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(De)Composing Immersion

Clerc Parada, M.

Citation

Clerc Parada, M. (2014, November 25). *(De)Composing Immersion*. Retrieved from <https://hdl.handle.net/1887/29928>

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Author: Clerc Parada, Miguelángel

Title: (De)Composing Immersion

Issue Date: 2014-11-25

Chapter 2

On La línea desde el Centro

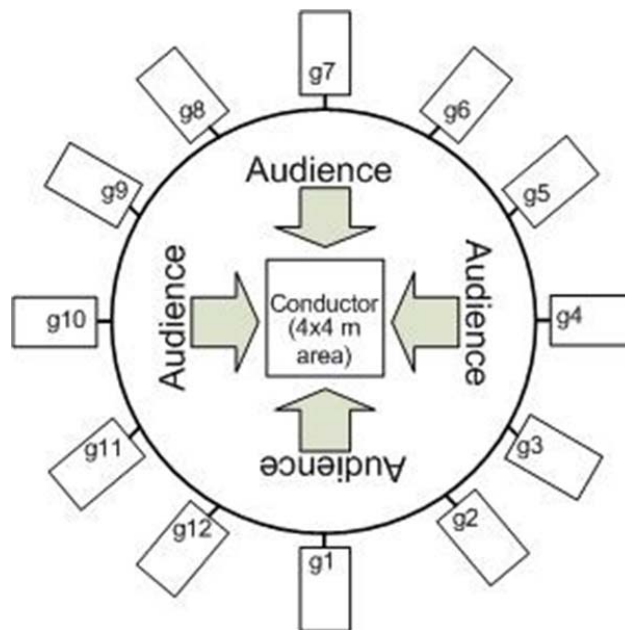


Figure 1 Stage setup of *La línea desde el Centro*.

2.1 Introduction

La línea desde el Centro (The line from the center) is a composition for twelve guitarists and conductor that I wrote in 2007. The audience is surrounded by twelve guitar players, and the conductor is placed in the center of the circular setup (Figure 1). As indicated in the figure above (arrows) the audience must be facing the conductor.

In what kind of physical space must this composition be performed? Should the physical space be considered as part of the composition from the beginning of the creative process? Composition and musical parameters can be easily observed from and treated in their isolated virtuality in the same way that an immersive experience can be isolated in the description of individual sensations. When Neruda wrote his poems, did he contemplate the possibility of a reader reading his poems in a toilet? He probably trusted in the quality of his works disregarding their physical context. His works do not specify “to be read on a mountaintop” or “to be read in a small room with candle light”. They can be read anywhere, and the quality of the work should adapt to any possible surrounding context. It is more and more common to take site-specificity into account, although it is also quite normal that composers do not demand where their pieces are going to be performed. In these cases, musical forms and gestures might be perceived by composers as enough to guarantee the perception of a virtual musical space. A musical piece can be performed in different spaces and the qualities of the work will have to adapt to the diverse spatial possibilities. This notion can be seen as a traditional and common approach for a composer. However, physical space can be considered as an essential musical parameter, and the acknowledgement of environment as a conditioning factor for musical experiences can significantly affect the aesthetic result of any given work. I acknowledge that this spatial concern is not new. Nevertheless, my compositional goal is not to aim at creating a separated virtual experience with spatial impressions, but to use space to blur the separation between virtual and real spaces. This approach will reveal new attitudes and perspectives in relation to spatialized music and conventional musical situations. It is important to mention that my concern is more oriented towards exploring the problems that occur in conventional spaces such as halls, theatres, and studios that are usually used for musical practice. For this reason, I will differentiate and relate sound art perspectives that have more diverse uses of space with practices that are related to a concert music tradition. Further on in this chapter, I will argue that in a habitual circumstance, it is easier to break conventions and to create new perceptual situations.

In a similar fashion to the previous chapter (On *What about Woof?*), this chapter begins introducing notions that arise from studying and reflecting on the experiences of *La línea desde el Centro* (from now on I will refer to it as *La línea*) without using the piece immediately as a reference to contextualize the ideas presented. Descriptions of how the work is associated to these notions become more prevalent towards the end of the chapter. The last subchapters, describing some of the processes of *La línea*, intend to show the compositional origins that gave birth to the ideas proposed. Additionally, this description of processes will be used to elucidate my approach towards the idea of “openness” and its relation to immersion.

2.2 Spatiality: a process towards immersion

2.2.1 Virtual and physical space

One of the main aspects that condition the occurrence of an immersive experience is the relation between listeners and the surrounding physical environment. The surrounding architecture resonates with and involves the listeners. When a sound is heard in a hall, it reveals the size and echoic characteristics of the space. The sources and the sounds produced can be located inside or outside the hall. The listeners recognize the difference between what is inside and outside. The differentiation of spaces makes them feel, consciously or unconsciously, “part of” the area where they are located, whether they are located outside or inside of a framed space. The sonic and physical borders define the kinds of sensorial characteristics that the space can offer. The perception through listening of the physical frame or environment is a form of self-representation. Inside a big hall or a small hall, circular or square, outside in the countryside, standing outside a sounding music hall or in a street, silent or noisy, the listeners interact with their surrounding space giving form to the way they listen what they are able to hear. The form of the space moulds the way we resonate in/out/with it. Self-representation in space is not necessarily something that listeners are conscious about during music listening. Listeners naturally experience the differences of each physical context often without conscious awareness.

Through music, the listeners can experience a virtual immersive landscape. They can detach the virtual perception of music from their awareness of the real physical space. The Danish musicologist Erik Christensen developed a theory of music listening in his book *The Musical Timespace*, where he proposes and classifies “listening dimensions” that interact simultaneously, creating a virtual musical space. He summarizes his model as follows:

The virtual timespace

States and events, movements and transformations of musical sound evoke impressions of space. This musical space is a virtual space, which is completely integrated with musical time. All kinds of spatial impressions, rise and fall, movement and growth, shapes and patterns, are called forth by temporal changes of sound qualities. The musical space is a virtual timespace.

The virtual musical timespace is evoked as a mental illusion by the experience of differences in Intensity, Timbre, Pitch height, Movement and Pulse. *Timbre* and *Pitch height* are microtemporal dimensions. In the temporal continuum, Pitch height represents the experience of *microtemporal regularity*, and Timbre represents the experience of *microtemporal change*. *Movement* and *Pulse* are macrotemporal dimensions, evoking the experience of time. Movement represents the experience of *macrotemporal change*. Pulse represents the experience of *macrotemporal regularity*. (Christensen 2009 3)

To graphically represent and summarize the relations between the macro and micro listening dimensions, Christensen presents the following figure:

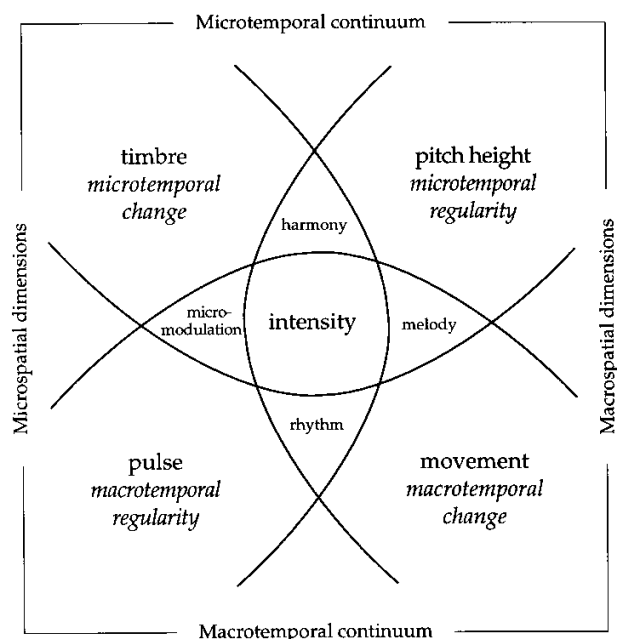


Figure 2 The microdimensions and macrodimensions of the musical timespace (Christensen 1996: 153)

The interaction between the nine musical dimensions creates a virtual time-space. As described in his summary and in figure 2, the musical dimensions refer to parameters that are only perceived and that can only be classified through listening. Christensen does not consider physical space in this model. As a consequence, the sensory and psychological perspective of the model emphasizes the separation of the virtual time-space from physical reality. The musical dimensions design metaphors of physical space. The dimensions do not need to be observed in relation to physical space. Unfortunately, it is common for composers to think of and write their music only considering the musical dimensions. The physical space and the performance context tend to be a concern that is confronted at the last minute.

In many occasions, I have realized how a given space has affected the perception of my idealized musical time-space. I found myself changing my compositions to enforce an expected virtuality over the given physical conditions. For instance, a very reverberant room can decrease the ability to perceive fast articulated figures. Also, an instrument's timbre can blend well (as expected or imagined) with other instruments in one space, while in another it is perceived as separate from the group, not creating the expected resulting timbre. Therefore it is essential to acknowledge that the virtual musical dimensions are conditioned by physical space.

"Evoking impressions of space" and "evoked as a mental illusion" are phrases that refer to transformations in the conscious state. The musical time-space may induce the listener to achieve an immersive state. The perception of a virtual space can be understood as the

experience of an immersive conscious mode.²⁴ Nevertheless, the real physical space provides a set of environmental characteristics that condition a virtual experience. Immersion can be misleadingly understood and approached from an isolated psychological perspective where the reference to a real physical environment is suppressed. Music mediates the way we perceive reality. In this case, I am referring to reality as a given situation where music is initially absent. The mediation begins when music appears and overlaps with the given sensory characteristics of the environment. Once music begins, we perceive it as a virtual phenomenon. As music continues it can blend with the environment and be perceived as part of reality, or it can become reality as the listeners immerse into the musical space. In both cases, "mediation" implies that there is an original environment that is being transformed. However, even when music becomes reality we cannot ignore the presence of the physical environment. Music always appears as a contrasting substance that transforms the way we perceive the environment.

The sensation of real space will transform the way in which we perceive a novel; if we read it in our bed, or if we read it under the sun on a beach, or if we watch a movie in our living room on a laptop or in the cinema, each experience will be conditioned by the environmental and physical characteristics of the surrounding space. Frances Dyson describes the phenomenology of space in relation to how we associate the virtual with real spaces through the use of new technologies that aim at creating virtual realities:

Space acts as a pivotal element in this rhetorical architecture, since it provides a bridge between real and mythic spaces, such as the space of the screen, the space of the imagination, cosmic space, and literal, three-dimensional physical space. Space implies the possibility of immersion, habitation, and phenomenal plenitude. (Dyson 2009: 1)

As mentioned in the quote above, immersion cannot be experienced in the absence of space. What is essential for Dyson is that the body in this immersive new context feels totally enveloped and surrounded by space, whether this space is perceived as real or imaginary, in relation to the physical space or not. It also implies that certain stimuli can create a virtual or imaginary space. Nevertheless, immersants cannot separate their sensory experience from the physical environment, so any form of immersion, physical or imaginary, will resonate with the physical space and its characteristics will condition the way in which immersion is experienced. Although Dyson appears to be aware of the relationship between physical and virtual spaces, through her book the reader will perceive the notion of full immersion as a "new" state or condition which arises within the virtual phenomena. The sense of "new" can be associated to a simulation, a separation or an extension of reality.

²⁴ The title of Ruth Herbert's *Everyday Musical Listening: Absorption, Dissociation and Trancing* introduces the three main conscious modes that she will use to describe the psychological effect of music listening in everyday life. I am referring to these modes as immersive. I will delve specially in the terms absorption and dissociation in Chapter 3 "On Eufónica".

Although she describes from diverse perspectives the cultural and ontological implications and effects in the perception of reality that arise from immersive phenomena associated to new media, the sense of “new” invites us to perceive immersion as a virtual transitory event. From this perspective, we may understand the notion of reality as a group of separate and different realities. My intention is to redirect the focus on immersion as an event that occurs within reality. Immersion can be understood as a transitional experience where there are given sensory conditions that continuously transform reality. In this way, “to immerse” and “to emerge” are thought of as resonance and continuity. Physical space needs to be an essential parameter in the design of “a perceptual continuity”.

In the case of *La línea*, the physical surroundings were always kept as the main spatial reference. More than aiming at creating a new or virtual reality, the goal was to create a subtle transformation in the perception of the surrounding physical space. The presence of a transformation implies that in the musical context an aesthetic virtuality overlaps with the real space. This happens in all musical contexts. However, in *La línea* the intention was to equalize the roles of the virtual and the physical, creating the sensation that what is being experienced is a transformed reality. From this perspective, the relation between the musical and the physical space cannot be seen as a dialectical confrontation between the virtual and the real. Therefore, when the musical stimuli end, the listeners do not perceive a re-entering into reality, but a transition within a continuous and transforming reality.

As mentioned earlier, it is common for a composer to begin a musical creation having only as reference the virtual musical time-space. Composers commonly take for granted that the virtual characteristics of music are the ones that will mediate our experience and transform our perception of reality. From this perspective, there seems to be no need to have the physical space as reference, as in this case, music is intending to create its own virtual space. The musical characteristics will have to adapt to any given performance space. On the other hand, within a traditional musical practice it is not common to begin with the perspective that space is the mediator that conditions the form of a musical experience. The consistency of the physical space can be perceived as a complication that contrasts with the abstract and immaterial characteristics of sound. Physical immersion implies the presence of a physical surrounding context. For this reason, during the process of designing an immersive environment the composer needs to give equal attention to both the physical and musical spaces, leading to the possibility of relating them to each other in new ways.

The limits of physical space aid in achieving an immersive experience. When we enter a warm small room, a big church, or a tunnel, we immediately perceive a sensorial transformation, our senses perceive the changes of the new physical space. In this sense, entering or coming out of framed spaces can be perceived as immersive transitions. Nevertheless, in a musical context, the cultural traditions standardize certain attitudes and expectations. Entering a concert hall contains a historical and cultural conditioning. In a traditional setting when a listener enters a music hall, the expectations are focused towards the forthcoming musical event which will happen in a specific area of the hall. The focus will be towards the place where the sound sources are located. In these cases, there is no need to pay attention to the acoustic and physical characteristics of the space. In this way, we can understand that the traditional duality invites a comfortable context for immersion. The space conditions the sound results, but this does not usually capture the listener’s attention.

The moment in which the music begins is the moment when the sensorial relations between sound, space and the listener begin. Before that beginning, the movement of the audience towards their seats occurs in an automatized and logical way. During this process, the listeners are not necessarily feeling a big perceptual contrast with their lives outside of the hall. This is because the gathering of people in a certain area is what should normally happen. This gathering implies a transformation of the more individualistic condition that each listener previously had outside of the music hall, but the audience experiences this process naturally as a cultural convention. This cultural automation occurs when the audience is aware that it is being part of a performance. On the other hand, when a person enters into an unknown room or hall without the expectation of an artistic event, the recognition and experience of the space is usually what takes the main attention. In non-artistic contexts, immersive transitions from one space to another occur detached from aesthetic expectations. Detached from expectations, the aesthetic sensations might or might not occur according to wherever we place our attention. Aesthetic appreciations might be randomly triggered by diverse sensory stimuli as in the same way they are triggered in our everyday life. These aesthetic appreciations do not necessarily occur within the repetitive tradition of conventional artistic contexts. The more conventional the architecture of a music hall is and the more conventional the setup of the performance is, the less we pay attention to the physical space as our expectations are focused on the forthcoming artistic event. This argument suggests that the music hall does not present itself as a key aspect in the aesthetic result of the performance. In this traditional approach, the role of the hall is merely functional. It aids the listener in experiencing the virtuality of the presented event detached from the physical reality and presence of the hall. For this reason, a transformation of the concert setting is required to achieve an immersive effect in relation to the physical space. These transformations should occur in relation to the physical disposition of the elements in the concert space, as well as in the way musical material operates and how it relates to the physical space and the listeners' positions.

