Fani Konstantinidou

____Aural Cognition and Listening Imagination in electronic music____

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Contents

1 Introduction

Music listening is characterized by the listener's subjectivity. Listeners experience a musical piece differently according to their imagination, memories or personal taste. Despite this subjectivity, there are some objective elements in listening that can be used to analyze the psychology and the expectations of a listener and composers can use them in order to communicate with their audience. In electronic music, several composers and academics have presented these objective elements and each one has very often a different approach. Some of these ideas are presented in this essay in order to organize and analyze the listener's perception in electronic music.

Imagination is a very subjective topic so each one of us can have a different point of view on it. For this reason, most of the techniques and descriptions in this essay, concern clear examples where the composer has the intention to create images. However, imagination can exist also in abstract music works, conceptual works or works where metaphors are used. In reality it is difficult to analyze this kind of works, where the intention of the composer is not clear, because this would be based only in hypotheses and not in facts. One should not forget the fact that imagination concerns not only the composer but mostly the listener. As a result, even if a composer is not interested in the creation of particular images, a listener could still create them. Without doubt this is almost impossible to be analyzed but by analyzing cases with simple meanings and objective symbolisms, we can make a conclusion about how people imagine and listen to electronic music. For this reason, I chose to

analyze my own pieces because they always describe a concept but at the same time the concept is not always clear and most of the listeners perceive a very abstract meaning. My intention though, is to create images or at least represent my ideas according to my aesthetic.

The listening analysis and the imagination process, are described in this essay not as the only ways of music listening neither as rules in music composition. It is an analysis of a specific point of view, either for composers that are interested in such a compositional way or for those who want to be aware on how a human mind works in music listening. The reason I decided to analyze this side of music listening is because I personally experience music in this way. Also, as I already said, I compose music following my imagination's instinct and always try to find descriptive tools but it is more than important to me to follow my personal aesthetic. During my studies, I had the chance to read many books and articles about compositional techniques but most of them were focusing in pitch, spectrum, sound relationships, time and in general technical information. However, my personal view of my music is something more than technique. For this reason, I decided to summarize all these references about how the listener perceives sounds and how a composer can use this information to describe a concept. In the end I expect to be able to combine this information with all the techniques and reach my goal to compose conceptual music without the limitation of using predictable structures and sound material to express myself, but follow my aesthetic which is focused on more abstract music.

Concerning the structure of this text, the analysis starts with simple, clear examples and ends up with more complicated meanings and metaphors. There is a brief analysis on how people understand their sonic environment and what the expectations are they might experience while listening to a sound. Some of the most important listening methods (such as Schaeffer's, Chion's and Smalley's) are examined. In the next chapter music listening is focused on listening imagination. All

the objective elements of the compositional process that can trigger someone's imagination are presented such as sound relationships, noise and silence, transformations of sounds etc. Finally there is an analysis of my personal works in order to conclude and describe in a better way my personal view in listening imagination.

2. Aural Cognition

2.1 Introduction

In listening analysis the most important step is to understand how people listen to sounds. Whether or not they have expectations, if they make associations and how they perceive sounds in every day life in general. This makes things even more complicated because according to the society they live in, their personal experiences and the environment they grew up in, their perception may be different. Thus, in order to understand how imagination occurs in a human mind, it is useful to start from a lower level of how people perceive the sounds.

Listeners in general make associations when they listen to a sound. Gary Kendall mentions,"Clearly listeners make associations among things. From moment to moment auditory experiences are related to typical patterns, and an effort is made to grasp the current context and to discern meaning" (Kendall, 2010). So when one listens to a bell he imagines for example a church or when he listens to a plane's sound he has the image of an airplane or he could think about a trip. As a result, things can be really complicated when one can recognize specific elements of an environment. In a neighborhood there are specific sounds that one can recognize if he lives there -his neighbor's laugh, a kid screaming or his neighbor's motorbike- but for a person from the countryside or even from another neighborhood these are just city sounds. Similar things happen when one has to deal with different cultures. Sounds of African percussion instruments might only bring to mind images of Africa on tv for a person raised in the west, but for an African it could be a ceremony or a very special event which includes lots of images and memories. "In stone-age

societies no one had heard the sound of a metal tool, sheet or anvil. There could be no template for such objects against which sound data might be matched. Confronted with a struck metal sound for the first time it might appear to possess 'magical' qualities." (Emmerson, 2007).

When one has to deal with speech in music, he must be aware of the language and the context. It is a fact that when one listens to someone talking -even if he does not speak the language- he is trying to understand the meaning. If a composer is interested in using speech in a musical piece because of the content of the text, he automatically has to make a decision about who is going to be his audience, based on what languages they understand. Of course several artists use speech in their music for the musicality of a language but this means that some people can have totally different perception of the piece because they do or do not understand the meaning. On the other hand a composer can process the voice sounds. In this case voice can become a sound object that can be used as any other sound but if it is still noticeable as a human voice, the listener will of course still make an effort to comprehend the meaning. For example Stockhausen, in "Gesang der Jünglinge" is using the text for its content but his decision to use the German language reduces the possibility for a lot of people to understand the text. As a result, a lot of people pay attention to the boy's voice for its musicality and not for the meaning of the text.

Another important element is the connection between the sounds. It is more than expected for listeners to create an image of an environment, a place or a situation. Thus, one could use the sound of foot steps and crumpling paper at the same time because those sounds could have pitch similarities or musicality together, but this could also create an image of a man walking while destroying a piece of paper. As a result, even if a composer uses a computer generated sound similar to one of our every day life, depending on what sound is coming next in the piece, the

whole image can change for the listener.

Pierre Schaeffer in his *reduced listening* theory, was trying to avoid exactly this situation -the association people can make with sounds so that the composer can use any sound only for its musicality and not for the context. More than fifty years later, people still listen to a sound and imagine its context unless they are very well trained not to do so and they are familiar with this kind of music. The above facts can be both advantages and disadvantages. In a composition the associations listeners can make can be used to help composers express their ideas or cause them troubles because the audience is distracted and they do not pay enough attention to the musicality.

2.2 Listening Modes

In music history, many composers and artists have tried to analyze how human beings listen to sounds and music and very often they suggest new approaches in music listening. Luigi Russolo presents for the first time after the industrial revolution, the industrial noise and the urban soundscapes for their musicality and not as sound pollution. According to him composers but also listeners should involve the new sounds in music and listen to them from another perspective. "We must replace the limited variety of timbres of orchestral instruments by the infinite variety of timbres of noises obtained through special mechanisms" (Russolo, 1913). John Cage, referring to the everyday sounds, has a similar theory as he believes whatever we hear can disturb us when we ignore it but if we pay attention to it, then we find it fascinating (Cage, 1937). Pierre Schaeffer develops a theory about listening even more as he introduces four listening modes. Brian Kane explains further.

"Ècouter designates an information-gathering mode where sounds are used as indices for objects and events in the world. (…) Comprendre, in distinction to Ècouter, designates a meaning-gathering mode of listening where sounds are heard as communicative signs. Typically, this mode is used to describe how one listens to a language; (…) Ouïr is to perceive with the ear, to be struck by sounds, it is the lowest, most elementary level of perception (…) is a disinterested and inattentive mode of passive listening that merely receives globally what is given in perception. (…) 'Entendre, is, according to its etymology, to manifest an

intention to listen, to select from what we hear (Ouïr) that which

particularly interests us, to effect a "qualification" of that which we

hear' (ibid.)." (Kane, 2007).

