in real time or recorded on a support (tape, digital medium) or exist as combination of these two options; the written version can be a sort of graphic score with some traditional texts included (sentences, words, phonemes, letters), only images (both connotative and abstract) or a combination of these two. Similarly, it is worth defining another related artistic manifestation: *concrete poetry*. This is a notion which is

[...] used in a general way to refer to work that has been composed with specific attention to graphic features such as typography, layout, shape, or distribution on the page [...] (Drucker 2012, p. 294).

During the 1950s, the various different aesthetic strands of *concrete poetry* started to consolidate, whilst the movement started to extend its reach to South America, Europe and North America. This span included Eugen Gomringer (Bolivia and Switzerland) with

his semantic-visual poems *constellations* (1951), the *Manifesto for Concrete Poetry* by Öyvind Fahlström (Brasil and Sweden) in Stockholm (1952-55), the *Noigandres* poets of São Paulo (who in fact called their works *concrete poetry* in 1956), to others in Germany, Austria, France, England during the early 1960s (Williams 2013, pp. vi-vii) and including Emmett Williams (United States) who worked in Europe from 1949 to 1966.

In this context are interesting the connections between *concrete poetry* (text and its visual shape) and *sound poetry*. A good example of this are the writings of English poet Bob Cobbing during the 1970s. Cobbing created works where text is disintegrated by means of erasing, cutting and juxtaposing words and letters. The final result was a type of abstract graphic piece in which remains a mere trace of recognisable letters. Cobbing used these text-visual pieces (it could be said *concrete poetry* pieces following the precedent descriptions) as a score to perform; “For Cobbing, the text is the starting point which generates the work” (Wendt 1985, p. 13), which ultimately involves both vocal production of sound and a sort of corporal dance. Many of his works were recorded and included the use of tape techniques such as superimposition and echoes in order to generate a textural component.

Along similar lines the French *sound poet* Bernard Heidsieck used the written text as “nothing more than a simple score” (Wendt 1985, p. 13). There was a difference in this context, however: English *sound poets* tended to use simultaneity both in recorded versions and in live performance (by means of several readers) to achieve textural sounds, whereas their French counterparts always use tape techniques, with only one performer in the stage versions (Wendt 1985, p. 14).

Another approach found within works of *sound poetry* based on non-semantic vocal production, are the pieces by French artist Henri Chopin. For example, Chopin’s pieces are based upon guttural vocalisations, amplified using microphones; these almost inaudible sounds are presented through the use of an old and malfunctioning tape recorder and have even involved the swallowing of different types of microphones.

As is possible to appreciate in the portfolio, some of these aspects are present, such as textural sounds, superimpositions and a few rough and guttural sounds.

Voice lexicon: speech production

This appendix covers basic concepts of *speech production*, *phonetics*, *phonology* and linguistic notions. This review allows to define a basic terminology used in the

description of the vocal materials used in the portfolio's pieces, both as *speech sounds* and as *semantic* materials; in this way, the analysis gives an account of these sounds beyond their nature as *sound objects*, *spectromorphologies* or as drivers of *levels of spatial function*. This is relevant, since the whole portfolio deals with the use of voices as source for sounds which operate as *semantic* and *non-semantic* elements.

With reference to voice and texts, whatever their nature (colloquial speech, poetry or scientific jargon), the topic addressed is human language. The discipline that studies language is *linguistics* (Aitchison 1992), which is composed in turn by other disciplines, each of which is focused on one of the constitutive levels of language. What these levels are, and how many there are, depends on the different models proposed by the scholars. They include models ranging from two levels up to six levels (Crystal 1995, p. 83) or as a wheel shape model proposed by Aitchison (1992, p. 7) which groups in concentric rings a “[...] wide range of topics and its boundaries are difficult to define” (Aitchison 1992, p.7).

