MUSICAL ATTITUDES AND EXPECTATIONS

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Contents

Chapter 1

Introduction

> Music is a parallel world we can have access to. We don't create it, it already exists, as always, we simply get in touch with it. It's like electricity, which is there but we don't see it, and it manifests itself in different forms depending on the switch we press. [33]

I have been in contact with music since early age. At home, a standing piano and a tape/cd player were the available channels for experiencing music and a way to understand what music can be about. Experiencing and exploring possible musical functions were activities restricted to my cultural and familiar circumstances and lack of academic musical education. During the time before being a teenager my musical nutrition was totally dependent on my close surrounding, my family and on the access to media like radio and, later on, some music channels on tv. Such a limited access to music was a normal setting for a kid of my generation, growing up in the 90s, and it could have been much worse than what actually was for me. Luckily enough, my family never really directly imposed their taste or convictions on me.

While growing up, I was sharing my bedroom with my only and elder brother: an unconventional and intelligent thinker therefore a big inspirational and influential source. One of the most direct and important influence I have been exposed to was the musical one. While I was still having great adventures with toys he was already buying his own records and playing them back constantly in our room. His selection was already very characterful and reaching out of the most accessible popular/commercial range of music that our sources could offer us. He was putting a lot of energy and passion in shaping his musical taste out

of the mainstream availabilities. As an obvious consequence of a peaceful brotherhood each of his choice would have shaped me as well. Especially music, being something which is hard to escape from when you share a space equipped by a sound system, shaped more than anything else. I was constantly exposed to its musical choices until my ego was formed enough to start pushing me to make my own musical choices and to later become a musician myself, in other words, to create my own attitude towards music.

This was the beginning of a path made of constant changes and explorations of musical activities and attitudes. Questions like "What is the function of music?", "What can be its usage?", "What do I expect from it?", "Do I like this music?", "What do I (dis)like about it?", "How music and its effect are related?", "Why shall I start making music myself?" and "Why shall I continue making it?" have never found a steady answer. The individual or communal way of dealing with such questions, whether conscious or not, is what I call musical attitude. It concerns with music and its conceptions, usages, judgemental criteria, motivations and expectations. It comprehends musicians, listeners and everyone exposed to music. This dissertation aims to expose and reflect upon general and diverse musical attitudes. I design two main categories:

Repetition

Attitudes based on formal *repetition* and *imitation*. They rely on established and clear expectations of what music should be like therefore on the *expected*. Styles and genres of music are derived from the attitudes of the expected and vice versa.

I attribute to them a tendency to use music as a *medium* for extra musical factors such as self-expression (emotional, ideological), dance, and mind's manipulation (e.g. transcendency). Music acting as medium *between* a subject and an object.

Change

Attitudes based on *change*. They rely on unestablished expectations therefore on the *unexpected*. They are characterised by a central interest for *experimentation*, *innovation* and *mere musical expression*. Music becomes the field of the research therefore *the* object or *the* subject itself.

The reasoning behind the categorisation is mainly heuristic. The designed categories are separated in their conceptual observations but possibly mixed in their practical existence.

In reality, the border between the two dominant approaches is much more blurred. Musical attitudes which strive for repetition and change, for the expected and the unexpected, coexist in their contradiction and they ultimately describe a complex system involved with an internal multiplicity of operating tendencies. Such a complexity reflects an impossibility of an establishment of moralities and rules. The only clear establishment is music: a game that since humanity has memory has been always played, with different attitudes and with constant changes of its rules and goals.

Chapter 2

Repetition, The Expected

2.1 Artless Music Consumption

> Whenever humans come together for any reason, music is there: weddings, funerals, graduation from college, men marching off to war, stadium sporting events, a night on the town, prayer, a romantic dinner, mothers rocking their infants to sleep ... music is a part of the fabric of everyday life. [25]

With the advent of electroacoustic devices as an accessible mass commodity, private and public reproduction of music became normal occurrences. Thus a large number of people have the chance to construct their own personal musical habits and rituals; private spaces furnished with stereo sound systems can turn into a sanctuary where to find an alternative from the outside actuality and to break through the given surrounding by imagination stimulated by waves of music reproduction. Anyone then has the possibility of accessing such a time and space traveling machine, anytime it is desired. The effect can be rather intimate to the extent of being therapeutic and the starting point, whether emotional or thoughtful, is often different from the arrival point. It is indeed a voyage often required by needs of distraction, relaxation and possible demands for clarification of unclear sensations and ideas.