In *La línea*, the sole focus on physical space transformed the traditional concert setup and conditioned the way I approached the musical material. As mentioned earlier, *La línea* is a piece where the audience is surrounded by twelve guitar players (Figure 1). In spite of seeming to be an intentionally closed frame for the audience, the actual initial goal of the piece was to create a disorienting effect in relation to the space outside the circle. One of the specific intended effects was to create, through the rotations of reference points (pitches), the feeling of being physically rotated. Ideally, I imagined the audience coming out of the circle feeling that they had ended up sitting pointing in a different direction from the one that they were pointing towards in the beginning; subsequently, they would look at the hall (or any surrounding context) and would try to relocate themselves in space. These first ideas reflect how I started the compositional process, having as reference the physical context that surrounds the circle, and the listener's possible perceptual transformation after the conclusion of the piece. To clarify, the piece was not written in relation to a specific site but it was developed as a piece that operates observing its physical surroundings, whatever these surroundings might look like.²⁵ Focusing on how the piece could relate to its surrounding space and time had a direct influence on the different and unexpected ways in

²⁵ I will continue to develop this issue on this text.

which I developed the musical material, form, type of score, stage setup, and the way that the performers and audience have to relate to these. All of these compositional and performative elements coalesced into a performance of immersive characteristics. When I was invited to write the project that resulted in *La línea*, I had not yet associated these phenomena to the concept of immersion. I associated the term immersion with this piece four years after its premier, and after five performances of it in different settings. The term immersion appeared as a word to describe in a concise way the sort of experience that occurs during this piece. It also served me to describe the differences between this piece and my previous works which have more traditional settings.

2.2.2 Being and space

La línea is a piece where the performance space is framed within another space. *La línea* gathers all of the participants within a circular area. The hall is not used in its traditional dual setup (audience/stage). Its architecture is perceived as a physical layer that surrounds the performance space. The audience is invited to a different use of the space, within which the most logical and traditional expectations are transformed and conditioned.²⁶ In a surrounding spatial work, the listener recognizes his position in space in relation to the sounding sources. Each listening position will offer a unique spatial experience. The surrounding sound sources create a referential frame. Surrounding spatial compositions generally aim at creating spatial impressions within the given spatial frame. The characteristics of the hall are often perceived as a complication for the creation of a surrounding virtual environment.

Persephassa (1969, for six percussionists) by Iannis Xenakis is a famous composition with an encircling setup (hexagonal) (Figure 3).²⁷

²⁶ Redistribution of musicians in space is not at all a new practice. There are many examples of spatial music through history, as within the Christian Liturgies with responsorial and/or poly-choral characteristics, which go back to early Christian rituals and reach developed forms with Palestrina, Gabrieli and other composers of the Renaissance. Also, during the 20th century, spatialization grew as a musical concern. Various uses of space can be found in the works of Karlheinz Stockhausen and Iannis Xenakis. The use of speakers in early electronic music also led to an increasing concern in spatialization.

²⁷ I worked with an edition of *Persephassa* from 1970.

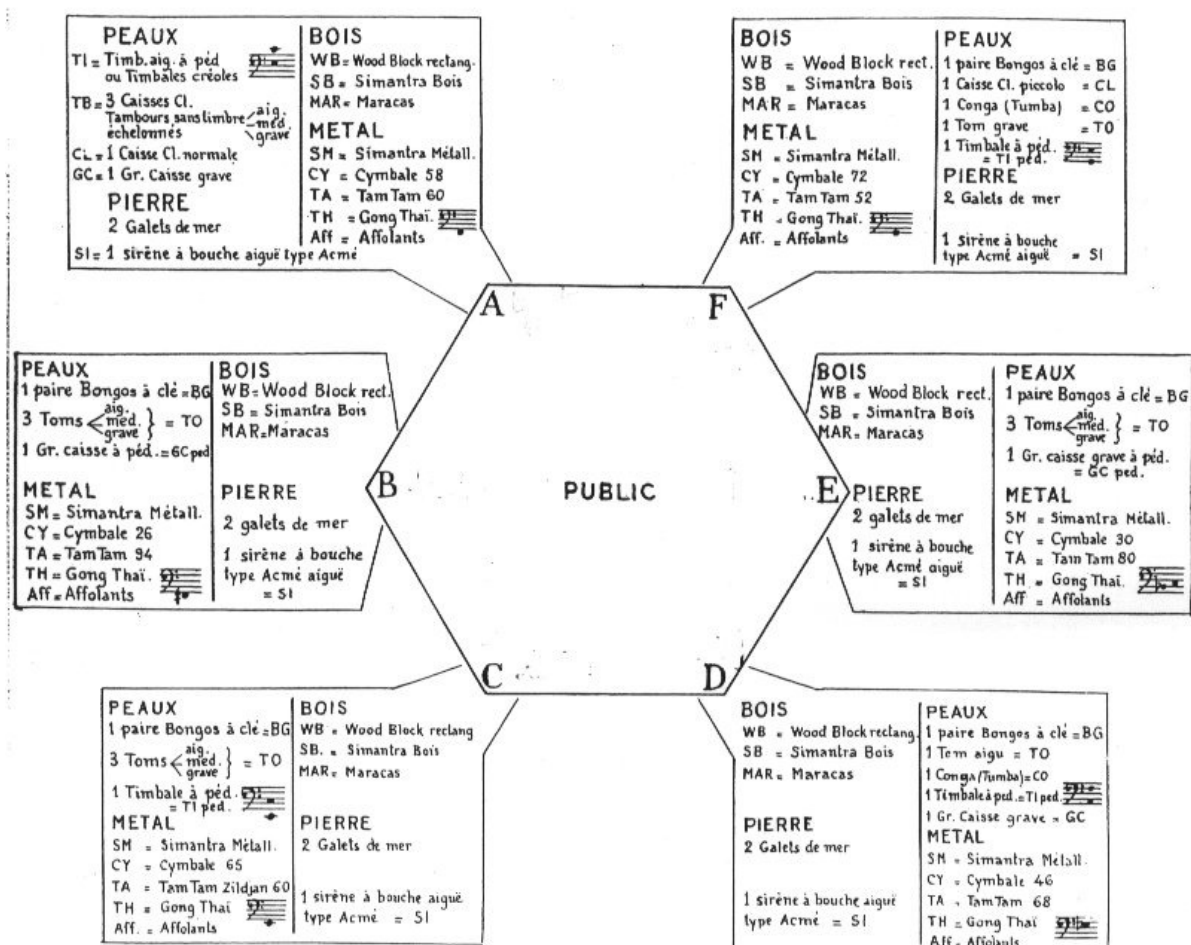


Figure 3 Spatial disposition of Iannis Xenakis' *Persephassa*

In this work, Xenakis explores the combinations of periodicities and multiple tempos in relation to their movement in a circular setup. In this process, he aims at creating temporal illusions through the use of physical space. The circle is used as a closed set of points that are combined mathematically to create simultaneous spatial rotations with different speeds and directions.²⁸ The temporal perceptual concern of the piece reveals the functional character of the closed circle. The circular setup functions to favor the creating of temporal sensations. Each listener inside the circle experiences his own particular temporal experience. This produces a sense of relativity, as the perception of time in relation to the sound sources is different from listener to listener.

²⁸ I am not presenting a detailed analysis of the compositional processes. For further investigation, a detailed description of rotational processes can be found in Maria Harley's PhD dissertation *Space and Spatialization in Contemporary Music: History and Analysis, Ideas and implementations* (Montreal: McGill University, 1994), especially in Chapter 7.4, "Sound Rotations in *Persephassa*" (pp. 293-296).

Xenakis seems to negate the linear notion of time. He investigates the relativity of temporal perception as associated to physical space through music and reveals the perceptual interdependency of time and physical space. In my interpretation, the unique position and experience of each listener is essential for Xenakis to describe the simultaneity (the “same” music) and multiplicity (the multiple perspectives from which the music can be perceived) of this temporal/spatial relation. In reference to spatialized music where the players “mingle” with the public, Xenakis comments (extracted from an interview with Xenakis): “The individual listeners don’t hear a completely different kind of music, but they certainly hear the same music from a different perspective” (Varga 1996: 98). This statement has immediate ontological implications. A spatialized work of these characteristics offers a space to experience a sense of being “singular plural”. The spatial disposition describes a sharing of multiple perspectives within a limited space and within a musical architecture (what Xenakis calls “the same music”).

The network of events designed by Xenakis reveals the self-inclusiveness of the hexagonal frame. The perimeter of the hexagon marks the spatial boundaries. The boundaries separate the external structures and aid the listeners to perceive a virtual construction. The sonifications and multiple readings of space in the works of Xenakis reveal the interest of the composer to create a musical architecture that, however related to physical phenomena, creates and is sustained by its own virtuality. In this case, virtuality equals music. Music is then perceived as a temporal-spatial construction. For Xenakis, it is important to give sensations of physical space through a musical practice where the listeners do not need to move physically from their listening positions. In this way, Xenakis uses spatialization to enhance the spatial sensations within the virtuality of the musical dimensions (as described by Erik Christensen).

In the interview with Andras Varga, Xenakis argues: “Space [physical] first and foremost has the task of allowing sound to be heard properly” (Varga 1996: 97). This sentence reveals how Xenakis was mainly concerned with the acoustic functionality of physical space. For Xenakis, on the surrounding disposition of instruments of *Persephassa*: “The acoustic problem is simpler” (Varga 1996: 100). The proximity and involving disposition of the sources avoid the conditioning acoustic effects of the physical space. For Xenakis, the acoustic characteristics given by a physical space have to be tamed in favor of a musical necessity. This is because he does not believe in perfect acoustic conditions. For instance, in reference to his composition *Terretektorh*²⁹ he states: “There’s no hall, however, that suits it perfectly [acoustically]” (Varga 1996: 99). For him, the proximity of the sources is essential so that the listeners perceive the energy from the sound source: “But I emphasize once again: the closer we are to the instruments, the less we lose of their energy” (Varga 1996: 100). In Xenakis’ work the spatial disposition has to be designed keeping the sound sources as the main spatial referent disregarding the physical influence of the hall. Proximity reduces the influence of the physical acoustic factors in the perception of the virtual musical space. For Xenakis, music should be able to sustain its own virtual architecture disregarding physical space. This notion could also be associated with how Xenakis imagines that

²⁹ *Terretektorh* (1965/66) is an orchestral piece where the performers are spread in different points within the audience. I will delve about the characteristics of this piece in the next chapter of this dissertation.

composers think about their music: "It's much more likely that they [composers] consider music objectively in terms of real sounds, rather than from any particular distance, which would be silly [...] unless they were thinking of some ideal hall which doesn't exist" (Varga 1996: 99).

The text above mainly focuses on works of Xenakis which are not site-specific. Xenakis' architectural works and site-specific compositions may seem to contradict the arguments mentioned above. In the *Polytopes* (the name of a series of Xenakis' spatial works) he constructs multimedia installations using existing architecture or buildings specially designed for each installation. In the *Polytopes* the architecture is integrated in the compositional process. For example, the *Diatope* (a *Polytope* constructed for the opening of the Centre Pompidou in 1977) is a (theoretically) transportable structure designed and constructed by Xenakis as an integral multimedia installation. In the *Diatope* and the other *Polytopes* the physical architecture blends with the virtual aspects of the sounds. "In the *Polytopes*, there is not really a contrast between the real and the artificial world; what is being dealt with is the creation of temporary transformations or modulations of a given space or site" (Sterken 2001: 271). On the contrary, *Terretektorh* and *Persephassa* are no site-specific works. Their musical setup thus produces diverse forms of spatial interaction depending on the characteristics of each space (as in *What about Woof?* described in Chapter 1).

La línea aimed at creating similar spatial impressions as in *Persephassa* and *Terretektorh*, but the main difference from Xenakis' perspective is that in *La línea* the focus is given to the physical space around the circular frame to create the composition. The virtual spatial impressions that occur in *La línea* do not aim to enhance the sense of spatiality within the virtuality, but rather aim at giving an active presence to the physical surroundings. The spatial sensations should not just be related to the framed area defined by the sources, but it should also affect the relations with that which is outside of it. For Xenakis, these effects were not his main goal. However, Xenakis' settings still naturally offer the possibility to perceive similar sensations and spatial associations. On the other hand, in *La línea* the compositional processes and the sonic spatial effects within the circle are a result of intentionally looking outside of the circle.³⁰ *La línea* can be understood as looking towards the physical reality from within the musical space of the circle. I did not consider integrating the architecture as an aesthetic or active element nor intended to create a self-sustained virtual space. In that sense it differs from Xenakis' approaches.

In the process of *La línea*, the particular acoustic characteristics of the hall were not studied to achieve a specific sound result. I did not intend to analyze the acoustic qualities of a given space, but to compose the piece while being aware of the perceptual meaning and cultural effect of transitional physical spaces. In *La línea*, the hall works as a gathering space, as an entrance or waiting hall. The hall becomes the reference to reality and a transitional space in between the outside and the inside of the circle. When the piece finishes, the listener gets out of the circular area to the framed space of the hall. As the hall becomes a shared space where the music of the circle resonates, it can be understood as

³⁰ To illustrate this argument, compositional processes of *La línea* will be described in detail further on in this chapter.

both an exteriority and an interiority. As in *Persephassa*, this occurs because of the sonic boundaries designed by the circular setup. The traditional focal attention towards the sound sources is replaced by the experiencing of a surrounding sound environment. A circular spatial setup creates an immersive context, where immersion occurs in a natural way. The listeners are physically surrounded by sound. However, this does not guarantee that the listeners will achieve immersive conscious modes. Nevertheless, the audience is inside a physical context where, due to the physical implications of their listening, they cannot avoid perceiving themselves in the proposed surrounding sonic environment.

The encircling context reduces the visual focal attention towards the sound sources. It also works as a physical description of the involving characteristics of listening. As already described in the previous chapter, listening and immersion can be associated to a sense of "being in". Our ears listen in every direction. In this way, the perceived spatial distance between the listeners' heads and all of the surrounding sources disappears, physiologically equating the listeners' heads to the perimeter of the circle. Each head becomes the circle. The circle can be thought of as a framed context that describes listening as resonance. This inseparable *contemporaneity* of the sound source and the listener creates a space as sonorous existence. As one listens, one becomes the heard (as described in the pages 25-26 of the first chapter in reference to the arguments of Jean-Luc Nancy). From this perspective, it is possible to suggest that one also becomes the space. Jean-Luc Nancy reflects that resonance makes "the sonorous place ('sonorized' one is tempted to say, plugged into sound), a place-of-its-own-self, a place as relation to self, as the taking-place of a self, a vibrant place as the diapason of a subject or, better, as a diapason-subject" (Nancy 2007: 16). In this context, the self does not appear as an isolated singularity but as a self that includes the resonating space. "So the sonorous place, space and place – and taking-place – as sonority, is not a place where the subject comes to make himself heard...; on the contrary, it is a place that becomes a subject insofar as sound resounds there" (Nancy 2007: 17). The experience of listening creates, through resonance, an embodied experience of plurality and disalienation. In *La línea* the listeners become the circle, therefore the hall, therefore the world.

Observing resonance as a representation can be misleadingly associated to a separation from reality, as the separation described by Frances Dyson in relation to virtual environments. As quoted in the previous chapter: "By 'being in', rather than 'looking at', virtual environments, the viewer is said to occupy the space and time, the here and now, the virtual present of a separate but ontologically real space" (Dyson 2009: 2). The notion of separation that Dyson associates to virtual environments does not apply to every listening and immersive context. The sense of perceiving oneself as "being in" inside a circular setup seems to be very natural and is apparently analog to the description of an immersive experience in virtual environments. Nevertheless, the context of an acoustic performance operates differently than in a technologically designed virtual environment. The difference between *La línea* with a virtual environment created through technology is the speed of transformation into an immersive mode. This difference lies in the fact that *La línea* does not intend to be a simulation. A simulation (in technologically based virtual realities) and an invented sound environment have different immersive processes and ontological implications. A simulation intends to offer an immediate transformation while an acoustic sound setup requires a slower process to achieve an immersive mode. For instance, the

virtual space we perceive in the computer screen is already there, always available for us. A full-flight simulator can quickly reproduce the sensation of being in a closed cabin in an airplane. With computers and simulators, the experiential shift is almost immediate. On the other hand, with a case like *La línea*, the immersion occurs in a context that does not establish a clear separation from the environment. In this way, *La línea* can be described as a sonorous immersive experience of an undefined kind, that occurs in resonance with the real space. It was not intended to create a virtual reality or a simulation.