Whatever the model, with its own number of disciplines and levels of study, it considers *phonetics* as a basic unit in its structure, in a corpus usually composed of *phonology*, *syntax* (or *grammar*), *semantics*, *pragmatics* and very specific disciplines such as *psycholinguistics*, *sociolinguistics* and *computational linguistics*, just to refer to a few of them (Aitchison 1992, pp. 7-10). In fact, Aitchison puts *phonetics* in the centre of her wheel shape diagram and defines it as “[...] the study of human speech sounds [...] Yet is a basic background knowledge, rather than part of linguistics itself” (Aitchison 1992, pp. 7-8).

Being more precise, *phonetics* is constituted by four main areas (Reetz and Jongman 2009, p.1):

- ***Phonetic transcription***: how to write down the speech
- ***Articulatory phonetics***: the study of speech production
- ***Acoustic phonetics***: the study of acoustic features of speech
- ***Auditory phonetics***: the study of speech perception

Articulatory phonetics or *speech production* is the area considered as a guideline to describe speech sounds within the present thesis, since it is useful as complementary tool to refer to these aural materials in a basic but academic way, avoiding both excessive acousmatic terminology and insufficiently sophisticated language. On the other hand,

there is no need to draw attention to the transcription of sounds, their acoustic characteristics (as physical phenomenon) or the physiology of hearing. The reason is because the aim of using this basic lexicon is to describe these sounds, or their qualities, especially regarding concrete aspects of them, for instance to comment on their function as referential elements and to name them objectively when the text might need other vocabulary rather than only the proposed acousmatic terms.

Speech production is a physiological process. When air coming from the lungs passes between the *vocal folds* (or *vocal cords*) and they vibrate, *phonation* (or *voicing*) is produced. The *vocal folds* are located in the *larynx* at the bottom of the *pharynx* (Reetz and Jongman 2009, p.9), which is situated in the throat, behind the mouth. *Phonation* is responsible for the creation of voiced sounds, such as vowels and many consonants, and pitched sounds as are normally used in singing (Wishart 1996, p. 264).

Vowels are defined principally as sounds in which airflow causes almost no obstruction during their emission, that is, the “[...] oral cavity is relatively open [...]” (Reetz and Jongman 2009, p. 13). On the other hand, *consonants* are defined as sounds produced by some sort of action over the airstream, some type of obstruction in the vocal tract in a way a friction is evidenced in the resulting sound (Crystal 1995, p.152). Meanwhile *consonants* can be clearly identified by how the airstream is affected, *vowels* are identified by how the form of the tongue and the location of the lips determine “[...] the size and shape of the vocal tract [...]” (Reetz and Jongman 2009, p. 19).

At this point, it is possible to provide some definitions of these two main groups of sounds, according to different authors. These definitions should be considered as a utilitarian vocabulary in description of the sounds implied within the present text:

Vowels: they are produced with a prominent vibration of *vocal folds* (Gussenhoven and Jacobs 1998, p. 8) and complementary *formants* produced by other sections of the vocal tract. Within the specific spectrum of a sound, there are some areas in which the acoustic energy is higher than others, forming spectral peaks known as *formants* (Moore 2016, p. 249). Each speech sound, both vowels and consonants, have specific spectral patterns which in turn give them their specific nature, and can be understood as “[...] the difference between the dark ‘u’ and the bright ‘e’” (Moore 2016, p. 249).

Other useful concepts in respect of *vowels* are *monophthong* and *diphthong*. According to Crystal (1995, p. 154), there is an aspect regarding permanence of the sonic

quality of a *vowel* found quite frequently in languages. When the quality is constant, the *vowel* is perceived as permanent in its duration and is referred to as a *monophthong*. On the contrary, when there is a change in the audible quality during the *vowel* emission, it is possible to perceive a glide, a slide between two quality states, produced by a movement of the tongue, and it is called *diphthong*.

Consonants: *speech sounds* which are produced by an interruption with different types and degrees of closure or constrictions of the air stream. Accordingly, it is “[...] relatively easy to ‘feel’ the articulation [...]” (Crystal 1995, p. 152) of them.