In contemporary music, composers adopt the above ideas and try to make

their own conclusions. Depending on the context of their music and the level of

communication they want to achieve, they develop their own theories or analyze the

facts from another point of view. This is important because even though human

beings perceive sound theoretically in the same way, the society they live in changes.

As a result, music itself changes and of course the perception of listeners cannot stay

the same.

Barry Truax and Denis Smalley make a distinction between hearing and

listening. According to Barry Truax, hearing is the physical process that happens in

our ear in order to receive a sound, while listening requires an effort from the listener

to listen, and also to interpret the information a sound carries (Truax, 1984). In a

similar way, Denis Smalley presents the words as they are defined in an english

dictionary where "hearing" is listening without attention and "listening" is a way to

pay attention and focus on what we hear. (Smalley, 1996)

Michel Chion introduces three listening modes. Casual listening, semantic

listening and reduced listening - borrowing the term from Pierre Schaeffer. Casual

listening is the process where the listener is trying to gather information about the

source. The sound source can be either visible or not. In the second case, the listener

uses his knowledge and logic in order to make the association. The second mode of

listening is the interpretation of a code. This could be a language or Morse code.

Semantic listening requires specific knowledge from the listener and very often a

sound is not used for its acoustical properties but is part of a complex system.

Finally, reduced listening is the listening mode where the sound is an independent

object without a meaning or reference to the source.

Denis Smalley describes his term "spectromorphology", as "a descriptive tool based on aural perception (rather) than a compositional theory method." According to him, spectromorphological listening is a mode where the listener focuses on "sound materials and musical structures which concentrate on the spectrum of available pitch and their shaping in time". Thus, in his essay he describes all the possible gestures and textures of a sound and he analyzes different structures and forms in order to make an objective analysis of listening. On the other hand, Suk-Jun Kim has a different approach. His main concern is the imagination of the listener and the associations one can make to create an image or a story while listening to sounds. He calls this way of listening "semiotic listening" because "listeners entertain sounds and their potential sound-images based on semiotic significations" (Kim, 2010).

Based on the theory that "An important task of the cognitive unconscious is to integrate experience from our multiple perceptual domains and to form a centralised understanding of the world around us." (Kendall, 2010), Gary Kendall is trying to analyze the way we listen by using "events" that our mind create in order to organize the complex information and understand their meaning. For him, the "event" concept starts when we are very young and while we interact with the physical world for the first time. Later in our life, the organization through "events" become metaphorical and unconscious and we are able to understand and organize complex experiences we might have. If a human mind works like that to process any kind of information, then of course music and sounds are included. An event is a situation with a beginning and an end, including one or a more sounds, in order to construct a meaning or an idea. He explains,

> "In acousmatic music the Circumstances of an 'event' are often
> intentionally impoverished in comparison to situations in everyday
> life. Because the basic information about the sound source and

context may be unknowable, the listener's attention is shifted to the elements of the Circumstance that are clear or to the specific characteristics of the EVENT schema itself (such as the dynamic flow of resources). In such ways our everyday habits of listening to 'events' are broken and reshaped for artistic purposes." (Kendall, 2010).
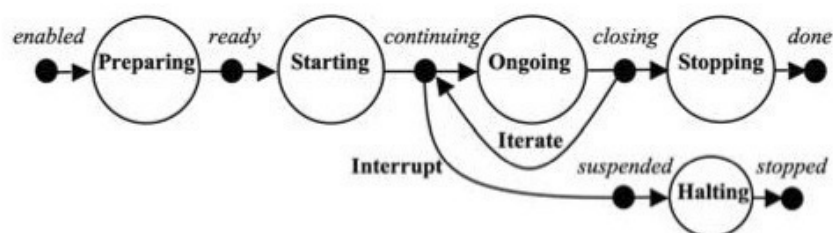
Pict. 1 Representation of the Event schema.
Processes are represented as circles and states as dots. (Kendall 2008.)

In all of the above ideas a composer can find useful information about how to deal with sounds. These methods are listening and not compositional methods, but these methods are more useful for a composer than a listener. A listener can find these methods useful to understand a musical work but for a composer it is impossible to predict that his audience can be trained by analyzing methods of listening. It seems more logical for a composer to try to understand the different approaches in listening - if he needs to do such a thing - and find ways to communicate with the listeners. The most important and unpredictable element in listening methods is the subjectivity of the listeners. People have different experiences and memories and as a result they tend to interpret sounds in their own way.

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3. Imagination and Reality

3.1 Introduction

In electronic music, due to the very wide variety of sounds that can be used or created, one can compose a piece and describe a very specific situation. This can be a disadvantage. As Pierre Schaeffer suggested, one might use the sounds not for their meaning but for their musicality and spectrum. Even more, a music work can lack or give abstract information so the listener can imagine a situation himself. This results in a big discussion about the imagination in music listening, but at the same time one can realize that objective elements in music composition can be used in order to cause or avoid imagination -at least at a level a composer can predict.

A very first step to understand how imagination occurs in a listener's mind, is to start thinking and analyzing very specific situations in music and what composers have done in order to create images and landscapes. For this reason, this chapter starts with simple ideas that gradually develop into more complex meaning, to end up with some basic techniques and how they could affect or trigger people's imagination in music listening. As the main concern is imagination, there is no limit on how, how often and in what situations a listener can start imagining things. Hence, here are mostly analyzed clear situations where the composer's intention is to create images and landscapes (real or unreal): situations where he expects the listener to recognize and make associations. Also, some conceptual compositions are examined -even if the composer is not interested in whether or not the listener observes his message.

As has been mentioned in the previous chapter, music perception differs from

person to person according to their experience, memories and culture. If we admit the fact that very often people make associations among the sounds they listen to, then one of the most major elements in music listening is imagination. In simple situations when the sounds of an environment are recognizable to the listener, imagination is limited but still exists. For example a sound of a car, could include information about the speed it moves, if it's small or big, even the brand sometimes. But it can't give information about the color or the driver. In this case, the listener most of the times creates his own personal image of that car and the surroundings according to his imagination. Depending on the sound, a composer can limit the imagination of his audience. If the same car's sound is smooth and moves with high speed most people will imagine that it moves on a highway. If the wheels' sound is not smooth, one could think it's moving on a path in a forest. In that way, a composer can create his own environments, real or not, so that he can communicate with the audience and present his personal idea. However, the composer's experience and culture is also involved, so there is a strong impact between the composer and the listener. "Moreover, sound-image is a concept often used by composers, particularly as they imagine those aural objects suggestive of things listeners might imagine touching or feeling, or places into which they might imagine listeners venturing." (Kim, 2010). Furthermore, a composer is always affected by the listener's perception because the listener is the main receiver of his work. "Aesthetics deal with perception, and thus more with the listener than the composer, who, however, during discussions with colleagues and listeners, when reading criticisms of concerts, listening to his own works, is within a feedback circuit, so that perception, both his own and that of others, affects his composing." (Koenig, 1968). Nevertheless, composer and listener must have the same cultural background in order to communicate. Obviously for a person raised in a western society it is not easy to comprehend symbolisms in Japanese music unless he is very well informed

about that culture or the specific musical piece.