The French economist and scholar Jacques Attali (1977), in its book *Noise: The Political Economy of Music*, observes several cultural stages which music has gone through its history. One came with the advent of the printing press and the possibility of music of being mass produced and spread. He names this historical stage of music *representing* where music

start being treated as an object of the market, transcending its role of a mere spectacle. Although he claims that during the twentieth century an other stage was about to take place:

> By the middle of the twentieth century, representation, which created music as an autonomous art, independent of its religious and political usage, was no longer sufficient either to meet the demands of the new solvent consumers of the middle classes or to fulfil the economic requirements of accumulation: *in order to accumulate profit, it becomes necessary to sell stockpileable sign production, not simply its spectacle.* This mutation would profoundly transform every individual's relation to music. [4]

He calls the consequential stage of the twentieth century *repeating.* It is characterised by the development of recording and broadcasting technologies, means of reproduction of music became a convenient alternative to live performances. The recorded music evades performative mistakes and aims to an impeccable musical construct for consumption. The consumer is empowered to choose what and how to listen to music. Here Attali reflects on the implication of such an empowerment to the individual:

> The technology of repetition has made available to all the use of an essential symbol, of a privileged relation to power. It has created a consumable object answering point by point to the lack induced by industrial society: because it remains at bottom the only element of sociality, that is to say of ritual order, in a world in which exteriority, anonymity, and solitude have taken hold, music, regardless of type, is a sign of power, social status, and order, a sign of one's relation to others. It channels the imaginary and violence away from a world that too often represses language, away from a representation of the social hierarchy. Music has thus become a strategic consumption, an essential mode of sociality for all those who feel themselves powerless before the monologue of the great institutions. It is also, therefore, an extremely effective exploration of the past, at a time when the present no longer answers to everyone's needs. And above all, it is the object that has the widest market and is the simplest to promote: *after the invention of the radio, that incredible showcase for sound objects, solvent demand could not but come their way.* It was inevitable that music would be instituted as a consumer good in a society of the sonorous monologue

of institutions. [4]

The privatisation of music and the freedom of selection became regulated by the music market which produces and makes available certain kinds of music under an estimation of the popular interest. Music treated under marketing constraints is considered commercial and it is usually based on an imitation of a given scheme, with slight changes, while still maintaining a clear functionality. Almost like clothing, being a commodity that, preserving schemes and functionalities, is under the influence of marginal aesthetic changes driven by trend-waves, commercial music performs a similar stratagem although less essential. Clothes are necessities and are provided by a market that adapts to each social class, attitudes to clothing differ from being merely functional to highly sophisticated, from casual to particularly stylish. Music, while not being a vital necessity, has found its way of reaching a similar state of consumption.

What is the actual interest in this music for the average listener? Does he actually listen to the music? Or does he do something else? Those moments are often described as a relaxing or as a hyper and intense exposure to feelings. Music seems capable of inducing emotions and sensations, often transmitted by a certain message which can be deciphered. Such a music is often bounded to the presence of lyrics and melodic lines. Is therefore the actual music the main interest? Or is it the effect? What does create the emotional effects? Is music offering a submission to an effect and the interpretation of a meaning? So is music able to carry a meaning? There is a common and superficial understanding of music being a carrier of meaning and ideas. This conception is associated to the individualistic and egocentric prospect which deeply influences the appeal and enjoyment of what is given as music, prioritising subjectivity, inspiration and the primacy of the individual. The interest then is mainly into a specific message which music can provide, into music as a tool for facilitating subjective expression and prioritising a self-centred view of the world; music as a way to strengthen a political view and to reinforce identification; music functioning and consumed in contexts of artless natures; music as an apparatus functioning in the position between an individual and its political/emotional stand, therefore between a subject and its object. Can music then become the subject or the object of the expression? In this case music would come to be a consequence of being addressed as the field of research itself, without functioning as a media for other purposes of expression. This will be explored farther in the next chapters.