Reetz and Jongman (2009, pp. 13-19) establish a classification of *consonants* according to the place and manner of the articulation. Most of the consonants operate through the action of articulators mentioned above (i.e. *labial sounds* or *dental sounds*), but are generalised by Reetz and Jongman (2009, pp. 52-56) as *labials*, *coronals* (tongue tip and blade involved), *dorsals* (tongue front and back) and *gutturals* (pharynx, epiglottis, glottis⁹⁸). Regarding the description of many of vocal sounds used in the portfolio, classification according to the manner of articulation is helpful:

- *Plosive or stop*: “[...] is typically identified by a short period of silence, while a closure is made in the mouth, followed by a short burst of noise, when the closure is released” (Crystal 1995, p. 137). The release is made “explosively, as in [p] and [b]” (Crystal 1995, p. 157).
- *Nasal*: the velum is lowered and the mouth is closed, directing the air to the nose, “[...] as in [m] and [n]” (Crystal 1995, p. 157). They could be voiced or voiceless (including phonation or not).
- *Fricative*: Two articulators “[...] come so close together that the movement of air between them causes audible friction, as in [f], [z], [h]. Some fricatives have a sharper sound than others, because of the greater intensity of their high frequencies [...] (as in *shoe*) [...] These are known as *sibilants*” (Crystal 1995, p. 157).

⁹⁸ Glottis is the space between the vocal folds.

- *Affricate*: “A complete closure is made at some point in the mouth; the soft palate⁹⁹ is raised. Air pressure builds up behind the closure and is then released relatively slowly (compared to a plosive release). The first element of the sound has a sharp plosive character, but this is followed by an element of audible friction” (Crystal 1995, p. 157). In English, this is found in the sound of [ch] and [g] in words like church, chin and gin or judge, respectively (Crystal 1995, p. 157, Reetz and Jongman 2009, p. 16).
- *Approximant*: In this type of sound, one articulator gets close to another, but not enough to produce friction. “The extent of the constriction is somewhat greater to than for a vowel but much smaller than for a fricative. Approximants have some characteristics of both vowels and consonants [...] they are sometimes called semi-vowels” (Reetz and Jongman 2009, p. 16). Examples in English are *w* and *j* (Aitchison 1992, p. 221).

Other types of sounds to be included in the *consonants* list are (Crystal 1995):

- *Roll or Trill*: “One articulator taps rapidly against another – typically the tongue tip against the alveolar ridge or the tongue back against the uvula in the different kinds of trilled *r*, heard for example in many English¹⁰⁰, French, and German accents” (Crystal 1995, p. 157). The first case mentioned, tongue tip against alveolar ridge, gives the strong *r* present in Spanish.
- *Flap*: “A single tap is made by one articulator against another, as in some pronunciations of the *r* in very, or the *d* in ladder, where the tongue tip taps once against the alveolar ridge” (Crystal 1995, p. 157). This is the soft *r* in Spanish.
- *Lateral*: “A partial closure is made at some point in the mouth, in such a way that the air stream is allowed to escape around the sides of the closure. Various kinds of *l* sounds are the result” (Crystal 1995, p. 157).

As Crystal states (1995, p. 157), these are general cases which give “a limited impression of the range of sounds found in the languages of the world”. Following this author, it is

⁹⁹ The *velum*.

¹⁰⁰ Considered as approximant by Aitchison (1992, p. 221).

possible to find a wide range, if in every case the different ways of articulation are examined in detail. However, considering the sounds used in the portfolio, this is a sufficient list to cover them. Since the sounds used to compose the works were extensively worked in different ways through digital techniques, the resultant materials could be analysed from the point of view of Schaeffer's *typology* or Smalley's *spectromorphology*¹⁰¹ or in a combination of approaches.

Finally, it is necessary to provide some simple definitions of the terms to be used, namely *syntax*, *semantics*, *phonology*, *phoneme*, *allophone*, *word* and *sentence*.