The other important element in listening imagination is the space and the place where the piece is being performed. The number of speakers one uses as well as the concert hall itself, can change the whole composition. Normandeau, suggests and explains further Chion's idea, "*There are two types of space in acousmatic music: the internal space -put in the work by the composer- and the external one -added by the concert hall* (Chion, 1988). The first is fixed and is part of the work on the same basis than the other musical parameters. The second is variable, changing according to the differences in hall and speaker configurations" (Normandeau, 2010). In electronic music as in acousmatic, the musical instruments are very often only the loudspeakers so we can clearly see that the above idea concerns any type of contemporary music composed for loudspeakers. And without a doubt, the number of speakers and the space are compositional parameters. Each speaker contains specific information for the listener and this is very often a useful tool for the composers to develop their idea. Even if the composer is not interested in triggering the audience's imagination, the use of multiple speakers can simulate a real or imaginary space for some listeners. In addition, the acoustics of a place can manipulate the listener's thoughts. For example, a big church cannot be compared with a simple living room. The reverberation of the church causes an impressive, almost supernatural result for the listener. In that sense, a composer can take advantage of the space and create specific atmospheres or even exaggerate so much that he is able to create unreal worlds. The combination of those two elements can create even more effective results.

A performer on stage, a title, program notes and descriptions of a work can of course manipulate someone's imagination. Even though music listening is a very personal experience, it is more likely that people's perception changes when they

read program notes. Let's imagine now, that in the previous example with the moving car, a composer gives information about the place, the reason he decided to use this sound etc. In this case, the listener could have enough information about the surroundings, if it is day or night, how many people are in the car, even if this is a sad or happy moment. Therefore, the meaning is much less abstract and the imagination is limited. But at the same time, music with symbolic meaning and/or abstract sounds that don't simulate reality like a soundscape can do, program notes (or even just the title) can motivate someone to use his imagination. Composers always use titles and program notes to describe their work through music history. Let's think about the "Four seasons" by Antonio Vivaldi. One can maybe feel the positive and happy feelings in "Spring" but as long as he knows that the composer describes spring, his imagination can go further, from simple images of joy to more complex and symbolic meanings like rebirth.

In the same way a performer can manipulate one's thoughts no matter if the performer is a musician, a dancer or an actor. The moves and the expressions of a performer can give a lot of information. Similar to the program notes, a performer can limit audience's imagination because he gets much attention and this could work against the thoughts of the individual.

> "But identifying the sources and causes of sound may only be a small part of any response to sound (…) But more subtly we may wish to predict the next move. We enter the world of will, choice and intention. We have every right and ability to describe our own thoughts and motivations but must gather every clue when we wish to know the will, choices and intentions of others" (Emmerson, 1988).

However, depending on the context, a performer can express a deeper meaning of the work so that people's thoughts can follow a specific path and develop even more his imaginal listening -exactly in the same way program notes can do. Equally, visuals accompanying a music work can be used with the same results. The sensitive part of the use of performers and visuals is that people in general tend to pay more attention to images than sounds. Thus, one must balance very wisely the collaboration between performer/video and music because it is easy to completely destroy audience's imagination by giving too much information.

It is clear that by controlling all or some of the above elements in music composition, one can make decisions about his work and how it will be presented according to its needs. Of course things can be more complicated in some cases because a composition is not as simple as a single sound. It is even more difficult to predict the results when one has to deal with imagination. However, the importance of imagination is that it is unpredictable and most of the times it is not even necessary to be able to predict it.

3.2 Sound Relationships

One of the most important elements in the composition process, are the sound relationships. Through the years the relationships among the sounds define the identity of the musical work. Composers make conscious decisions about the relationships they create and they are aiming towards a specific result depending on their work. In electronic music the sound relationships are equally important. Similar as words in a text, sounds bring continuity and depending on the way they are used cause different meanings and structure. As one would expect, there are several ways and perspectives to connect the individual sounds. The sounds can be connected according to an algorithm, aesthetic criteria, technical criteria (such as spectrum, texture etc) or a concept/situation that a composer wants to simulate. In any case, music is based in sound connections and for this reason music listening is also based on how we experience the sound relationships.

The relationships among sounds have a fundamental role in listening imagination. The way people interpret the sound relationships can make them imagine situations or not. As Casey mentions, we imagine not only sound-images but also their relationships. "We also imagine that individual objects or events together constitute a circumstance or situation: "a state of affairs"" (Casey, 1976). Therefore, for a composer interested in describing an environment, situation etc this is a very useful tool. Without doubt, every soundscape has its roots in this primitive compositional element. In this way composers describe a place or a situation and most of the times listeners grasp his idea. But also in more abstract musical ideas or symbolic ones, the sound relationships can create the atmosphere or describe a

situation in some level. Kim makes a reference to "Industrial revelations" by Natasha Barrett where for him -and apparently for many others- the piece begins with a train arriving in a train station.

> "In industrial revelations by Natasha Barrett (2001), neither the drone at 0:53 nor the short, high-pitched squeak around 1:03 identifies a particular place. But heard together repeatedly with ever increasing loudness, the two sounds may form the image of a train approaching with accelerating speed at 1:31 of a real train stopping at a station." (Kim, 2010).

It is indeed impressive because in the piece there is no clear reference to any train. The main sound source could be a train or maybe a sound that is processed in such a way that it sounds like a train. In any case, the combination of the sounds as well as the listener's memories, experiences and imagination, create a specific atmosphere and a place, an image.

But sound relationships are very well connected to all the other compositional factors. They create complexity, or they can be used to simulate a landscape. In the following sections, it is going to be clear how and why sound relationships can contribute in imagination.

3.3 Real and Unreal Landscapes

Focusing on the imagination process, one of the main things that comes to mind is not only a specific story but also the place, the surroundings and "where" this story takes place. Even though it is not always necessary for a composer to build a landscape, neither for a listener to imagine it, it happens very often. Based on all the above important elements that contribute to our imagination, a composer can create a real or unreal landscape. Especially in electronic music, due to the wide range of sounds that can be generated plus the wide range of tools one can use to process recorded sounds, the formation of a landscape can become really easy.

Trevor Wishart mentions three types of landscapes one can create -apart from real environments that can be simulated. The 'unreal objects / real space', the 'real objects / unreal space' and the 'real sounds / real space'. In the first two cases his point is clear. Transformed sounds exist in a real soundscape or "real" sounds exist in a "non real" space. The third environment he describes it as surreal.

> "We might accomplish this by a gradual process of substitution, or some stage along this process we begin to perceive a different kind of landscape. The disposition of the objects remains realistic (in the sense that we retain the image of the acoustic space of a 'forest') yet the sound sources are not real in any sense of the word. Here we have the first example of an imaginary landscape of the type 'unreal objects / real space'. If we now take the original sound-objects (the animal and bird sounds) and arbitrarily assign to each occurrence different amplitudes and degrees of reverberation or filtering, we achieve a second but quite different kind of imaginary landscape of

the type 'real objects / unreal space'." About the third case he continues, "(…) by appropriate editing and mixing procedures, we are able to animate a duet between a howler monkey and a budgerigar or a whale and a wolf; we have a landscape in which the sound sources are real and the perceived space is real, yet the relationship of the sound images is impossible… I therefore propose to call this type of imaginary landscape (real sounds / real space) 'surrealist'" (Wishart, 1986).

Wishart is not only interested in the landscapes one can create but also about what techniques one can use to start creating different worlds, spaces that can be real or unreal.

