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SYNTACTIC VERSUS SEMANTIC STAND: ANALYSIS OF JONTY HARRISON'S KLANG AND SURFACE TENSION

Bilkent University 2019

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A Master's Thesis

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Ankara
August 2019

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The Graduate School of Economics and Social Sciences
of
İhsan Doğramacı Bilkent University

by
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In Partial Fulfillment of the Requirements for the Degree of
MASTER OF ARTS IN MUSIC

THE DEPARTMENT OF
MUSIC
İHSAN DOĞRAMACI BİLKENT UNIVERSITY
August 2019

To my loving family and Yıldız

I certify that we have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Music

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ABSTRACT

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August 2019

During the 1980s and 1990s, English electroacoustic music composer Jonty Harrison (1952-) composed a series of tape pieces and collected them in an album called *Évidence matérielle* in 2000. In this thesis, two pieces, *Klang* (1982) and *Surface Tension* (1996) have been analyzed in order to place them accurately within the contextual framework drawn by Pierre Schaeffer, R. Murray Schafer, and Simon Emmerson. To discover the relationship of those concepts to Harrison's music, the author investigated Pierre Schaeffer's *Treatise on Musical Objects* (1966 edition), R. Murray Schafer's *The Soundscape: Our Sonic Environment and the Tuning of the World* (1977 edition) and Simon Emmerson's *The Language of Electroacoustic Music* (1986 edition). The intention of this work is to explore the musical connections between syntactic and semantic usage of the sound source on Jonty Harrison's *Klang* and *Surface Tension* regarding the musical approaches of Pierre Schaeffer and R. Murray Schafer.

Keywords: Jonty Harrison, Klang, Surface Tension, Pierre Schaeffer, R. Murray Schafer.

ÖZET

JONTY HARRISON'IN ESERLERİ KLANG VE SURFACE TENSION'DA SÖZDİZİMİNE KARŞI ANLAMSAL DURUŞ ANALİZİ

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Temmuz 2019

1980'li ve 1990'lı yıllarda, İngiliz elektroakustik müzik bestecisi Jonty Harrison (1952-) bir dizi elektronik müzik parçası yapar ve 2000 yılında *Évidence matérielle* adlı bir albüm çıkarır. Bu tez, *Klang* ve *Surface Tension* isimli parçaları Pierre Schaeffer, R. Murray Schafer ve Simon Emmerson tarafından çizilen bağlamsal çerçeveye tam olarak yerleştirmek için incelendi. Bu ekollerin ilişkisini keşfetmek için yazar, esas olarak Pierre Schaeffer'in *Treatise on Musical Objects* (1966 baskısı), R. Murray Schafer'in *The Soundscape: Our Sonic Environment and the Tuning of the World* (1977 baskısı) ve Simon Emmerson'ın *The Language of Electroacoustic Music* (1986 baskısı) adlı kitaplarını araştırdı. Bu çalışmanın amacı, Pierre Schaeffer ve R. Murray Schafer'in müzikal yaklaşımlarına ilişkin Jonty Harrison'ın *Klang* ve *Surface Tension* isimli parçalarındaki ses kaynağının sözdizimsel ve semantik kullanımı arasındaki müzikal bağlantıların araştırılmasıdır.

Anahtar sözcükler: Jonty Harrison, Klang, Surface Tension, Pierre Schaeffer, R. Murray Schafer.

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CHAPTER 1

INTRODUCTION

In a text he wrote about *Évidence matérielle* (2000), Jonty Harrison openly revealed his ideas and inspirations from Pierre Schaeffer and R. Murray Schafer. He compared the two approaches to the same street name differently on each opposing end, *rue Schaeffer* and *Schaefer Street* respectively. (Harrison, 2004) While *rue Schaeffer* indicates abstraction of sound objects and their musical information stripped from the meaning of their sources, *Schafer Street* underlines the sound sources which vitalize its natural form and referential aspects. Harrison claims that his own musical practice in his album *Évidence matérielle* is an interplay between these two approaches. Harrison's music from these two decades has contributed to field electroacoustic music composition in significant ways. Also, the influence of Pierre Schaeffer and R. Murray Schafer is undoubtedly apparent both musically and theoretically. Nevertheless, how he is influenced by these two composers has not been thoroughly discussed. Jonty Harrison was in search of synthesis between syntax and semantics. The syntax of the sound material of Pierre Schaeffer and the semantics of sound source of R. Murray Schafer are examined by many scholars. However, the comparison and analysis of

similarities and differences in Harrison's interpretation and musical practice in his music have remained limited.

The thesis will examine *Klang* and *Surface Tension* as they relate to the theories of Pierre Schaeffer and Murray Schafer. Harrison openly gives us the clue that the pieces are positioned somewhere on the street where one end is defined by Schaefferien *Objets Sonores* and the other by Schafer's highly referential soundscapes. For Harrison, this Schaeffer/Schafer division is merely two ends of the same road. (Harrison, 2004) The pieces, that are analyzed, identified as belonging to this spectrum. However, Harrison does not go into specifics as to how the pieces relate to Schaeffer or Schafer. The task of this thesis is mainly to shed light what Jonty Harrison means by *rue Schaeffer* and *Schafer Street* and then examine how these two pieces specifically relate to the theories and approaches of Schaeffer and Schafer. Writings and musical practices of Harrison indicate how he discovered and interpreted abstractions of *rue Schaeffer* and *Schafer Street* and how he interplayed the theories and inspirations between Pierre Schaeffer and R. Murray Schafer.

In the second chapter, three different musical approaches will be examined. Firstly, Murray Schafer's perception of the soundscape, secondly, Pierre Schaeffer's musical approach and lastly, Simon Emmerson's method of electronic music analysis Language Grid will be thoroughly explained. In the third chapter, *Klang* and *Surface Tension* will be analyzed in light of the information mentioned in the second chapter. The syntactic and semantic stand of these pieces will be investigated according to three different approaches mentioned above.

1.0.1. Objective of the study

There are lots of analysis methodologies in traditional acoustic music. However, in electronic music, there is no agreed analysis methodology by scholars. I, as a composer whose source of motivation comes from electronic music, and always interested with

the music of Jony Harrison considering his compositional techniques. I searched an answer for how I can study on his music and which analysis techniques that I could use to learn his compositional approach. Thus, I choose two pieces of Harrison, *Klang* and *Surface Tension*, which I find very rich in terms of their sonic world and analyzed by studying analysis methodologies. In the text written in the album, Harrison metaphorically creates two blocks, one direction is *rue Schaeffer* and the other is *Schafer Street* as Harrison explains these two edges. These two edges where the sonic world based on spectramorphological sound qualities versus natural sounds. My main purpose is to learn how I can use these two approaches in order to analyze these pieces and can I use them for my later compositional studies. Also in this thesis, I aimed to explain Harrison's understanding of *rue Schaeffer* and *Schafer Street* and which ideology they indicate. Furthermore, my intention is to confirm that as Harrison claims his music is located in between *rue Schaeffer* and *Schafer Street* by using these two approaches as analysis methodology. Additionally, I used Simon Emmerson's Language Grid based on the information that is gathered from Schaeffer's and Schafer's musical approach. Language Grid is a matrix where the musical stand of Schaeffer and Schafer finds a place. Therefore, I will mention what are the characteristic aspects of these approaches and will analyze *Klang* and *Surface Tension* by using them.

The reason I chose *Klang*, as Harrison mentions, the piece is located in between *rue Schaeffer* and *Schafer Street* while wandering to both sides of the road and is generally standing in the middle. Owing to the fact that *Klang* is a progressive piece of music which goes to the sides of the road of Pierre Schaeffer or Murray Schafer, it could be clearly analyzed and examined its regions in detail. Therefore, while analyzing, I thought it would give significant results since *Klang* goes to both sides from time to time.

On the other hand, the reason why I choose *Surface Tension* is that it is a stable piece

which has the opposite character of *Klang* which was a progress piece. It contains sounds that are much closer to the sound source and are more crispy, as well as it contains sounds that are too abstracted from the original material. It is essential to see while using Schaeffer's and Schafer's musical approach as an analysis method, what could be the possible results for *Surface Tension* while considering these two distinct features. As Harrison states that *Surface Tension* is closer to *rue Schaeffer*, I chose this piece to see if it, in fact, matches with Harrison's explanation.

1.0.2. Analysis methodology

Pierre Schaeffer's musical perception and his analysis method for sound objects are useful for studying the pieces detailedly. Examining the pieces by the perspective of Schaeffer helps us to understand small pieces of the puzzle. This is a decompositional process separating and classifying sound objects of the music. This method investigates pieces microscopically and explores the syntactic attribution of the sound object. I start to analyze pieces with TARTYP and tried to find out if there are any reduced listening technics used in the pieces. After categorizing the sounds in Schaeffer's diagram, I study pieces with the musical perception of Murray Schafer. Due to the fact that R. Murray Schafer's soundscape approach, in fact, is not an electronic music analysis methodology, the reason that I mentioned Schafer thoroughly in the thesis is to clarify his musical understanding. He is an important figure in electronic music composition who is a protagonist character of soundscape composition.

In this thesis, the written information about him aimed to show his musical perception. I only used *signal*, *keynote*, and *soundmark* in order to analyze the pieces and also searched for any sound *symbolism*. This helps to reveal the organization of the piece. The focus area of Schaferian approach is larger than Schaefferian approach. Both methods of Schaeffer and Schafer are complementary to each other. While the Schaefferian method is beneficial to examine syntactical features of sound objects,

Schaferian method inspects the semantical aspect of sound events. Moreover, while the former method is beneficial to study on a small scale area of the composition, the letter is useful for a larger scale area of the piece. Layering the music with the consideration of *signal*, *keynote*, and *soundmark* explore an ordered relationship among the sound objects that are already categorized with using TARTYP. Simon Emmerson's Language Grid looks at the big picture. It analyzes the whole piece and this method has the largest scale of focus on the pieces. This method gathers Pierre Schaeffer's musical perception and Murray Schafer's musical approach together in the matrix. I did not consider this method as a different approach but as a bridge which collects both approaches in a single roof. With using the information that is obtained from both the approaches of Schaeffer and Schafer, revealed the semantic and syntactic stand of both pieces at the end. Therefore, I could locate the place of the pieces in between *rue Schaeffer* and *Schafer Street*.

In addition, there are other methodologies that are used to analyze electronic music. The reason why I stick to my framework is to see *Klang* and *Surface Tension* through Jonty Harrison's eyes. In Lasse Thoresen and Andreas Hedman's article of *Spectromorphological analysis of sound objects: an adaptation of Pierre Schaeffer's typomorphology*, they expend TARTYP diagram by Pierre Schaeffer and develops the diagram by adding more columns and creating visual representations. This expended diagram is used for both analyzing electroacoustic music pieces and notate (ThoresenHedman, 2007). Also, Denis Smalley uses the term of Spectromorphology. As he states, "collection of tools for describing sound shapes, structures, and relationships, and for thinking about certain semiotic aspects - potentially analysis of a kind" (Smalley, 2010: 95). These are designed for the use of "describing and analysing the listening experience" (Smalley, 1997: 107).

Moreover, Smalley used terms of Indicative Networks and Indicative Fields in The

Listening Imagination: Listening in the Electroacoustic Era. It explains the association in the music that is comprehended as semiotic or mimetic. Indicative Fields are not solely based on information, events and messages; there can be, in fact, a relationship with the personal experience that is gathered externally (Smalley, 1993: 521). This method describes the connects between the listener's concern of the sound source and personal experience (Smalley, 1993: 521).

On the other hand, David Hirst analyzed Denis Smalley's Wind Chimes by using SIAM framework which is developed by him. With this framework he was able to analyze the piece by following parameters; segregation, integration (horizontally and vertically) and assimilation and meaning. The identification of sound events and semantic vs syntactic relationships are considered while analyzing the piece (Hirst, 2006).

1.0.3. Implementations

I used the following software to vitalize the analysis; Logic pro X, Izotope Rx 5, Spear, Open Music. I started to analyze the pieces in Izotope Rx 5 where I could see the spectrogram of the music. I tried to read the formal structure and the harmonic content by looking to the spectrogram. To get the harmonic content of a specific area, I cut that zone with Logic Pro X and I opened that part with Spear. Spear makes a partial analysis and can export as sdif file. With using Open Music, I can see the musical notational representation of the harmonic content. Additionally, I isolated the visible sound objects on the spectrogram in order to listen to them carefully.

CHAPTER 2

BACKGROUND INFORMATION

2.1. Brief Information about Jonty Harrison

Birmingham based British composer Jonty Harrison composes especially multichannel acousmatic music by particularly using environmental sounds. In 1980, while he was gaining DPhil from the University of York in Composition, he had chances to work in the electronic music studio. After his graduation, he joined the University of Birmingham in the Department of Music and there in 1982, he founded the BEAST (Birmingham Electro-Acoustic Sound Theatre). Between 1976 and 1980, he worked with many important electroacoustic composers and organizations in London and here he produces electroacoustic compositions that eventually became quite influential in the acousmatic genre. Moreover, Jonty Harrison, who has won many prestigious awards and held important positions both in European and American universities and electroacoustic institutions. He was also an accomplished teacher and has trained many composers who are active today. Harrison has four solo albums and they are performed and broadcasted worldwide. Apart from *Évidence matérielle* (2000) which

will be examined in this thesis, three others are called; *Voyage* (2016), *Environs* (2007) and *Articles indéfinis* (1996). (Harrison, 2000)

Today Jonty Harrison is considered one of the leading electroacoustic music composers. He also has developed an interest and expertise in its performance, historical theory, and aesthetics. In addition, especially since the 90s, his compositions have been in multichannel formats. Lastly, Jonty Harrison contributes to the development of computer software which is being used in multichannel compositions and still takes part in many advanced projects.

2.2. Jonty Harrison Comment on Évidence matérielle

> "My acousmatic journey seems to take me down a wide road. One side of the street has a sign saying 'rue Schaeffer' — here the preoccupation is with abstracting musical data from sound objects (*objets sonores*), without reference to their provenance in any anecdotal way. Activity on this side of the road springs from reduced listening and is primarily concerned with a spectromorphological exploration of sound qualities in order to discover (and, ultimately, to release) the latent structural properties of the material. This betrays a specifically 'musical' mindset, in which articulation of material and of structure dominates. The name on the other side of the road is hard to read, but I am sure that 'Schafer Street' — where natural sound is used precisely 'because' of its provenance, and where signification does not reside in the 'purely' musical (whatever that is) — cannot be more than a block away." (Harrison, 2000)

In the album of *Évidence matérielle*, he describes his approach metaphorically and depicts a street divided into two directions. He depicts himself constantly wondering in this street. These roads clearly represent Pierre Schaeffer and R. Murray Schafer. However, according to Harrison's abstraction Pierre Schaeffer has been mentioned as

rue Schaeffer and R. Murray Schafer has been mentioned as *Schafer Street*. Harrison interprets the *rue Schaeffer* as an abstraction of musical data which refers to sound objects without having any connection to its original source. Therefore, Harrison searches the hidden features of sound at the side of *rue Schaeffer*. On the other hand, he describes *Schafer Street* as natural sounds, used in an absolute sense. In Harrison's metaphorically abstraction of this two-way street depiction, he defines himself as a wanderer who has an unstable and uncertain condition where he observes the environment from the middle of the street.

In *Évidence matérielle*, *Klang* represents of this path not only the *rue Schaeffer* direction but also the *Schafer Street* direction. Although, Harrison used casserole dishes when he was composing *Klang*, neither his aim was pointing out to casserole dishes nor having an anecdotal context. On the contrary, *Klang*, *Sorties*, *Hot Air* and *Unsound Objects* are at the Schafer side of the road and has conceptual referential aspects. In addition, while *Klang* represents both two way of the depiction, *Surface Tension*, *Splintering* and *Streams* turns back to a more abstracted mode where most of the time connotational attributes of the sound material are neglected.

Yet, at last, he realizes that he connects with the abstract and the concrete nature of the sound material and finds connections between the Schaefferian and the Schaferian worlds.

2.3. Defining Electronic Music

Too many terms have been coined to this new genre of music that started in the aftermath of the Second World War. These terms electroacoustic music, electronic music, tape music, *musique concrète*, computer music and *elektronische Musik* are used in similar and interchangeably throughout the years. All these terms have historical connotations. They are not just defining electronic music but a school of practice. Two explanations of electronic music can be seen below. "Music made in whole or in part

by electrical instruments, amplified or electronically modified instruments, recording devices or computers" (Deutsch, 1993: 5). On the other hand, it is stated that "all music made with electronics, whether specifically with a computer, synthesizer, or any other special equipment" (Chadabe, 1997: x).