The few speech sounds described previously, become part of another categorisation when they are considered as part of meaning within a language, this is leaving the *phonetics* approach to consider few notions from the *phonology*

According to Crystal (1995, p. 160) “[...] phonology studies the way in which a language’s speakers systematically use a selection of these sounds in order to express meaning”. On the other hand, Crystal (1995, p. 431 and 429) defines *syntax* (or syntactics) as “[...] the study of word combinations [...]” and “[...] sentence structure [...]”¹⁰² and *semantics* as “the study of linguistic meaning [...]”. In this way, when in this text something is referred to as *syntactic*, attention is focused on the structure of sentences and when it is referred to as *semantic*, it is dealing with the meaning involved in words and sentences¹⁰³. Additionally, the basic distinctions explained below are useful in considering the compositional approach performed in regard of speech sounds, which is, as it has been established, to work with them moving between their pure morphological values (sonic shapes) and their nature as bearers of meaning (semantic units), in other words, between *phonetic* features and linguistic aspects.

- **Phoneme:** “The smallest contrastive unit in the sound system of a language” (Crystal 1995, p. 427). Or, according to Aitchison (1992, p. 39) “[...] phoneme is the smallest segment of sound which can distinguish two words”. For instance, in

¹⁰¹ Considering the creation of vocal sounds just by means of the physiological apparatus, it is advisable to study the classification and production techniques proposed by Trevor Wishart (1996, pp. 263-286), which cover several sounds and points out creative approaches for performance and the obtaining of sound objects to be used in fixed media composition.

¹⁰² Referred as grammar as well (Crystal 1995, p. 422)

¹⁰³ A deep explanation and definitions on these fields are not provided since they will be mentioned as general categorisations as it has been stated already. For a thoroughly study on them, it is recommendable the bibliography suggested, especially the texts by Crystal (1995) and Aitchison (1992).

English the sound of *p* and *b* are substantial units which can allow differentiation between the meaning of *pig* and *big* (Crystal 1995, p. 160). Or in the case of Spanish, the sound of *m* and *p* allowing the differentiation of *mar* (sea) and *par* (pair). As is easy to notice, the importance of such sounds, in terms of meaning, is given by the context, since they are not considered relevant as mere sounds in a *phonetic* perspective. Returning briefly to the *musique concrète* theories, in his study of language, Schaeffer points out (1966, p. 285) that the context is given by the understanding of a certain language. If somebody does not know the specific language, in the moment of hearing these sounds, he or she will not hear *phonemes* but *sound objects*, or, at least, his or her attention it would be driven towards the sonic shapes rather to linguistic aspect, which it is kept hidden due to the ignorance of the given language. Following this idea, it is possible to affirm that, if a *phoneme* is isolated in a way the context for its functionality as such is lost, then it becomes a *phonetic* unit that can be analysed as *sound object* in an acousmatic perspective.

- **Allophone:** “[...] variants of a phoneme [...], in the form of a linguistic unit that does not alter its basic identity [...]” (Crystal 1995, p. 415). In other words, there are sounds which can vary, more or less in certain amounts, without changing the meaning involved in them. These *allophones* are defined as well by the context. For example, in Spanish the word *zapato* (shoe) can be uttered in a sloppy pronunciation with the less dental sound of *s* (*sapato*), without altering its meaning. Just as the *phoneme* becomes a *sound object* by losing its functionality due to the change of its context, the recontextualisation of an *allophone* could give rise to new *words*, which were not included initially during the collection of sound speech materials.
- **Word:** The smallest syntactic unit in a language “[...] that can stand alone as a complete utterance, separated by spaces in written language and potentially by pauses in speech” (Crystal 1995, p. 433). It can carry complex meanings or have a functional nature within a syntax system.
- **Sentence:** An assembly of words which is the “[...] largest structural unit that displays stateable grammatical relationships, not dependent on any other structure” (Crystal 1995, p. 430). It carries meanings and messages.

This appendix has covered the basic speech sound production theory and the lexicon derived from it used in this thesis. Although simple and limited, the notions explained are enough to address the analysis of the portfolio and, eventually, are used when is necessary throughout the text of each analysis chapter.