At the same time, Ambrose Field suggests: "A sonic landscape can be identified in term of its 'landscape morphology'. There are four main categories of landscape morphology. Hyper-real, Real, Virtual, Non-Real." (Field, 1988). The *'hyper-real'* refers to situations that appear to be *'more real than real'*. In such situations belong landscapes that have all the elements of a real landscape but the information is fake. Field uses as an example of this landscape Luc Ferrari's "Presque rien no. 1". Ferrari, by compressing the timescale, creates a landscape with all the attributes of a real one but in real life this place does not exist. Real is the environment that "has not been simulated in any way". About the virtual landscape, he mentions: "Virtual reality is pure simulation, and is ultimately intended to be perceived as such." He considers such an environment Wishart's "Red Bird" where "humans transform into machines within large empty ambiences, animals run for shelter in windswept landscapes and the audience is invited to 'listen to reason' amidst burbling water textures. These landscapes have little to do with reality -except that they are purely surrealistic brought about by the abstraction of real events and spaces." Finally, what is left

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belongs to the *Non-Real* environment. "These are environments that are not surreal, nor are identifiable as real in any way. For example, a Non-real environment could consist of highly processed textural sounds that are remote surrogates of their original recordings." He identifies as *Non-Real* landscape, Denis Smalley's "Wind chimes".

Obviously, the sounds themselves define a landscape. In the above examples we can clearly see that the combination of the sound objects with the use of a space, create a real or unreal landscape. But one can start wondering, what is finally a landscape in music? If one can recognize real elements of a landscape -even more if it is a stimulation of a space- things are simple. But if we accept the "*non-real*" spaces, then theoretically any musical work can contain landscapes. Indeed, for a listener, any musical piece could consist a landscape because imagination is unlimited. So even if the composer is not interested to create a landscape, he very often does. If the composer's intention is to create a landscape -like Wishart does in "Red Bird" or Ferrari in "Presque rien"- the listener can imagine a space, animals, humans or any of the sounds in that space, and follow a specific story the composer wants to describe. There is the case of a composer who, even if he is using sounds of most people's everyday life, is not interested in "landscapes". For instance, Jonty Harrisson's "Klang", contains sounds that people are familiar with, but his approach to his music is not the same as Wishart's. In such a piece, if we adopt Schaeffer's theory that listeners shouldn't perceive the meanings that the sounds carry, but focus only on their musicality, then we are not supposed to imagine a landscape. But for many people, this piece brings images and one of the reasons is the sound material, because contains familiar sounds of our every day life. Take for example the music of Xenakis. He simulates situations but for sure not landscapes. However, some listeners experience a place or a story. Therefore, in music listening the term

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landscape could be used to describe either a "traditional" landscape -where the composer deliberately simulates it- or a more abstract situation, place or space as an outcome of the listeners' imagination.

> "Does Xenakis want you to perceive 'gas molecules moving'? Maybe not, but he does believe it represents a deeper archetype of 'statistical' phenomena which permeate many aspects of our universe. Do Cage or Stockhausen intend you to 'hear stars' or at least 'star maps' – not really, although they represent an image of isolated points in patterns which 'translate' very neatly into musical patterns and reflect deeper-lying ideas they hope to articulate. For Cage they create yet another mechanism for the removal of human intention and memory, and also perfectly mirror the Zen idea of 'interpenetration'. In Stockhausen's case the transition from astronomical to astrological has become clear in many of his works of the 1970s and he intends a conscious knowledge of relevant traits to be brought to bear on the music and communicated to the listener." (Emmerson, 1988)

The common element between the landscapes described above -real or unreal- is that they are defined by the sound relationships. Of course the sound connection is one of the principles in the music composition process but as has been mentioned earlier, it is also one of the main elements in the listening process. As a result the sound relationships can affect the way people imagine things. Indeed, Trevor Wishart is focusing on exactly this element when talking about landscapes.

3.4 Noise and Silence

Noise and silence, by definition have opposite meanings. In the Oxford dictionary, silence is explained as *"complete absence of sound"* when noise is *"a sound, esp. one that is loud or unpleasant or that causes disturbance"*. Even though most of the times in our every day language we use these definitions to describe a noisy or silent environment, we can very often use the opposite words to describe the same situation. For example, silence in a room can be considered the lack of music but this doesn't mean that sounds from the street outside cannot be heard in that room. And the opposite, one can consider the same room noisy because of the outside sounds coming through the window. Reading carefully the definition of those two words, it is easy to understand their subjectivity. Noise *"is especially the loud, unpleasant sound that causes disturbance"* but there is no rule for what is loud, for what is unpleasant or even more what disturbs someone. Each one of us can perceive a sound as noise or as the most pleasurable music. Similarly silence is *"complete absence of sound"*, but in fact that is as impossible as being in a room without reverberation. Theoretically this exists, but not in our everyday life. Therefore, even if people most of the times agree in the usage of the words noise and silence, it is also important to mention their subjectivity. "To experience pure silence or to endure the magnitude of an absolute noise would be to reach the edges of perception. Within this range there are of course a multiplicity of ways to understand and appreciate silence and noise (…)." (LaBelle, 2010).

In this chapter, noise and silence are presented together not because of their opposite meanings but as important compositional elements that contribute to the listeners imagination due to their subjectivity of their context. "Silence and noise circulate as sonorous material as well as conceptual structures; they operate as

extreme points on the sonic spectrum, filling the imagination with powerful imagery as to the dynamics of auditory experience." (LaBelle, 2010). Both noise and silence can have a different definition in social and musical terms. In the present text, the interest is focused on the musical approach even though the borders are not always clear and the result is sometimes confusing. For this reason, this text mostly emphasizes what is interesting for the aural perception and imagination analysis in electronic music, even though other approaches are often presented because they cannot be completely ignored.

3.3.1 Noise

One century after Russolo's manifest, people involved in music still discuss noise. Through the years, a lot of composers expressed ideas similar to Russolo's and tried to present another perspective of what is noise and what is not. Pierre Schaeffer, in 1948 composed the "Quatre etudes de bruit" where even he himself calls his sound material "noise".

The origin of the word noise is from the latin *"nausea"* that derives from the greek nausie (from naus = ship, ναυτία in modern greek). Both mean motion sickness, seasickness caused by the motion of the sea. Of course the meaning and the way in which we use the words change through the centuries, but by analyzing a word's origin we might see the actual meaning. Things are not so different today as we mostly use the word noise to refer to an unpleasant situation. Murray Schafer refers to four types of noise: unwanted sound, unmusical sound, any loud sound, and a disturbance in any signaling system (such as static on a telephone or snow on a television screen) (Schafer, 1994). In physics, in music or even for images we use the word noise to describe "unwanted" information. "We know they are noises in the first place because they exist where they shouldn't or they don't make sense

when they should." (Kahn, 1999). Jacques Attali has another approach to noise and music, focusing on and analyzing social facts.

"A noise is a resonance that interferes with the audition of a message in the process of emission. A resonance is a set of simultaneous, pure sounds of determined frequency and differing intensity. Noise, then, does not exist in itself, but only in relation to the system within which it is inscribed: emitter, transmitter, receiver. Information theory uses the concept of noise (or rather, metonymy) in a more general way: noise is the term for a signal that interferes with the reception of a message by a receiver, even if the interfering signal itself has a meaning for that receiver. Long before it was given this theoretical expression, noise had always been experienced as destruction, disorder, dirt, pollution, an aggression against the code-structuring messages. In all cultures, it is associated with the idea of the weapon, blasphemy, plague." (Attali, 1985)

At the same time, with the word noise we could describe a signal. There are several types of noise such as white, pink, brown etc, whose main difference is the energy per frequency. In physics and acoustics, noise as a random signal is an important tool. Things are more complicated in music because this signal is also used for artistic purposes and of course in this case noise is not "unwanted" information at all. As a result, on one hand noise can describe useless information and on the other hand, it can describe the sound source (e.g. White noise). In both cases it is clear that in musical terms, noise has more to do with the source of the sound than the loudness.