As can be seen in both of the explanations, the usage of any kind of electronic has become essential. In addition, while determining the definition of electronic music, it is uncertain whether the environmental sounds are considered or not. However, the definition of Jon Appleton significantly contains *concrète* or recorded sound. "When referring to electronic music I mean music composed by using electronic instruments and *concrète* sound by living composers and by computers" (Appleton, 1989: 69).

He later relates soundscape compositions with *musique concrète*. Owing to the fact that the terminology that electronic music and electroacoustic music, in fact, defines the same field where their boundaries are very wide. This is the reason why both terms are being used interchangeably. Barry Schrader makes the most thorough rationale definitions. He explains *musique concrète* as "any electroacoustic music that uses acoustic sounds as source material" (1982:2) Electronic music as "music in which the source or original, sound material has been electronically produced. This is usually done with electronic oscillators" and computer music as "a type of electronic music in which a computer is used to generate the sound material". In addition, the term of electroacoustic music is used by Schrader to indicate that associate any of the former explanations.

Besides, the two phenomenal pioneers of the electroacoustic music studios RTF (Radiodiffusion Télévision Française) in Paris and WDR (Westdeutscher Rundfunk) are expressed themselves as against each other. Pierre Schaeffer, the director of RTF, stated that the music they are composing is *musique concrète* which means getting a direct connection with the sound which declared as:

> "I mistrust new instruments, waves or waveforms, what the Germans pompously call elektronische Musik. Before all electrical music, I have the reaction of my violinist father, my vocalist mother. We are artisans. My violin, my voice, I meet them again in this bazaar of wood ... and in my truck horns, I seek direct contact with sonic materials, without electrons interposed." (Schaeffer, 1990: 26, translated by Andra McCartney)

WDR Studio separated the recorded sounds that are called concrete sounds from their musical approach. They composed with more sterilized materials made of sine waves and oscillators with the serialism compositional technique which is stated as:

> "In electronic serial music ... everything to the last element of the single note is subjected to serial permutation ... Today, the physical magnification of a sound is known... as exact scientific data ... Talk of 'humanized' electronic sound may be left to unimaginative instrument makers." (Eimert, 1955: 8)

The synthetic discrimination between WDR and RTF evaporates in a few years. The composers of *Westdeutscher Rundfunk* stretched their techniques of composition beyond serialism and they started to practice acoustic sounds so-called *concrète* sounds while using electronic sources. On the other hand, Pierre Schaeffer and his colleagues started to manipulate the recorded sounds in their studio what made the sound sources imperceptible while the first works of the RTF had recognizable sound sources. The shields between these two approaches disappeared. Moreover, Hans Ulrich Werner and Michael Rüsenberg (Madrid, 1995; Lisboa, 1994 as cited in McCartney, 2000) who are the two soundscape composers produced two urban soundscape composition CDs in *Westdeutscher Rundfunk*. Although lots of textbooks state the contrastive approaches between *Radiodiffusion Télévision Française* and *Westdeutscher Rundfunk* in terms of *musique concrète* and elektronische Musik continued,

the division between two approaches has widely decreased by the time these publications were released. While *musique concrète* connotates to tape music that can create confusion, the term electronic music refers to all types of electroacoustic music that may also include the approach of *elektronische Musik*.

CHAPTER 3

BACKGROUND METHODOLOGY

3.1. Raymond Murray Schafer's Soundscape Approach and Semantic Relationship

3.1.1. Musical approach

Raymond Murray Schafer is a Canadian composer, environmentalist, music educator, and writer. He developed his theory on environmental sounds, which is called soundscape. He examines the sounds of different cultures and places, in precise detail. Schafer explores the connection between man and environment and searches an answer on what could be the result on local people if the sound of the environment changes.

Schafer devoted himself to understand the environmental sounds of the world. History, culture and geographical features play a huge role in the semantic relationship of sounds. On the other hand, he is dealing with the noise pollution problem over the world and researches on the relationship of cause and effect on noise pollution. He states that the industrial revolution increased noise pollution over the world and

caused universal deafness. In addition, he is against to decrease all the sounds in order to reduce noise pollution without investigating its content. Instead, he suggests finding the sounds inside the noise cloud that should be stayed or increased. Due to the fact that the answer to this suggestion will show which sounds can remain, the others which should be eliminated will reveal (Schafer, 1977: 3).

He believes that the only way to improve the acoustic design of our environment is an interdisciplinary synergy. According to Schafer, we must take our cue from Bauhaus school where architects, painters, sculptors, and designers are working together in order to develop the industrial design. Thus, in order to find innovative suggestions for advancing the acoustic design of soundscape, it is important to work together with musicians, acousticians, psychologists, sociologists, and other professions (Schafer, 1977: 4).

This is why Schafer treats to the world as a macrocosmic musical composition that humans are both the composers and performers who are accountable for shaping its form. This approach is very similar to John Cage's comprehension of music as seen in the quotation: "Music is sound, sound around us whether we're in or out of concert hall" (Schafer, 1977: 5). Both composers embrace the soundscape of the environment taking account all the sounds within. Schafer states that through the history the relationship between composers and the environmental sound starts with the Italian futurist, Luigi Russolo. He used environmental sounds to develop an orchestra of noisemakers.

> "When John Cage opened the doors of the concert hall to let the traffic noise mix with his own, he was paying an unacknowledged debt to Russolo. An acknowledged debt was paid him by Pierre Schaeffer during the musique concrete it became possible to insert any sound from the environment into a composition with tape..." (Schafer, 1977: 111)

Thus, on account of the fact that the usage of environmental sounds is increased from the past to the present. The most critical element of the entire twentieth-century music is the soften lines between music and the sonic elements of the environment.

Schafer states that the relationship between semantics and sound cannot be separated. Among many reasons cited in *The Soundscape: Our Sonic Environment and the Tuning of the World*, I will mention two selected critical connections that play a vital role in the environmental sound which will clarify why the semantics of the sound should not be separated from its source. In fact, it is beneficial to understand the factors such as culture, history, and geography which constitute semantics.

3.1.2. Elements of a soundscape

A soundscape is not about solely hearing the sounding objects but perceiving the event itself. An acoustical environment, a musical composition, and even a radio program can be an example of a soundscape. To examine a soundscape, one must understand the important properties such as their identity, mass, and influence (Schafer, 1977: 9).

Schafer takes three identical terms from visual arts to understand the features of the soundscape. *Figure*, *ground*, and *field*. *Figure* is the target of the concern where it gets all the attention. It's placed on the foreground and takes an interest. *Ground* is the context or location which places to the background. *Figure* can be comprehended with the presence of the *ground* that helps to expose the outline and mass. Thus, *figure* cannot stand alone without its *ground*. And lastly, *field* is the location where the action is being done. More importantly, *field* plays a huge role in the perception of *figure* and *ground* (Schafer, 1977: 152).

Field can change the perception of ambiance or the focus of interest. In other words, according to the place of observation, the terms of *figure* or *ground* can be used

interchangeably. Hence, when these terms take place to help us out to understand better how to consider a soundscape, Schafer used terms such as *keynote*, *signal*, and *soundmark* for the aural equivalent to the visuals. *Keynote* is the character of the soundscape. As in tonal music, a musical note gives the character of music which helps to classify the tonality. The characteristics of *keynote* are; it is overheard, it becomes a listening habit, it is not consciously listened and it is produced by its geographical features. Moreover, *keynote* sounds are the ambiance sounds which are at the background. For example, forest, plains, water, and birds.

Signal is the foreground sounds and being listened consciously. It is the *figure* rather than being the *ground* with the comparison to visual practice. *Signal* sounds take attention and become more prominent. For example, sirens, horns, and bells are good examples of a *signal*.

Soundmark is the corresponding term to *field* in visual tradition. Listening consciously or not, is much related to defining the sound as a *signal* or a *keynote*. However, the vital variable is the *soundmark* that can change the perception towards to *signal* and *keynote*. To clarify, what makes them *signal* or *keynote* is related with the *soundmark*. To illuminate, in the very noisy places, quite sounds cannot be perceived as *signal*, they are usually categorized as *keynote* yet they can be identified as *signal* if they listened in a very quiet environment. For instance, while a car engine sound can be recognized as part of *keynote* in a modern city, it can easily become a *signal* in a rural area. In addition to the effect of *soundmark* and *field* on the perception, the state of mind plays a crucial role on the recognition of *signal* and *keynote* or *figure* and *ground*. Hence, the observer is also affected by the memories and experience of the place (Schafer, 1977: 152).

3.1.3. The hi-fi and the lo-fi soundscapes

There are two different terms in order to understand the quality of the soundscape. Schafer defines the quality of the soundscape by using the terms of *hi-fi* and *lo-fi*. These terms come from the hi-fi, lo-fi systems which indicate the signal to noise ratio. It is the same as the usual usage of the term in this context. When there is less noise, sound quality is better. The soundscape equivalent of these terms is related to the noise percentage. What makes noise in the soundscape is the conflicting sounds that have the same frequency band. On account of the fact that frequencies are overlapped, the definition of *signal* and *keynote* is blurred and becomes harder to differentiate each one (Schafer, 1977: 43).

According to Schafer, the *lo-fi* soundscape is the consequence of the Industrial Revolution and the Electric Revolution. The former caused a blurriness to the soundscape and the latter created the way worse. In the phase of the Electric Revolution, the most important factor of how it affects the quality of soundscape was the recording and playback technology that can amplify the sound or play the source of the sound in any location which is called as *schizophonia* by Schafer (Schafer, 1977: 90). On the other hand, due to the fact that *hi-fi* soundscape has less noise, it has a more clear texture. Which means each layer has its own frequency band because of that the contrast of *signal* and *keynote* are more definite. For example, Schafer describes rural areas, night time and ancient times as *hi-fi* soundscape when compared to the modern city, day time and modern times according to their noise content (Schafer, 1977: 43).

Additionally, in a soundscape, one or more *sound event* can be heard simultaneously. Schafer defines gesture as an exclusive single event which is very noticeable and specific. On the other hand, he describes the texture as the accumulation of activities that are indefinite and more complex (Schafer, 1977: 158).

3.1.4. Symbolism

Schafer mentions three terms that indicate the aspects of sound; *sign*, *signal*, and *symbol*. Firstly, the *sign* is the image of natural existence. To clarify, they are the indicators of the sound and do not resonate by themselves. For example, musical notes are the inscribed representation of the sound. Also, the on and off switch on the radio are good examples of a *sign*.

Secondly, the *signal* are the sonic events that are connected to their connotations (Schafer, 1977: 169). To illuminate, unlike the *sign*, *signal* vitalizes straightforward a sonority. For instance, siren, horn and ring bell are the good examples for the *signal*. And lastly, the *symbol* has huge referential features. To clarify, when the *symbol* is heard, it brings our mind not its real meaning but its connotations which is beyond its actual definition. On account of the fact that it has a huge relationship with the previously experienced information or cultural relationship that is separated with its physical meaning, it has a broad and extensive context associated with its background (Schafer, 1977: 169). That is why Schafer states many times that sound is not separated from its reference. Especially for soundscape researchers, it is an undeniable fact that the semantics of the sound is attached to its source and cannot be separated from each other.

When we consider that every culture has a different relationship with the soundscape, people, who belong to different cultures, comprehend the environmental sound variously. To understand how different approaches are shown by varying cultures, Schafer compares the sound sources and asks *earwitness* accountants (the one who declares that he heard the sound) whether they like the sound or not. In this context, he names the pleasing sounds as *sound romance* and displeasing sounds as *sound phobias* (Schafer, 1977: 146). *Sound romance* and *sound phobias* are the results of *symbolism*. Both terms are based on personal experiences and perception of the

meaning of the source material. Hence, the inferred values from the sound source can vary people to people.

The answers of *earwitness* accountants reveal the significant differences based on cultural values on sound *symbolism*. Moreover, geography and climate play a huge role in the *symbolism*. For instance, while people who live at the sea coast like the sound of ocean waves, people located inland like the sound of the waterfall. In addition, the strong winds are disliked by the people who geographically related to the ocean as New Zealand and Jamaica. Moreover, there are also global *sound romances* and *sound phobias*. For instance, most of the people like the sound of a purring cat. Besides, while New Zealand, Canada, and Switzerland find heavily distaste the sound of the machine, Jamaica has no notion for it (Schafer, 1977: 147). Therefore, while machine sounds are mostly deplored by the countries that are technologically developed, maybe liked by the countries where the machine sounds are received as new. As a result, *symbolism* has an enormous impact on the perception of the sound that is highly related to personal experiences. The important variables that affect people are the experience gathered from geographical features, climate, and culture (Schafer, 1977: 147).

3.1.5. Sound object vs sound event

If we look more closely; both R. Murray Schafer and Pierre Schaeffer devoted themselves to critically listening of the features of sound. Also, Schafer stated that "Although a mechanical engineer by training, Schaeffer never surrendered his ears for his eyes." (Schafer, 1977: 129) This shows that Schafer corroborates that both of them practice on the very deeps of the sound while Schafer appreciates the skill of *ear cleaning*[1] of Schaeffer. *Sound object* (*l'objet sonore*) is the term invented by

[1] *Ear cleaning: "A systematic program for training the ears to listen more discriminatingly to sounds, particularly those of the environment." (Schafer, 1977: 272)*

Pierre Schaffer which means sound as sound without accommodating its connotation. Schafer mentions that the *sound object* is the smallest contained fragment of a soundscape (Schafer, 1977: 129).

Owing to the fact that it has a beginning, middle, and end, it can be examined. The fact that *sound object* has a small proportion, it is analyzable because it has an envelope which is consist of attack, body (stationary state) and decay. In addition, Pierre Schaefer and his colleagues cut the attack of a sound that leads to a change in the meaning of the original sound source. For example, an amputated attack of a piano became a flute or bassoon sounded like a cello. Murray Schafer states that this kind of approach can be beneficial for students in terms of ear training purpose. However, he does not support the idea of separating the semantic features from the sound. On the contrary, Pierre Schaeffer is against to relate the referential aspects of the sound with its physical feature. "The sound object must not be confused with the sounding body by which it is produced" (Schaeffer, 1966, as cited in Schafer, 1977: 130).

The sentence from Schaeffer is clearly made his point of view in terms of working with sound. To clarify, Pierre Schaeffer is only interested in the phenomenological formation of the sound. Unlike the approach of Pierre Schaeffer, R. Murray Schafer states that this approach is limited for the soundscape researchers, and he emphasizes that it should be both important for the soundscape investigators that the referential aspects of the sound and its communication with the context of the *field*. (Schafer, 1977: 131)

While Schafer and his colleagues working on a single sound, they investigate contextual relationships of sonic material among *signal*, *symbol*, *keynote*, and *soundmark*. In order to evade any disorientation of terms, Schafer calls Pierre Schaeffer's *sound object* as a *sound event* in the context of the soundscape composition. "This is in line

with the dictionary definition of event as 'something that occurs in a certain place during a particular interval of time'- in other words, a context is implied." (Schafer, 1977: 131) Schafer underlines again the importance of the relationship between semantics aspects of the sound and the sound source. Moreover, Schafer draws a line between the *sound event* and *sound object*. If a sound recorded and examined in the laboratory, it can be called as a *sound object*. The same sound can be labeled as a *sound event* if it is investigated in the community (Schafer, 1977: 131).

> "To determine the way sounds affect and change one another (and us) in field situations is an immeasurably more difficult task than to chop up individual sounds in a laboratory, but this is the important and novel theme not lying before the soundscape researcher." (Schafer, 1977: 131)

Schafer and Schaeffer are affected from each other's ideas and works. R. Murray Schafer finds the system that was invented by Pierre Schaeffer very impressive. The system so-called *solfège des objects musicaux* considers the characteristic features of the *sound object*. Pierre Schaeffer made a paradigm that apparently classifies all the isolated sounds for the educational purposes of his students. However, there are two reasons that R. Murray Schafer does not seem to approve this system, one is its complexity and the other one is the isolation of the sound source's referential aspects.

> "In his book, he presents the paradigm in a table covering four pages. There are nearly eighty blocks in the table and many are further subdivided in a dazzling performance of French complexity. It would be useless to reproduce this table without Schaeffer's several-hundred-page-explanation and rationale." (Schafer, 1977: 134)

As Schafer states in the quotation above that he finds the four paged system complicated. Even if the system consists of many blocks, it is not enough for the explanation.