Appendix 4: EAnalysis software

The software EAnalysis (Couprie 2014), developed by Dr Pierre Couprie, has been used in this doctoral research to carry out the analysis of the pieces included in the portfolio. This software is part of *New multimedia tools for electroacoustic music analysis* at the MTI Research Centre of De Montfort University (Leicester, UK).

This tool was selected for its easy access and use. The software contains pre-existing analytical tools suitable for this thesis, namely *sound objects* and *spectromorphologies*, while the analysis criteria not included in EAnalysis were easily implemented through the use of *structure levels*, a handy tool to describe sections within the timeframe of any given piece.

All the images included in this thesis were generated using this software, except those which are scanned images or graphic schemes like Figures 1 to 4. All the EAnalysis images were subsequently edited in Adobe Photoshop since the software cuts nomenclatures or overlaps elements when the scale of the image is changed with the zoom tool¹⁰⁴.

Another important issue to mention is the use of the *formal diagram* preset for the *structure levels*; in the case of the *structure level* for main sections, the preset used was *linear*, which presents each section after the other, as can be seen in Figure 193.

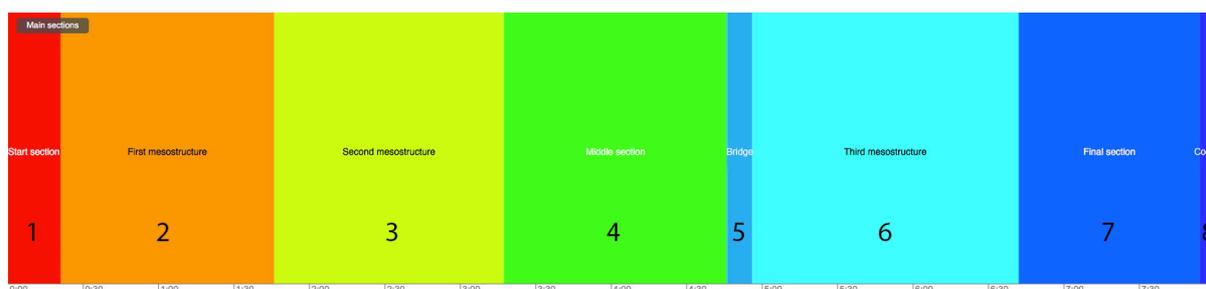


Figure 187: *Linear* preset for the *structural level* used to show main sections of a given piece; the numbers were added, and the names corrected in *Adobe Photoshop*

In order to provide a clarified view of the diverse elements in the analyses for the *levels of spatial function, voice type and speech-sound type distributions*, the preset *formal diagram* presented a good way to do it. This is achieved by the preset by ordering each segment at different heights within the area of the specific given *structure level*. Any

¹⁰⁴ For a comprehensive description of the interface of EAnalysis (Couprie 2014), please visit the website <http://logiciels.pierrecouprie.fr/telechargement/EANALYSIS/EAnalysisHelp/pages/interface.html>

segment representing a defined unit (a *level of spatial function* for instance) that is repeated is presented at the same height all across the timeline within the given structure level. There are sections of time where a unit is not present, consequently there is nothing to show in the specific time area generating gaps in certain images; these gaps are filled in previous or forthcoming images when the space is occupied by the respective unit that reappears. Figure 194 shows four units distributed in time from left to right; in the Y axis, after the last unit with light green colour, there is a white empty space that is filled in subsequent images when in those locations a corresponding unit is shown, as is possible to see in the following Figure 195.



Figure 188: Space gap after the light green unit in this *structure level* example