Indeed, when Pierre Schaeffer composed the "*Quatre etudes de bruit*" (1948), even though in the title he used the word "noise", it is more likely that he used the

term to impress or to describe his piece and it's sound source. Apparently, he doesn't consider his own musical piece unpleasant or loud. Of course Schaeffer was one of the revolutionary composers at that time, trying to start a new way of thinking on how people should listen to music. As a result, using "noise" in music and emphasizing this word, was some kind of revolution at that time. Perhaps it made people curious to listen to that piece, or he was trying to convince them that noise is not necessarily unpleasant. In 1937, John Cage talking about the future of music, suggested another approach.

"I believe that the use of noise to make music will continue and increase until we reach a music produced through the aid of electrical instruments which will make available for musical purposes any and all sounds that can be heard. Photoelectric, film, and mechanical mediums for the synthetic production of music will be explored. Whereas in the past, the point of disagreement has been between dissonance and consonance, it will be, in the immediate future, between noise and so-called musical sounds. The present methods of writing music, principally those who employ harmony and its reference to particular steps in the field of sound, will be inadequate for the composer, who will be faced with the entire field of sound." (Cage, 1937).

From that time until now, things have changed. In popular music "noisy" sounds are gradually used more and more. In the 60's one could see more rock bands using distorted guitars and sound effects that was considered noise in the past. In the second half of the 20th century, many kinds of popular music using noise were growing, such as industrial music, post-industrial, noise rock etc. In 2000, Bjork

composed the music for Lars von Trier's movie "Dancer in the dark" where among others, she used machine and train sounds. The movie is about an almost blind woman that pays attention more to sounds than other people do, due to her disability to see what is happening around her. She is able to see the musicality of the machines in the factory she works, and in her every day life. In other words, Bjork suggests something that Russolo did one century ago. The impressive thing, is that even one century later, she does not present the musicality of the machines as it is. She uses the rhythm and the repetitive pattern the machines have, to create music that most of the times was transformed from the machine sound to a melodic pop song. Of course the usage of the sound material differs from composer to composer and involves his personal view of his own music. But at the same time, especially through the pop culture, one can clearly see that the audience needs to be trained in some types of sound. Indeed, the distorted guitars gradually became famous and were accepted by more and more people through the years -at least in the western culture- and their sound is no longer noise. But perhaps a train sound, even with emphasis in its rhythm, is.

In 2000, Kim Cascone published an article about the "aesthetics of failure" in electronic music where he was talking about the digital "mistakes" and how composers use them.

> "The "post-digital" aesthetic was developed in part as a result of
> the immersive experience of working in environments suffused
> with digital technology: computer fans whirring, laser printers
> churning out documents, the sonification of user-interfaces, and the
> muffled noise of hard drives. But more specifically, it is from the
> "failure" of digital technology that this new work has emerged:
> glitches, bugs, application errors, system crashes, clipping, aliasing,

distortion, quantization noise, and even the noise floor of computer sound cards are the raw materials composers seek to incorporate into their music." (Cascone, 2000).

Even though composers in electronic music are more open to the idea of noise, digital mistakes, clicks and bugs were not very popular in music twenty years ago. But in the mid or late 90's they became popular among the composers. It seems logical, because during the 90's more people were able to compose music with computers. Although Cascone accepts that any kind of digital "failure" can be music, in a way he also admits that noise exists and can be unpleasant. "There are many types of digital audio "failure." Sometimes, it results in horrible noise, while other times it can produce wondrous tapestries of sound. (To more adventurous ears, these are quite often the same.)" (Cascone, 2000). Cascone refers to *"more adventurous ears"* and by that he accepts the fact that people, even people involved in electronic music, can find something noisy or less pleasurable. Moreover, it is proved again that people's perception about noise changes through the years according to their experience, their cultural development etc. When computers became popular and could be used by more and more composers, the digital clicks were not yet mistakes and could be parts of a composition. Exactly as Russolo suggested, the new "noisy" sounds after the industrial revolution, could also be part of the music of those times.

In contemporary music, in one or another way, every composer has to deal with noise. Of course the use of noise, either as a signal or whatever is considered "noisy sound" is more than accepted. For many years already, composers use any kind of sounds, or noise (such as white noise) to make music. In 1995, when Stockhausen presented the *"Helikopter-Streichquartett"*, the impressive thing was not the helicopter sounds blending with the sound of the strings, but the extraordinary and difficult way of the realizing the piece. Any sound can be part of a composition

and used in any way according to the needs of the composer. Hence, one can say that noise does not exist. For a composer any sound can be "noise" because it does not fit in his composition and any sound considered noise by others, can be part of his work.

3.3.2 Silence

Silence, like noise, can also be interpreted different in musical and social terms. The difference between silence and noise is that both in music and every day life, silence is considered valuable and people's perception about silence -especially talking about music- is more or less the same through the years. Nowadays, more and more companies are oriented in developing silent machines for our home equipment, silent cars or anything that could contribute against noise pollution. Big highways are equipped with noise barriers and most of the devices we use in our every day life have been replaced with silent or less noisy ones. Therefore, people ask for silence and they need to live in a quiet environment. However, as has been mentioned in the introduction of this chapter, silence can be very subjective. The new generation of "silent" devices, are of course not absolutely silent, they just produce less noise. In any case, the need of silence in every day life is always increasing -apparently because humans use more and more automated devices with noisy motors- so people tend to appreciate silence more than sound unless sound is not clearly defined as music.

In music, silence is equally important. Each composer uses silence for different reasons but it is always used and treated as the sound. In tonal music, musical symbols include break symbols as well, and they are equally important and detailed as the ones that represent sound. In 1949, John Cage published the article *"Forerunners of modern music"* where he analyzed the process of composition and

gave the following definitions: "Structure in music is its divisibility into successive parts from phrases to long sections. Form is content, the continuity. Method is the means of controlling the continuity from note to note. The material of music is sound and silence. Integrating these is composing." (Cage, 1949). In the same article, in his discussion about structure, he mentions: "Sound has four characteristics: pitch, timbre, loudness duration. The opposite and necessary coexistent of sound is silence. Of the four characteristics of sound, only duration involves both sound and silence. (…)" (Cage, 1949). Indeed silence is, together with sound, the material of music and the only characteristic they share is duration. It is exactly because silence is the basic material of music that duration is important. There is no rule about the duration of the silence in a piece, so the composer has to decide if and how he is going to use it, exactly like his sounds. Depending on his needs, he might use silence to emphasize a sound, create dynamics, separate parts, or create an atmosphere. Silence does not necessarily interrupt sound but can also be the main ingredient of a musical piece where a sound interrupts silence. Thus, silence and sound, as Cage suggested, coexist in a composition either in balance or not.

The subjectivity of silence has also been discussed in music. Of course, not all the composers have the same approach but it is interesting to think again of John Cage and his "silent" piece 4'33'', and his general opinion.

"Silence is all of the sound we don't intend. There is no such thing as absolute silence. Therefore silence may very well include loud sounds and more and more in the twentieth century does. The sound of jet planes, of sirens etc. For instance now, if we heard sounds coming from the house next door, and we weren't saying anything for the moment, we would say that was part of silence, wouldn't we? (…)" (Cage, 1966).

As has been discussed about silence in our everyday life, Cage's belief is totally true. It is almost impossible to experience absolute silence, which is also true in music depending on our perception of the sounds. The silent moments in a composition are not necessarily silent during a concert where one can often hear people breathing, coughing etc. Cage, based exactly on this idea and the idea that any sound around us is music, composed the silent piece.