The process of achieving an immersive mental mode in an acoustic context requires a transition time. This time is aided by the transitional spaces that are around the circular setup. The transitional spaces can be understood as references to reality. If we are able to perceive or recognize the role of each transitional space, we are enabled to perceive the relations between different but coexisting layers within reality. This implies that the sensation of "being in" an invented immersive environment occurs due to the existence of a contrasting reality. An immersive experience seems to depend on this ontological relation. What does it mean "being in"? Does the ontological character of an invented environment separate the listener from a being outside?

In *Being Singular Plural*, Jean-Luc Nancy proposes that the essence of being is singular and plural. He unites being-singular-plural as a compound term that interrelates simultaneously all the possible meanings of each word. For Nancy, there is no "being itself". "Being" is immediately singular-plural, so it is not possible to approach being as a preexisting individual notion of existence. Nancy proposes that existence is always co-existence:

That which exists, whatever this might be, coexists because it exists. The co-implication of existing [l'exister] is the sharing of the world. A world is not something external to existence; it is not an extrinsic addition to other existences; the world is the coexistence that puts these existences together. But one could object that there exists something [which does not first coexist]. Kant established that there exists something, exactly because I can think of a possible existence: but the possible comes second in relation to the real, because there already exists something real (Nancy 2000: 29).

In this fragment, Nancy proposes that thinking of reality is one of immediate coexistence. From this perspective, it is impossible to think of singular existences if they are not interacting within a reality that is always plural. The realities of the screen, of music, of a book, or of the environment can only be observed as part of an interrelated reality. If we take this argument into consideration, it does not make sense to approach immersion as the experience of a "separated ontological space". "Being in", as an ontological experience, is an elucidation of plural coexistence through resonance. In this sense, being immersed as a "being in" is a disalienation from any form of ontological dualism and separation. From this perspective, being immersed is understood as the opposite of being separated. Therefore, in an artistic context, is it worthwhile to intend to create a separate reality? Any departure point will always begin from an end within coexistence. "Being" always relates to simultaneous modes of reality. However, experiential contrasts are what can make us perceive transformations within reality. In this sense, a musical environment needs specific characteristics which contrast with the non-musical time-space. As a result, it is important

to establish the differences between the environment of the non-musical time-space and the environment of the musical time-space. The musical time-space creates an undefined experiential territory that can induce the listeners to achieve a state of amazement in relation to their surroundings. In this way, we can enhance our awareness of being-in reality from the experience of being-in a musical environment.

An immersive experience in a sound environment where the sounds are undefined and do not induce the listener to create referential associations can be compared to the involving experience of a womb. A full immersion implies a giving-in to a non-referential and pure state of sensation. Perhaps the ontological importance of belonging is represented in immersive experiences that bring to life the seemingly unreachable memory of the mother's womb. Involving experiences might trigger a sort of unconscious physiological nostalgia. Peter Sloterdijk also proposes the experience of "being-in" as an analogy to the womb:

Although the physical and psychological life of man presupposes that he has left the womb behind, existence is simultaneously directed to find and occupy, even in a wakeful state, a being-in, and thus a womb-like relationship to his environment (Sloterdijk 2008: 72-73, my translation).

In this quote Sloterdijk describes existence and its relationship to the womb in spatial terms. He describes the disposition and relation of the body with the surroundings. In every spatial layer we are involved in our environment. In this sense, every spatial experience could be understood as a being-in. By thinking of being in the womb, a room, a hall, a city or a forest we may perceive different degrees of distance between our body and what surrounds us (considering that we do not usually perceive air as a substantial involving matter). However, the notion of womb described by Sloterdijk implies that being-in is a sharing of space where the distances are blurred by our body perception. The distance between what surrounds us can only be felt in the proximity of our senses. In this way, a spatial notion is associated with a sensory experience. This can be linked to Nancy's idea of resonance through listening. From a more phenomenological perspective Nancy also identifies being-in through listening as a womb-like experience:

The womb [*matrice*]-like constitution of resonance, and the resonant constitution of the womb: What is the belly of a pregnant woman, if not the space or antrum where a new instrument comes to resound, a new *organon*, which comes to fold in on itself, then to move, receiving from outside only sounds, which, when the day comes, it will begin to echo through its cry? But, more generally, more womblike, it is always in the belly that we - man or woman - end up listening, or start listening. The ear opens onto the sonorous cave that we then become (Nancy 2007: 37).

Nancy describes the ontological implications of listening and resonance as a condition *sine qua non*. We listen, therefore, we exist in resonance. The womb serves to describe the ontological nature of listening. However, psychologically speaking, we do not necessarily feel ourselves as living in resonance, as being part of a singular-plural reality.

The individual perception of oneself and the contrasting contexts of reality are obstacles to establish a womb-like relation with the environment. Leaving the womb implies an individualization that grows towards adulthood. This develops one's sense of being alone in contrast to what is different from oneself. On the other hand, during the immersive experience, the immersive sensation of being-in implies a sense of belonging. In immersion, the individual perception of the self transforms into a sense of being-with, into an extension or a sublation of the self. The pluralized belonging of an immersive experience seems to aid towards giving sense to our existence as every time we emerge from these experiences we can perceive ourselves, metaphorically speaking, as reborn. Consequently, the following increasing curve towards individualization pulls us again towards the search for another immersive experience. From this perspective, immersion can be perceived as a necessity to give sense to life, and to recover a sense of being-with, which is associated to the involving and aural nature of the womb. Peter Sloterdijk reflects on the aural nature of the womb, and on the ontological implications for the building of a self:

First: prior to individuation we listen, that is, fetal hearing anticipates the world as a totality of noise and sound that is in a constant state of becoming; ecstatically, it listens to the sounding world from the darkness, usually oriented towards the world, in an unwavering inclination towards the future. Second: after the formation of the "I" we listen back: the ear wants to undo the world as a totality of noise, it yearns to return to the archaic euphony of the pre-mundane interior, it activates the memory of a euphoric *enstasis* which accompanies us as an afterglow of paradise (Sloterdijk 2008: 291, my translation).

The voluntary search for immersive experiences reflects a physiological nostalgia, an unconscious search for the sense of life that can be symbolically represented as a search for the womb experience. For Sloterdijk the experience of hearing in the womb is prior to the experience of the world where we form our individual sense of self. From this perspective, we can perceive listening outside the womb as a prolongation of a non-individual origin. The quote above also refers to an immersive listening in the womb that is expectant of the future, and oriented towards the world. This notion connects to my idea that immersion has to be approached as an experience that observes the world and integrates it in a sensory experience. Listening is always a state of resonance with the world. However, the search for immersion within the continuous and invasive sonic context can lead to dissociation and alienation.

The search for immersive experiences could also be perceived as an aesthetic extension of the immersive conscious modes which occur in our everyday life. In the back cover of Ruth Herbert's *Everyday Music Listening* is written: "Absorption and dissociation, as manifestations of trancing [immersive conscious modes], are self-regulatory processes, often operating at the level of unconscious awareness, that support individuals' perceptions of psychological health" (Herbert 2009, back cover). Herbert proposes that shifts towards conscious modes are biological traits that serve as resting and protective mechanisms. To support her proposal, Herbert describes the research of the psychologist Andrzej Kokoszka who "argues that these rest episodes exhibit natural and cultural 'protective mechanisms' that counteract the detrimental effects of information deprivation or overload" (Herbert

2009: 203). The forms of immersion that Herbert investigates are referring to conscious modes that are not only related to music listening. The resting episodes can occur in diverse situations with or without music. Herbert tries to describe the connection between the biological origin of rest episodes with human cultural (not only referring to the arts) activities, as she further proposes:

It is therefore possible that hobbies, for example (including music listening), may function at one level as external justifications of periods of mental and physical recuperation, behavioural 'masks' that serve to validate a need for rest and rejuvenation, used in a culture where merely to sit and stare (certainly in public) might be considered at best a waste of time with no measurable end-product, and at worst offensive (Herbert 2009: 203-204).

The quote above suggests a physiological and psychological origin of hobbies and cultural practices. The notion that the existence and establishment of a musical cultural context is a result of biological necessities suggests that music in its cultural context can easily lack a "special" sense, and participates as a conventional necessity within the normality of daily routines. Herbert's implied intention to understand the origin of art might cause the reader to perceive an air of commonness in relation to the special mediating effect of music. Considering the fact that music listening (often) occurs within an everyday context, it is necessary to give a different and special attention to that which might *artistically* transform the perception of everydayness. Herbert's case studies give evidence of the diversity of aesthetical impressions that people experience through music in daily situations. From a composer's perspective, Herbert's research therefore serves, as an invitation to critically observe and evaluate everyday and artistic situations that people might perceive as special.

Sloterdijk describes a similar notion to that of Herbert, but from an anthropological perspective. He describes human existence as consisting of "on and off" cycles:

Humans are beings who cannot abstain from dropping the curtain of the theater of the world for a few hours every day - even when during the day they define themselves as rational beings, and reason pretends to be able to maintain a long-lasting wakeful relationship with an ever-present world.

A new kind of philosophical anthropology arises from the assertion that men are beings who exist in rhythms of the rise and fall of the world - existent, non-existent, present, absent. From the idea of anthropology as onto-rhythmical arises a dual program: on the positive side a metaphysic of triviality, and on the negative an ontology of discrete or gray nothingness. Within this rhythmological aspect, there emerges a secret affinity between diverse parts of human life which are never normally considered together: sleep and stupidity, the oldest spaces of withdrawal from the world, touch upon the cultures of drugs, of meditation, of speculation, and of music, the gracious art which, as is usually said, transports us from the pale hours to a better world. They follow one another like the components of an immune system for a defense against the infectious and excessively demanding world (Sloterdijk 2008: 289-290, my translation).

The “immunological system” described by Sloterdijk is analog to the “protective mechanisms” mentioned by Herbert. The “on and off” natural cycles, as protective, resting and restoring necessities, are mirrored in our cultural practices. Therefore, music can be perceived as a habit within the “on and off” loop during wakefulness. Music participates in an overloaded social context where “disconnection” is a necessity. In this context, music is commonly used as a mechanism of dissociation. As Sloterdijk says, it is common to describe music as taking us to a better world. This ties music with a movement to another world. In this context, music works functionally and participates in modern life as a necessary rest mechanism. From this perspective, the better world that music offers is integrated as a temporary dissociation within the alienating and conditioning factors of the socio-cultural context. Thus, immersion as a result of music listening does not affect our perception and critical awareness of reality. For this reason, to create an open and plural form of immersion, as mentioned earlier in relation to Herbert’s notions, it is necessary to question and observe critically the automatisms and habits of musical practice. What artistic characteristics can produce is a long-lasting aesthetic effect which affects one’s sense of being and which does not only remain in the commonness of the everyday loop of biological and routine immersions.

Reflecting on the concert setup and experiences of *La línea* brings to surface diverse problems and new perspectives in relation to concert habits. The circular setup of *La línea* seems to create sufficient conditions for a womb-like experience. The invitation towards a different setup, and the voluntary participation in the concert context prepares the listener to achieve an immersive state. The voluntary participation in a different concert setup creates a ritual ground. Just by entering the circle, the listeners experience a “giving oneself in” to an offered composed physical context. The listeners know that they are entering into a composed context. In this act, the listeners commit and simultaneously experience an open attitude towards the offered situation. A ritual requires a commitment. In a ritual, the participants cannot do whatever whenever they want. In this way, *La línea* resembles a meditational ritual. Openly entering into a ritual ground with an experiential expectation is analog to the voluntary aspect of meditation. Entering into a framed circular space is essential for achieving an open perceptual attitude.

The ritual sense is increased due to the existence of recognizable spatial borders. The circular form of the piece can be transported as an instrument from place to place. And, just as any other instrument, it will resonate and behave differently in every given space. However, in this specific case, the audience is part of the instrument. The listeners can perceive themselves as belonging to, and completely involved by, a womb-like resonating entity, and its resonance echoes in the architecture that surrounds it. Belonging to a resonating entity does not mean that the circle is an individual frame separated from reality. Belonging in a resonating entity elucidates the existence of the self within the multiplicity of the world. Jean-Luc Nancy proposes that the notion of unity, which can be associated to the perceived inclusiveness of the circular space in *La línea*, cannot be understood as an isolated “one” but as a unity of diversities which are worlds within the world.

The unity of a world is not one: it is made of a diversity, and even disparity and opposition. It is in fact, which is to say that it does not add or subtract anything. The unity of a world is nothing other than its diversity, and this, in turn, is a diversity of

worlds. A world is a multiplicity of worlds; the world is a multiplicity of worlds, and its unity is the mutual sharing and exposition of all its worlds—within this world (Nancy 2000: 185).

From the perspective of this quote, *La línea* exposes itself as a world, and in doing so it also exposes its diversity within, and the diversity that surrounds it. For Nancy, the ontological connotation of his argument is a condition *sine qua non*. However, in the context of Nancy's quote, the argument arises from a philosophical reflection. What interests me is not just acknowledging this inherent ontological condition, but rather exploring how a musical or artistic event can reveal or express this condition through its aesthetic and perceptual characteristics. In this way, *La línea* can describe diverse layers of exposition. The individual characteristics of listening in a given position in space are projected to the whole content of the circle as if it was one big listener in relation to space (many ears create one circular listening space). This creates a multilayered condition of being. The multiple positions (listeners) in the area inside the circle create a diversity within a homogeneity. Then, the circle resonates as a singular entity with a diverse surrounding architecture. Moreover, this setup may allow us to imagine the interaction of spatial layers beyond the architectural and environmental limits. This musical context reveals a sense of being, where "the outside is inside; it is the spacing of the dis-position of the world; it is our disposition and our co-appearance" (Nancy 2000: 13).

2.2.3 Descriptions of *La línea* in diverse spaces

The disposition of the circle in relation to the surrounding architecture conditions the listeners' perceptual and psychological relations with the physical space. Nevertheless, what creates this perceptual diversity is the contrast between the closed homogeneous environment inside the circle with the random forms of the surrounding architecture. This reveals that I was not concerned in using the architectural qualities of a space as reference to develop the composition. The specific characteristics of the possible surrounding architectures (public supplies)³¹ were not taken in consideration to develop the spatial ideas. This statement seems to contradict my goal of transforming spatial perception with the surrounding context. However, it does not, because the movements of the conductor and the spatial design point and project sound towards the space outside the circle. I composed the circle as a point of observation towards its interiority as much as its exteriority. The closed and homogenous environment of the circle is what allows the transformation of spatial notions with any surrounding context. The spatialized sounds within the circle were composed aiming at persuading the listener to simultaneously perceive the space within and outside of the circumference, disregarding the characteristics

³¹ The fourth part of Brandon LaBelle's book *Background Noise: Perspectives of Sound Art* is titled *Public Supply: Buildings, Constructions and Locational Listening*. This chapter explores the relation between architecture and the experience of sound in diverse sound art installations. The term "public supply" makes reference to the physical spaces where sound installations or performances can be situated. These spaces range from traditional spaces as concert halls, theatres and museums to any sort of closed space or outdoor spaces as streets and parks. In this sense "public supply" refers to any form of architectural environment.

of the surrounding architecture. This makes *La línea* a piece that should be able to relate to any given space.

As in *What about Woof?*, in *La línea*, the hall and the surrounding physical structures affect the sort of transitional experience that the audience goes through. The main difference between the two pieces is that during the compositional process of *La línea*, I acknowledged and accepted that the diverse physical spaces, in which the piece is performed, are going to condition the perception of the piece, while in *What about Woof?* the diverse perceptual effects and variations between setups happen due to spatial limitations. In *What about Woof?* it is necessary to “tame” the hall (as Xenakis would try with his compositions). The variations between performances occur due to a struggle with the physical spaces. On the other hand, the closed setup of *La línea* is created expecting the possibility of any type of surrounding space. *La línea* has been performed in many different settings, and in each context the relation to the surrounding space is conditioned by the position of the circle. As it occurs in every musical performance, the different settings also present diverse forms of interaction between the composed and environmental sounds. However, the main perceptual differences between the performances are caused by the different spatial relations between the circular area and the surrounding physical structures. In the following paragraphs I will describe the different settings in which the piece was performed to contextualize this argument.