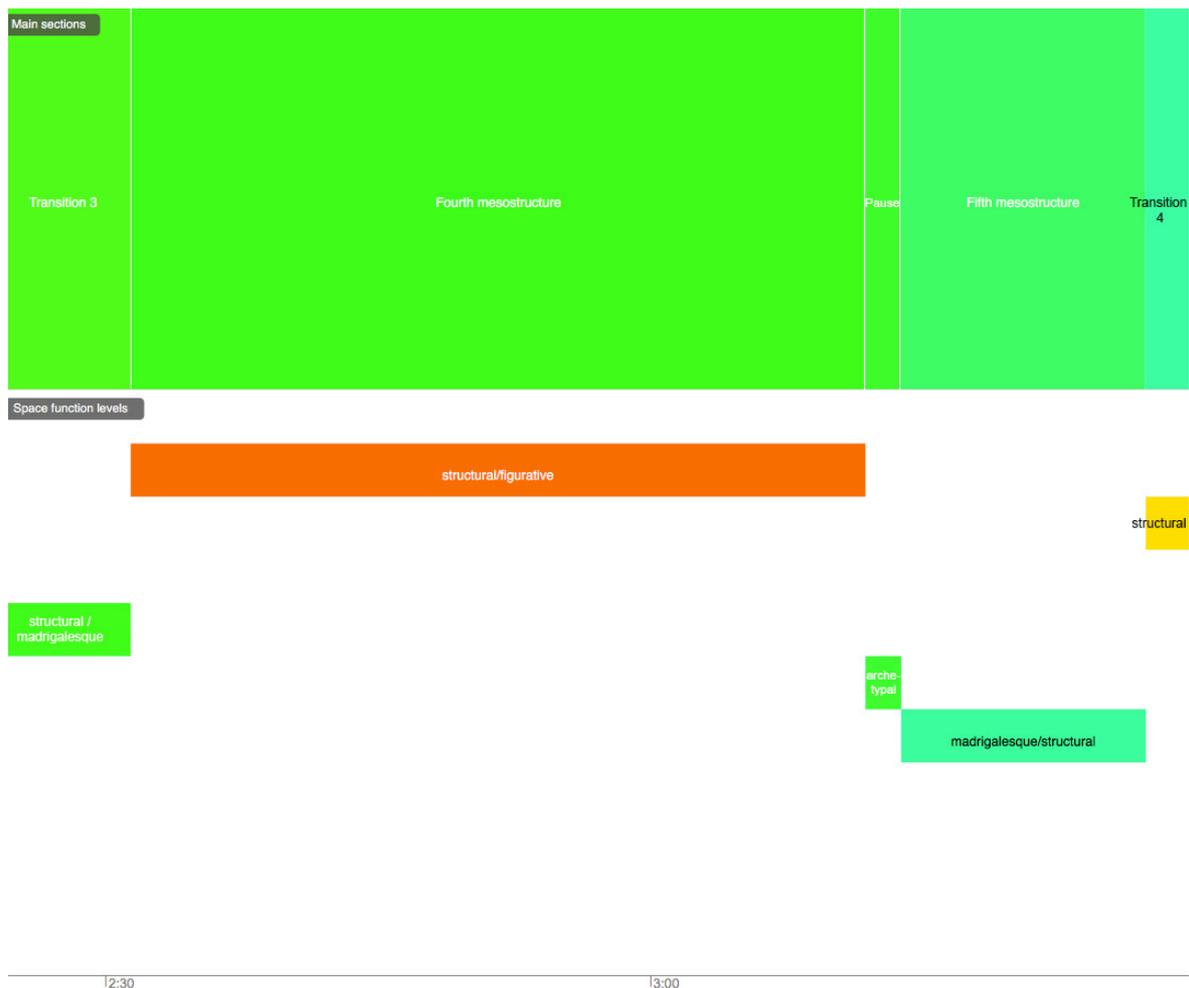


Figure 189: Another section of the same *structure level*, in this case showing the gap left by the absence of the light green unit and some of the spaces below which are empty in Figure 194

EAnalysis automatically generates texts in black or white fonts, according to the colours of units, segments and backgrounds; those colours were kept in all the images, for example in the graphic lists for *levels of spatial function*, *voice type* and *speech-sound type distributions*, as is shown in Figure 196. However, in some images the original text within a given unit (rectangle) is chopped by the software and since many cases the unit is too small or too close to another, the text was written again in the colour of the rectangle and located near in a convenient position, as can be seen in Figure 197.