"The initial absence of music might be taken as an expressive or theatrical device preceding a sound. When that sound is not forthcoming, it might become evident that listening can still go on if one's attention is shifted to the surrounding sounds (…) Ostensibly, even an audience comprised entirely of reverential listeners would have plenty to hear, but in every performance I've attended the silence has been broken by the audience and become ironically noisy" (Kahn, 1999).

Although Cage has his own personal view on silence, it is accepted that the way he interprets it, is true. This doesn't mean that other approaches does not exist or are not important enough. Composers through the years, as well as contemporary composers, treat silence in music without paying attention to the sounds that might interrupt it during a performance, or they ask for complete silence from the audience during a concert. Even more, silence can give the opportunity to assimilate a sound or a musical work and the proof is that some silent moments are always necessary for the audience after a piece is over in a concert. Even if it is not pure silence, the audience still perceives it as silence and absorbs the information of the piece and most of the times they ignore any extramusical information.

In listening imagination the subjectivity of noise and silence can be very important. In Cage's example during the performances of 4'33'', during the "silence" any sound could trigger someone's imagination. At the same time, noise is also important. Due to the subjectivity of what is considered noisy or annoying, people can experience different feelings and reactions and if necessary, imagine different things. In addition, one can use "noisy" sounds as a sound source for his work such as machines, cars, or even helicopters as we saw. This encourages the listener to make associations among the sounds as well as imagine and create stories.

3.4 Transformations and complexity

Considering all the above as the most crucial components in listening imagination, one can conclude that specific techniques could be used to cause imagination. Sound material, time and duration, space and complexity are not only the principles in music composition but also the most concrete tools for a composer to trigger someone's imagination. At the same time, the listener tends to receive those signals unconsciously and interprets the music according to his experience. It is well known that these principles are blended very well together in a composition and it is almost impossible to make a reference in one of them but ignore the others.

As we have seen, in most cases the creation of a landscape -deliberately made or not- in music is based on the sound relationships, the way they are connected, transformed or blended. Time, duration, space, individual sounds, silence etc, are all contributing to the creation of an atmosphere. Either forced by aesthetic criteria, a symbolism or a narrative, a composer transforms the sounds in order to connect them. They can help to develop a structure, change the environment, combine different sounds and create a continuity, a meaning. Trevor Wishart, in "Red Bird" transforms the sounds in a very clear way. For him, sound transformations may be divided into 2 distinct types:

- ■ <u>Sequential transformation:</u> The sound is continually repeated with slight changes in its character on each repetition, until it becomes a new sound-image

- ■ <u>Continuous transformation:</u> One continuous sound begins as recognizably gestalt-A and, without pausing, becomes recognizably gestalt-B   (Wishart, 1977)

Indeed in "Red Bird", a "metallic hammer" is continually repeated until it becomes a clock. In this case, it is easy to recognize what he calls "sequential transformation". Later, an "alarm" confirms that the previous sound has indeed been transformed into a clock and gradually becomes a bird (continuous transformation).

On the other hand Denis Smalley recognizes two types of transformations, especially among acoustic musical instruments and electronics. "Transformation has two aspects: The first is transformation among instrumental identities. The second is transformation between instrumental and non instrumental identities" (Smalley 1993). In the first case he presents as an example the "Thema" by Horacio Vaggione. For Smalley, the connection between the electronics and the instrument is a continuous transformation "(…) the impression is always given of a transformational relationship to an instrumental base". It is true, the electronics are blended with the saxophone in such a way that one cannot realize what sound comes from what source. This is mostly happens because there are continuous, well hidden transformations and the result is smooth and natural. About the second type of transformations, Smalley refers to "Verblendungen" by Kaija Saariaho where "(…) Instrumental identities are covered and the direction of transformation may be either implied or freed".

In any of the above examples, one can realize that a transformed sound can affect the listener's imagination. For example in "Red Bird", things are clear. A new, imaginary landscape is created in order to help the composer develop his symbolism. Besides, this is Wishart's intention. He is aware of the way the listener perceives the sounds and he is creating an imaginary landscape consisting of recognizable sounds to most of the listeners. But also in Vaggione's case, the transformed sounds can affect the way people are listening to his piece. By doing this, he is combining two almost opposite sound sources (acoustic instrument and

electronics) in such a way that he creates a new environment, a dialog that is based in similarities rather than contrast. The result could be even confusing for many listeners because of those similarities -when is the saxophone player active, how and what are the sounds he is producing?

Transformations can of course take place among more than two sounds. Blocks of sounds can be transformed into other ones and develop the general structure of a piece. In such a case, the techniques might differ. One can use the loudness of sounds as well as the pitch, to mask sounds so they could gradually replace some others and end up with a totally different part. The more sounds are involved, the more possibilities one has to transform them into something else because they can be combined in several ways. Obviously, this doesn't mean that a successful transformation happens only among plenty of sounds. However, it is probably wiser to focus on the complexity of sounds rather than their transformation.

Complexity has a strong relationship not only with the sound material but also with the space, time and transformation of a sound. Any sound apart from a single sine wave, can be considered complex. A sound in a large space, where reverberation occurs, is a sum of many different sounds at the same time. A transformation between two sounds is also based on their complexity, but time is also important. "Perception of sound complexity depends on time: we only hear the complex relationship between two sounds, if we remember both of them. Every sharp contrast interrupts our awareness of the respective average complexity" (Koenig, 1965).

A good example of complex sounds that involve all the above attributes of a composition, is Alvin Lucier's "I am sitting in a room". At the same time, this example shows how all these attributes can contribute in listener's perception and imagination of the piece. The listener can create an image of a man "existing" in a room but this gradually changes by adding the reverberation of the room to the

primitive sound. In the end, the sound has been transformed into something completely different. After some minutes the listener is already unable to bring in mind the person in that room. The combination of the voice and the reverberation of the room (complex sound) creates another environment than that person in that room.

We could say that this type of transformation is the "sequential transformation" that Wishart describes. Apparently the sound is very complex, consisting of many sounds at the same time and every new sound has a strong relationship with the previous one. Time is important, because the transformation takes place over a certain duration. The sound material is of course important because the result comes by adding new sounds to previous ones each time and obviously the space is important because it is changing the whole composition. The same piece performed in another place would be totally different, because the reverberation of two rooms cannot be identical.

Kim, explains more about the piece:

> "As the piece goes through many iterations of replaying and re-recording his voice in the room, it takes only a few minutes for us to begin to hear the sound of the room pitted against the original clarity of his voice; at about forty minutes, the voice becomes a memory set apart from the room in which it now only resonates. The process slowly replaces the sound of the voice with the color of the room, decoupling them from their original (albeit hidden) integration. But this decoupling of room and voice also causes our sense of the voice to change drastically. For as the energy of the voice is turned toward revealing the resonances of the room, the original voice gradually disappears into the overwhelming

reverberation of the room. In the end, only traces of the voice remain, recognizable in the rhythm of the resonant reverberations only to those who have followed the piece from the beginning. As a result, the voice loses its identity, becoming less and less voice-like, until we might finally call it Not-Voice."