The audience going to the stage. On two occasions, the circle was built on stage. In these cases, the traditional area for the audience to sit was visible and empty. The audience occupies the conventional space for the performers. This immediately transforms the context for the listener; the duality and the usual comfortable distance that a traditional setting gives is erased. The audience is aware of the role change of the hall. The hall works as a transitional space because the audience does not sit in their usual location; they have to walk through the hall to another place within that hall. However, the use of the stage in this way is not really unusual; composers have done it many times without thinking of doing anything particularly special, apart from taking the opportunity to create a more *neutral* space than the concert hall itself, in other words a space which could be “coloured” more fully by the music and events taking place there, rather than already being “coloured” by expectations regarding its accustomed use. The main difference of *La línea* with this attitude is that, despite being a relatively common format, the circular setup aims at producing spatial sensations that relate to what is outside of the frame of this piece. Additionally, during the composition process, the circular setup is taken as something special and essential in the functioning of the piece. If significant importance is given to the physical format during the creative process, the music may transform the way we perceive the physical space despite the possible conventional settings. To perform *La línea* with the audience on stage while they are able to see the audience area empty is different than listening to a classical string quartet in a similar setting, basically, because the musical structure of *La línea* is designed in relation to its exteriority. This should sonically emphasise the different spatial sensations and relations that the setting of the piece on stage produces. From this perspective, the empty space has an active role in the perception of the piece.

Performers going to the audience area. On one occasion the piece was performed in the audience area. In this case, the stage area was visible and empty. This does not differ much from the opposite version mentioned above. However, the listeners are more familiar sitting in the area where they would usually sit; there is indeed a clear change of setting in reference to where the sound sources come from. But in this case, the performers and the conductor are the ones adapting to the audience space, and not vice-versa. As a result, in this situation there is still a slight sense of separation as in a traditional concert setting. The audience is in the “official” audience area, and this allows the listener to begin the performance with a more traditional attitude. This attitude might affect the sense of awareness and inclusion of the surrounding physical space that the musical structure intends to produce. In this setting, the listeners are visited by the musicians in their conventional place of comfort, and the new character of this visit might draw the attention of the listener towards what is new in their territory.

Neutral space. On another occasion, it was performed in a big conference hall. As someone enters this hall, the first impression is as if it was a big empty warehouse. The hall is a big rectangular prism with a very high ceiling, about ten meters high. In this case, the symmetry and emptiness of the building creates a drier environment for the piece. The boundaries of the circle are less evident for the audience. This version can be compared to Xenakis’ *Polytopes* in which the buildings and the media are built together as an interactive whole. The borders of the circle blend with the building walls as a complete installation. Consequently, the effect of perceiving the hall, as a transformational space is weaker. The hall does not work clearly as a transitional space. In this case, the audience comes out of the piece when they come out of the hall. The performance happens in an area “of its own”, which equates the hall to the circle. This self-inclusive characteristic made the performance more common in the sense that it isolates the performance as a virtual entity, separated from the immediate surrounding reality. In this case, I consider the effect of the physical environment as not aiding in achieving my intended experiential goal (to perceive the interaction between the space within the circular setup and the space outside of it). The world created within this physical boundary limits the possibility of producing a multilayered sense of reality, erasing some of the plural readings that the piece can offer. This problem reveals the necessity of a spatial disposition in which *La línea* co-appears with other spaces to create the intended effect.

Outdoors. *La línea* was performed once outdoors. The space was inside an old convent (currently a university), in an open courtyard. As a result, the performance could still be considered as happening inside of a building, or surrounded by united constructions. This is the only performance which included a significant participation by environmental sounds. This made the piece work in a very different way. The soft sounds of the composition blended with the wind, birds, distant cars, people walking, voices, and all sorts of small sounds. This created not only a spatial transformation in relation to the inner sound characteristics of the circle, but a blending of sonorous spaces.³² The audience enters into a performance space by choice. The sound is constant, and works like a thin surrounding curtain that transforms the sounds outside. The sounds outside are perceived as being

³² This blending is represented in the immersive model of entering into water that I will describe in Chapter 3.

close, and they can draw the attention of the listeners as if they were taking a breath during diving. The coexistence between the sound of the piece and the environmental sounds enhances the listeners' attention to both.³³ This might not be necessarily pleasing for the audience. Some might want everything around them to be silent, and others might give in to the blending of internal and external sounds. In any case, the presence of both internal and external sounds cannot be erased. The framed sounds of the circular instrument musically resonate with the sounds of the surrounding environment which is redefined as a dialoguing musical space.

2.2.4 Habitus and the contexts of performance

Perception of multiple physical and virtual spaces is not just a discrete experience detached from socio-cultural influences. Physical and virtual spaces can be attributed with multiple meanings. Personal experiences and specific socio-cultural contexts affect the way in which people perceive physical spaces (theaters, churches, hospitals, stadiums, city streets, schools, etc.). Simultaneously, social conventions are at work, exceeding a mere individual perception. Consequently, in order to reflect on immersion from a spatial and multilayered perspective, it is necessary to acknowledge the social context and how conventions influence one's experiences.

In the performances described in the sub-chapter above, the immersive and open qualities arise as a confrontation to an embodied "habitus". "Habitus" is a term that relates to our introjected social behaviors and culturally acquired values. I consider it necessary to delve into this term because it describes a sociological phenomenon and context that may obstruct the perception and understanding of a new approach towards immersion.

The sociologists Loïc Wacquant and Dipane Hlalele describe habitus as follows:

The way society becomes deposited in persons in the form of lasting dispositions, or trained capacities and structured propensities to think, feel and act in determinant ways, which then guide them (Wacquant 2005: 316).

Habitus is created through a social, rather than an individual process leading to patterns that are enduring and transferable from one context to another, but which also shift in relation to specific contexts over time. Habitus is not fixed or permanent and can be changed in unexpected situations or over a long period of time (Navarro, 2006). Bourdieu (1984) views habitus as neither a result of free will, nor determined by structures, but created by a kind of interplay between the two over time; dispositions that are both shaped by past events and structures, and that shape current practices and structures and also, most importantly, that condition our very perceptions. Habitus is conceived as the mental structures through which an individual apprehends the social world ... essentially the product of the internalization of the structures of that world (Hlalele 2012: 269).

³³ These ideas are closely related to those of John Cage. Later on I will elaborate on them in relation to Cage's thoughts on silence and music.

The historical processes that have led to the diverse musical contexts of today has molded the way we relate to them. Social structuring and conventions condition, to some degree, the way in which people experience and understand immersion and openness. As mentioned in the quote above, habitus does not happen as a consequence of one's free will, but as an interaction between pre-existing social structures and individual choices. Subjects can only begin to interact in an already present social context. As a consequence, it is necessary to acknowledge that an introjected habitus in the context of musical performances is a result of pre-existing, though constantly developing, social processes. From this perspective, open and immersive experiences, which intend to integrate different layers of reality, appear to occur as a confrontation with the more conventional aspects of social reality. In my opinion, habits during musical performances are strongly connected to spatial conventions that occur within what the French Marxist theorist, writer and filmmaker Guy Debord calls a "society of the spectacle".

Debord describes a society that, through mass media, has become a mere representation of a more authentic social life. Although Debord's approach is merely political, some of his arguments may be used to describe aspects of the cultural and social context in which music is performed, and to analyze how social conditioning may affect immersive experiences. For Debord "the spectacle is not a collection of images, but a social relation among people, mediated by images" (Debord 1983: n.p.). He argues that in a "society of the spectacle", perception and authentic social relations are impoverished and that this society is deprived of its critical potential. In this way, a society is manipulated towards a state of passiveness which alienates its population from real experiences. I notice a resemblance between Debord's description of the spectacle and immersion regarded as a dissociative experience into a virtual reality and intended to be separated from the real environment.

The spectacle presents itself simultaneously as all of society, and as instrument of unification. As a part of society it is specifically the sector which concentrates all gazing and all consciousness. Due to the very fact that this sector is separate, it is the common ground of the deceived gaze and of false consciousness, and the unification it achieves is nothing but an official language of generalized separation (Debord 1983: n.p.).

This quote describes a false sense of unification via simulation, which can be understood as a form of alienation, because the way of unifying and interacting through media is perceived as false. Following Debord, the German media theorist Siegfried Zielinski describes notions of false unification in relation to the socio-economic transformations that occurred during the 20th century:

The 20th century was a period of disunity, of terrible explosions, murderous political systems, and violent splits, punctuated by phases of economic and cultural prosperity. At the end of the century, we were inundated with concepts of artificial bonding, unifying, and reuniting, as though by way of a conciliatory gesture. Universal machines, globalization, and technological network of geographical regions and identities that are in reality divided were advanced to counter the facto divisions that have intruded between individuals and between people and machines because of

the unequal distribution of wealth, education, culture, and knowledge. In no way did they serve to diminish real divisions; they merely created the impression that the real gulfs were easy to bridge using market strategies and technology (Zielinski 2006: 40)

According to Zielinski, the alienation created by the spectacle is a result of market strategies and the primacy of technological development. Computers and internet mediate one's relation with the world. Through these technologies one experiences only a simulation of real interaction.

However, for Debord, this simulation cannot be separated from reality:

The spectacle, grasped in its totality, is both the result and the project of the existing mode of production. It is not a supplement to the real world, an additional decoration. It is the heart of the unrealism of real society. In all its specific forms, as information or propaganda, as advertisement or direct entertainment consumption, is the present model of socially dominant life (Debord 1983: n.p.).

Debord suggests that the social environment is an integral part of one's reality. This notion invites me to reflect about the conditioning nature of communicational and social habits on one's perceptual experiences. How do these habits affect the perception of art? It is difficult to identify how today's artistic practices are critically significant within a "society of the spectacle". How "special" are they? Are they different from mass media? Following Debord, new music practices are embraced within a socio-cultural context from which they cannot be separated. Seemingly revolutionary art forms participate in their own loop of necessary marketing. It is important to acknowledge that every artistic practice will be part of a cultural frame with its own resulting conventions (*habitus*). This is the main reason why I think that immersion should not be considered as a form of dissociation or as a separate virtual reality.

The co-appearance of physical spaces (the circle and external architecture) and virtual spaces (musical dimensions) in *La línea* works simultaneously as the exposition of a habitual context (simulation), and as a perceptual experience which integrates diverse layers of reality. From this perspective, I propose that the interaction of virtual and physical spaces in a context of *habitus* (e.g. a traditional concert setting) can be composed to expose conventions *and* to open new perceptual notions. Immersion and openness are rethought as an ability to simultaneously feel *and* critically observe our habitual attitudes. From this perspective, a music composition can be developed aiming at an experience of reality rather than creating a simulated or virtual experience. In order to (re)compose immersion, it is important to consider that the social environment where music is practiced already carries its own virtual characteristics (socio-cultural conventions). Musical immersion can be approached as an event to interconnect sensory experience with a physical reality in order to transcend one's common automatisms. This idea invites me not only to imagine each musical work as a new virtuality, but to try to renew the relations between virtual spaces, physical spaces, and the always conditioning social conventions.

2.3 Compositional processes: immersive reflections

2.3.1 Pitch, timbre and space: blurring the source

As already mentioned in the first chapter (page 37), Frances Dyson proposes that immersion is also obtained by diminishing the critical attention to the apparatuses that produce the sensorial stimuli. The awareness of the source is replaced by a direct sensory experience. When the audience associates a physical sound object to an episodic memory (such as during an instrumental concert) causing an aesthetic value judgment, it becomes more difficult to lose objective awareness. For creating an immersive experience, it seems necessary to blur the referential characteristics of any sound source. This need demands a constant re-approach towards the way that recognizable sound sources are used and presented. Repetition easily creates stylized and recognizable aesthetics.

Any sound practice ends in a characteristic aesthetic. It is just a matter of time. The audience will build a recognizable aesthetic. The utopia of the non-referential has limits. However, we have to keep on trying that these references are less influential. It is very interesting when those references are not there.³⁴

In the case of *La línea*, the blurring of timbral and referential qualities occurred not as a result of an intentional approach to this problem, but as a result of finding practical solutions for musical ideas. In the process of trying to find an effective continuous sound texture through the guitars, the timbral quality of the guitars was transformed. I used a different microtonal scordatura for each guitar and then asked the guitarists to play tremolos. This produced the effect of long sustained sounds and beatings (effects which sound unnatural on a classical guitar).³⁵ In this way, the referential and traditional characteristics that the guitar suggests were blurred. I considered that an effective continuous movement of sound through space would make it easier to produce spatial illusions based on pitch disposition in physical space. If each sounding position was clearly defined and recognizable, then the relation between the circle and the surrounding space would be more static. I worked and experimented on the problem of continuity in workshops with six guitar players (although the piece was eventually composed for twelve guitars). Below I will describe some of the exercises we tried during these workshops, and by doing this I will also describe how the solutions led to immersive sounds.

1st exercise: the main goal was to pass a constant sound (unison) from guitar to guitar. The passing of the note from one instrument to another should not have pauses or silences in between. Classical guitars cannot sustain sounds for long. The only way to make the illusion of a long sound without the aid of technology or additional devices is to play repeated notes with tremolo technique. Initially, I intended to create a continuous texture using the guitars in a conventional way. For this reason, the repeated note tremolo was the most logical technique to begin with. This exercise was written with traditional score notation with sextuplet tremolos and dynamic swells that created cross-fades.

³⁴ Personal interview with Francisco Lopez on October 16, 2012.

³⁵ "Beating" refers to the audible beats that result from the interference between two close frequencies.

2nd exercise: The spatial motion of this exercise is the same as in the previous one, but now also includes a chromatic rotation, moving in semitones as the sounds move from guitar to guitar. The pitch-change between guitars fragmented the flow of sound, and even when the cross-fade was well produced, the chromatic pitch change produced a scaling effect. The glissando-like gesture that I expected within the tremolo texture did not work with chromatic scales. On the contrary of what I intended, moving from guitar to guitar in semitones too clearly defined the position of each sound source.

3rd exercise: multiple simultaneous circular rotations, performed with tremolos as in the previous exercises. In this exercise, my interest was to achieve a continuous cross-fade of three different rotations. In this exercise, different speeds and directions of rotation happen simultaneously (as seen in figure 4). The resulting dynamic contour of the overlapped lines should create three perceivable rotation speeds. This exercise resembles the rotational design of Xenakis' *Persephassa*. In *Persephassa*, Xenakis uses tremolos and cross-fades between players to create a continuous movement of sound through space. This continuity and spatial cross-fading highlights the physical movement of sound through space. The continuity aids to produce an immersive effect, as the sound-flow is not fragmented into identifiable gestures or figures. In this sense, I am considering that continuous sound, as used in *Persephassa* or in *La línea*, aid in achieving an immersive effect.

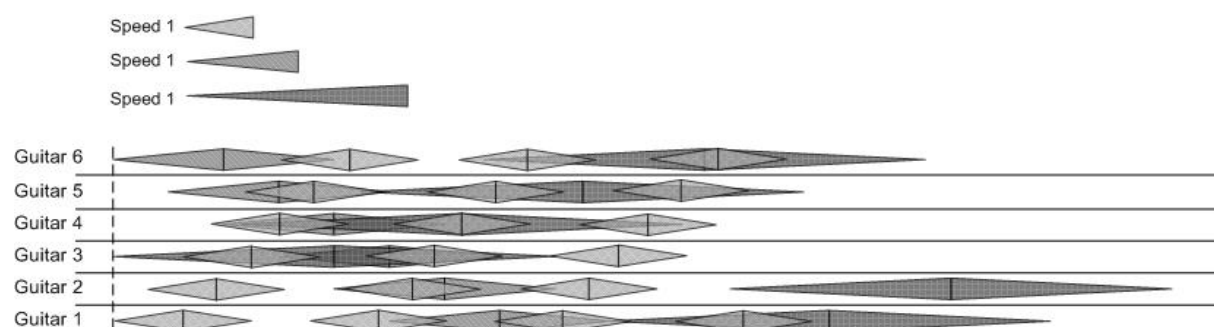


Figure 4 Cross fade exercises with three simultaneous rotations.

The result of this exercise did not work as expected. The tremolo and the demanding detailed dynamic control made the overall result nervous and erratic. As seen in the graphic above, it is difficult to recognize and distinguish the three speeds of rotation during the denser overlapping areas. In this stage of experimentation, I did not recognize that the number of guitars used was limiting a broader perception of movement. Six guitars made the different rotations overlap too often, and made each guitar sound as an isolated point.