2.2 Emotional Submission

> We humans are a musical species no less than a linguistic one. We integrate all of these and construct music in our minds using many different parts of the brain. And to this largely unconscious structural appreciation of music is added an often intense and profound emotional reaction to music. [31]

Music can be approached, while listening or creating, as a form of emotional submission. Submission takes place when accepting the emotional effect produced by music as the dominant condition for musical experience and the main source of compositional inspiration. Emotional stimulation can be a dictated consequence to musical exposure as much as motivations for musical creativity. In other words, emotional impacts can be aroused by listening to music and emotional states can inspire musical activities like composition and performance. Emotions can therefore dictate and directly effect musical appreciation and making. The psychiatric and psychoanalyst Anthony Storr (1992), in his book *Music and Mind*, observes some relations between music, brain and body:

> It is generally agreed that music causes increased arousal in those who are interested in it and who therefore listen to it with some degree of concentration. By arousal, I mean a condition of heightened alertness, awareness, interest, and excitement: a generally enhanced state of being. This is at its minimum in sleep and at its maximum when human beings are experiencing powerful emotions like grief, rage, or sexual excitement. ... We all crave some degree of excitement in our lives; and if stimuli from environment are lacking, we seek them out if we are free to do so. Not all music is designed to cause arousal. [38]

Emotions are strong feelings derived by circumstances that can be internal, like moods and memories, and external, like social/political contexts on any scale. A self-expressive content may create an extra symbolic context where informations can be derived from, inducing emotional affects and emphatic relations. An additional symbolic context is a quality added to the music by the presence of a content representing emotions and ideas such as lyrics and some form of musical harmony and structure. Such a content can be a conscious initiative of the musician in order to communicate a message or to have a specific effect. The initiated message is often driven by a need of expression of a subjective interpretation of life and reality through intuitive inspirations or of communication of an

ideology. In this case the musician or composer serves as a subject, his message as the object of the attempt of communication and music as the medium. Music becomes a tool when the core of attraction for the creative involvement is based on expression; music is then limited to exist in order to serve a purpose, to function between an object and a subject, to facilitate a communicative cause. A strong state of imagination or emotion and an effort to express it artistically is a poetic and romantic approach that can be explored through various forms of art including music. Music can then be a coincidental tool assisting a prioritising aim, the priority being self-expression over the musical expression. Such a communicative function in the nature of the musicians ambition would persuade a listener to identify with or against the interpretation of the message deviating the perceptive attention from the actual music to the added informative content. This would then affect the perception discouraging a sheer listening while encouraging a conceptual or emotional interpretative state of perception. Encoding an emotional or ideological message into the music stimulates an interpretative reception during the listener experience, it distracts from the act of listening towards an act of conceptual relation and emotional identification. The absence of a wanted message does not avoid an emotional reaction or a need for an ideological identification within the listener, it avoids its dictation therefore its responsibility. Emotional or ideological inspirations lead to a creative process which reflects a subjective state in the music by representative means. The attempt of representing meanings through music makes the latter a carrier of significance that goes beyond a pure sonic experience, submitting the listener to a state of decoding an apparent message. Decoding a representation of a subjective state often directly affects the emotional sphere through triggering empathic relationships. A habitual exposure to music containing poetic informations creates expectation for a musical message and it facilitates a submissive state. A state of emotional submission focuses the attention on the effects created by the music rather than on the music itself, which can be experienced through listening to the sheerly musical plane (Aaron Copland, 1939) or deep listening (Oliveros, 1988). The latter mentioned listening modes describes a perceptive condition that can go beyond an empathic feeling or a necessity of comprehension, a condition that differs from a submissive state to the interpretation of the musical effect.

2.3 Listening Modes

There are many factors which suggest that emotional arousal is related closely to hearing more than seeing. Storr (1992)[38], introduced in the earlier section, mentions some of them: the strong intensification of a movie's expressivity made by the musical soundtrack; in this regard, he recalls a friend of him who, disappointed by his first visit to the Grand Canyon, realised that he had seen the Grand Canyon many times before in movies and never without music; how the effect that a suffering animal or person change when from being a silent scene becomes accompanied by screams; he also compares the frighten which a dark world can evoke with the one of a silent world, the latter being much more terrifying. He points out how we are dependent on background sounds since earlier than we can even see, as David Burrows (1990), teacher at New York University, writes:

> An unborn child may startle in the womb at the sounds of a door slamming shut. The rich warm cacophony of the womb has been recorded: the mother's heartbeat and breathing are among the earliest indications babies have of the existence of a world beyond their own skin. [7]

The listening process in relation to music, being music's primary action, is a very relevant factor in seeing how music can be approached and conceived differently. The American composer and writer Aaron Copland in the book *What to Listen for in Music* (1939) approaches the process of listening to music breaking it up, for the sake of analysis, into its component parts. These components are three separate planes on which music exists: (1) the sensuous plane, (2) the expressive plane, (3) the sheerly musical plane. He claims that the separation is made "for the sake of greater clarity" and that "actually, we never listen on one or the other of these planes. What we do is to correlate them—listening in all three ways at the same time." [8]