(Kim, 2010).
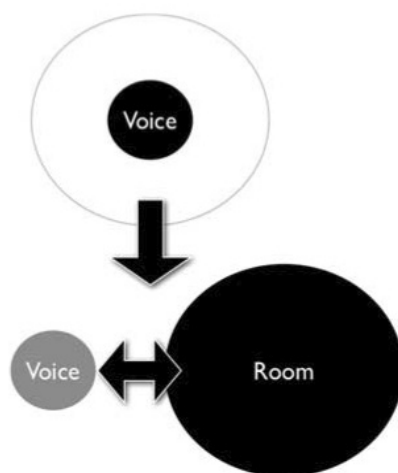
Pict. 2 Decoupling of voice and room.
The voice and the room are gradually decoupled in I Am Sitting in a Room

In music composition all main attributes of a sound, as well as the combination of them, have a very strong impact on each other. For this reason, any technique one might use to compose and connect sounds is going to be a result of many factors. Transforming or creating complex sounds is not an exception. Therefore, in music listening, any tool, technique or element could contribute to imagination, but transformations and complexity seem to be two of the most important ones. In all the above examples about noise and silence, about sound relationships or the creation of a landscape, one can see that we are able to make associations mostly because of the combinations, the complexity and the way the sounds are transformed into something else.

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4. Personal works

4.1 Introduction

In this chapter, two of my works are presented. The analysis that follows is not focused so much on the morphological aspects of the work as on the concept and the associations one could make while listening to the pieces. The importance of this chapter is mostly that by analyzing my own pieces, I can go a step further and explain my personal approach to music listening and imagination in a better way. I explain the concept and the compositional process as well as the result and how this is connected to the idea before I start realizing the pieces. I find this necessary because my work is not based in very concrete sounds, neither in "traditional" narratives but my personal way of composing is mostly focused on the above ideas rather than technical elements. In other words, I am mainly interested in the concept and most of the times the pieces are a metaphor or a presentation of something else.

Another reason that I find this chapter important is because imagination is a very subjective sense and it is almost impossible to analyze other works if the composers themselves don't declare their intentions about their concept. For this reason, in order to present the basic elements of music listening, I chose in the previous chapters to make references in the most representational works with very strong meanings and almost obvious narratives. My personal opinion though, is that imagination can take place among any kind of work, even the most abstract. This for two reasons, first because if the composer has a concept then it is very likely that some of the listeners will understand it themselves or at least understand that there is some description, an idea; even if they are not aware of the concept. Second

because imagination cannot be controlled and even in the most abstract ideas, a listener can imagine specific things, stories or landscapes.

4.2 Twinned

4.2.1 The concept

The piece is three independent shorter pieces consisting of three different sound sources respectively. The first is made by harmonica sounds, the second by human whistling and the third by mouth harp recordings. The main goal was to create a relationship between the three miniatures so that they could be used one next to the other to create a longer structure but at the same time, remain independent pieces. It was important to keep the three pieces independent because the goal was to be able to play the three miniatures in any order but still make them capable to create a longer piece in their combination.

The main similarity between the pieces is their structure and the sound processing. I created seven groups of sounds for each piece using the same tools to process the sounds for each group. After that and while composing the first piece, I created a pattern where sounds of specific groups appear in specific order (Pict. 3).

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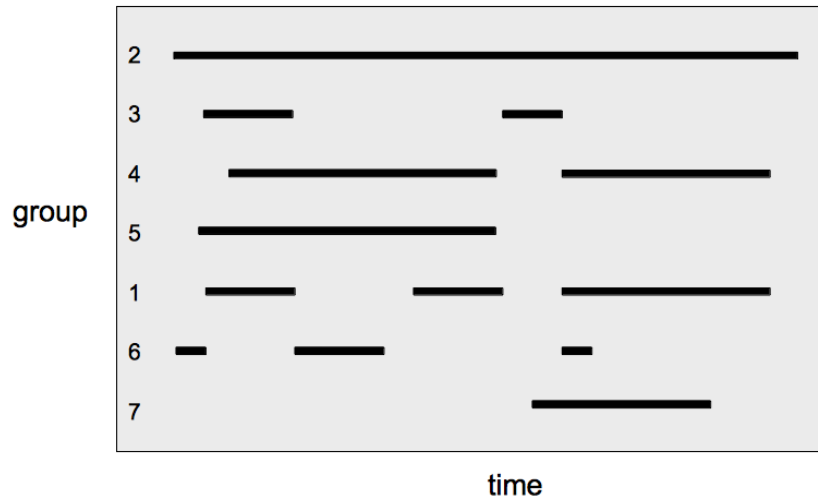
Pict. 3 The groups of sounds as they appear in "Twinned"

The groups appear relatively in time and they don't have a standard duration for each piece. By doing that, on one hand I managed to have less limitations and more control to the aesthetic result and on the other hand, the similarities became less obvious. Also, every time a group appears it could consist of any number of sounds. This means that group 3, for example, could be only one sound or a combination of sounds by this group.

Another important element about that piece is that the groups are also used for the sound spatialization. Thus, in each of the eight channels, specific groups appear for every piece. Below there is a diagram that shows the arrangement (Pict. 4).
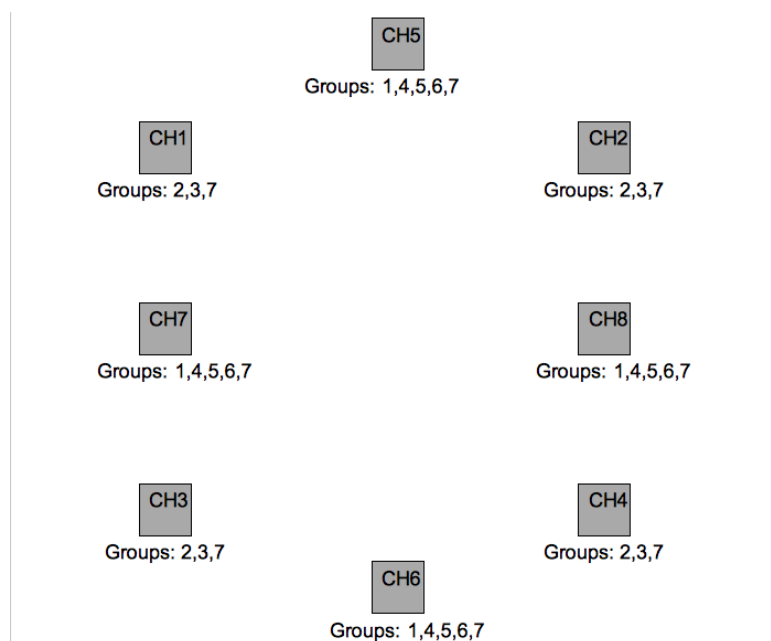
Pict. 4 Arrangement of the groups in space

Although the groups for each channel are specific, not all the sounds of each group are used in all channels. This means that if for example group number one consists of five sounds, some of them could be placed in channel five, some in channel seven or sometimes all sounds are in all possible channels.

In this piece the most important thing was to work with the two limitations, follow the pattern and keep the three miniatures independent. Those limitations caused some problems either in each short piece or the combination of them. The problems were mostly solved by the fact that there is no limitation in the time and the total duration for each piece or group of sounds, as well as there is no limitation in the amount of sounds that appear. By doing that I managed to compose independent pieces with their own characteristics even if the structure was almost the same for each piece. About the combination of them, the structure, the pitch and the spatialization similarities are used to connect them.

4.2.2 The result

The miniatures could be presented in any combination due to the fact they are independent. I decided to build the piece in this way for subjective reasons, because I made the pieces in that order and there is an inner development in the whole composition. This development is a personal view of the piece and myself while composing. It has to do with how the piece is created through time and how my own perspective changed while composing the three pieces, even if I had to follow the same steps. For myself is quite important that I can see the way I am dealing with the different sound material each time and there is a different way of thinking about the aesthetic result of each piece.