Moreover, Schafer claims that although the system has subdivisions inside, the blocks are again not enough. In order to use the chart, one must read hundreds of pages of explanations. This is the one trait that Schafer reacts negatively. Secondly, although there are too many descriptions and identifications in the chart, the system has the approach of sound as sound which eliminates its contextual connotation and it is not enough for the one who identifies himself as a soundscape researcher. (Schafer, 1977: 135)

The target of *solfege des objets musicaux* is for individual *sound objects*. According to Schafer, this system can be used either by improving itself for compound sounds or using the system for the *sound event*. The system of Pierre Schaeffer is more suitable for solo *sound events* nonetheless, it has to be altered for soundscape *field* concept and these parameters should be added before examining its physical attributes;

- The distance between the observer and the sound source

- The loudness of the sound

- Comprehensibility inside the ambiance

- Whether the *sound event* can be isolated from its content or it is a component of a bigger context

- Whether does the character of the *sound event* and ambiance similar

- Whether the environment have any drift, displacement, echo or reverberation

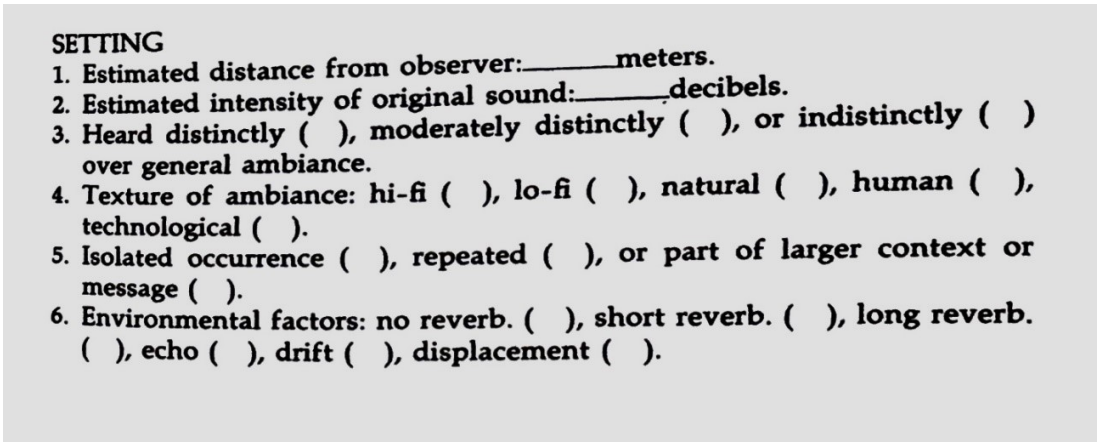

Figure 3.1: Sound event settings (Schafer, 1977: 135).

After getting the answers for these crucial questions, we are continuing to look at R. Murray Schafer's two-dimensional extensive table. These parameters; duration, frequency, dynamics, and temporary internal fluctuations are placed in vertically and attack, body and decay are located in horizontally. Pierre Schaeffer coined in the term internal fluctuations is consist of mass and grain (Schafer, 1977: 136).

Mass is associated with frequency. It is consists of frequency collection which is demonstrated as a frequency block by sketching its shape. Mass is a bandwidth of a sound collection. For instance, a filtered white noise in any range is a mass. On the other hand, the grain is a form of internal fluctuation that has a consistent modulatory reaction which affects the roughness of the texture of the sound. It makes a continuing tremolo that is the result of amplitude modulation or frequency modulation (Schafer, 1977: 136).

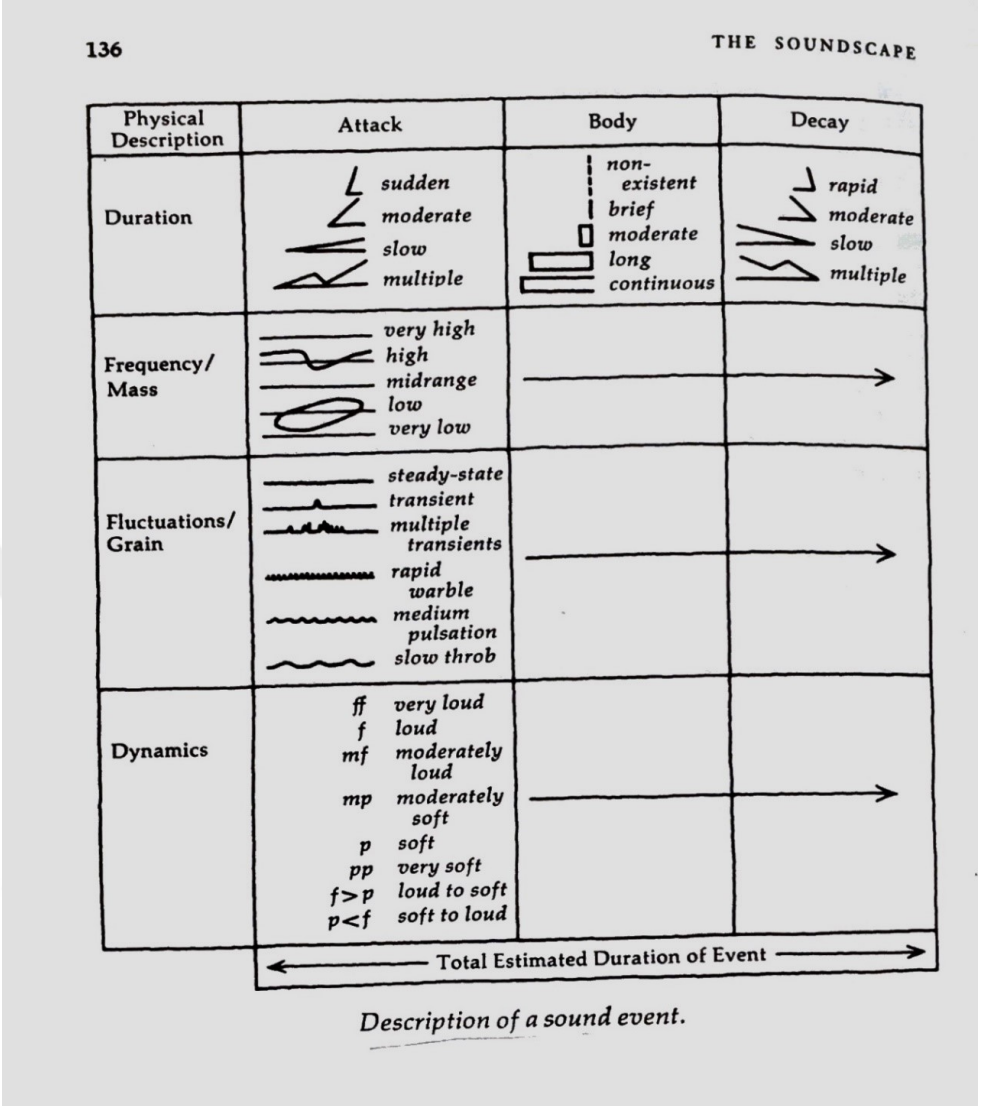

Figure 3.2: Schafer's extended chart (Schafer, 1977: 136).

R. Murray Schafer states that these graphical drawings are not aimed to be the exact shape of the sound. Yet they are beneficial for ear training students to understand the characteristics of a sound. This chart helps to discover the diverse attributes of sound *symbolism* by comparing the features of distinctive sounds. Although, the fact that this table has boundaries and is exclusively usable for secluded *sound event*, it is a rewarding system for finding unrevealed aspects of the segregated sounds.

3.2. Pierre Schaeffer's Musique Concrete and Syntactic Relationship

3.2.1. Reduced listening

Reduced listening is one of the three modes of listening which are casual listening, semantic listening and reduced listening as Chion defined them (Chion, 1994: 24). These three different types of listening are used for different purposes and we will mainly focus on the reduced listening.

Reduced listening is free from its meaning and its cause, and is focused on the sound solely rather than it's other traits. In other word, it inverts the bilateral keenness concerning meaning and causes, and it directs keenness to solely on sound (Chion, 2009: 30). The main focus of reduced listening is a sonic event that is not related to the referential aspects of the sound source. The most important value is the data inside the sonic event that is serrated its meaning and connotation. This method helps up to understand the important points of the piece and seeing it in a totally different way in terms of analyzing its structure.

In a typical listening process, the sound is perceived as a means. However, in reduced listening focusing solely on the *sound object* can be perceived as an anti-natural operation that eliminates all the habitual connotation in the listening process. In order to focus on unique traits which are implicit in our apprehension, reduced listening gives us the chance to focus on these traits in an unnatural way. That's why reduced listening refers to the isolation of sound perception and it associates with the *sound object* in a sense that they complete each other's in a receptive way (Chion, 2009: 31). By being unnatural we mean that when we hear the music we don't typically divide it into pieces as sound, meaning and etc. However, in reduced listening, that's what we do intentionally by separating the parts of listening and that's why we call it unnatural. Thus, this is an artificial behavior that helps to illuminate unique information inside the *sound object* itself.

Because of all the traits about reduced listening that I mentioned above, it provides us the chance to have a better perspective on how to focus on the sound solely. This gives us a little bit more information about different parts of the sound which makes sound what it is completely. It develops our understanding of recognizing different parts of sounds and makes us more attentive to certain aspects of the sound.

3.2.2. The laboratory

Schaeffer clearly defines how the musical system works. In order to understand how the musical system works, it is important to examine the attributes and clarify its framework. However, to do these kinds of researches required to have tools for it. Schaeffer states that it is impossible to do these analyses without having an electroacoustic laboratory.

> "When an artistic investigation becomes analytical, it may need equipment, not just to measure objects but also to display them in a different light, to "play them," as it were." (Schaeffer, 1966: 321)

Owing to the fact that Pierre Schaeffer used an electroacoustic system to understand the structure of the sound, he broke the wall of the endless cycles of aesthetic debate. He clearly explains this with the following quotation. "... is often the case with contemporary music: a prisoner of the system yet bewildered by its development" (Schaeffer, 1966: 321)

3.2.3. His approach to sound objects and sound recording

Sound objects and sound recording is important and it can basically be understood by factures. Schaeffer states the importance of facture many times. In this case, he is referring to facture in order to understand the attributes of the sound object in its nature.

> "Here we will use it to refer to all the ingenuity (rarely revealed in acousmatic listening) that goes into the creation of varied, formed, willed sounds in an infinitely more extended register of matters and forms than either the musician conditioned to registers or the physicist obsessed with filters and frequencies could ever have imagined a priori." (Schaeffer, 1966: 328)

For instance, if a traditional musician works with a metal sheet, he will directly ask a set of metal sheet and want to separate the sounds according to their registers. An electronics expert will cut the sound into pieces according to its frequency and duration. Although there could make a wide variety of musically possible choices over the sonic event, the frequency and duration have no relationship with these choices. As in the photography, it is essential to decide the following parameters; the angle, the distance and the lightning for the object, in fact, it is the same during the recording the sound object. These parameters are equally important to reveal the potential of the sound. The metal sheet can be scratched, hit, or stroked in various ways. And to record it, the setting of the potentiometer, and the filters, which can also in real-time, should be adjusted according to the position of the microphone/s (Schaeffer, 1966: 328).

First of all, using different drumsticks obviously changes the sound is variable. After that, while recording, surrounding play a huge role on the sound considering the positioning of the microphone and the surrounding materials. The quotation below mentions how potentiometer can change the sound.

If we wait until the attack to turn up the potentiometer, we obtain a sound that will be astonishing in its originality as much as its authenticity: it is both a sound we know well and one we do not recognize. Where fairly long objects are concerned, therefore, a skilfully handled potentiometer can be as effective and subtle as the violinist's bow (Schaeffer, 1966: 329).

After taking a recording of sheet metal, it can be mixed with different types of percussion. With this way, it can build a *sound object* by two blended sources. As a consequence of this method, the product has melodic modulations and rhythmic articulations, in fact, which are the result of superimposition and juxtaposition of the sound sources. Schaeffer clearly defines this working process as "in concrete music, in direct contact with the stuff of sound, like the sculptor with his clay." (Schaeffer, 1966: 329)

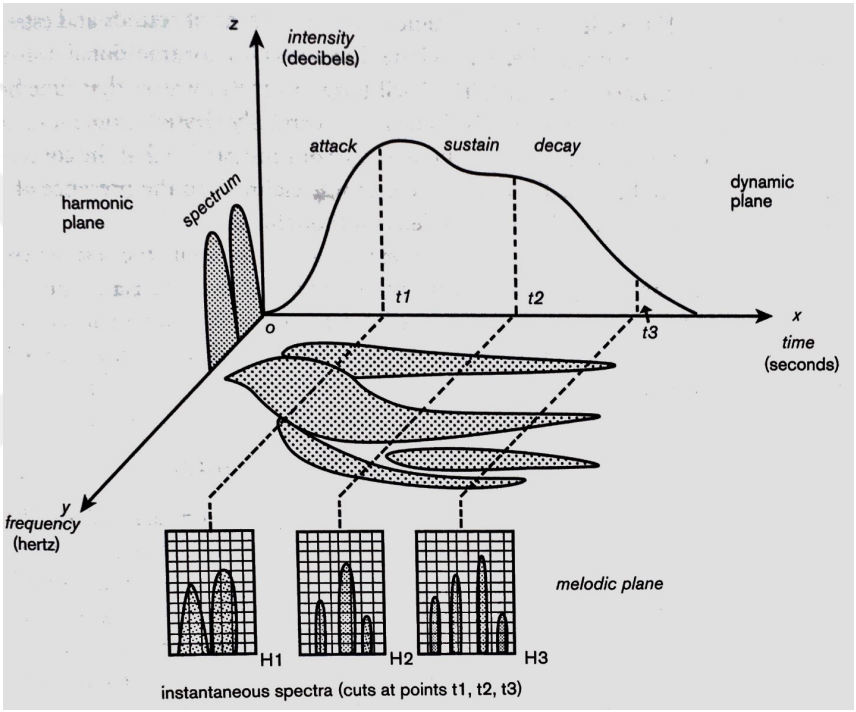

Figure 3.3: Pierre Schaeffer's reference trihedron (Schaeffer, 1966: 331).

According to Figure 3.3;

X = Time (seconds)

Z = Intensity (decibels)

Y = Frequency (Hertz)

Firstly, manipulating the duration in terms of cutting with scissors and editing. Secondly, with the use of potentiometer, it is possible to change the intensity of the *sound object* in terms of raising or lowering the overall levels. And lastly, Schaeffer manipulates the speed of the sound by speeding up or down the tape which alters both the rhythm and frequency of the sonic event. Therefore, the structure is getting richer owing to the fact that the *sound object* is transposed to a lower or higher register; the structural aspect of the sound matter is enriched. These three techniques that are used to alter the *sound objects* are related to the physical attributes.

3.2.4. Typology of musical objects

It is important to talk about the typology of musical objects because; it helps us to understand the definition and analyzing the process of the object. It is also an inseparable part of sonic events and it consists of three parts mainly which are called identification, classification, and description. Those three parts will be presented in the following sections in order to figure out different layers of sonic events.

3.2.4.1. Classification

Classification is one of the three processes of typo-morphology which is the first stage of musical research. It consists of typology and morphology that are discovering, listing and defining in terms of analysis and synthesis, which is an implementation of the sonic attributes of an object (Chion, 2009: 58). Hence, typo-morphology is a definitive pack of storage of sonic events. It plays a key role in sonic events as a definitive pack of storage. There are three essential processes of typo-morphology, which are identification, classification, and description (Chion, 2009: 58).

1- The identification of the *sound object* in terms of separation into fractions of sound.

2- The classification of the *sound object* in terms of a distinctive rough manner.

3- The description of the *sound object* in terms of indicating its unique features in-depth.

While typology is related to identification and classification, morphology is associated with the description. These three topics are examined in the six-dimensional classification scheme.

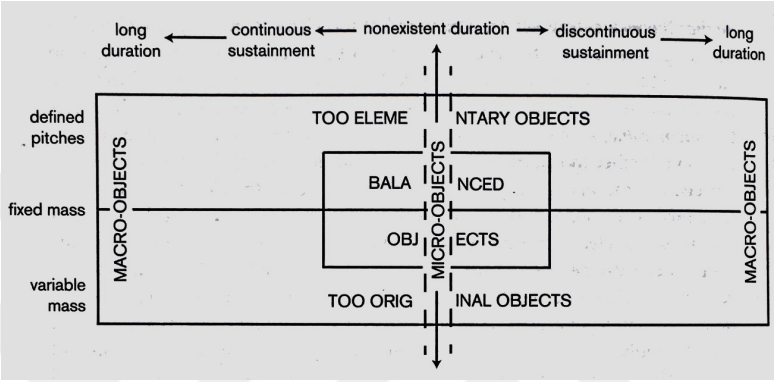

Figure 3.4: Typological characteristics (Schaeffer, 1966: 346).

The first two elements are facture and mass that are related to morphological aspects. The second two factors are duration and variation which are associated with temporality. The third two components are the balance of the object and the grade of originality that forms the structure. On account of the fact that Schaeffer finds the six-dimensional classification system as impracticable, to avoid inessential confusion, he defines the diagram as two-dimensional chart segregated into four blocks as seen in figure 3.4 (Schaeffer, 1966: 346). Schaeffer clarifies by simplifying the relationship between the member of morphology; mass and facture. He defines facture as "the qualitative perception of the energetic sustainment of object." (Schaeffer, 1966: 346)

The temporal variations are indicated horizontally. As it can be seen in figure 3.4, the horizontal axis at the midpoint illustrates the objects that have a short duration. Moving from midpoint to left or right indicates the sound that has more wide-ranging facture. Therefore, in the middle of the horizontal line, impulsive types of sound,

where the energy is revealed in one shot, are taking into consideration. For instance, in a short-range from the midpoint to the left describes the sound with continuous sustainment. On the other hand, moving towards to right from the midpoint, in the same manner, demonstrates the sound that has discontinuous sustainment and repeated sustainment.