Furthermore, the chromatic pitch change created a fragmentation of space. In a more traditional context, chromaticism is considered and perceived as a form of glissando. However, in this case, the physical separation makes the half-tone distance sound as a big intervallic jump.

The first and most logical solution to avoid this fragmentation was to alter the tuning of every second guitar by a quarter-tone deviation. Then, to aid the guitar players in a practical way, I retuned the first three strings so that they can easily play a unison with the three of them (with an easy fingering for the left hand). This retuning also affected the guitar timbre. The first two strings of each guitar were lowered to easily produce a unison with the third string in its common tension. The lowered tension of the first two strings, plus the difficulty of having a precise tuning with this low level of tension, makes the resulting sound from the tremolo sound buzzy, losing the referential quality of the guitar. In this context, each guitar individually sounds like a plucked string instrument, but not much like a classical guitar. The continuity created by the change of timbre, plus the microtonal distance, blurred the specific physical position of the sound sources. When all of the guitars are sounding simultaneously, the timbre becomes even more undefined, and the physical objectivity and referential quality of the sources become even more blurred. The guitar loses its traditional role, and the referential associations disappear during the sonic experience. In this way, the listener's attention to any specific physical position is decreased.

This phenomenon also creates a perceptual transition from the common cultural expectations that a guitar implies, towards an experience of sound without the source as protagonist. This notion can be related to the characteristics of acousmatic music in which any sound may be used as musical material and where there is no visual relation with the originating cause. In the 1950s, which is the historical period when *musique concrète* and acousmatic music began to develop, such compositions might have had an immersive effect in which the unconventional sounds transform the perception of the conventional concert context. The timbral novelty of the musical material used might have opened a multilayered immersive space due to the clash with the conventions of the time. However, as quoted earlier, "any sound practice ends in a characteristic aesthetic" (Lopez 2012). In the case of *La línea*, the use of the guitar refers to the instrumental tradition of an instrument that we often listen to in our everyday life. Probably people listen to guitars mostly through speakers as an acousmatic sound. In any case listeners are able to associate the heard with the instrument, extracting the instrumental sound from its acousmatic appearance. Despite the diverse musical styles in which guitars are used, and the diverse techniques that these imply, we can consider that, generally, we hear guitars played in a conventional manner. Accordingly, the expectations of the listeners relate to what the instrument culturally represents. In the case of *La línea*, time is needed to deform these cultural expectations that the known instrument offers. The embedded traditional attitude towards the forthcoming artistic event is key to persuading the listeners to achieve an immersive state. The traditional expectations are deceived, and the listeners are slowly persuaded into a more open and experiential mode. The presence of this sort of transitional time also reveals a clear difference with "simulated" realities, where sounds are immediately non-referential or immediately associated to a virtual object. The convention of the concert, due to its "normality", can be associated to an everyday context. A certain form of musical immersivity is expected, and the listeners expect that an aesthetic event will happen. In the case of *La línea*, the process of mediation occurs as a sublevel that transitions after the music begins and occurs within it. Sound starts as expected, however the "new" way that sounds are presented transforms the expectations gradually into a different experiential

space. Therefore, the transformation that occurs within the duration of the musical event can be compared to the perceptual transformations that occur in everyday situations where music is present. In an everyday context, such as during shopping when music suddenly begins (or continues), the mediation occurs randomly, in an unexpected way, and with no need to pay attention to. Music is part of the ordinary everyday life. Music appears as a presence that blends with the spatial environment, transforming our perception without us necessarily noticing it. Analogically, in a conventional musical event, the music begins as expected and the listeners sit in the musical space which can be compared to entering a shop. In this context, the musical beginning is also part of the conventional setting (as part of a "shopping" experience). The experience of entering a shop can be thought of as conventional as a common musical beginning. Possible transformations towards immersive conscious modes and new forms of awareness may happen after the music started, as transitions within music (as well as within shopping situations with music). The audience, when listening with a conventional attitude, might experience these transitions in an imperceptible way. In this way, the characteristics of these immersive transitions within music could be compared to the mediating and transitional characteristics of music in everyday contexts.

However, in a music performance, the conventional expectation is a form of predisposed state of openness that is not natural to everyday contexts. For this reason, in *La línea* the referential associations that arise from the guitar's presence on stage serve to deceive the expected. The presence of loudspeakers immediately offers the possibility of a virtual space, whether the sounds are synthesized or concrete. This possibility is not offered by a classical guitar played without amplification. The sounds that appear from a loudspeaker offer an immediate virtual space. Furthermore, from a loudspeaker we can expect almost every sort of sound. There is no point in expecting a particular sound from a loudspeaker. From a classical guitar, visually present and acoustically performed, the members of an audience can expect sounds that are limited to its physical possibilities (including extended techniques). As a consequence, in *La línea*, to achieve a non-referential listening, a longer transition is necessary. This slow process helps to perceive immersion as an integration of diverse perceptual layers and not only as an immediate virtual space created by sound.

In *La línea* there is a confrontation with the traditional limitations of the instrument. The new timbre in *La línea* does not occur from a radically different usage. The guitars are not played with objects, or as a drum, or as bowed instruments. Sounds do not appear immediately as non-referential. The compositional exercises previously described reveal how the new timbre results from trying to create a constant sound with an instrument that does not resonate for long. The traditional nature of the instrument was challenged by the need for a specific sound gesture. The tremolo and the new scordaturas appear as a result of this necessity. None of these uses are totally new for the guitar. However, the resulting sound texture when all twelve guitars play simultaneously offers a very uncommon timbre and continuity for guitars. As the listeners experience the piece, the physical objectivity of the guitars slowly blends with a sonic outcome that gradually becomes a sonic virtuality. The slowness of the transformational process allows all the pre-existing layers (physical spaces, expectations, social context) to keep an active role throughout the transformations within the piece, resulting in the experience of a multilayered reality.

After retuning the instrument and finding a timbre that fits the needs of the composition, the continuous movement through space could be solved in an easier way. The rhythmic continuity and flow was solved by an improvised exercise during one of the workshops. I stood in the center of the six guitar players which were placed forming a circle, and pointed with one arm towards one guitarist and started rotating. All of the guitar players had to play all the time the tremolo at an almost imperceptible volume. Additionally, they had to play louder when my arm was pointing towards them. As a result, they could focus more on listening to the passing sound from guitar to guitar. I instructed the players to attempt to create a larger cross-fade, so as to not leave a silence or softer gap in between them. To solve this, I told them to look to the pointing position as the center of an area, the center being its loudest point and the imaginary external borders as the softest. (Figure 5).

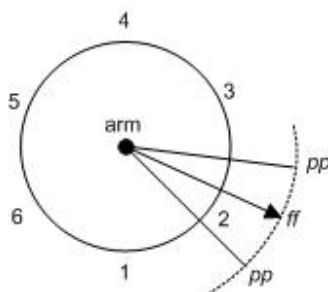


Figure 5 The pointing arm guides dynamic fluctuations

Consequently, the flow effect I expected was immediately achieved. The players were fully focused on the moving arm and on listening. We immediately started trying different forms of reading my arm's movements. Some of the variations that I finally used in the piece were:

- playing with two arms moving simultaneously in different directions
- speeding up and slowing down rotations,
- using the height of the arm as a volume controller
- changing the speed of the tremolo as I walked closer to or away from the players.

After defining and practicing a series of instructions on how to read the movements of the conductor, the intended flow of sound between players was achieved. While conducting and improvising inside the circle I felt that every movement I made seemed to have a sound and spatial effect. As I moved my arms, I felt that I was moving a substance that reacted very naturally to my gestures. Through this experience, I discovered myself in an environment that I did not expect in the beginning of this project. The whole setup was working as one interactive instrument. At the same time, it was easier for me to visualize myself as a listener. We always listen when we play an instrument. If I play a guitar or a piano, I also listen to it. However, in this case, my distance from the sound source with its

sometimes unexpected sound quality made it easier for me to perceive myself in a dual state of performer and listener. The sounds made me aware of my physicality. I perceived myself as being moved by the sounds, and simultaneously being responsible, through my movements, for the sounds produced. This perceptual effect interested me because I imagined that my experience as a listener would also be experienced similarly by the audience. I was able to, through listening, empirically experiment with the spatial illusions that I initially intended to produce. These experiments led me to situate the audience facing the conductor.

My intention in setting the audience facing the conductor was so that the audience would perceive the connection of physical movement with sound, without focusing on the sound sources. The imaginary lines that connect the conductor with the sounds pass through the bodies of the listeners. When the arm of the conductor is pointing towards the guitar players, it also points towards the audience. As the arm points towards the listeners, they perceive the sound coming from behind as an intensification of their presence, and as an embodiment of the visual gesture. In this way, the visual effect produces a sound sensation that directly affects the listener. Every visual instruction is connected to what is heard. I imagine that at a certain point during the piece, some listeners within the audience might give in to this way of listening, and actually feel themselves as producing the sound when the conductor points in their direction (listeners that perceive themselves as resonating). In this sense, the visual aspect of the conductor enhances the sonic experience (not of listening to the material or its development but of listening to oneself in a resonating organicity).

I decided to work on the piece from this new perspective, but as a result, I was obliged to sacrifice the figurative complexity that I could achieve with traditional notation. The simultaneous speeds of rotations and detailed rhythmical ideas were abandoned, as the focus of the players could not be on their scores but had to be on the conductor's movements.³⁶ This forced me to work with very simple material of a very clear gestural nature. As the movement of sound had to be connected to the movement of a human body, the type of sound gestures were always limited by the body's limitations. These limitations influenced the way I approached the development of rotations and the relation of the piece with space. The positive aspect of these limitations is that every musical possibility had to pass through an embodying process, and as mentioned in the previous paragraph, the body movements were always connected to a sonic outcome. This process reveals how the composition and the musical outcome are a result of a physical immersion, where the perception of physical space, body and sound are always interdependent. This reveals that *La línea* is a composition that results not from immersive ideals which are objectively affecting the approach towards the compositional processes, but from a process which is immersive. The embodied sensation (immersive) inside the circle was a discovery that occurred as a result of the exercises described earlier which originally aimed to produce simple spatial movement of sound. Once I defined the circular setup and behavior of the

³⁶ This is different from the shared attention that performers give to the conductor and to the score in a conventional setting. As I will explain further on in *La línea* the conductor movements communicate musical information that is missing in the performers' parts. The resulting choreography works like a score in motion.

material, every process had to depart from an initial physical experience (conducting limitations). I had to first immerse in a physical behavior that later led to new processes. The virtual qualities of the piece arise from this immersive origin.

This immersive process led to the creation of a score with open characteristics. As mentioned earlier, the conductor's movements affect the way sounds are produced. This forces the players to always look at the conductor's movements. As the conductor has to turn and move around, he or she cannot have a score in a fixed position and follow it (the conductor has no choice but to memorize the score). This interdependency demanded me to invent a different kind of score. The first spatialized musical sounds that I composed were adjusted to the physical possibilities of the conductor. I invented a way to write these movements in a score that is a set of choreographic instructions (Figure 6) plus some written cues to trigger pitch changes.

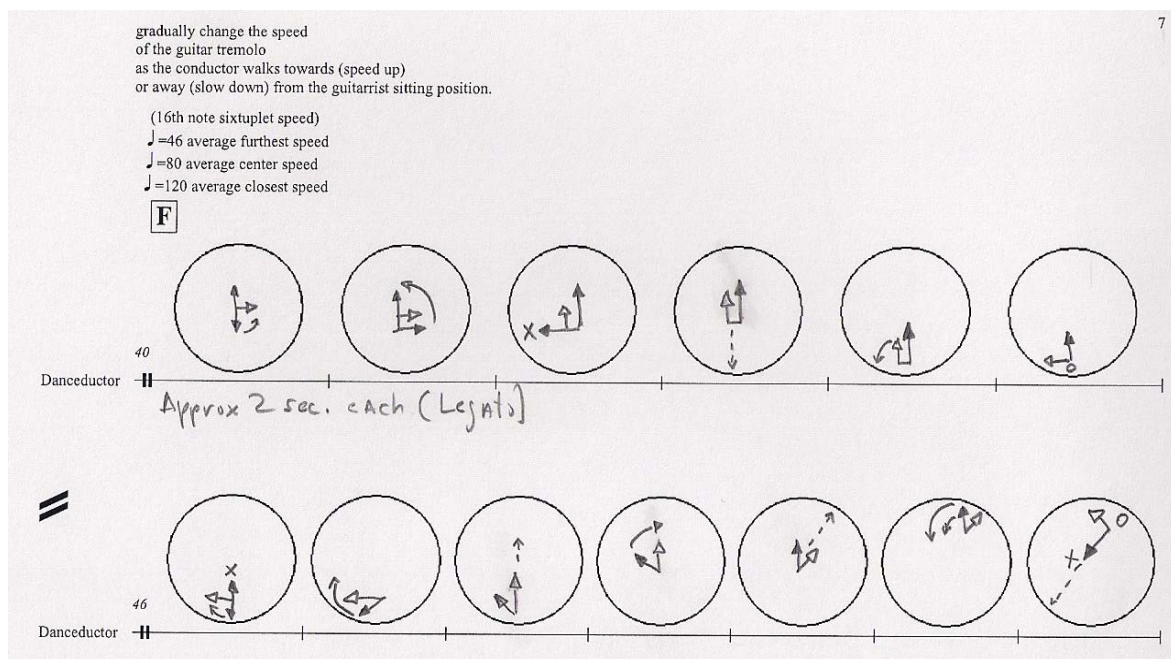


Figure 6 Choreographic instructions for conductor.

When I was writing the movements, I had a spatial map of the pitches and a structural timeline to know when and where the pitch changes would occur. However, when I finished the score, only the circles with the inner indications remained, as seen in Figure 6 above. Therefore, the conductor cannot be completely aware of the specific pitch map around him. This did not result from an intentional choice. This type of score resulted as a practical need to communicate a choreography that needs to be easily memorized. The specificity and simplicity of the circular instructions describe a clearly fixed structure that results in a performance that is structurally not mobile. The focus demanded by the choreography does not allow the conductor to make a representation of the sonic outcome. The conductor's

part works as an incomplete source. This incompleteness persuades the conductor to have an open attitude towards the score. The feeling of openness does not reside on the structural and interpretative mobility of the score, but on the fact that the conductor is an indispensable part in completing a whole that cannot come to life without his interaction with the other parts. In *La línea* each part is incomplete in itself and can only be completed through the interaction between the performers and the conductor. This phenomenon relates to scores that do not offer the possibility of making a sonic representation through reading. I consider this an open characteristic of the score, which I call "invisibility".

The sonic "invisibility" of the score induces the conductor to be expectant of the sonic result as if he was going to listen to the piece for the first time. The conductor as listener aims at perceiving something more. Merleau-Ponty reflects on this notion: "It is thus of the essence of the thing and of the world to present themselves as 'open', to send us beyond their determinate manifestations, to promise us always 'something else to see' " (Merleau-Ponty 2002: 388). In the context of this quote, openness is approached as a necessity against the limitations of the objectivity of perceiving a thing as "one". For Merleau-Ponty, the objectivity that arises from visual logic restrains the full perception of objects and of the world.³⁷ For him it is necessary to recover a sense of mystery which leads to a perceptual subjectivity. These notions connect to how *La línea* is perceived as open. The determinacy of signs and symbols in the score does not clearly connect to the sound representations. The score creates a gap between representation and experience. The fixed aspects of the score clearly present a part of the experience (choreography) but they hide, almost completely, the sonic outcome. Because of this characteristic, in the moment of the performance, the conductor can perceive himself as a listener despite knowing how this interactivity operates.

The guitar parts work in a similar way. Each guitar part has the conductor's line (with its circular designs) on top of their own. Most of the time, the players hold particular pitches for extended durations in order to be able to look at and focus on the rhythmical and dynamic indications created by the conductor's movements. The guitar staff indicates few points to change pitches. This results in an almost empty score. The conductor's movements work as a score in motion, complementing the guitar parts. Accordingly, the performers depend on the conductor to complete the overall sonic result. The performers, in the same manner as the conductor, become listeners. They depend on the group interactivity to be able to listen to the full sound result. This interdependency causes the players to focus on how their communicative behavior affects the overall interactivity.