The sound material has been chosen according to personal aesthetic parameters. The recordings are made by various random sounds each instrument can produce and they are not based on a composed piece. That was a conscious decision that gave me freedom to use the material without having to deal with pitch and harmonic limitations. In this way I made my own choices about the pitch, the rhythmic elements etc. Even though each piece is made by sounds of a specific instrument, the final groups contain sounds not similar to each other. This was a hard part because I had to imagine how the sounds will be for all the three instruments after being processed and be able to create all possible sounds that could develop the idea for each piece. During the mixing procedure, I very often had to create more sounds and in a some cases I didn't use all the sounds I had made in the beginning.

The reason I find this piece interesting as an example is that it has a very particular concept and I am using sounds of acoustic musical instruments. I chose to work with those instruments for aesthetic reasons but also because I find it interesting to use sounds that anyone can recognize, but use them in a totally

different way. At the same time, this combination was a great challenge for me. I had to deal with the possible problems and find a way to combine them according to my personal taste. The use of instruments automatically makes the piece more abstract than the examples I describe in the previous chapter. However, there is a concept in the structure of each miniature and this concept was important for me to organize my material, as well as to have a meaning, to present the idea. During the piece one cannot always recognize what the sound source is. Some groups contain sounds with more information about the sound source and others contain less. Group number three is a good example of sounds that have been processed very much. Also, the seventh group contains sounds of each instrument without any processing at all. My main intention was to create a mystery about the sound source during the piece and finally reveal the information (In the diagram above, one can see that group 7 appears only in the end of each piece). I see the combination of electronics and instruments as a battle that the instrument finally "wins".

Even though the concept of the piece as well as the concept of each miniature was very important to me while realizing the piece, my main intention was not to make it clear to the listeners with program notes etc. The listeners can make their own conclusions and associations according to their experience. However the concept made my work descriptive. Even if one cannot recognize my idea exactly, I think he is able to see the repetition among the miniatures or the little "fight" between the instruments and electronics and translate it in any way. Although in this piece there isn't any "landscape" as the ones described previously, for me there is a specific place and a story. The little details on how I organize my material in the miniatures as well as the way I finally decided to combine them in order to create the long piece, describes specific situations. Maybe the descriptions concern more abstract ideas but I think it is possible for the listener to see these descriptions, or even better, to perceive them unconsciously and create another story according to his

experience or imagination.

4.3 Laminar Flow

4.3.1 The concept

"Laminar Flow" is a piece made of the sounds of machines and "noisy" motors, tools and appliances of our everyday life (drill, sewing machine, hammer, motorbike). The piece was supposed to be a composition for a dance performance that never took place. The main idea was to record these sounds because they are always rhythmical, but they are not made for music creation. I found it interesting to use these rhythms because I suspected that this could help the dancer to create the choreography, while it was challenging for me to use only "noisy" sounds with very specific texture, similar to each other. In addition, the dancer found the concept interesting because she wanted to emphasize the body movements as mechanical movements.

My main intention for that piece was to keep a balance between the dancer and the music. I was not interested in emphasizing the visual part more than the music, or vice versa. The result should be the perfect collaboration between them, where neither the music can be presented without the dancer nor the dancer without the music. For this reason, I always had a dancer and the possible movements in mind while composing even though my experience in dancing is limited and I had no idea what the choreography might be. However, I realized that even with this limited knowledge the way I was dealing with the piece was totally different than other times.

The form is quite simple. There are two main parts with a gradual development in the way the sound material appears as well as the dynamics. I did

this for two reasons. First, because I thought this is a good way to keep the balance between the music and the dancer. I did not want to overemphasize the music with a very complicate structure or form. The second reason was that, due to the lack of experience I had in working with dancers, I tried to keep it simple in the beginning to see what the outcome might be. I gave more time in the development so that the dancer has also time to develop the choreography without many dramatic changes.

4.3.2 The result

As has been mentioned, in the end the dancer didn't participate in the project. As a consequence, the music had to change because without the dancer it was impossible to develop my idea. Luckily this happened before the piece was finished so it was easy to change it. For this reason I decided to mix it for eight channels and almost replace the dancer by using more speakers. The four speakers in the corners contain more static sounds and they mostly represent the music as it should be with the dancer, while the back-front-side speakers, represent the dancer and her moves. Each speaker contains different sounds but very often all speakers contain the same sounds. This is because the main idea from the beginning was the collaboration between the music and the dancer. The borders should be blurred regarding what the dancer is describing and what the music. As a result I found interesting to "blend" the information among the speakers and even if I describe the dancer in specific speakers, these sounds can also sometimes appear in the other channels as well. In addition, I emphasized more in the microstructure of the piece, trying to imitate the possible moves of the dancer according to my imagination. Thus, one can listen to the grains in 3'00'' and perhaps perceive it as a specific move of a dancer on stage.

As with the previous piece, even if the concept is very important and defines

the final result, it is probably difficult for a listener to interpret it. But at the same time, the descriptions are very specific, so even if one cannot imagine a dancer he could see some motion in the microstructure, as well as listen to the main groups of speakers and how they interact with each other. Furthermore, the sound material is also important in that piece. The machines are not recognizable due to the processing, but they create a specific atmosphere and sometimes it may even be easy to guess. Their rhythm still exists and some specific frequencies that could be considered annoying are emphasized on purpose. The reason for this is that I, in my own way, wanted to describe the sound sources as something "noisy", something that we would prefer not to listen to in our everyday life. Hence, a very specific situation is described, a place and a story.

5. Conclusion

After the analysis of my own pieces, where on the first sight the story and the "landscapes" are abstract, I believe I made it more clear why I decided to focus on the imagination process in music listening. Even though my decisions when I realize a piece are based not only on the concept or the story but also in the aesthetic result, there are always some metaphors and some descriptions. Some listeners don't necessarily listen to this description and my intention is not to motivate them to listen exactly to my ideas. But at the same time it cannot be ignored. As imagination is a very subjective topic depending on his experience one could see or listen to my descriptions or not, or translate them in his own way.

The way I describe each situation is exactly what has been presented in this essay. The way I see noise and silence, how sounds are transformed and why and how I create an imaginary landscape, is my own way to use all the tools other composers use to create a real world and describe concrete stories. Even though my form most of the times is based on concepts, my decisions are based in more technical elements so that I can achieve the desirable result. Thus, I use pitch or spectrum similarities, specific durations, transformations etc. But I always keep in mind that sometimes only the meaning can result a descent connection among the sounds because the listeners (including myself) cannot ignore their memories; they recall if they need to.

Summarizing, it is wise to say that there isn't any specific rule one has to follow. The way we listen as well as the way we compose can be focused either in the technical point of view (as Smalley describes in "Spectromorphology") or the conceptual point of view (as Kim suggests). Very often the combination of both is essential. However a listener is focusing on the concept rather than the technical

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aspect. It is almost impossible for a listener (if he is not a composer himself) to focus on specific "textures" and "gestures" and think if they are well combined. These tools are important mainly for composers as one point of view on how humans perceive sounds. But even in this case, the composer's personal taste can cancel some of these "rules". I believe a composer should keep in mind any possible way of listening -if he is interested in describing an idea through music.

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Contents of the CD

The data CD contains the present text in .pdf format and stereo versions of my pieces "Twinned" and "Laminar flow" (.aiff format). In addition the pieces I have used as examples in this essay especially in the chapter "Imagination and reality" are also included (.mp3 format).

/01	Thesis text
/02	Twinned, Laminar Flow
/03	Presque Rien_Ferrari, Industrial Revelations_Barrett, Klang_Harrison, Red Bird_Wishart, Thema_Vaggione, Verblendungen_Saariaho, Wind Chimes_Smalley