The vertical axis illustrates variation and mass. The center of the vertical axis points out fixed mass, which is accepted as an overhead between variable mass and obviously distinguishable pitch.

In the center of the scheme contains balanced *sound objects*. When we go away from the balanced area, the sound has more original or elementary characteristics in the vertical axis. The vertical line in the middle of the diagram indicates micro-objects that has a short period of duration. From the upper side of the diagram to the bottom side, the originality of the sound improves.

3.2.4.2. Exploring column of the scheme

Facture and duration are shown in the horizontal axis. For example, the sounds of middleboxes are like pizzicato, glottal stop, and pulse. Although they have facture, it is not able to be perceived. In this zone, the sounds are well-formed, well-balanced factures have adequate originality as a bowed sound. There are two sides of the chart, the left side indicates continuous sounds and the right side demonstrates discontinuous sounds. If it is moved to the right side or left side of the chart, the beginning and the ending of the sound become unpredictable whether they are continuously sustained or iteration of an impulse, described as “nonexistent facture”. The edges of the diagram indicate the sounds that have longer duration factures consist of extended reiterations.

On the other hand, when we move to the left side, the first column is well-formed continuous factures. The sonic result of this area is consist of the sound that is well balanced in terms of duration, for instance, a bowed sound. If the left column of the formed continuous factures is viewed, which is continuous homogenous, the sound belonging to this area have not existent facture and have longer sustainment such as an endless note on hurdy-gurdy and an electric shaver. At the leftmost describes samples which have unpredictable facture and unpredictable rhythm. This side consists of a group of long-held sounds that are linking each other randomly such as a bowed sound being repeated inconsistency while connecting to each other as unpredictably irregular. On account of the fact that the permanency of the sound is clearly distinguishable among the whims and fancies, the object becomes more unified.

On the contrary, the discontinuous side of the diagram starts with formed iterative factures which are the closest column to the center. In this area, the sound has a well-formed facture such as a staccato on a string instrument. The duration of the sound is shorter when compared with the column formed continuos factures. As we move the right side of the scheme, iterative homogeneous appears. In this area, the sound has non-existent facture. Unlike the sound types of continuous and homogeneous, the duration of the sound becomes shorter and is repeatedly iterated in an infinite period of time such as repeatedly synchronized mechanical staccato.

The rightmost column with a discontinuous sound is accumulations. Both accumulations and samples have unpredictable factures with no temporal unity however, they demonstrate unique attributable differences. While accumulations consist of a group of unpredictable randomly iterated short sounds, the sample made by a group of unpredictable randomly sustained long sounds that are linked together. Example for accumulation: pizzicatos from a group of unsynchronized strings or randomly played staccatos from a string orchestra construct a multiform iterative.

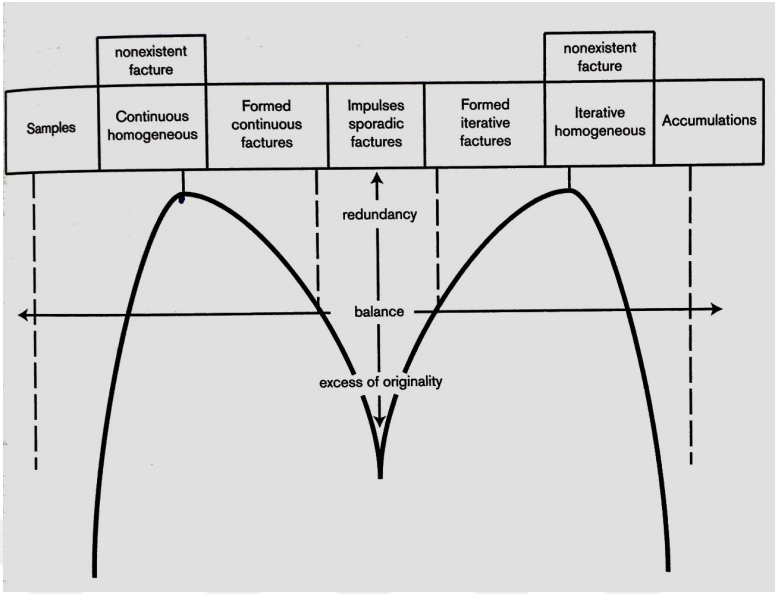

Figure 3.5: Excess or lack of balance in *sound objects* (Schaeffer, 1966: 349).

There are seven zones in the horizontal axis of the chart where the relationship of facture and duration is associated with the grading of the sound in a scale of the excess of originality to redundancy. The black lines which look like a letter M indicate how original is the sound according to the horizontal axis. At the vertical, the highest point of the curve is zero which indicates redundancy and the bottom point of the curve demonstrates the infinity that is total unpredictability.

3.2.4.3. Exploring row of the scheme

The midpoint of the shape in figure 3.5 indicates fixed mass sounds and the mass of define pitch located higher of this area which is called tonic sounds. For example, bell, cymbal and gong sounds have a fixed mass and they indicate average originality also which has an adequate balance between the simplistic harmonic content and the least simple sounds that progress mass in terms of pitch. If we drift apart from the area of balanced mass, it will be encountered the objects that are too original which loses the integrity. These sounds cannot be followed by the audience and they

are defined as unpredictable events if the whole duration of the sound is considered. Thus, P. Schaeffer defines these sounds as unclassifiable sounds. Schaeffer suggests two different solutions to identify these types of sounds (Schaeffer, 1966: 349).

The first solution is to select a little piece from the sound mass, that has a short duration and named as *cell* by Schaeffer, in order to understand the events aurally. After that, an artificial coherence should be imputed in order to classify the *sound object*.

On the other hand, his second solution is based on the usage of ears as a decoder. In spite of the unpredictable variations of the sound, if it is relied on ears to understand the characteristic features of the object, ears can connect the important instants that can reveal a mass of significant information to perceive the sonic event. These types of sounds are called as *larger notes*. As a consequence, there are *cell* and *large notes* that are the extremes of typology and edges of this classification system (Schaeffer, 1966: 349). The two bottom horizontal axles are incomparable with neither higher nor middleboxes. This area is very unbalanced or original objects. Facture and mass are both varying and are interdependent in terms of mass and facture which will be thoroughly discussed later.

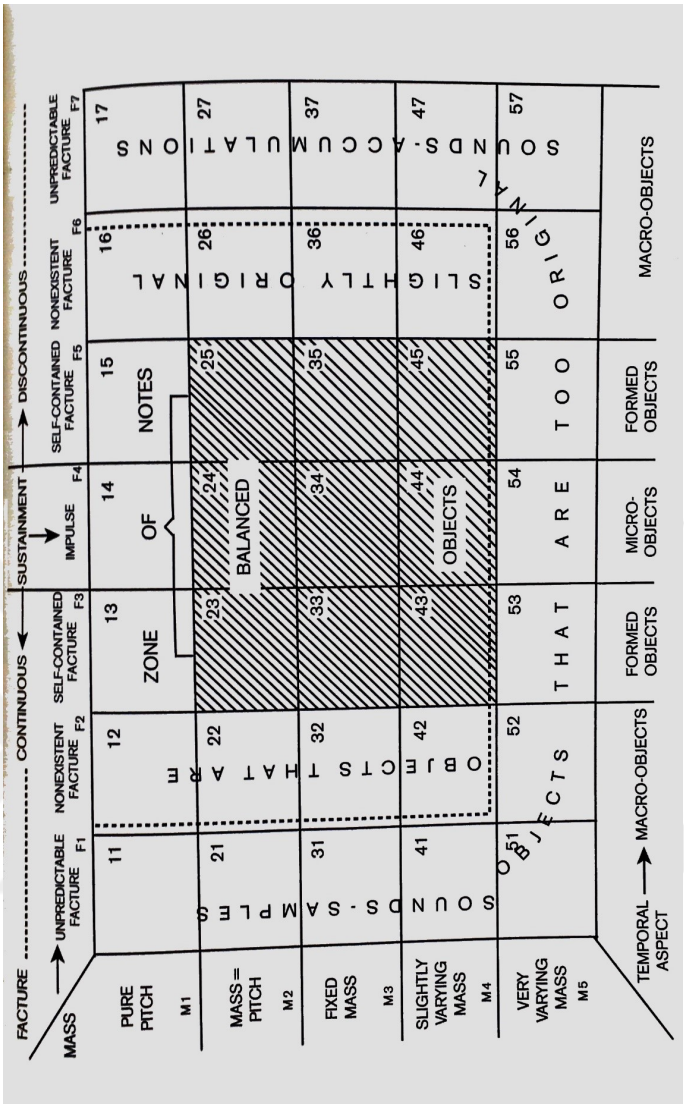

Figure 3.6: Foundational schema of TARTYP (Schaeffer, 1966: 351)

3.2.4.4. Balanced objects

In figure 3.6, 23, 24, 25, 33, 34, 35, 43, 44 and 45 are the most musical objects that are located at the center as nine boxes which have a good form, obvious harmonization of facture and they have an adequate period of time to be learned by the ear excluding the middle-lower column which represents the micro-objects. On the other hand, the mass of these boxes is very similar to typical orchestra instruments. For instance, percussion determined as fixed mass, any note on the staff as determined pitch and

glissando as slightly varying mass. Therefore, these descriptions are for balanced objects with the help of mass and facture.

3.2.4.5. Examining by factural attribution

If the sense of facture is needed to express in detail; none at all (percussive), actively sustained and iterated sounds have to be clarified. Schaeffer states that it is best to understand these differences by comparing the attributes of orchestral instruments.

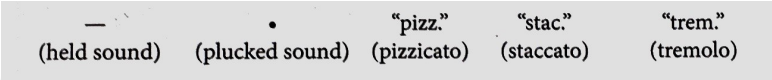

Figure 3.7: Indicators of the relationship between the visual and sonic result (Schaeffer, 1966: 353).

These indicators of Schaeffer creates a relationship between sustainment and musical objects. Although, at first glance, the differences between a sound of piano and violin perceived as their degree of sustainments, it is not the only attributional diversities.

Even though the gestures are hardly understandable, the movement of a performer as breathing or his arms and the dynamicity given to the notes underlines and makes the perception of the gesture easily comprehensible. The facture dies out because of two reasons, one is through excess which holds the sound forever and the other is through insufficiency that the sound cannot be heard due to the lack of time. For example, when a sound is sustained, it cannot be perceived as a measured form. Only the regularity or fluctuations of the sustained sound can be received by ears. On the other hand, plucked sounds are received by ears in terms of "only all-or-nothing impulse" (Schaeffer, 1966: 353)

Besides, there are hybrid sounds such as a staccato which vanishes into the global form as a bowed note of a string instrument. Therefore, these criterion indicates the important relationship of facture and sustainment and also underlines the significance

important relationship of facture and sustainment and also underlines the significance of the capacities of the listener's memorization.

We will continue to examine common musical notes in terms of analyzing the main types of facture which are easy to generalize. N is located between $\bar{N}$ and brief sounds. Brief sounds such as N' which can be a plucked violin note that is very related to a sound of pizzicato. Pizzicato is a brief nonsustained sound that can be demonstrated as $\dot{N}$. In spite of looking criteria of mass, (') the prime sign will be used for brief sustained sounds and (.) the full stop indicates the percussive sounds (Schaeffer, 1966: 354).

Hence, what could be the differences between the sound of woodblock and a piano percussion sound? Schaeffer clearly distinguishes the differences by using a fermata for the piano sound to underline its resonance. Therefore, the piano sound is indicated with $\frown$ and for percussion (.) which demonstrates the absence of any resonance. This sign is mostly used for micro-objects or impulse (Schaeffer, 1966: 354).

On the other hand, the double prime sign (") is applied for iterative sounds that are consist of repeated brief sounds such as drum roll or staccato. As it is discussed before N' and $\dot{N}$ are used for brief sounds, there are also two types of iterative sounds as (N')" and ($\dot{N}$)". The former is used to indicate the bowed staccato and the latter demonstrates the drumroll that has no resonance (Schaeffer, 1966: 354).

According to the duration of sound regarding their active sustainment or resonance, series of noniterative notes are sorted below.

Figure 3.8: Non-iterative notes, ordered according to duration (Schaeffer, 1966: 354).

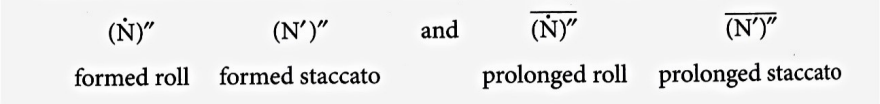

Figure 3.9: Iterative notes, ordered according to duration (Schaeffer, 1966: 354).

To sum up, after examining how to sustain effects on criterion, Schaeffer makes a reduction these signs and simply collect them under three indicators; N, N' and N". He uses N for sustained notes and N" for iterative notes. He excludes the differences between N' and Ṅ and simply uses N' for all brief sound that is called "impulses". Moreover, he uses N" to indicate iterative sound in spite of using (N')" and (Ṅ)".

3.2.4.6. Examining the sound by mass

Schaeffer states that there are two different categorizations that are related to the mass of the sound. First one is that, if the mass of the object occurs concentrated into one tessitura, it will sound as a fixed pitch that resembles traditional musical notes. This type of objects are shown with a N. However, the sound is not obviously able to be located and the mass is fixed in the tessitura such as the sound of gong or cymbal illustrates huge diversities in timbre which is demonstrated as fixed complex note that is to shown with an X (Schaeffer, 1966: 355).

The second one is that "the mass of the sound evolves in the tessitura in the course of its duration". For instance, a Hawaiian guitar is a good example. Also, there is a wide variety of glissandi usage in modern music. These notes are indicated as reasonably varied and are demonstrated with a Y (Schaeffer, 1966: 355). It has been clarified that the balanced objects are indicated with nine boxes in figure 3.10 with the association of facture and mass.

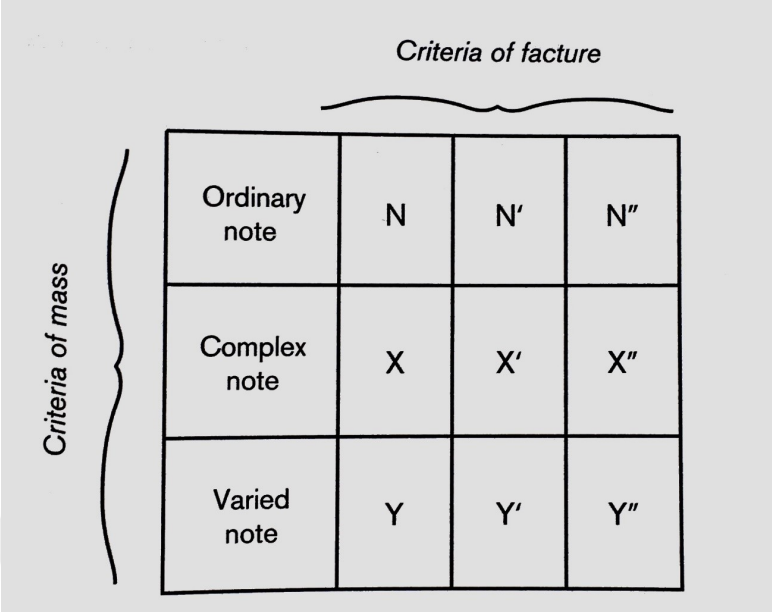

Figure 3.10: Balanced objects (Schaeffer,1966: 355).

From now, I will give examples for each box excluding the first row that was given before.

Examples;

X: A metallic brush drawn on a cymbal.

X': A metallic brush struck on a cymbal that is instantly dampened.

X": A cymbal with a tremolo by using ordinary or drumstick.

However, if a tremolo played as slurred, as a consequence, the impulses become not very distinctive and because of that, they are located under X box. Thus, where to locate the horizontal boxes are related to how much sustainment the *sound object* has.

Y: Glissandi are obvious examples such as a Hawaiin guitar however Schaeffer also states that “Singers use these discreetly in order to ensure their voices are accurately placed. We can still use Y to notate...” (Schaeffer,1966: 355)

Y’: Only considering the duration of a portamento between two notes.

Y”: A slide-drum that is played with tremolo and glissando.