Although the previous argument shows an open attribute in the score of *La línea*, the fixedness of the score and its non-suggestive instructions contradict other perspectives of an open work. For Umberto Eco, the participation of the performers has to add an individual characteristic to the work:

...the individual addressee is bound to supply his own existential credentials, the sense conditioning which is peculiarly his own, a defined culture, a set of tastes,

³⁷ This idea can be associated with the notion of "false objectivity" as discussed in Chapter 1.

personal inclinations, and prejudices. Thus, his comprehension of the original artifact is always modified by his particular and individual perspective (Eco 1989: 3)

When addressed to the listeners, the argument above seems to be inevitable. But if addressed to the performers of *La línea* those personal characteristics are somehow void and seemingly unimportant in their performative and compositional role. This can be interpreted as if the players were used as parts of an organic system. This system enables the players to experience all of the characteristics presented previously in Eco's argument as listeners but not as performers. Prior to the performance, the memory of the piece is of no importance, and their performative focus is replaced by their particular and unique listening expectations. The resulting sounds that the performers listen to come from a communicational task, more than from a personal interpretation of the specific sounds within the score.

The "open" characteristics of *La línea*, previously described, derive from the necessity for finding practical solutions to notate the functioning of a previously designed interactive space. The open characteristics are a result of the immersive characteristic of my initial experiences as a conductor during the creation of the piece. This also suggests that the development from an immersive goal or experience towards a score of open characteristics is sometimes a practical tendency. In the following chapters of this dissertation, I will present other cases to sustain this argument. Music that intends to produce immersive effects tends to demand for an open approach. As mentioned earlier in the case of *La línea*, I did not intend to produce an immersive experience. In *La línea*, immersion is the experiential result from the performance of spatial ideas. Musical spatialization implies the creation of an immersive space. For this reason, I perceive the solutions that led to the immersive conducting modality of *La línea* as a result of the natural interdependency between space and immersion. Spatialization and immersion interconnect to develop into a score of open characteristics.

2.3.2 Rotational Perspectives

When the conductor is in the center of the circle and acts as a movement controller, the kind of spatial relations between him, the audience, the sound sources, and the space outside the circle can produce many diverse relationships. The notions and processes that will be described below arise from my experience conducting the guitar players during the initial workshops. Some of these notions will seem to contradict with the described conducting limitations mentioned earlier. So it is important to clarify that these ideas are extensions and "imaginings" that occurred within the listening/conducting experience. Later on, during the compositional process, I adapted these ideas to the physical limitations of the conductor. As a consequence, the composing became an overlapping and cyclical process, starting from a physical experience, moving towards a virtuality, and returning to a physicality, all mingling back and forth. This resulting compositional method describes an immersive process in which physicality (spatial and human) and virtuality (musical timespace) intermingle. Through the following presentation of the resulting compositional processes I intend to demonstrate the existing interactions between the virtual and physical spaces that are present in *La línea*. These processes also reveal the compositional origin from where I developed the arguments presented on the subchapter 2.2.

The circular setup of the piece aims at producing rotational sound gestures. I approached these rotations from three perspectives (Figure 7). In the following paragraphs I will explain each perspective.

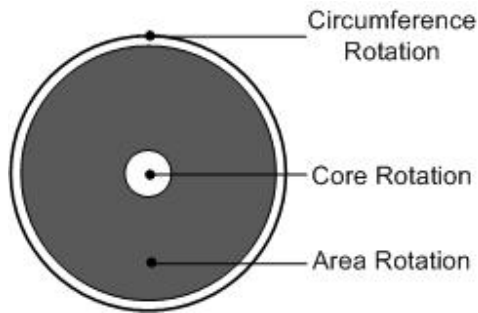


Figure 7 The three rotational perspectives.

Through the piece, I shift from one perspective to another. These perspectives appear in sequence, overlap, blend, and separate in different ways. The goal was to create a perceptual illusion where the virtual and real spaces blend to cause a feeling of spatial disorientation. The virtual implications of this occur through the changes inside of the circumference. The real perceptual changes occur as a consequence of the relation between the resulting virtuality within the circle with the physical space outside of it.

To understand how the three rotational perspectives are perceived, we have to imagine ourselves sitting in the "area of rotation" looking at the core (Lx in Figure 8). When there is only a "circumference rotation" (as seen in Figure 8) we can perceive ourselves in a specific position that is being surrounded. There is no correspondence between the facing direction of the conductor and the rotating sound. Only the pitch rotates to a new position.

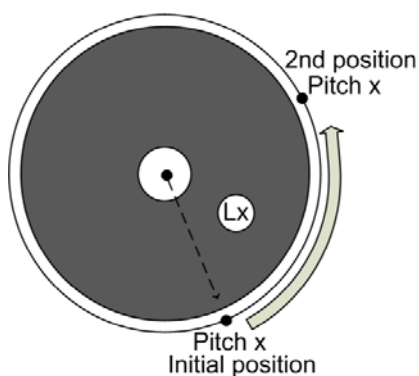


Figure 8 Circumference rotation

When there is a “core rotation” (as seen in Figure 9), only the conductor rotates.

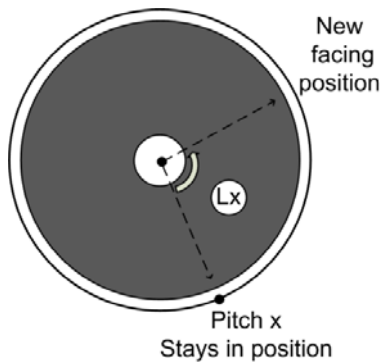


Figure 9 Core rotation (conductor rotates)

The “area rotation” (Figure 10) happens when a core rotation (visual) corresponds with the circumference rotation (pitch). During an area rotation, the listeners change their position in relation to the other two corresponding points.

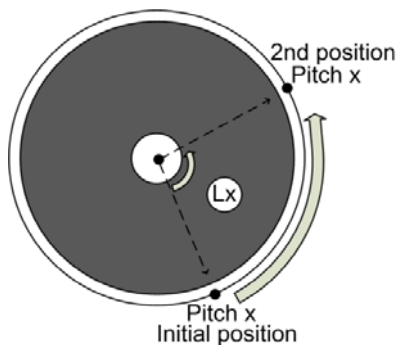


Figure 10 Area rotation

Focusing on producing a rotational effect in each perspective leads to the creation of different musical material and perceptual situations. The overlap and diverse combinations between the three forms of rotation create diverse relations and inconsistencies between physical rotation and virtual dimensions.

The rotational perspectives are connected to a more general perceptual interaction: the internal vs. the external movement (Figure 11).

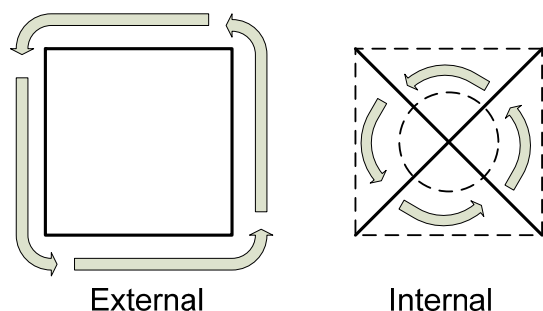


Figure 11 External and internal rotational perspectives.

For instance, a single musical idea can be approached in different ways as seen in Figure 11. I consider the angles and lines as the virtual position of sounds, and not as the physical positions of the sources. This means that the sources will have to adapt to the previously proposed sound movements. The first square on the left shows four sounding points (vertices). The square approach results from an external and surrounding perspective. If we visualize the rotation of only the 4 vertices, we only perceive the linear movement of a square circumference. However, if we visualize the rotation of the inner lines of the square, we can see the area that they will cover (as seen in Figure 12 below, in the second circle from the left). This new perspective produces a shift of focus towards the inner changes. As a result, it is possible to identify the diverse possibilities and relations between an external and an internal approach. In the third circle from the left (as seen in Figure 12), the same vertices of the first circle are presented as a cross. The rotation of the cross covers the full inner area. The cross rotation makes one perceive the sound as a current that pushes the inner areas. In *La línea*, the differences between both approaches (external and internal) are reflected in the way pitch, rhythm, dynamics, and visual elements are used. Related to this, the visual relation between the audience and the conductor conditions some of these effects. For instance, if there is a harmonic rotation and the conductor does not move, the audience perceives a surrounding external movement. However, if the same harmonic rotation happens with the conductor rotating in synchrony with it, the audience perceives an internal rotation. In the latter example, the conductor can be understood as the center of the cross.

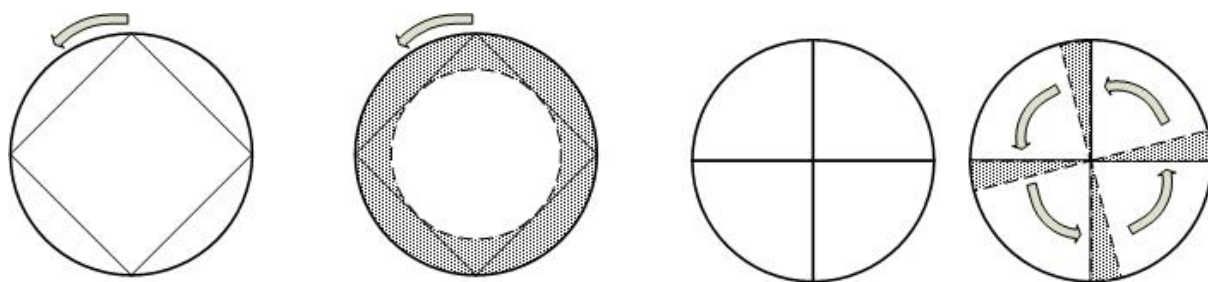


Figure 12 Square and cross internal perspectives

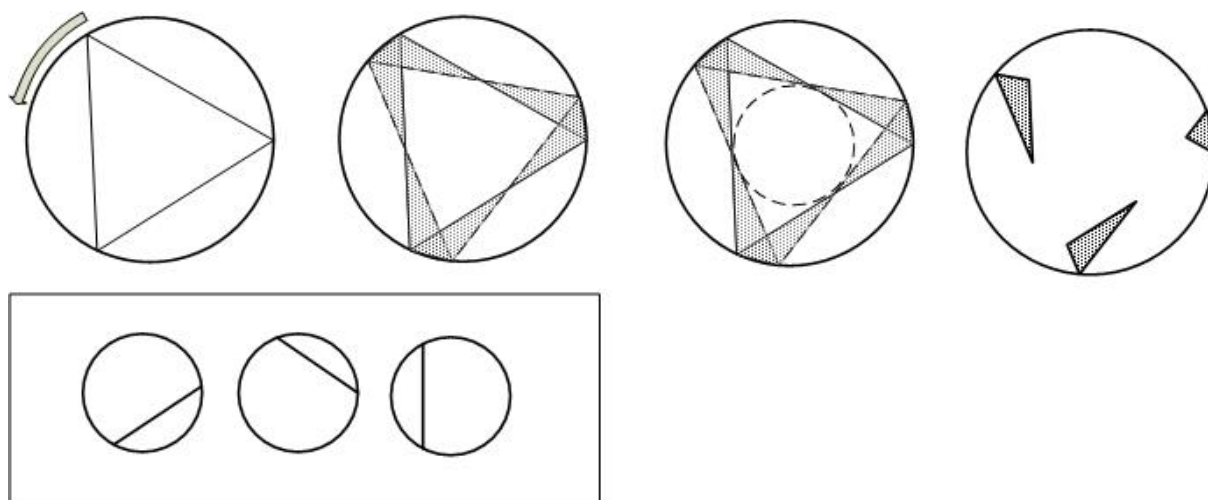


Figure 13 Triangular internal perspectives

In Figure 13, we can see the same process as in Figure 12, but with a triangular design. The framed rectangle in Figure 13 that shows the single lines inside the circle aims at isolating the inner spatial events that can be approached separately in the compositional process. The last circle on the right shows areas resulting from the rotation of the triangle. I approached these areas as mobile figures which have a characteristic timbral and harmonic color. For instance, if I move and rotate one of the resulting polygons to another position within the circle, I would project the original sounds that created the polygon, from the polygon towards the circumference, creating a different surrounding spatialization of the sounds corresponding to the polygon. In this way, a small fragment within the circle can project different spatial forms towards the outside. (Figure 14)

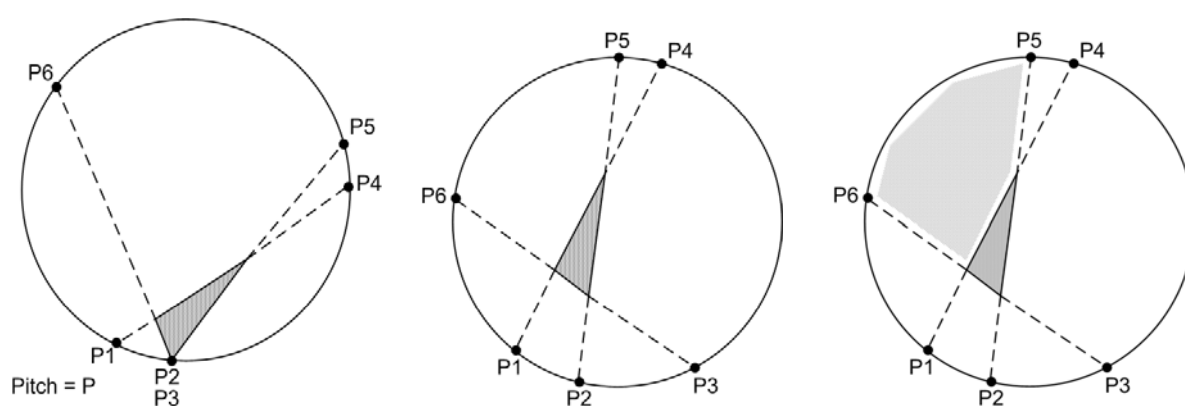


Figure 14 Pitch projection from inner polygon.

The circle on the left (seen above in Figure 14) shows how each segment of the polygon is prolonged to connect with a sounding point (pitch) on the circumference. The circle in the center shows a displacement of the polygon and how the same pitch material is projected into a different spatialization. The circle on the right shows a shadowed area that represents a new area resulting from the projecting lines. The shadowed area is defined by the sonic characteristics assigned to the guitars that are between P5 and P6. This process reflects how a common external approach (circumference rotation), when approached internally (as a cross rotation), can create new spatial projections from the inside. This reveals that the sonic material perceived by the listeners inside the circle is a result of a process that looks outwards (from inside the circle towards the outside). This does not guarantee that the listeners will recognize this approach. This process creates new spatial relations that would not occur in a common inward looking approach (focusing on what occurs inside the circle). In *La línea* the spatial outcomes that come from an outward looking process (focusing on the space outside the circle) may allow the listeners to simultaneously feel surrounded by sound and to perceive the external physical space beyond the sonic boundaries created by the circular setup. This experiential description can be perceived as a phenomenological idealization. However, I devised this description in relation to my listener's experience of *La línea*. Therefore, I consider this perceptual description as a real experiential possibility.

Following the logic of an outward approach, I also project lines from the resulting intersections of different rotations (Figure 15). The intersections project sounds towards different points of the circumference. This can produce an irregular sound effect of random positions. These positions still follow the proportional space of a simple rotation.

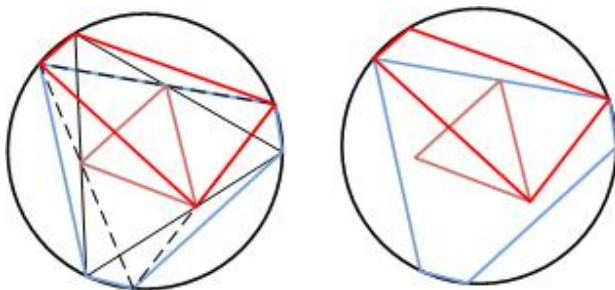


Figure 15 Projection of intersections of overlapping triangles.