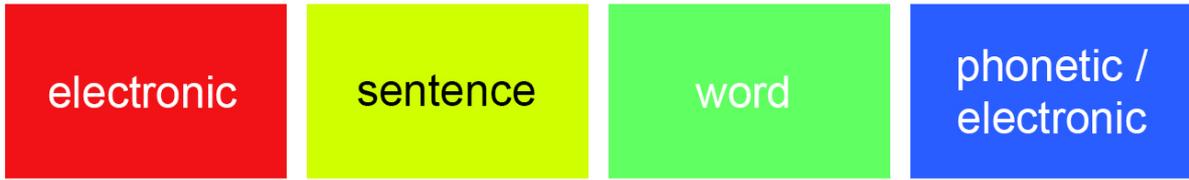


Figure 190: Graphic list for *speech-sound type categories* of a piece; black and white texts generated automatically by EAnalysis

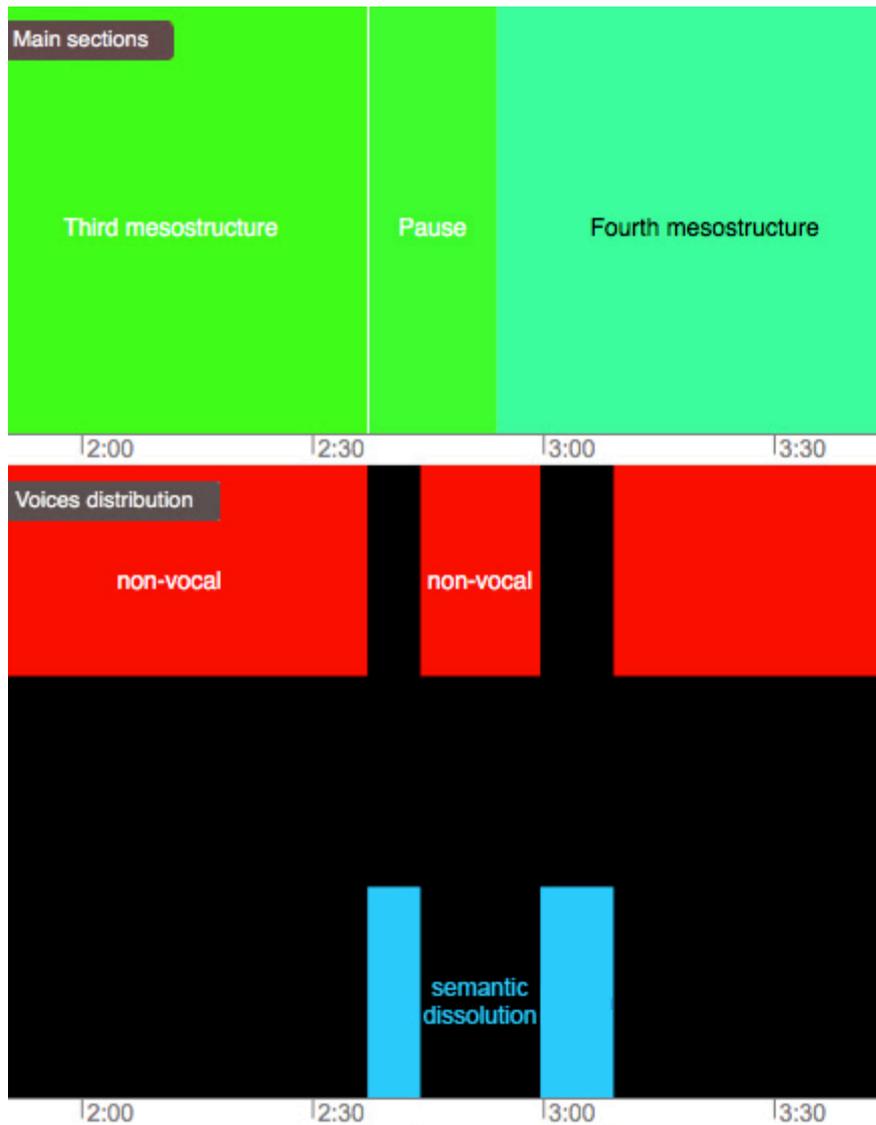


Figure 191: Replacement of text using colour of the respective units (light blue rectangles and texts)