3.2.4.7. Not very original or redundant objects

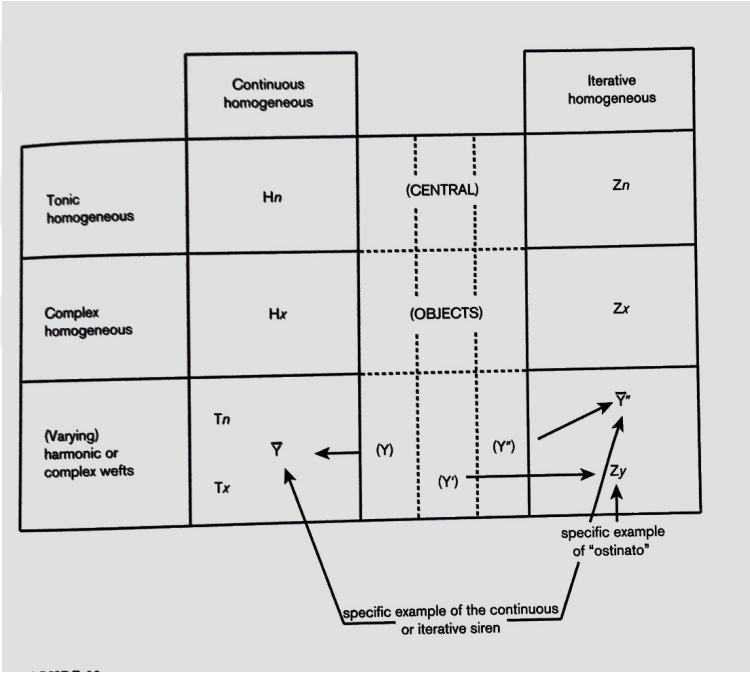

Figure 3.11: Not very original or redundant objects (Schaeffer,1966: 359).

In figure 3.6, it can be seen that the objects that belong to M3 (fixed mass) or M4 (slightly varying mass) are not the edges of either redundancy or originality. Hence, facture plays a vital role in the criterion of redundancy. In order to gather redundant objects, Schaeffer suggests taking a balanced sound and lengthen the continuation of the sound will cause a perishment of the dynamicity of the object. There are two types that are mentioned below:

1- Fixed mass:

For example, if the body of N or X is stretched out eternally, their balances will be destroyed. This can be done with whether mechanically or with an instrumentalist, it can be indicated as $\bar{N}$, $\bar{X}$ or formless iterations which are continued above the threshold of the human hearing ability and can be stated as $\bar{N}$" or $\bar{X}$", because of the fact that little dynamic variations can be heard. On the other hand, if this process is made mechanically, the sound will be so straight that it is demonstrated with a different name which homogeneous. These sounds are shown as Hn and Hx while the iterative equivalent that is perfectly iterated sounds are indicated as Zn and Zx. Nonetheless, the differences between $\bar{N}$ and Hn cannot be perceived. As a consequence, Hn, Hx Zn, and Zx are not fascinating sounds especially when they are insulated (Schaeffer, 1966: 356).

2- Variable mass

"How can we reconcile the idea of a redundant object with the idea of variation? In other words, how can a varied note such as a Y become redundant?" (Schaeffer, 1966: 357) The answer is simple since the *sound object* become slower, it can be effortlessly determined. To clarify, on account of the fact that the object has not a surprising motion, it can be easily foreseeable. Schaeffer calls this as "relative redundancy" (Schaeffer, 1966: 357).

The differences between Y and X or N is more obvious regarding (Yn) and (Yx) that are perceived as a melodic glissando or compound glissando. However, the differences between (Yn) and (Yx) will decrease if the sustainment of Y is extended (Schaeffer, 1966: 357).

The representation of $\bar{Y}$ is a very slow siren sound and is a tedious object. It is redundant and a varying sound. Also, it is slightly more salient when compared with

a homogeneous sound yet still a dull sound which has a tameness variation (Schaeffer, 1966: 357).

In fact, the most interesting sounds in the music world are the least encountered. Because primarily shows slow variations in melodic or harmonic structures. For example, whether they are the sustained notes of N that interplay between each other or since they have complex X tone colors unified in a variable or gradually advancing way. Schaeffer names the combination of gradually developing the sounds as *wefts* and he indicated them with Tn to Tx, regarding the fact that whether the sound is related to the type of N or X.

There are two types of sounds if Y sound becomes iterative. The second type is more appealing than the first one. For instance, the first one is a siren sound which is staccato and prolongs forever which can be shown as $\bar{Y}$". This is, in fact, eternal repetition of the sound Y' such as a creaking of a mill wheel. Continuous impulsive Y sound is demonstrated as Zy. Schaeffer mentions this sound as an *ostinato* sound that is located in the same colon and is more multifaceted or complex sounds than Y or Y' objects that are shown as P in the chart.

In figure 3.6, Schaeffer allocated the first line of the diagram to pure sounds. These sounds are corresponding to line 5 as redundant sounds versus too original sounds. Although the diagram is made in symmetry, Schaeffer indicates that, in fact, there are not a wide difference between the objects that are located in the upper half and the lower half of the diagram (Schaeffer, 1966: 358). On account of the fact that it is not necessary to have the first row, where the pure sounds are located, he decides to remove the first row regarding the little variety between as sinewave and a pitched instrument. Therefore, he includes pure sounds to the second row.

3.2.4.8. Eccentric sounds

In the case of musical performance, to stand out the audience's focus as an extraordinary and unpredictable *sound object* must be flashed. Here we came across with eccentric sounds which have an extremely original base and so it does not belong to any form. Although unpredictable and complicated structured sounds perceived as unformed or characterless in a coherent structure, human recognition can unify the whole information idiosyncratically (Schaeffer, 1966: 360).

3.2.4.9. Samples

Samples are sustained sounds that are continuously insistent and distinctive *sound events* which are thoroughly inconsistent within itself. As Schaeffer exemplifies his definition of the sample in his book clearly.

> "A child lightly touching a violin string with his finger while his bow wanders clumsily all over the place gives us a sound as incongruous as it is interminable but in which the unity of intention and mode of realization impose themselves with unpleasant insistence; moreover, as this sound, which the word sample seems to us to describe very accurately, is not modulated, articulated, or organized to enable us to hear a structure or a fragment of musical language, we are justified in giving it the status of object despite its complexity" (Schaeffer, 1966: 361).

These sounds are interrupted continuous sounds. However, when compared to accumulations, even though both have unpredictable factures, samples are less interrupted sounds that are more connected and also they are sounds with incompatibility within themselves.

3.2.4.10. Accumulations

On the other hand, accumulations are discontinuous continuous sounds. Schaeffer gives clear examples of how accumulations of the diagram sounds.

> "A shower of pebbles pours out of a truck, or a flight of birds twitters, or Xenakis's orchestra, even arranged according to the Poisson system or the bell-curve, makes "clouds" of pizzicati or glissandi..." (Schaeffer, 1966: 361)

To clarify, instead of just sticking to the sounds that make up each other, we need to realize that we distribute sounds in complex forms with short impulses. In all this disorder there is something that ensures regularity, and this suggests an object from within. Moreover, in the bird's flight, in the concert hall, the facture between the elements of the sound texture is similar. This similar fact brings together objects for the ear and it provides unity to human perception. Each animal sound such as birds ensures the continuity of the other and each falling pebble sound reproduces itself like the previous and next stone. According to Schaeffer, this is the definition of the accumulation: they are disorganized when accumulated, but the human ear trusts their similarities and fuses their diversity together with each other (Schaeffer, 1966: 361). Schaeffer's comparison of these two types, sample (consistency of reasons) and accumulation (the similarity of the amount of reasons), are not very separate from each other. In addition, the situation is subjective and depends on our will. For instance, the reason that we hear something spills on the ground depends on a reason because there is an actor that pours it. Moreover, it makes short pulses and this is due to a multitude of similar reasons because every piece falls after the previous one. It is clear that the amount of sound can be classified subjectively from a human perspective. Furthermore, it depends on personal tastes. Consequently, the extremities in the outer colons of figure 3.6 merge in Schaeffer's diagram.

3.2.4.11. Cells, ostinati, and fragments

These are the artificial *sound objects* that are not found in nature. These sounds are identified by either looping a groove or slicing a part of a magnetic tape excursively. The characteristic of this *sound object* is very related to the closed groove. Moreover, this sound effortlessly can get a location in the diagram near to natural objects. The decision of where to cut the tape appoints focus point and its length. Any slice of a piece can be chosen where it is more convenient, under the threshold of ear memorization, the sound consists of a torrent of irregular micro-sounds. Thus, thanks to its temporal unity, if the structure is very original in terms of both facture and variations within the mass, the *sound object* readily insulated. Hence, it can be basically identified as a unified *sound object*. These types of objects are called *cell* and indicated with K (Schaeffer, 1966: 362).

On account of the fact that it shows iterative characteristics, it is classified under the colon of formed iterative sounds. In addition, they are located under the Y, which has lively variations in terms of mass and named irrational.

On the other hand, listening the selected piece of the tape again and again, generates an *ostinato* that is a more common version of iterative Zy and indicated with P. While Zy is restricted with the same attributes of sound that are infinitely repeated, the cell ostinato is named as "cyclic sound effect" (Schaeffer, 1966: 362). To clarify, the cell ostinato is a reiterated small duration of the sonic event that returns to the beginning of the sound every time which is basically looping.

Lastly, there is a fragment which is demonstrated with ϕ. This is generated by slicing a magnetic tape that consists of N, X or Y notes and separating them into individuals. This cutting attempt on, for instance, the sound of a violin or a piano, is not entirely related to changing durations, which also helps to gain memorability, but more importantly associated with manipulating characteristics of *sound object* which

are rending the semantic relationship, changing the beginning or the ending, which makes the sound unpredictable, or the dynamic level of the sound (Schaeffer, 1966: 362).

Even if the original sound was not interesting, after editing, it gains originality at some level. Owing to the fact that the relationship with the origin of the fragment and the difference from the cell in terms of nature, the fragment is located at the bottom midpoint. Moreover, these sounds have short durations in common although it is not a must.

Even though Schaeffer wanted to categorize neither cell under formed iterative notes nor fragment under the impulse, since it protected the unity of the diagram, he did.

3.2.4.12. Large notes and wefts

It is unfeasible to guess or pursue with all of its details and sophistication because this issue is both restricted in terms of time and it is illogical in terms of diversity of its density, that is note Y which has a changeable mass when we try to generalize it. Face value of note Y will not be varied such as glissando during tessitura, or else, it will be analogous to note Y' or it will be a stack of Y' notes and this will lead us to the previous examples that are mentioned above.

The character of the box features a consistent facture, diversity and many components. If it has fast variations and inconsistent facture it would be the sum of microsounds which will lead us to the cell (Schaeffer, 1966: 363).

To the contrary in here, the article reaches out various forms and it spreads to arrayed motifs that are connected in a logical way and is called as large note that is indicated with W. If this is not the case and the technical instrument doesn't hold the article in a logical way, large note loses its association and it becomes a sample in a quick way. That is why it is located in between a note that is varied in a reasonable

way in normal time and it becomes the structure which has become complicated by enlargement (Schaeffer, 1966: 363).

This original association is not the only benefit of providing a box in order to categorize new numbers, but also it reminds us that some musical motifs in the score are not heard in insulation in reality but they are united as a large note, such as the notes that are added to bass fundamental by Bach. W will be located down below Y inside of the column that is for formed held sounds (Schaeffer, 1966: 363).

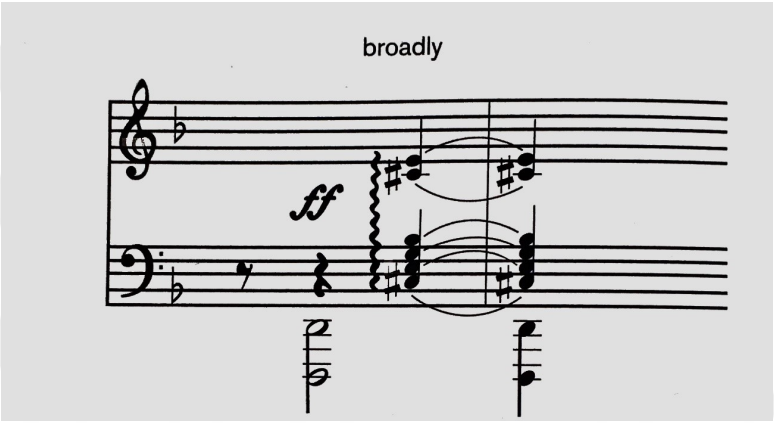

Figure 3.12: Notes that are added to the bass fundamental by Bach (Schaeffer, 1966: 363).

With a start from Tn and Tx, we should be able to generalize the theme of the weft. We have assumed a continuity for these and it prevented any kind of accident. During the increase and decrease phase with homogenous sounds, the wefts above have been seen as a generalization of these, as packages of N or X step by step. Based on this we can imagine that this kind of sounds, despite their slow development, can show some disorders in dynamic or the rhythmic structure can develop itself slowly but steady. How is that possible for an object like this to have a musical impact? (Schaeffer, 1966: 364)

We will be noticing that "developmental continuity" of the object. The winner is

continuity in melodic-harmonic or harmonic-dynamic weft. When compared to cell ostinato in terms of originality, the elements are secluded and cell ostinato is completely unpredictable. On the other hand, mixed weft has an approximately predictable facture and consist of gradually developing complicated character. For this reason, it is located in the column for homogenous sounds (Schaeffer, 1966: 364).

These wefts are very widespread in conventional symphonic music. They are observed as a result of the combination of N, X or Y. However, we use it to define as "group objects", because of that they are not reachable as perceptually and also they are natural macro objects that are impossible to be scored. Besides, the composer wants them to provide their living continuity and wants them to be a kind of set for the development of important events. Same way, the weft of a mass cannot intervene by just being inadequately original (Schaeffer, 1966: 365).

3.2.4.13. Unisons

Unisons, which is widespread in music, seems to get away from our typology. Unisons can be considered in two different way: whether as basically a held sound or an element of accumulation according to the quality of the sound, facture and the perception of the listener. If the sound generated with high quality, it will be perceived as one note that will integrate it even more. It will sound as a simple object like N. On the other hand, if the sound does not unify, it will sound more complex and the listener perceives the sound as not one but a mass of varied sounds which will lead us to accumulations.

> "if an orchestra is tuning up, giving as in different dynamic forms, in different octaves, and adorned with slight glissandi because the instrumentalists are turning the pegs of their violins, we will have a true accumulation of N and Y sounds rather than a unison." (Schaeffer, 1966: 365)

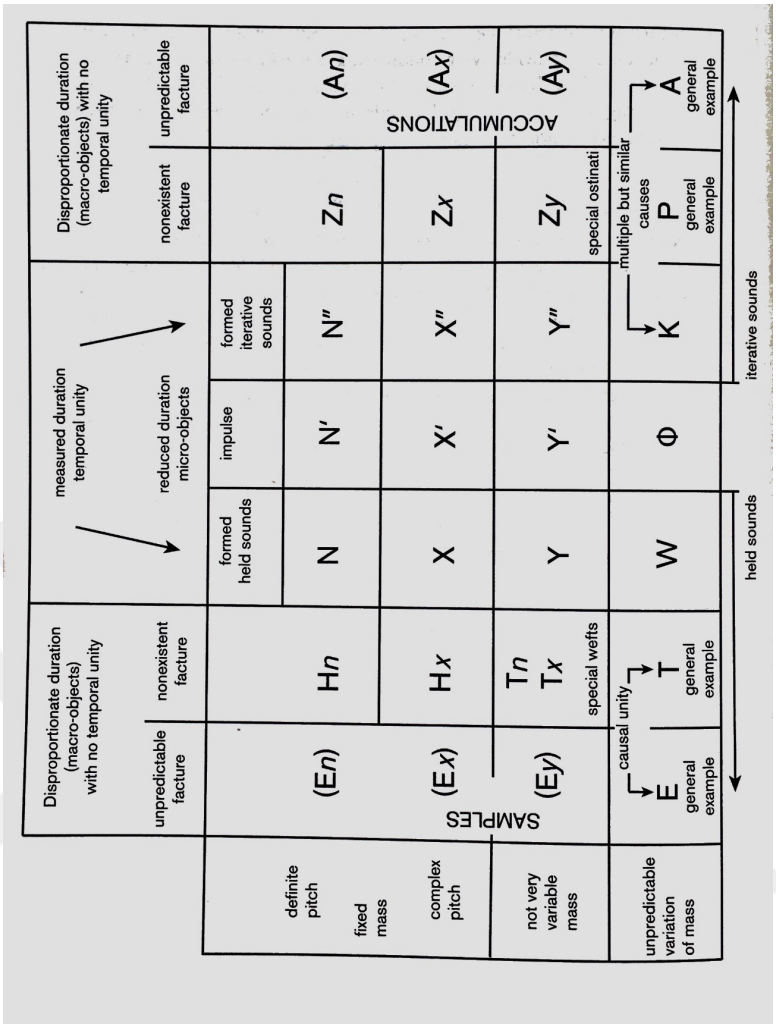

Figure 3.13: Typology (Schaeffer, 1966: 366)

3.3. Language Grid

3.3.1. Introduction

I will briefly mention Language Grid, which is one of the analyzing methods, what it is and its origins in a historical basis and what are parts of the framework of Language Grid. Afterward, I will focus on the mimesis part mainly and will give some examples in the context. Language Grid is an essential context which contains different perception in order to analyze music as we hear and categorizing it.