Keeping the internal and external movements as a reference produces a focus on the movement of sound disregarding the position of the sound source. In this way, the musical gestures and the sorts of sounds chosen for each player come from observing a movement within a limited spatial area of the audience. For instance, a spatial sound gesture that occurs within a polygon inside the circle could demand the use of a player that seems totally disconnected from the position of the polygon. An initial imaginary movement of sound is what is used to compose the spatial design, and not the position of the source. I am differentiating spatial processes that begin their approach from the position of the source with the ones that focus on movement of sound disregarding the possible sources. The

perceptual goals between one approach and another might be similar and end in similar results, but I consider that focusing on movement prior to the placement of the source is more clearly an immersive approach. To imagine the spatial movement of an undefined sound is to imagine a perceptual transformation of the medium that we are in. As a consequence, the gesture I initially imagined will have to encounter physical reality, resulting in a musical gesture that is neither a representation of the initial imagination, nor an imposition of the possibilities of the sound source.

We perceive currents as transformations of our medium, but not as separated gestures coming from a source. When we dive in the sea, we perceive ourselves as moved by the environment. We can recognize the presence of a current, but experientially we cannot separate it from its environment. From this perspective, focusing on the source as the departure point to create an immersive experience seems to be a contradiction. The sources have to adapt to the proposed behaviors of the imagined environment. This adaptation implies that the sources are also affected by the nature of the proposed environment. In *La línea*, the sound sources react and are moved by the imaginary currents of space. Thus, the behavior of the source and the gestural environment cannot be separated.

2.3.3 Pitch as an imaginary space

Pitch is used to develop a virtual space that interacts with physical space. Specific pitches are initially connected to specific positions in the physical space, and then these positions start to change (gradually rotate or jump). The physical association with pitch starts to interact with virtual uses of pitch and harmony. Initially, I imagined intervallic distance as a virtual physical distance. It is important to understand that the virtual space in which I describe these ideas has physical conditions that are imaginary and do not correspond with real perception. These virtual compositional ideas are transformed in their real sonification. For this reason, the following description does not correspond with perception based on psychoacoustics.

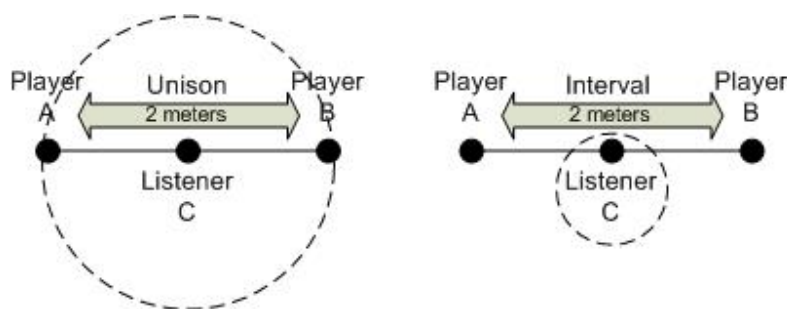


Figure 16 Pitch representation of virtual space

If a listener (C) is located between two players (A, B) sitting two meters apart he or she can easily perceive their physical distance from the sound sources. I propose that if the two players play a unison the listener is contained in the pitch area perceiving no distance from

player to player (left circle in Figure 16). The listener uses the same space as the players, as if they all were contained in a single spot. If the intervallic distance between players increases, the virtual pitch distance between players will also grow, so that the listener will perceive his own position separated in relation to the players (right circle in Figure 16.) The listener feels himself situated between two sounds.

With this logic, I approach the circle in the following way:

The range of the circle is defined by the diameter length between the first and seventh guitar (Figure 17). The increasing of intervallic distance and pitch rotations will always have this axis as a reference, making it work as a "fundamental" spatial disposition (as a spatial tonic). This means that when there is a unison between g1 and g7 the audience shares the same pitch distance, as if everyone was placed in a single spot. I imagine the surrounding unison as a sort of shared spatial unity.

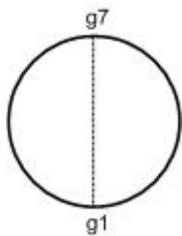


Figure 17 Bottom and top guitar of the circular setup

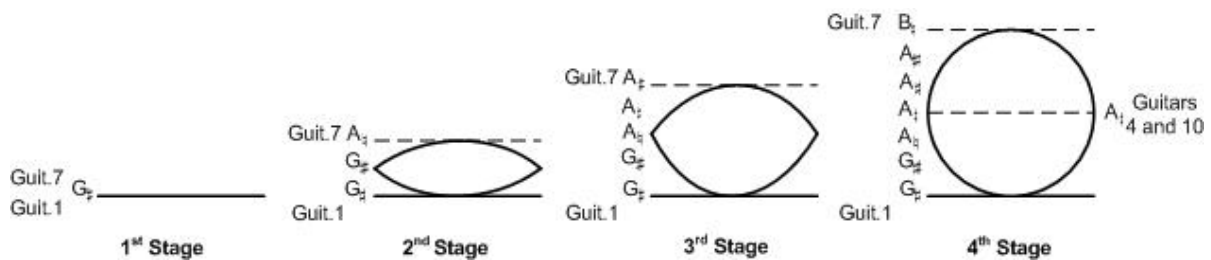


Figure 18: Spatial pitch progression in first section.

The first intervallic distance between these two guitars is a unison (G#) as seen in the first stage in Figure 18 above. This means that all guitars of the circle play in unison. Therefore, as described previously, the listeners are all contained in a single spot (visualized as a line, seen on the left of Figure 18 above). In the first stage of the piece, all of the players play a unison tremolo at an almost imperceptible volume. This makes the G# sound like a buzzing vibration present through all of the space. However, once the conductor starts rotating, a circling motion of G# starts to be perceived around the audience (through dynamic variations of the players). The rotation of the conductor and the dynamic rotation through the circumference correspond to each other. This correlation corresponds to the "area

rotation" described earlier in figure 10. However, on a unison rotation there is no pitch change so there is an inconsistency in relation to the "area rotation" described above, where there is a movement in space of a pitch in reference to other pitches. For this reason, the unison rotation, when corresponding to the conductor rotation (core), is not perceived as an area rotation but as a core rotation that reveals the sonic space. Considering that I observe the unison as a unified virtual space, I perceive this unison rotation also as a rotation that occurs within the listener's body, as an embodied and internal sonic rotation.

This description of the unison rotation will be interfered later by short and slow quarter tone glissandos. Iannis Xenakis says that "The glissando is a straight line slanted in space ... it is time and pitch rolled into one" (cited in Labelle 2010: 185). For Xenakis the glissando "represents the most usual behavior of a sound, while a sustained note is something special because the slope of the pitch versus time change is nil" (Varga 1996: 69). He visualizes the constant pitch shift of a glissando as a physical gesture that designs a form in a virtual space that is projected as sound in the actual physical one. In Xenakis' music, pitch motion is thought of as spatial motion (as one of the musical dimensions described by Erik Christensen). This notion of pitch shift related to movement in a virtual space is what allows me to imagine an actual physical rotation of a unison as a static situation in a virtual sense. Simultaneously, when there is a unison rotation, it is easier to associate the spatial movement to a physical reality. The forthcoming microtonal pitch changes slowly and virtually interferes in the perception of the physical objectivity produced by a rotating unison. In this way, the designed virtual pitch architecture overlaps, blends, and contradicts with the physical spatial changes. In this compositional process, physical motion through space can be associated with a motionless virtuality, and vice versa, a virtual motion can be associated with a fixed physical point.

The circling unison of the first stage stays for more than a minute before the pitches start to change into the next opening stages. All of the pitch transformations are very slow and they all come out from continuous quarter-tone glissandos in space. I perceive these slow and short glissandos as deformations (an opening circle in the case of the first section as seen in the stages 2, 3 and 4 in Figure 18) of the given unison space. The perception of this should be like being part of an energized environment that starts to slowly move and transform. In *La línea* the tremolo activity never stops. This makes it difficult to perceive when the pitch changes begin exactly and where they lead to. This is done intentionally so that the listener discovers himself in new situations in this constant tremolo texture without leaving the continuous flow of the given environment. Nevertheless, some fixed behaviors, such as the rotating unison of the first stage, stay for a long period of time (in proportion to the piece's length) to define and set conditions of space that must be clearly perceived.

The first guitar will stay as a fixed fundamental in the following stages. As the circling sound movements pass repeatedly by the seventh guitar, its pitch starts to gradually rise in semitones. The remaining guitars complete the interval (fill the space) between guitars 1-7 with quarter-tones, producing the already mentioned glissando effect. This process stops when the intervallic distance between guitar one and seven grows to a minor third (Figure 18, 4th stage.). This interval is a result of the quarter tone distance between each guitar from bottom to top. The resulting pitch disposition is used as a recurrent point of arrival throughout the piece (Figure 19).

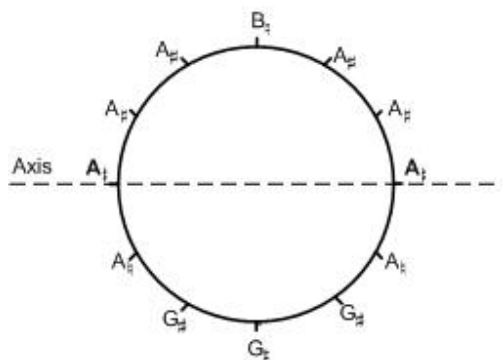


Figure 19 First open pitch disposition

When the intervallic distance reached a minor third, more pitches were required to fill the glissando movement, thus it gradually starts to become possible to connect pitch with spatial positioning. In this sonic context, the sound movement is still perceived as surrounding glissando gestures. This makes it very hard to identify and assign a pitch to any specific position. The pitch positions work more as illusions of position than actual identifiable spots in space. The sounds tend to repeat in a certain position, but they do this always coming from within a circling glissando gesture. Once the first open pitch positioning is defined (as seen in Figure 19 above), the circumference starts to rotate, and based on my experiences as a conductor of the piece, it does not give time for the listener to actually discover or define the spatial pitch structure (Figure 20).

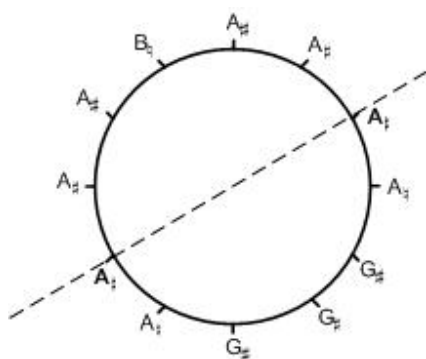


Figure 20 Rotation of the first open pitch disposition

This behavior causes pitch to be perceived as a constant flow. In the first sections of the piece, the harmonic and modal relations are almost erased in the microtonal movements. The more traditional motivic, harmonic, or tonal uses are replaced by the use of pitch to draw a spatial design and to create a continuous sensation. However, the previously

described processes still reveal the presence of a spatial narrative as an equivalent to a harmonic narrative that could be associated to a musical tradition. The imaginary gravitational forces push and accelerate the pitch rotations to specific dispositions that repeat throughout the piece. Nevertheless, as mentioned before, the exact position of each pitch will be hard to define within the continuous sound movement. In spite of the existence of spatial pitch cycles, the constant sound flow in space within a small microtonal range seems to make pitch not important in its more traditional musical sense. The spatial and pitch narrative blend in a process of movement that creates an environment that transforms in a musical way without revealing its formal relations. There is an intended musical transformation that creates a sense of "directionality". However, this "directionality" is not revealed in the surface, as there are no clear musical figures or a marked musical structure. As a consequence, the listeners do not place their attention in formal or structural elements to create a narrative through formal associations.

2.3.4 Plural Harmony

The spatial setup and the continuous sound behavior of *La línea* invites the listeners into a seemingly non-narrative experiential territory. Each listener is in a particular position to receive the sound in a different way. The spatial and sonic characteristics of *La línea* can be perceived as part of an open form which offers multiple perspectives. The openness resulting from the disposition of musicians and audience sets the conditions for a singular experience within a shared plurality. This open nature can be related to immersive experiences in which the immersants perceive themselves in a shared space interacting from their own perspective. In *La línea*, the immersive environment results from the experiential sharing that occurs within the continuous sonic and spatial transformations.

By composing the continuous sonic texture of *La línea* I intend to make it difficult for the audience to recognize specific spatial patterns and defined points in space. Uninterrupted repetitive motifs without contrasting events and long lasting drones are common characteristics in traditional immersive practices. On the other hand, contrasting events and irregularity can maintain someone's attention, shifting in between different forms of expectation and also changing one's mind states. Change invites the listener into inventive participation and formal awareness. This creates a dialogue where the source imposes its formal presence and presents itself as "an other". Continuity blurs this separation. In *La línea*, the continuous presence of stimuli transforms its perceived referential origins into an experiential and characteristic environmental constant. From this perspective, continuity seems to be an essential feature in the achievement of an open perceptual space. As well, in this space, formal narrative seems to lose importance.

From a musical perspective, it is common to compose a development or a kind of directional flow for producing perceptual transformations. To achieve a perceptual transformation, the listeners do not have to acknowledge that there is a musical process that guides them. This approach differs from sound installations where the listeners can walk and move freely, creating their own musical flow. It is common that in sound installations, visitors can enter at any moment. This gives them more freedom to follow their own path which differs from the linear presentation of events of musical works. When an invented reality is created as a simulation, it does not necessarily require a predesigned directionality, but mainly the

establishment of experiential conditions and open interactive elements. It is more habitual to find non-directional (or non-guided) approaches in sound art than in a music concert context. Directionality is characteristic of western classical music. Composers commonly decide the order of sonic events in their compositions. This often leads to an imposition of directionality, whereas non-directionality seems to be an essential characteristic of immersive and open experiences. Nevertheless, when there is a total absence of musical guidance, the special qualities of the offered sonic event or environment may transform into an experiential normality. In everyday life, we constantly relate to multiple sonic events that might or might not have a musical impression. In sound installations that depend on the listeners' free interaction, there is no need for composing sound events in time, because the listeners will be responsible for the duration and transformation of the sonic events themselves. This makes me establish a clear differentiation between immersive music and immersive sound environments. Music is more often composed considering a linear presentation of events within an specific time frame. In this way, music aids experience through a sonic guidance, while a sound installation does not necessarily aim at being musical in a guided or linear sense. This does not mean that an installation will not be perceived musically by the visitors. A non-guided installation offers an open sonic environment that the listeners can perceive from their own multiple and particular perspectives. But in these cases the linearity and temporal frames, which are commonly associated to diverse musical practices, are absent.

Through listening to immersive music, the audience experiences perceptual transformations which blur or hide the music's structural qualities (diminishing critical awareness). This listening process goes against an Adornian "adequate listening". Theodor W. Adorno classifies types of music listeners in a hierarchic structure (he does not present it clearly as such but the hierarchy can be deduced by his qualitative arguments). For Adorno the adequate listeners are the *expert* type (on top of the hierarchic structure), and the *good* type.³⁸ For Adorno, the *experts* (mostly musicians) are the listeners that are fully conscious of the musical structure. They are able to identify parts of the structure and participate by imagining formal possibilities. The good listeners are also "structural listeners" but they do not have the musical knowledge to identify technical details. Their associations are a result of a natural talent (for Adorno this type of listener is "a musical person"). From the perspective of immersion, it is quite problematic to categorize listeners in this way. Furthermore, the diversity of listening attitudes of an audience makes this hierarchy less convincing.

In order to avoid this hierarchic perspective, composers may aim at blurring referential, structural, and conventional elements by offering a work open to multiple perceptions and interpretations. I perceive a similar concern in some of the works of György Ligeti. In the fragment below Ligeti describes his orchestral work *Apparitions* (1958-59) as the result of the interaction between "states" and "events":

³⁸ In a less clear hierarchic order, Adorno describes the other listener types: *culture consumer*, *emotional listener*, *resentment listener* and the listeners to whom *music is entertainment*. On the lowest level one finds the *indifferent*, *unmusical* and *anti-musical* listeners. I will not discuss these types. The argument I am presenting is related to the *expert* and *good* listener type.