Regarding the audio management, the EAnalysis version used (version 1.1.8), allows one to import both stereo and multichannel audio files; however, unfortunately the software does not allow the playback of multichannel files and in fact lacks the settings to route a multichannel piece. Subsequently, stereo reductions for the octophonic pieces were

prepared in order to facilitate the work. Every time it was necessary to listen in the octophonic system, a hybrid method was adopted, combining a video render of a given analysis inserted in the multichannel session of the composition software used and running in parallel the EAnalysis itself. This was especially required for the *levels of spatial function* analysis.

Alongside the images included in the thesis text, a video for each piece is provided, presenting main sections, *sound objects* and *spectromorphologies*, *levels of spatial function* and *voice type* and *speech-sound type* distributions.

These videos can be found accompanying the audio files of the pieces in the folder '03_Videos_EAnalysis'. Finally, the original EAnalysis files are provided to be accessed where the software is available¹⁰⁵ and are included in the folder '04_EAnalysis_files_portfolio'.

¹⁰⁵ The EAnalysis software requires as minimum Apple Macintosh OS 10.10; there is no version for other operative systems. To see details on the requirements, please visit the software website (Couprie 2014): <http://logiciels.pierrecooprie.fr>. These EAnalysis files can show some differences with the images presented in the thesis, since they were edited to correct the details mentioned above, including loss of letters in the nomenclatures or lack of numbers in the structural level for the main sections.

Appendix 5: Pieces information

1. Cycle *La lumière artificielle*

Composed between 2015 and 2018 at the University of Sheffield Sound Studios.

Recording sessions: Studio 5. Composition sessions: Studio 6.

Format: Eight channels (8.0)

Total time: 48'52".

Pieces included:

Overture (2015-2016) 8' – Premiere: Festival *Sónar Sound* Santiago 2015.

Voices: Alejandra Caro, Mathilde Rioton, Natalie Verhaegen.

La Lumière (2015) 9'46" - Premiere: *Sound Junction*, University of Sheffield Sound Studios concert series, October 2015. Third place ex-aequo in the 2016 SIME Electroacoustic Music competition, Lille, France. Voice: Mathilde Rioton. Released in a stereo reduction in the CD *Fluctuaciones* (Albornoz 2016).

La Luz (2016-2017) 9'45" - Premiere: *Sound Junction*, University of Sheffield Sound Studios concert series, November 2017. Voice: Alejandra Caro.

The Light (2017) 10' - Premiere: *Sound Junction*, University of Sheffield Sound Studios concert series, May 2017. Voice: Natalie Verhaegen.

Hundreds of milliseconds (Finale) (2017-2018) 11'21" Premiere: *Sound Junction*, University of Sheffield Sound Studios concert series, April 2018. Finalist at the Fundación Destellos competition 2018. Voices: Alejandra Caro, Mathilde Rioton, Natalie Verhaegen and Lucy Houghton.

2. Three acousmatic tributes

Composed between 2014 and 2017 at composer's personal studio in Santiago de Chile (part of *Un regalito misterioso*) and the University of Sheffield Sound Studios (studios 4 and 6).

Format: Stereo.

Total time: 25'01".

Pieces included:

Un regalito misterioso (2014-2015) 9'22" – Premiere: EMS 2015 Conference, Sheffield 2015. Finalist at the Fundación Destellos competition 2015. Voice: Matilde Pérez. Released in the CD *Fluctuaciones* (Albornoz 2016).

Tom... Far... Orion... Blue... (2016) 8'28" – Premiere: 43 New Music Festival of Lüneburg, Germany, October 2017. Voice samples: David Bowie.

Sheffield 17 (2017) 7'11" – Premiere: Ai-maako Electroacoustic Music Festival of Chile, Santiago de Chile, October 2017. UK Premiere: BEAST FEaST 2018, University of Birmingham, UK, April 2018. Voice: José Vicente Asuar.