3.3.2. Language Grid and what it means

Language Grid, at its simplest, is a table. This table is used for describing different types of vocal equipment inside of stable media composition and with its planned statement. This term was first mentioned and enhanced by Simon Emmerson in 1986 in his book called "The Language of Electroacoustic Music" which has also been published in 1986 (Emmerson, 1986).

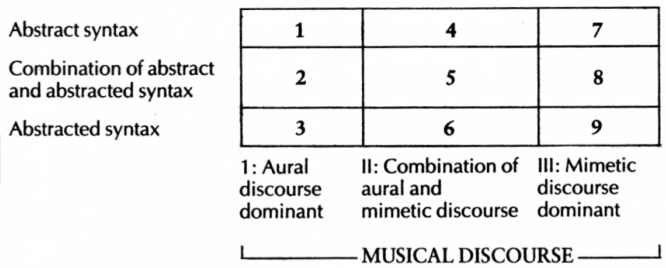

Figure 3.14: The diagram of Language Grid (Emmerson, 1986: 24)

Instead of concentrating on a specific sonic event or mold, Language Grid takes notice of the piece as a whole. It sorts the syntax of sound whether they are abstract or abstracted, by their type of statement whether it is aural or mimetic. However there is no such a thing as an entirely abstract syntax or fully aural statement all the time, so Language Grid let us use combinations by originating nine sections totally, but Emerson states that these sections are considered only as contingencies (Emmerson, 1986).

Language Grid combines two magnitudes within a vertical grid. First one is x-axis, and it consists of mimetic and aural discourses and the second one is the y-axis, and it consists of abstract and abstracted syntaxes (Emmerson, 1986). These both magnitudes are perpetual, and pieces can state anywhere inside boundaries, but as I mentioned before it was divided into nine sections- three sections for each axis- (as quality dominant, a balance of qualities, the other quality dominant) and a few pieces are studied which are considered to lie in each section.

Many questions have been asked about the selection of pieces and where they lie in the grid, in the next section of my thesis, I will briefly talk about the origins of the Language Grid.

3.3.3. How is the Language Grid originated?

At the end of the 1970s, a rising generation of electroacoustic musicians was taking part in the U.K education sector. Also, there was residual interest in comprehending the music which comes from Europe, the United States, Latin America, and Asia. However, producing books about it did not exactly meet the need.

In the early years of the mid-1960s in some festivals in Europe, some opposite approaches were in the same line. Lots of revolutions have been carried out about thinking of propositioning of experimental music. Language Grid is a product of this making sense experience which took place in the U.K in the 1970s.

X-axis criteria was basically about if we recognize it as something coming from the material world and y-axis criteria was basically about if the sounds themselves mean something? However, these two questions have different answers for both composers and listeners. Composers assumed that it would rise as a part of the listening experience and an enthusiastic listener can learn the content of piece by the help of publications and programs.

3.3.4. The framework of the Language Grid

In the Language Grid table, the musical framework is horizontal, and syntactic framework is vertical. There are eight different parts of this framework that I will briefly summarize below.

3.3.4.1. Syntax continuum

Its interval is from abstract to abstracted syntax. This side of the chart concentrates on the compositional decisions on whether the sound sources are selected because they are notional or sonic materials.

3.3.4.2. Abstract syntax

This area of the diagram the sounds are chosen based on some formulized or conceptual notions or diagrams distinct from receptive qualities of materials. Could be defined as a sudden and unexpected in terms of sonic quality (Emmerson, 1986: 26).

3.3.4.3. Abstracted syntax

Sound sources are ordered according to their sonic property. The hearing is important and materials are chosen in order to obtain sonic relationships. Could be described as a bottom-up style (Emmerson, 1986: 26).

3.3.4.4. Combination of abstract and abstracted syntax

A composition style that uses some ways of sound perception and based on some diagrams on the other language levels. This area is located between abstract and abstracted syntax that has the elements of both (Emmerson, 1986: 27).

3.3.4.5. Musical discourse

It consists of two parts: aural and mimetic. Aural is focused on pitch, rhythm, and the sound is used as an instrument where the semantic aspects of the sound are eliminated and mimetic is the counterpart of the aural side that focuses on referential information of the sonic event.

3.3.4.6. Aural discourse

It states classical musical thought in molding musical pieces. The referential aspects of the sound sources are neglected. The main reason for choosing the sound is the data inside the object. This area is located on the left side of the diagram (Emmerson, 1986: 28).

3.3.4.7. Mimetic discourse

It is partly about echoing nature and partly some ways of human culture's that are not directly related to musical material. This area is located on the right side of the diagram (Emmerson, 1986: 35).

3.3.4.8. Combination of aural and mimetic discourse

It is a combination of aural and mimetic discourse, and it also gives us the chance to realize intangible parts of the piece. This area is located between aural and mimetic discourse (Emmerson, 1986: 29).

3.3.5. About mimesis

> "We may concede that instrumental sound-images and evocation, being primarily musical, may still be allowed within this category [Aural discourse dominant]. It is the sounds of the environment not traditionally associated with music whose imagery we wish to discuss as mimetic discourse."(Emmerson 1986: 26)

Using of definable music records as source material has broken in many different genres from plunderphonics to hip-hop. However, the recognition of different sounds may deeply depend on our past experiences and level of perceptions.

Example 1:

Aural: abstract + abstracted

Jonathan Harvey - Mortuos Plango, Vivos Voco

Harvey is basically concerned with two voice archetypes that are used during many modern classical musics and proprietarily electroacoustic music. We lose our information about details of the source, and we enter into a phase of pure sound. This is how we return back to aural, and we get lost in the beauty of sound.

Example 2:

Aural: abstracted

Denis Smalley - Pentes

Bernard Parmegiani - De Natura Sonorum

In our discussion about describing sounds we may define it technically, but we may not be able to make the sound, and even we are not able to recognize the instrumental sounds that are used, we tend to lose in aural statements.

Example 3:

Aural + mimetic: abstract Luigi Nono - La Fabbrica Illuminata The tape part is mimetic to our vision acutely. There are some sources in Milan studio which are quite mimetic in terms of it is quite similar to factory recordings.

3.3.6. Conclusion

Therefore, I have briefly mentioned about Language Grid, what it means, its framework, and mimesis. It is quite clear that from all the things I mentioned above; the perception of listeners can be as effective as the efforts of composer and music can emerge in different environments that are not similar to its origin. Because perception has two sides, which are composers and listeners, and the other is meaningless without one. That is why Emmerson's Language Grid only a source for categorization but the real categorization start with the interaction between listener and composer. That is why the Language Grid is a very important concept to make this bound more spirited and unbreakable.

CHAPTER 4

ANALYSIS OF THE PIECES OF JONTY HARRISON

4.1. Klang

4.1.1. Introduction

The main materials of Jonty Harrison's *Klang* were found in Denis Smalley's kitchen which is two earthenware casseroles. He recorded the sound by resonating the lids and the body of the casseroles or by rubbing the lids inside the bowl. These unique sounds dominate and form the entire piece. *Klang* is a progressive music and it has developing sections. How the material is processed and approached time to time differently, considering *rue Schaeffer* vs. *Schafer Street*, played a vital role in the music.

4.1.2. The general overview of Klang

The beginning of the piece is close to Muray Schafer's approach in terms of semantic attribution of the sound material. The sound of the bowl is explicit and this gives

to the listener a chance to establish a bond over personal experiences. The fact that nearly the first three minutes consist of merely manipulated bowl sounds. This gives the listener an opportunity to fantasize his own story with casseroles. The beginning of the music is so solid that one can think about how the sound source is resonated whether it is hit by something or two bowl crushes one another. Hence, this area correlates with the ideas of Muray Schafer, listener searches some connection with the piece over experiential connotations.

On the other hand, there are some altered sound objects that are played sometimes starting from the beginning. These sounds will eventually dominate the overall ambiance in the middle of the piece. At this point, there are far less referential aspects of the sound world compared to the beginning. The sonic material is selected because of the unique information it possesses. Here we arrive at a point in the piece where the music is much closer to *rue Schaeffer*. Now the sound objects are used, as Schaeffer says, as an instrument that are stripped from its cultural, or semantic relationship with the sound source. After the middle section, the music continues with retrograde of the first half of *Klang*. The piece ends as it starts that is again related to Schaferian approach.

Music starts close to *Schafer Street* and follows a process. There are two main parallel processes through music. First, there are gradually introduced sound objects that are manipulated from its original form. While approaching to the middle section of the piece, both the degree of the manipulation of the original sound object and the frequency of its appearance in the music increase step by step. Thus, at the end of this process, they capture the whole sound world. The second process is made by using reduced listening. The original bowl sounds heard over and over again, it loses the semantic aspect of itself. Listeners start to perceive not the bowl itself anymore but its unique sonic information embedded inside it. For this reason, the sound of the bowl turns into an instrument that can be manipulated over its sonic attribution.

To clarify, although at the beginning one listens to the sound of a bowl, after a time he starts listening to the sonic quality of the bowl where the bowl itself disappears.

The section between 3'11" and 3'55" functions as a bridge. Until reaching this area the process that is mentioned above accelerates and carries the music to the area of *rue Schaeffer*. From 3'55" to 6'15", it is the peak area of the music where the composition neglects any semantic connotations associated with sonic materials. The section between 6'15" to 7'40" works again as a bridge passage, however, this time the process is reversed where Schaefferian music is taken back to "Schafer". The formal structure of the music is transparent and well balanced. It has a clear palindromic structure where almost the exact midpoint works as an axis of symmetry.

4.1.3. TARTYP analysis

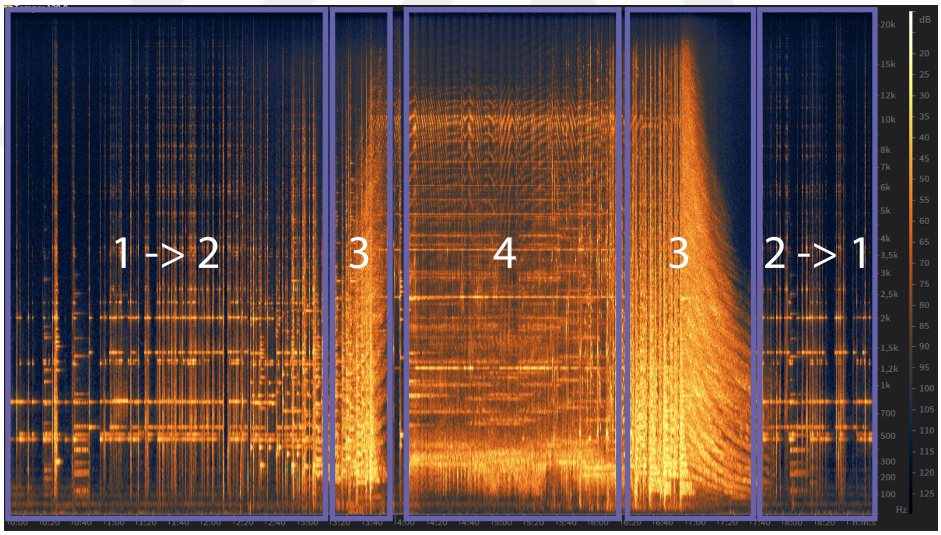

Figure 4.1: Phases

There are four different phases of casserole timbre as seen in figure 4.1. In each phase, the sound material is alienated to its original form. First one is located at the beginning and it sounds like an ordinary bowl that we are familiar with our everyday lives. The second one has a slightly different sound timbre when compared to the

normal bowl sound. This is the fourth sound event in the piece. Even though both of them located under N in TARTYP diagram figure 4.1, there are timbral differences between them which can easily be noticeable by ear.

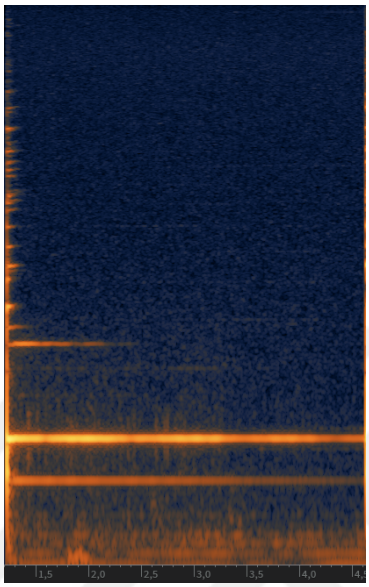

Figure 4.2: First Bowl

The first one in figure 4.2 has less noticeable overtones. It is hard to differentiate the change of overtones that are located in the higher frequencies. The pitch content in figure 4.3 is obtained from the first bowl sound.

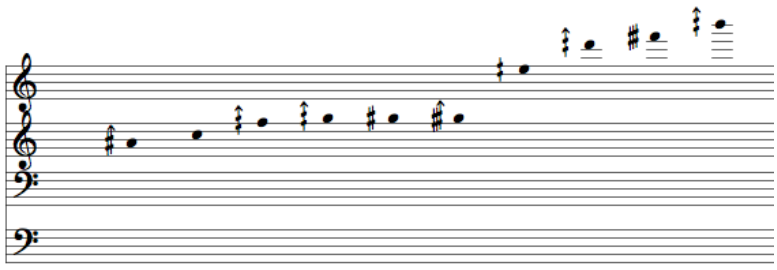

Figure 4.3: Notational representation of the first bowl

Owing to the fact that the second one starts the development step by step, it plays an important role in the piece in terms of making an accumulative process and smoothly

and smoothly connecting the places each other. Even, the differences between in the figures 4.2 and 4.4 can be seen by looking to spectrogram solely both in the figures 4.3 and 4.5 demonstrates thoroughly the notes that are changed.

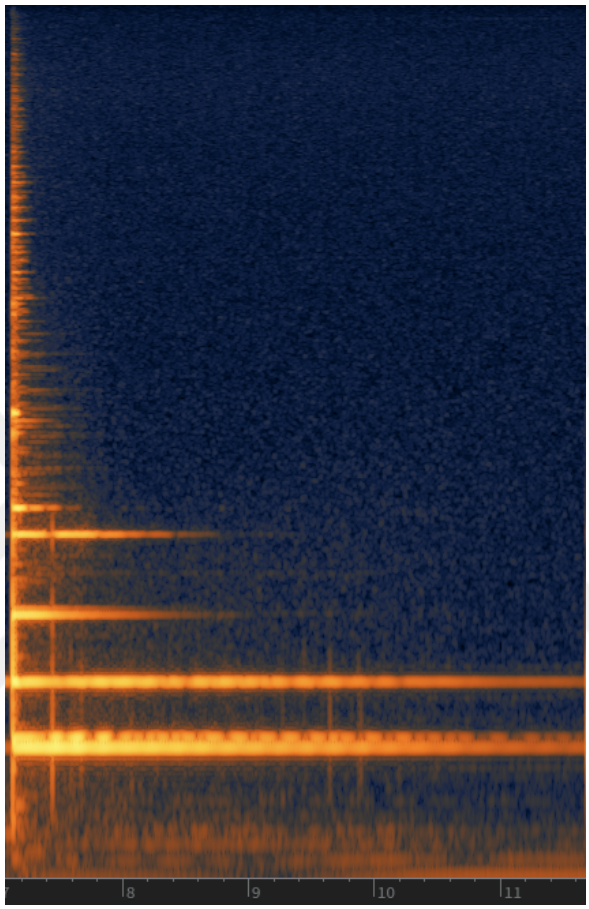

Figure 4.4: The second bowl

The third overtone is different than the first bowl sound and all the harmonics are much more sustained. Also in the second chord indicated in figure 4.5, after the 7th harmonic, notes are substantially located at lower registers compared to the first chord. While in the TARTYP diagram both chords located as N or $\widehat{\text{N}}$ the sounding of two chords are distinctive.

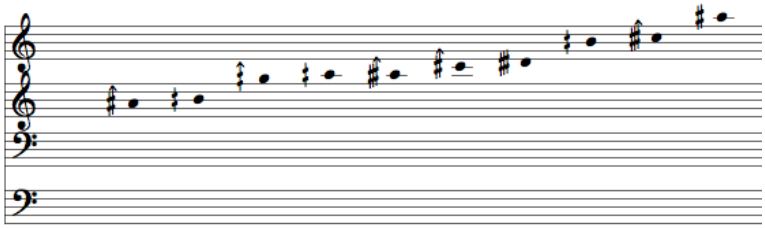

Figure 4.5: Notational representation of the second bowl

Within this process, a more sustained and abstract version of the second chord comes in 0'40" as seen in figure 4.6. This time the sound object has richer harmonics and fluctuates over time. Due to the fact that the sound is more sustained than the previous two, the overtones are clearly visible on the spectrogram.