The musical form has its origin in a continuous interaction between states and events. The states are interrupted by suddenly appearing events and are changed by their influence; and vice versa: The altered states also have a certain influence on the nature of the events; for the latter must always be new in character in order to continue to change the altered state. In this way, an unceasing transformation is created (Ligeti 1967: 169, translated by Erik Christensen).³⁹

Erik Christensen refers to the phenomena that Ligeti describes in the quote above as transformations of energy (Christensen 1996: 29). Ligeti's "unceasing transformation" seems to create a continuous flow which gives the music an open character rather than a framed structure. Approaching musical material as transformations of energy can be considered an "immersive attitude" because this approach implies an experiential goal that is not related to a particular formal perception of the work. From this perspective, the goal of composers is not to reveal structural material but to offer an experiential space open to diverse interpretations. The sonic result of *Apparitions* does not clearly exemplify the notion of transformations of energy. The sudden "apparitions" of new contrasting events still may be perceived as isolated events which fragment the piece. Erik Christensen describes how Ligeti's notions were further developed and improved in the orchestral work *Atmosphères* (1961):

This is music without melodic or rhythmic gestalts, and without clearly discernible pitches and durations. *Atmosphères* is a flow of sound. Subtle changes in timbre, intensity and movement create auditory impressions of variable sound masses appearing and disappearing, approaching, passing and withdrawing (Christensen 1996: 29-30).

From Christensen's perspective, for the creation of a continuous flow or transformation it seems essential, on the one hand, to continuously renew the character of the appearing events and on the other to present material in a way that is not clearly discernible. The immersive quality in *Atmosphères* seems to rely in the latter. *Atmosphères* consists of one continuous flow in which Ligeti did not intend to present the work in perceivable fragments.

The concept of "micropolyphony", as defined by Ligeti, describes a musical process which intends to not reveal the structure of the material; it radicalizes a traditional practice (polyphony) to obtain new sonic effects. Ligeti describes this style in relation to *Atmosphères* in the following quotes:

My music is a continuous flow, unbroken by bars, like a Gregorian melody. You could not analyze it according to Riemann's rules.⁴⁰

³⁹ "States" refer to continuous musical flows that are perceived as continuous and not radically changing musical environments. "Events" are occurrences that appear influencing the sonic nature of the musical flow.

⁴⁰ Hugo Riemann (1849-1919) was a German composer and music theorist. Due to his theoretical works on musical harmony, Riemann is considered to be one of the founders of modern music theory and an important influence for modern musicology (Encyclopædia Britannica). Ligeti is referring to the positivistic methodologies that are characteristic of Riemann's theories.

The thematic-motival structure and its role in the progress of music is almost completely abandoned.

Atmosphères is just a floating, fluctuating sound, although it is polyphonic. *Atmosphères* [...] have a dense canonic structure. But you cannot actually hear the polyphony, the canon. You hear a kind of impenetrable texture, a very densely woven cobweb. I have retained melodic lines in the process of composition, they are governed by rules as strict as Palestrina's or those of the Flemish school, but the rules of this polyphony are worked out by me. The polyphonic structure does not actually come through, you cannot hear it; it remains hidden in a microscopic, under-water world, to us inaudible (Ligeti 1983: 14-15).

The quotes describe musical characteristics that correspond to immersive notions. The sonic outcomes of micropolyphony can be described as being of an immersive nature, deviating from music which exposes its processes through the sonic result. From this perspective, I consider Ligeti's musical goals to be of an immersive nature and that his micropolyphonic works such as *Atmosphères* represent a historical opening towards music of immersive characteristics. However, the compositional processes of Ligeti still have a traditional origin. Melodies and counterpoint are used to create the "cobweb". For example, canons are perceived as processes of accumulation and densification or as shifts and openings of pitch ranges. These characteristics, which relate to pitch contour, correspond to earlier forms of counterpoint such as renaissance motets or early baroque fugues. The overall micropolyphonic texture in Ligeti's music inherits a sense of directionality that is related to pitch range and variations in density.

Atmosphères guides the listener through a sonic flow that is musically designed with an underlying structure that is not clearly presented on the sonic surface. An underlying musical structure which guides the listener is one of the main traits that differentiate a musical immersion with other forms of immersion. This reveals that structural listening is not the main goal in creating immersive compositions but only one of the perceptual possibilities. I consider "guiding", from a composer's perspective, as a necessity to achieve a "musical" immersive experience. However, in *La línea*, my immersive goal is to create music where listeners do not perceive the presence of a direction despite being guided. I intend that the listeners maintain an open attitude through the full duration of the musical piece.

The sonic result of *La línea* resembles a micropolyphonic texture as in Ligeti's music. However, in the case of *La línea* the sonic outcomes result from the spatial mechanisms and not from a reinterpretation of traditional approaches such as polyphony. In order to create a continuous and immersive musical texture such as the one in *La línea* it is not necessary to depart from traditional processes. In *La línea* the spatial mechanisms produce multilayered textures which do not have a polyphonic origin. The resulting harmonic development creates gradual and continuous perceptual transformations. The harmonic changes are not evident due to the continuous texture, spatialization and the slowness of transformation processes. Also, the initial standardization of a microtonal pitch color and the rotational qualities make it difficult to specify when and how the sounds transform.

In the last third of the piece, the pitch range starts to open out from the circle's axis. The first fixed-range starts to slowly open during the four stages shown below (Figure 21). Each stage adds a semitone to each interval that moves away from the axis. The intended slow opening of the pitch range would have been even better disguised by adding a quarter-tone during each stage. However, the tuning of the guitars would have needed to change during every stage, and to do this precisely required a level of complication that did not fit the flowing behavior of the performance.

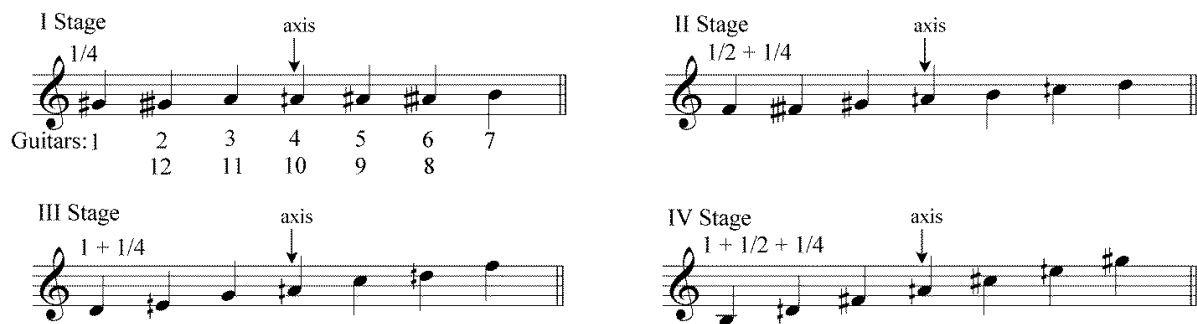


Figure 21 Pitch range opening process in four stages.

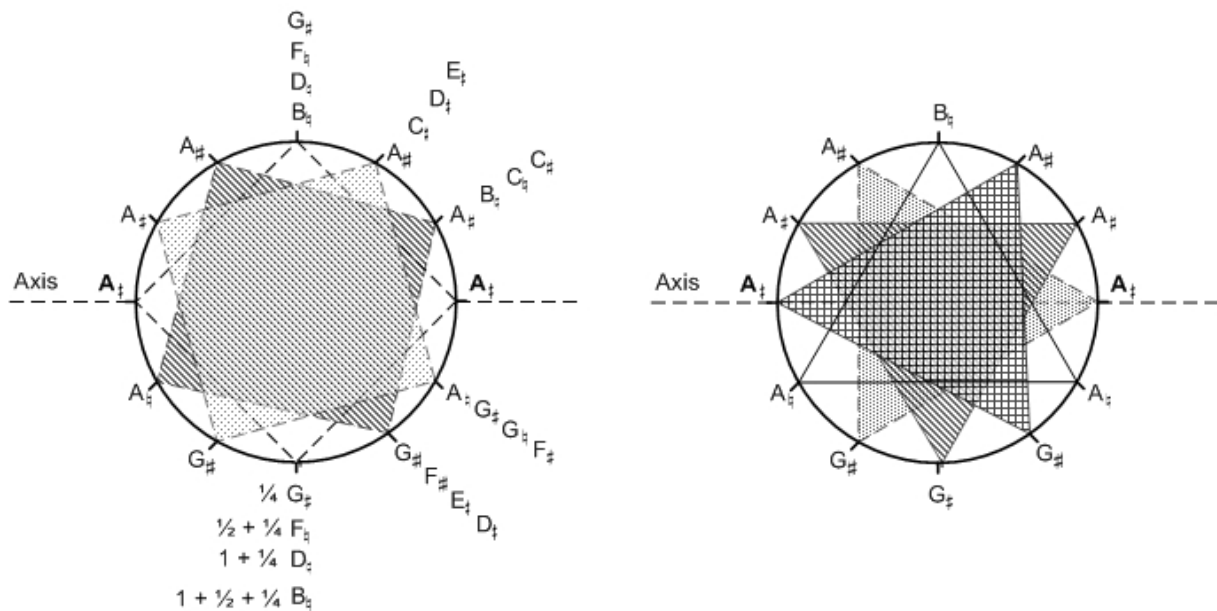


Figure 22 Square chords describing pitch range opening process. Triangle chords (right).

During this process of opening the pitch range, the continuous tremolo texture is still the main sound behavior. The new sounds of each stage appear as crescendos that rise out from a sonic flow built from many pitches. As the disposition of pitches gradually opens within this flow, harmonic colors start to be perceived (as chords). These harmonic pitch groups are built from square and triangle rotating cycles (Figure 22). Chords cross fade rotating from one square (or triangle) to the next. This produces a continuous harmonic movement in space that blurs the specific location of each chord. The cross-fade space in between guitars adds a new harmonic and spatial layer to the harmony defined by each sound source. The overlapping of chords creates a spatial multi-directionality where each listener experiences his/her own harmonic context.

In the beginning of the piece, each listener experiences the motion of sound through space in a particular way due to their unique position. Pitch is initially used to aid the perception of physical movement in space and it is divested of a traditional harmonic sense (as chords or modal colors). The pitch material in the first two thirds of the piece is a microtonal cluster within a minor third, and as this interval never stays in a fixed spatial disposition it is hard to recognize. The resulting pitch texture does not produce audible chords or characteristic harmonic colors. The transition from this close range (minor third frame) towards open harmonies is very slow. The goal of this slow process is that the spatial and sensorial perception produced in the beginning blends gradually with a more familiar harmonic listening. The new harmonic layer appears gradually as a new music that moves within the nature of the spatial music from the previous fragments. Simultaneously, the opening pitch range expands the physical and virtual spaces (as seen earlier in Figure 16). As a result, the opening range of pitches can be imagined as sounds that reach out further into the surrounding environment. In this way, the surrounding space that was being affected by a spatialized sonic process, which could be perceived mainly as a music that emphasizes spatialization, is gradually being transformed by a new harmonic musicality. In *La línea*, the spatialized beginning moves towards a harmonic experience that opens a new virtual space within the spatial nature of the piece.

In *La línea* the opening harmonies result from spatial processes and not from a solely harmonic approach. As a result, the harmonies are displayed in diverse physical and virtual (referent to pitch in the musical dimensions) dispositions simultaneously. Even if my approach did not depart from a more conventional use of harmony I perceived an aesthetic familiarity when listening to the harmonic opening. There is a cultural conditioning within the aesthetic (sometimes perceived as emotional) associations of harmony. Most of the music that is reproduced in public spaces (cinemas, elevators, waiting halls, supermarkets, cafes, restaurants, bars, in the streets, etc.) of the western world have harmonic characteristics that can be related to the tonal system. Tonal harmonies continuously raise, disappear and blend within the western cities' soundscape. In *Singing Neanderthals: The Origins of Music, Language, Mind and Body*, Steven Mithen states that there is a connection between aesthetic preference and the tonal systems that belong to western culture (Mithen 2005: 52). With this argument, Mithen suggests that there are prevalent types of harmonies in western sonic environments and that society prefers the harmonies that they are more often exposed to.

This argument can be further contextualized by exploring how listeners create this association. In "Attitudinal Effects of Mere Exposure" (Zajonc 1968) the social psychologist Robert Zajonc proves through a series of tests "that mere repeated exposure of the individual to a stimulus object enhances his attitude toward it. By 'mere' exposure is meant a condition making the stimulus accessible to the individual's perception" (Zajonc 1968: 1). This article explores aesthetic and emotional appreciations in relation to language and symbol perception. The few musical experiments presented in Zajonc's investigation demonstrate how repeated exposure to a type of music can enhance the listeners' affinity towards it. In the article *Absolute Pitch as a Learned Phenomenon: Evidence Consistent with the Hick-Hyman Law*, the music cognition researchers Jasba Simpson and David Huron prove the correlation between repetitive exposure to Western music and acquiring absolute pitch:

An analysis reaction time data collected by Miyazaki (1989) provides additional support for absolute pitch as a learned phenomenon. Specifically, the data are shown to be consistent with the Hick-Hyman law, which relates the reaction time for a given stimulus to its expected frequency of occurrence. The frequencies of occurrence are estimated by analyzing a computer-based sample of Western music. The results are consistent with the view that absolute pitch is acquired through ordinary exposure to the pitches of Western music (Simpson and Huron 1994: 267-270).

Simpson and Huron's research could be associated to the research of Robert Zajonc. Tonal preferences arise as a result of listening repeatedly to a limited amount of musical models. The Hick-Hyman law suggests that there is tendency to discard among the unknown choices and to frame our choices among the most familiar ones. Correspondingly, we can deduce that our aesthetic choices could also be conditioned by these laws.

From a historical point of view, the sole existence of the terms "consonance" and "dissonance" elucidate the conditioning association which has been created between harmonic relations and aesthetic perception. The "doctrine of the affects" in the Baroque period established a dependency between harmony and emotions (the doctrine derives from earlier notions, as in the specific moods assigned to Greek modes). Although the affects were used rigidly during a short historical period, the association between harmony and musical aesthetic continues to echo up to the composers of today. Affects created an aesthetic archetype that evolved into a diversity of emotional-harmonic conventions.

As a result, it is difficult to ignore that the predominant harmonic environment affects and conditions the way in which music is perceived and composed, despite the diversity of approaches that are used to develop pitch material (microtonal, spectral, serial, mathematical, spatial, aleatoric and others). My intention is not to state that harmonic conventions are universal features of music but an influencing factor in the creative process and in the receptive effect. From a composer's perspective it is important to not take these notions (affectations, consonance, dissonance, etc.) as empirical facts. The composer Horacio Vaggione argues: "Of course, there are primitive principles underlying musical practices, but these should not be qualified as foundations of 'music itself,' for this would negate the

possibility of developing other musical practices related to different assumptions” (Vaggione 2001: 55).

In order to approach immersion from a compositional perspective, it is necessary to acknowledge and observe critically the determining and influencing effects that music has on listeners’ everyday life.

2.4 Reflection

The rotational and pitch processes presented above demonstrate how the mutual influence between imaginary and physical spaces gives form to the musical result of *La línea*. By presenting these processes, I intended to reveal the musical origin from which I developed the opening arguments of this chapter. These processes elucidate a compositional approach that departs from a musical virtual space that is always moving towards and interacting with physical reality.

As argued by Erik Christensen, the interaction of musical dimensions creates a perceptual virtual space. Generally, composers develop their compositions without taking into consideration how musical dimensions relate and interact with the physical space. This implies that composers usually aim at an immersive experience within this virtuality. The use of spatialization in Xenakis also reveals his interest in creating a self-contained virtual space, despite the different spatial disposition of the performers in some of his works. On the other hand, in *La línea*, the multiple interactions that occur between the virtual characteristics of music and the physical reality were taken into consideration to develop the composition. As a result, the physical space transforms the perception of the musical outcome and vice versa, the musical outcome transforms the perception of the physical space. From this perspective, immersion is not thought of as the experience of a self-contained virtuality, but as the experience of multiple realities that are transformed through their interaction.

The harmonic processes of *La línea* trace a slow transition that begins from the presentation and definition of an experiential territory towards an increasing harmonic musicality and increasing rhythmic changes. The harmonic opening occurs within a spatial composition that combines multiple and diverse perceptual perspectives. As a result, harmony is not only a color displayed linearly in time, but a musical layer displayed in physical and virtual spaces exposing their interaction and multiplicity with an aesthetic sense.