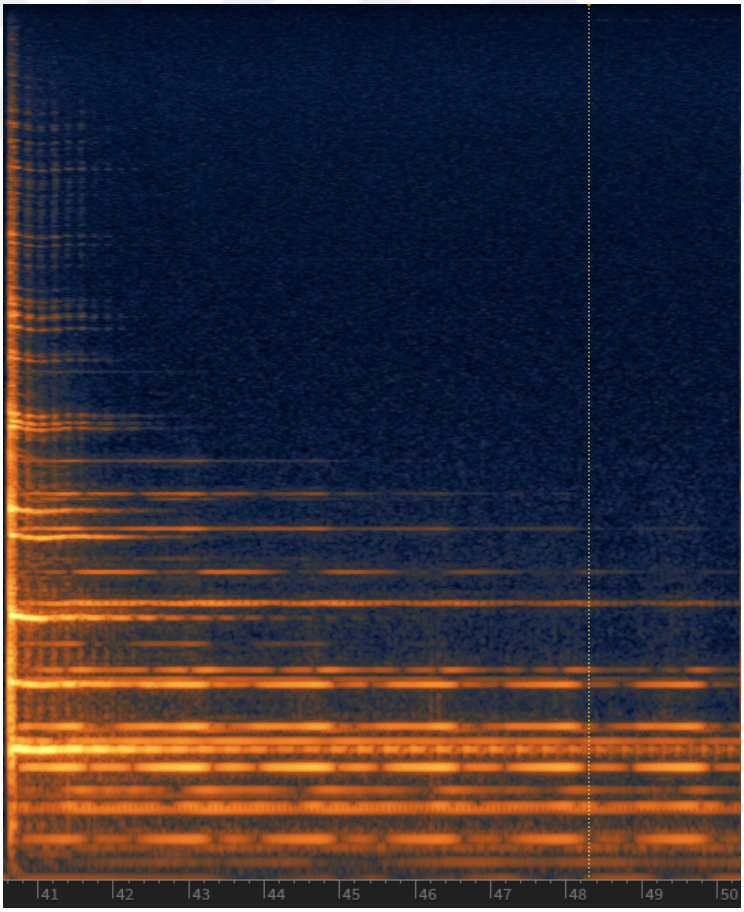

Figure 4.6: Second phase bowl, more denser

In figure 4.7 demonstrates the musical note values of the spectrogram in figure 4.6. As the sound fluctuates, notes inside the chords slowly change. There are two timbres alternating each other seen in figure 4.7. These two timbres can be clearly seen when analyzed at different time steps.

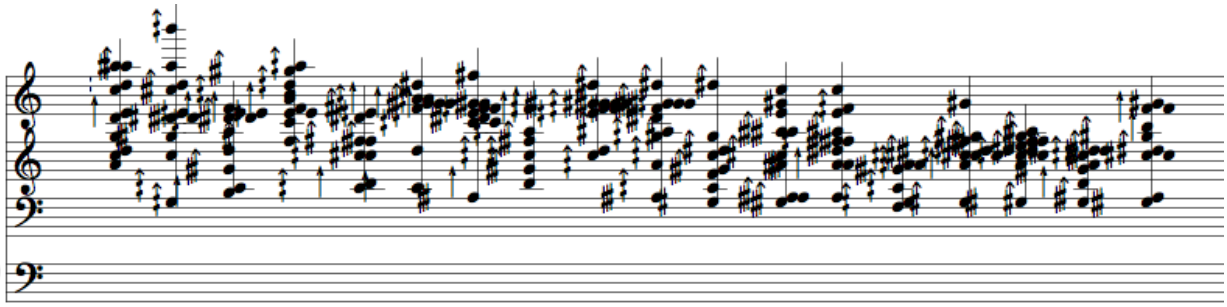

Figure 4.7: Notational representation of a fluctuation

From the beginning to 3'10" there was first two versions of N. First one was the natural bowl sound. The second one was merely manipulated when compared to the first one. This area consists of N, N' and N" notes and when looked in a big picture, they belong to An. This area has unpredictable facture and is related to accumulations column of the TARTYP diagram.

From 3'10" to 3'55" the third version of the bowl sound is introduced. As it can be seen in figure 4.8, Y notes are presented which are located inside the attack of the bowl sound. After the three resonated bowl sound which is shown with the light blue rectangle, there is a big glissando passage located between 3'22" to 3'55". This area of the composition functions as a bridge from Schafer side of the piece to Schaeffer side of the composition. At the beginning of this area, Y notes affect the perception of the zone as Ay. After the third light blue rectangle, there is a big long glissando, between 3'22" to 3'55" is recognized as Ey. Ey is the area where the sound is long and has slightly variable mass with unpredictable facture. Because of the fact that the glissando is not fragmented as it was before, this area belongs to Ey.

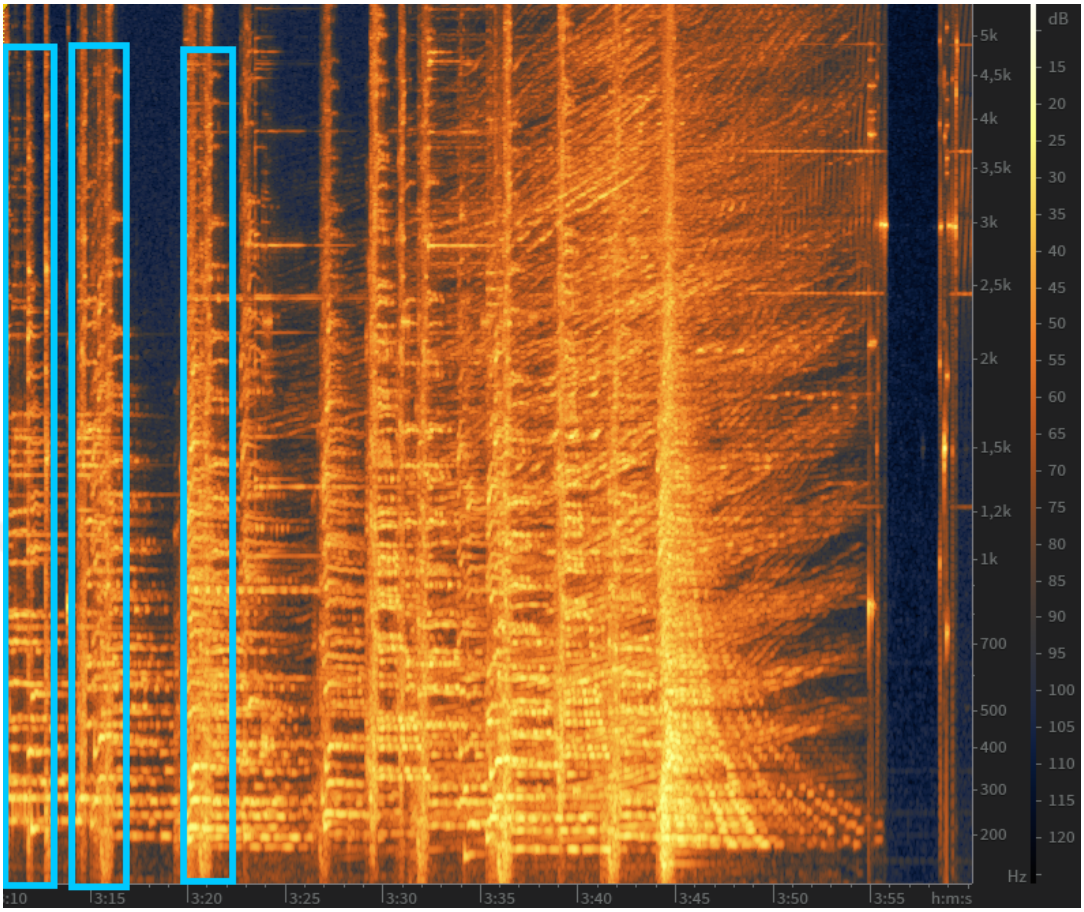

Figure 4.8: Y notes

At the end of this bridge, the music reaches its most alienated zone in the whole composition which refers to the fourth phase of the bowl sound as I mentioned at the beginning. This area is located between 3'57" to 5'55". In this zone, the semantic aspects of the sound are neglected and composed by considering the content of the sound. This place has two different layers. The first layer is Tn area which is located at the bottom of figure 4.9. In this place, Tn area is continuous and has no facture. It sounds like a wind which has a significant audible timbral content rather than just generating noise. The second layer is also a continuous sound and how prominent overtone content also visible on the spectrogram however this one has unpredictable facture.

As the Y" notes are being presented again from 5'55" to 6'57", this section can be identified as Ey. Between 6'57" to 7'40", the piece has a one sustained glissando which is demonstrated with Y in figure 4.9. This place is the third phase of the bowl sound just as in the first bridge. The process done in Ey and Y zones are the reverse operations of what is done inside the first bridge which is located between 3'10" to 3'55".

The end of the piece returns to the beginning of the content. The sound world of this zone is very similar to the beginning. This area has N, N' and N" and they are elements of An. Music returns to the first phase of the bowl sound which has the natural sound of the material. The listener can easily get in touch with the semantic relationship with the sound source again. It almost reminds us of where we departed from. However, after being exposed to the musical journey, the relationship between the listener and the sound material is changed at the end in terms of how sound connotates to the real world.

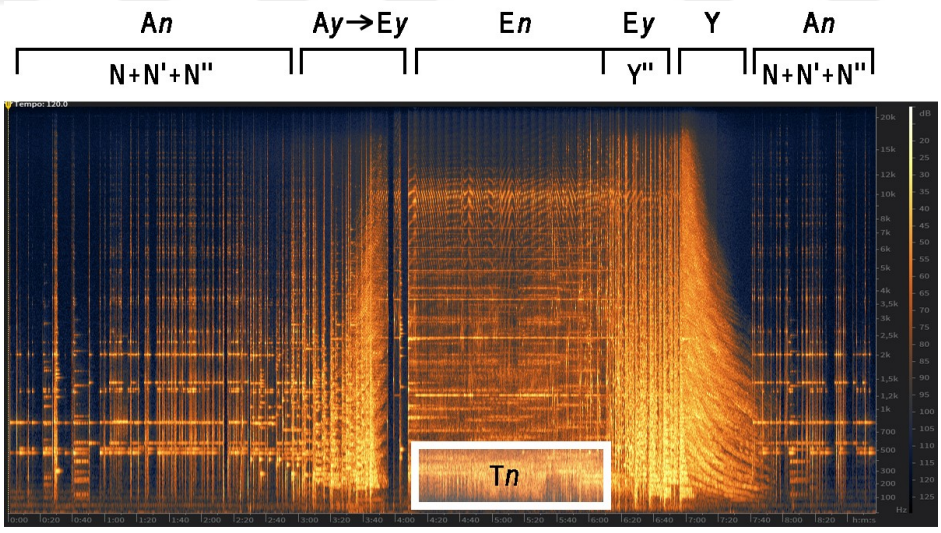

Figure 4.9: Overall diagram of *Klang*

4.1.4. The soundscape of Klang

The naked bowl sound is the *symbol* in the whole piece. It has a referential aspect that listeners can easily get in touch with. While at the beginning of the music, the bowl sound functions as a *signal*, in the middle part of the composition it acts as a *keynote*. For example, from beginning to 3'10" bowl sound is alone and works as *signal* however between 3'10" to 7'40" it becomes *keynote* and the glissandi, impulsive sounds and long siren-like sounds are the *signal* of this place. In the middle part of the piece, the zone named Tn, which can be seen in figure 4.9 is the *soundmark* of this place and the horizontal lines above the Tn seen in the spectrogram are the *signal* of the middle zone. From 7'40" to the end, the natural bowl sound comes again and functions as a *signal* as the beginning.

4.1.5. The Language Grid

The sound world of *Klang* consists of plain sounds that are used as its original form, estranged sounds that are detached from its original identity and the sound materials which are in between these two edges. When considering this information about the music, *Klang* is located in the middle between aural discourse and mimetic discourse. Thus, when looked as vertical, the piece is in the combination of aural and mimetic discourse column.

In addition, when looked at the horizontal side of the diagram, there are three indicators; abstract syntax, abstracted syntax, and combination of abstract and abstracted syntax. In this case, in order to be under abstract syntax line, music should be composed lean on some formulation or conceptual schemas which are irrelevant to the characteristic of the sound source. Due to the fact that both Jonty Harrison did not mention any conceptual scheme about his compositional process and, as seen in the analysis above, the piece has been composed in regard to a sonic transformation than an abstract compositional methodology. Thus, it locates under number 6.

4.2. Surface Tension

4.2.1. Introduction

The name refers to an event made by liquids that let heavy particles stand on the surface. On the contrary, the sound world of *Surface Tension* consists of dry and crispy sounds that are made from rubbish. Polyethylene sheets, styrofoam, and bubble-wrap sounds create a "sonic surface" on the contrary to a liquid one. (Harrison, 1996) The sonic world of the piece is listened from inside of the sounds which are located beneath the surface. "yet by doing so creates a musical flow which requires one to listen 'inside' the sound, just 'below' the surface, getting 'under the skin' of the sources' generally similar natures." (Harrison, 1996)

4.2.2. The general overview of Surface Tension

This music completely located at rue Schaeffer due to its artificial sonic environment. However, viewing by Schafer's perspective and treating this artificial ambiance as an element of soundscape composition gives us more information about the piece. Both approaches complete each others gap and help us to gather more knowledge of the composition. Unlike *Klang* where the music has a progressive structure and has blocks that have different characteristics, *Surface Tension* is characteristically fixed monoblock. The piece has a complex sonic world. There are two main *gestures* at the beginning that form the whole piece. The first one is located between 0'01" to 0'04" and the second one based between 0'04" to 0'08". The former is a natural sounding sonic material and the latter has more artificial sounding. Although the second *gestures* can resemble its source, it becomes alienated after that moment. After both *gestures* are clearly presented one by one ,in the beginning, they are juxtaposed in the rest of the music with varying level of amplitude. Changing sound levels affect the perception of the material in terms of categorization.

4.2.3. TARTYP analysis

The first sound object in the music located between 0'01" to 0'04" is X" and the second one which placed between 0'04" to 0'08" is Y as it can be seen in figure 4.10. These are the two main sound objects that form the music.

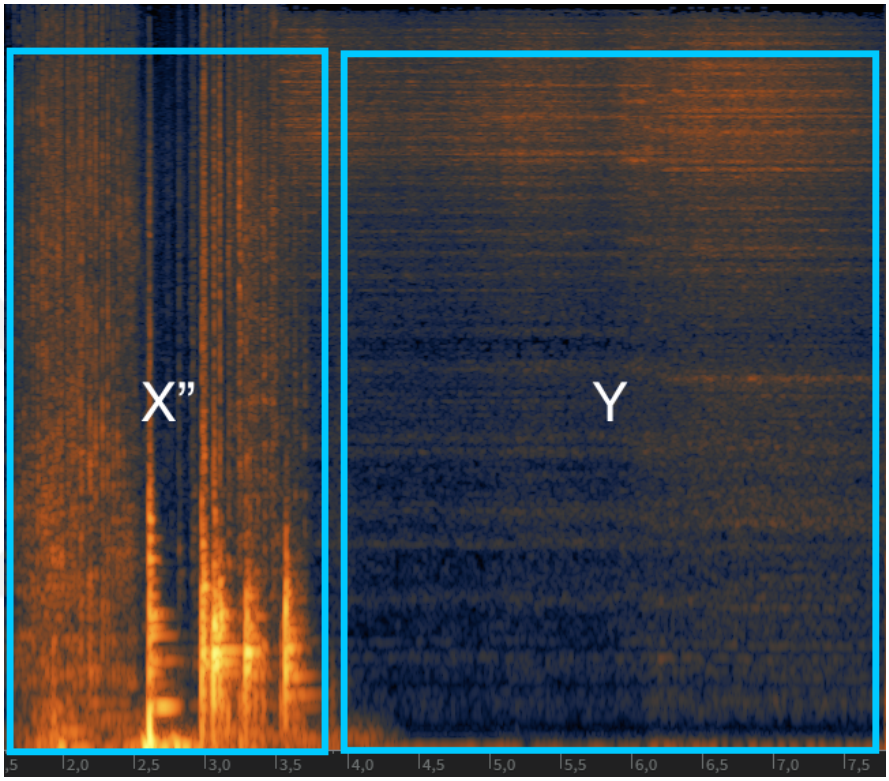

Figure 4.10: First two sound objects of *Surface Tension*

Rest of the music is literally the variation made by these two *gestures*. The area from 0'09" to 0'26" consists of Ax and Hy. Ax and Hy are the developed version of X" and Y notes which were located at the beginning.

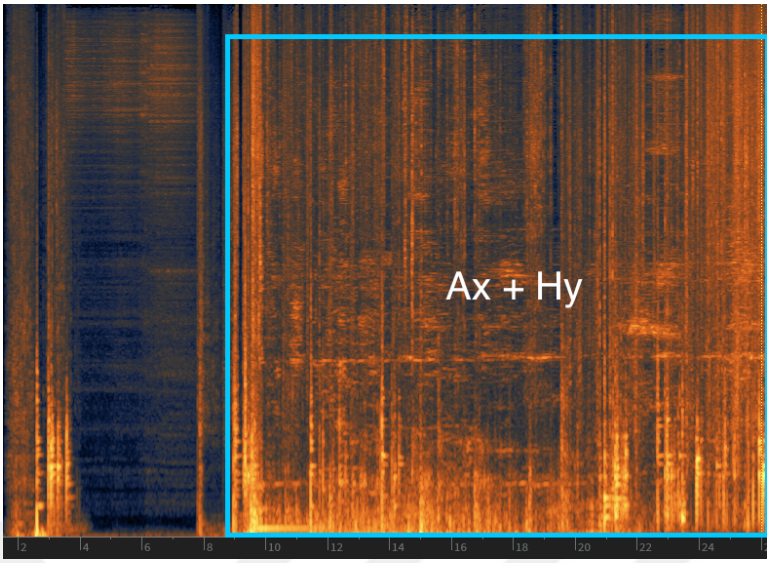

Figure 4.11: Ax and Hy

Ax has unpredictable facture and it is an iterative note which is a complex sound. Hy is a continuous sound, a held note which has no facture. Both notes have a varying level of gain through the piece and sometimes one of them dominates an area in the piece. The zone from 0'26" to 0'36" is dominated by Hy although there are two X" which can be seen in figure 26.

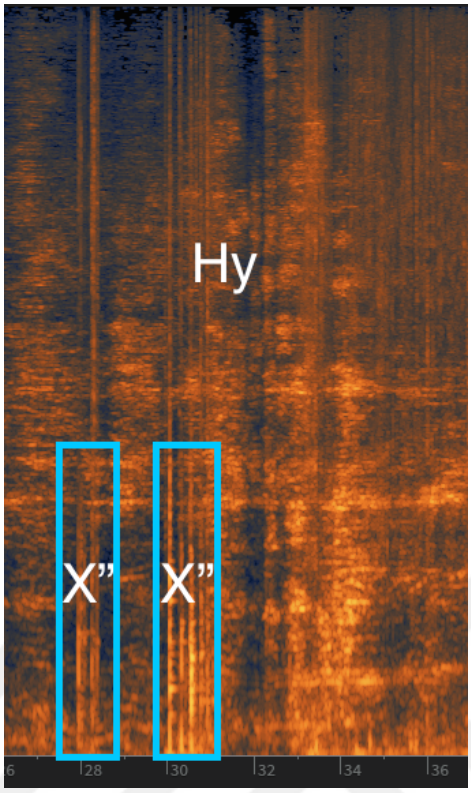

Figure 4.12: Hy and X”

After this place, Ax solely take back the area between 0’36” to 1’48”.

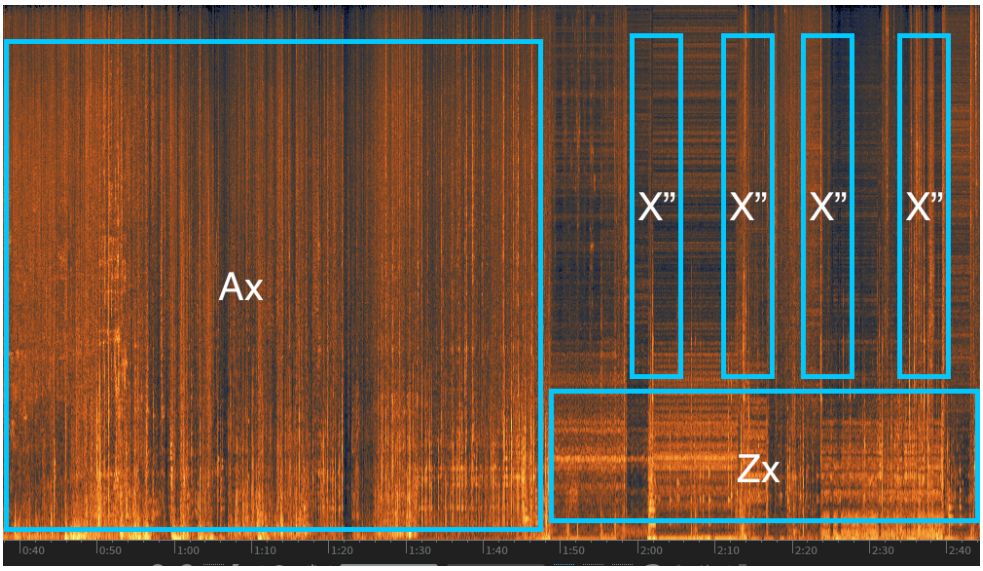

Figure 4.13: Ax and Zx

In figure 4.13, it is indicated that from 0'36" to 1'48", it consists of Ax note and between 1'48" to 2'39" and there are four X" note on top of Zx. X" notes can easily be differentiated by hearing while listening Zx. Zx is a continuous iterative note which has no facture. This note repeats mechanically and has complex pitch content.

Between 2'40" to 2'45", this area consists of Hx and connects to the area of Ax which locates between 2'45" to 3'14". After A and H zone played by themselves, they emerge in the are between 3'14" to 3'55" as Ax and Hy. Zx and Ax notes play together from 3'55" to 4'03". Ax and Hy notes are located between 4'03" to 4'13" and lastly from 4'13" to 4'15", Zx and Ax notes are located which can be seen in figure 4.14.

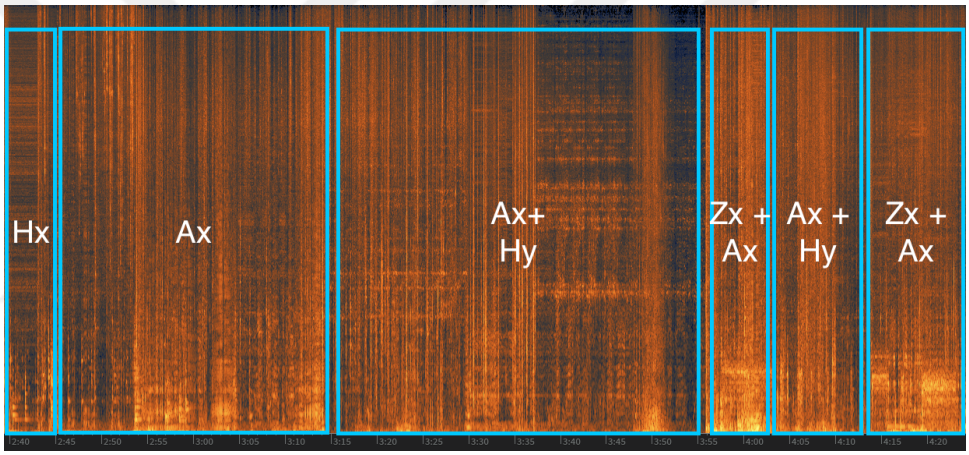

Figure 4.14: Hx, Ax, Ax+Hy, Zx+Ax, Ax+Hy and Zx+Ax

From 4'23" to 6'10", the notes of Ax and N are located in figure 4.15. This N note comes from the Y note at the beginning. Y altered to Hy and now it evolves to N. It is located in a high frequency range which has clear overtones as seen in figure 4.15.

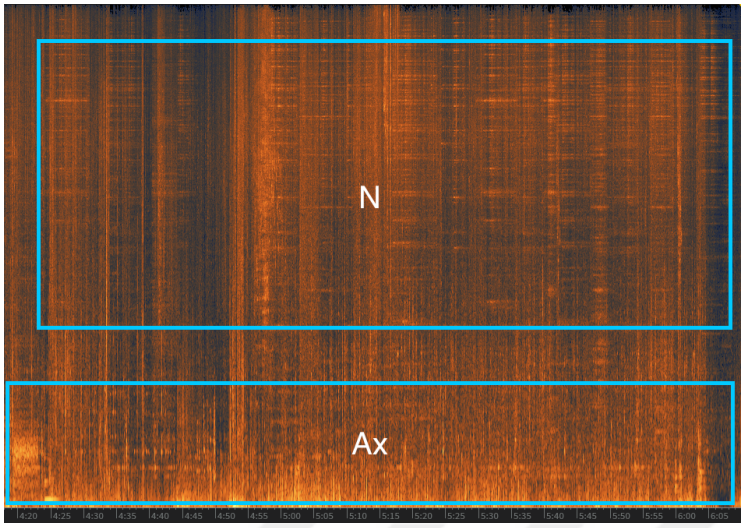

Figure 4.15: Ax+N

After this long section, Ax note dominates between 6'10" to 6'23". Due to the fact that the sounds become more continuous than before, Ex is located from 6'23" to 6'48". E note has unpredictable facture and is a continuous sound. From 6'48" to the end, Ax note dominates the zone which can be seen in figure 4.16.

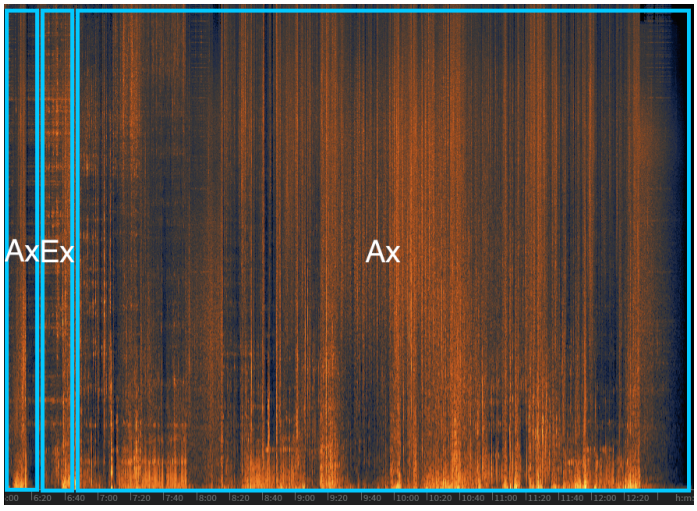

Figure 4.16: Ax, Ex, and Ax

Therefore, the piece developed from X" and Y which are the two gestures at the beginning. *Surface Tension* is stable music in terms of progression. Although the

TARTYP notes are most of the time was same, the perception was changed lots of times in the piece. I will mention the change of perception in the next title.

4.2.4. The soundscape of Surface Tension

Viewing the piece from Schafer's point ironically gives more information about the piece while considering this piece actually is at the *rue Schaeffer*. This happens because of the fact that the perception of the sonic scape is changing over time. The X" and Y, the iterative *gesture* and the long sustained motif are the sounds we overheard. The function of being *signal* or *keynote* for iterative and sustained sound is interchangeable through the piece. In figure 4.11, Ax and Hy notes are indicated, Ax developed from X" the iterative sound and Hy evolved from sustained sound. In that place, Hy the sustained sound is *keynote* and the iterative sound Ax is the *signal* of that area. Although the sustained gesture sounds unnatural, it makes an artificial ambiance which is listened passively.

In figure 4.12, this time Hy, the sustained note is *signal* and X" notes are the *keynote* of the area due to the fact that the iterative sounds are repeated too much and they became an ambiance in this zone. Ax in figure 4.13 is a complex sound that includes a reverberation of the iterative sounds which generates a drone sound and itself. While analyzing this area with TARTYP, we cannot separate the content, however, in the view of soundscape approach, the iterative sounds are *signal* and the reverberation of the source is the *keynote* of the zone. In the other half of figure 4.13, the perception changes again, Zx note is the *keynote* and X" notes are the *signal*.

In figure 4.14, while because Hx is isolated in that area, it has the purpose of being both the *signal* and the *keynote*, Ax has again two layers; the dry version of itself is functioning as *signal* and the reverberation works as a *keynote*. The third block in figure 4.14, Hx and Ax are located. Hx is the *keynote* of that area while Ax is the *signal*. Last three block in figure 4.14, Ax is always the *signal* while Zx and Hy

are the *keynote*. In figure 4.15, while Ax is the *keynote* of the zone, N is the *signal*. Ax notes in figure 4.16 are again both *signal* and *keynote*. The reverberation of the sound source is *keynote* and the direct sound is *signal*.

Thus, *Surface Tension* has two layered music when looked under soundscape approach. Both layers always heard though out the piece. First one is the sound that protects its original form. This layer gives a clue about what is the actual sound source to the listener. These sound events refer to the materials of our daily lives. While this helps the listener to imagine a story about these solid materials, the second layer forces them to realize that this sonic world is not the one that we are living. The second layer is more abstract. In this sonic world, generally the sounds that are closer to real life are the *signal* and the artificial sounds form the *keynote* although it is changed in figure 4.12.

4.2.5. The Language Grid

Surface Tension has both referential sounds and abstract sounds. This piece is a domination race between the artificial sounds and more natural sounds in the entire composition. In *Surface Tension*, more natural sounds are used to transfer their referential aspects to the listener in order to give the tension of not liquid but crispy rubbish. Between *rue Schaeffer* and *Schafer Street*, the piece stands at the middle which is the vertical middle in the Language Grid. On the other hand, due to the fact that *Surface Tension* did not compose with abstract contextual schemes, the piece stands in abstracted syntax. Therefore, *Surface Tension* is located at number 6.

CHAPTER 5

CONCLUSION

In the *Évidence matérielle* (2000), Jonty Harrison's inspirations from Pierre Schaeffer and R. Murray Schafer had been explained clearly by himself. According to Harrison, he metaphorically compares the approaches of Schaeffer and Schafer as a street and calls "*rue Schaeffer*" and "Schaefer Street". In this thesis, his both musical and theoretical influence are discussed by two selected pieces *Klang* and *Surface Tension*.

The target of this thesis is to clarify how the musical approaches of P. Schaeffer and M. Schafer can be used to analyze *Klang* and *Surface Tension* and can I use them for my later compositional studies? Also in this thesis, I aimed to illuminate what Harrison in fact meant to be while he stated *rue Schaeffer* and *Schafer Street* and which ideology do they present? In addition, my secondary objective is to confirm the location of the pieces in between *rue Schaeffer* and *Schafer Street* as Harrison claims his music by using these two approaches as analysis methodology.

I gathered important information about both pieces from the analysis. Both the results of my analysis and Harrison's personal positioning for *Klang* is the same.

Although the piece goes to both sides of the Street time to time, when we take the piece as a whole, *Klang* is located between *rue Schaeffer* and *Schafer Street*. On the other hand, *Surface Tension* shows differences between Harrison's identification and my analysis. Jonty Harrison locates *Surface Tension* near to *rue Schaeffer*. Even though the piece has more abstract sounds from its original source, it has also crispy natural sounds which listeners can easily make a connection with. Thus, the result of my analysis locates *Surface Tension* at the midpoint of *rue Schaeffer* and *Schafer Street* as in *Klang*.

I faced two cases while analyzing the pieces by the approaches of Schaeffer and Schafer. In the first case, during the analysis of the piece, if the sound objects belong to TARTYP are out of the sample column and accumulation column, they can easily be part of *keynote* and *signal* and the ordered relationship of those objects are identified in the soundscape approach. On the other hand, in the second case, if the objects are under the accumulation and samples column in the TARTYP diagram, they disintegrate into layers by *signal* and *keynote* in the soundscape approach. For example, if the sound object is located in the column of A or E, it divides into layers within itself while determining *signal* and *keynote*. If the sound object is not located in the column of A or E, it becomes a part of the *signal* or *keynote* layer.

Additionally, while using this analysis methodology which consists of both the musical approach of Schaeffer and Schafer, it is revealed that if the selected piece is much closer to aural discourse in the Language Grid, Murray Schafer's approach which I use as layering the piece into *signal*, *keynote*, and *soundmark* and also searching for a *symbol*, gives unique information about the piece. On the contrary, if the piece is much closer to mimetic discourse in the Language Grid, TARTYP analysis explores significant information in the piece. Therefore, when the piece which is much closer *rue Schaeffer*, is analyzed by TARTYP, we conclude with expected results. However, when it is analyzed by the division of *signal*, *keynote*, and *soundmark*, there will

occur unexpected results which give more details about the piece and that helps to comprehend the piece better. The situation is the same for the pieces which are much closer to *Schafer Street* when they are analyzed with TARTYP.

Thus, this shows that both approaches of Schaeffer and Schafer are complementary to each other. They fill the gaps of each other. Moreover, the Language Grid reveals the syntactic and the semantic stand of the pieces, based on the results of both approaches.

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