Sensuous plane:

> The simplest way of listening to music is to listen for the sheer pleasure of the musical sound itself. That is the sensuous plane. It is the plane on which we hear music without thinking, without considering it in any way. One turns on the radio while doing something else and absent-mindedly bathes in the sound. A kind of brainless but attractive state of mind is engendered by the mere sound appeal of the music. ... The surprising thing is that many people who

> consider themselves qualified music lovers abuse that plane in listening. They go to concerts in order to lose themselves. They use music as a consolation or an escape. They enter an ideal world where one doesn't have to think of the realities of everyday life. Of course they aren't thinking about the music either. ... The sensuous plane is an important one in music, a very important one, but it does not constitute the whole story. [8]

Expressive plane:

> Here, immediately, we tread on controversial ground. Composers have a way of shying away from any discussion of musics expressive side. Did not Stravinsky himself proclaim that his music was an object, a thing, with a life of its own, and with no other meaning than its own purely musical existence? ... My own belief is that all music has an expressive power, some more and some less, but that all music has a certain meaning behind the notes and that the meaning behind the notes constitutes, after all, what the piece is saying, what the piece is about. This whole problem can be stated quite simply by asking, "Is there a meaning to music?" My answer to that would be, "Yes." And "Can you state in so many words what the meaning is?" My answer to that would be, "No." Therein lies the difficulty. [8]

Sheerly musical plane:

> Besides he pleasurable sound of music and the expressive feeling that it gives off, music does exist in terms of the notes themselves and of their manipulation. Most listeners are not sufficiently conscious of this third plane. ... Professional musicians, on the other hand, are, if anything, too conscious of the mere notes themselves. ... It is very important for all of us to become more alive to music on its sheerly musical plane. After all, an actual musical material is being used. The intelligent listener must be prepared to increase his awareness of the musical material and what happens to it. ... But above all he must, in order to follow the line of the composer's thought, know something of the principles of musical form. Listening to all of these elements is listening on the sheerly musical plane. [8]

He concludes the chapter with the following conclusion:

> In a sense, the ideal listener is both inside and outside the music at the same moment, judging it and enjoying it, wishing it would go one way and watching it go another—almost like the composer at the moment he composes it; because in order to write his music, the composer must also be inside and outside his music, carried away by it and yet coldly critical of it. A subjective and objective attitude is implied in both creating and listening to music. [8]

Pauline Oliveros in 1988 coined the term "Deep Listening" after experimenting with improvisation session in particularly interesting acoustic spaces. She is one of the experimental composers who addresses sound and Deep Listening as the central focus and inspirational source of her music. Deep Listening is what Copland describes as the "sheerly musical plane" but she expands the application of the meaning from music to every sound. In her article Quantum Listening (2000) she describes deep listening as a state of mind, a connective awareness to all that is:

> Deep Listening is listening in every possible way to everything possible to hear, no matter what you are doing. ... It represents a heightened state of awareness and connects to all that there is. ... Deep Listening is active. What is heard is changed by listening and changes the listener. I call this the listening effect. Two modes of listening are available—focal and global. When both modes are utilised and balanced there is connection with all that is. Focal listening garners detail from any sound and global listening brings expansion through the whole field of sound. [29]

She faces Deep Listening (or Quantum Listening) as a complete focus towards sound without considering interpretation. The listening effect results in a meditative state of mind where meaning is transcended. She differentiates listening and Quantum Listening:

> Listening shapes culture locally and universally. It is the directing of attention to what is heard, gathering meaning, interpreting, and deciding on action. Quantum listening is listening to more than one reality simultaneously. ... We hear in order to listen. We listen in order to interpret our world and experience meaning. Our world is a complex matrix of vibrating energy, matter, and air—just as we are made of vibrations. Vibration connects us with all beings and to all things interdependently. We open in order to listen to the world as a field of possibilities, and we listen with narrowed attention for specific things of vital

> interest to us in the world. We interpret what we hear according to the way we listen. By using many forms of listening, we grow and change, whether we listen to the sounds of our daily lives, of the environment, or of music. Deep Listening takes us below the surface of our consciousness and helps to change or dissolve limiting boundaries. [29]

In the previous quotes, Oliveros relates the topic of listening to any sound. She also explored the same ideas in her music as a composer, performer and obviously listener. In fact also music can be approached through many forms of listening therefore different degrees of interpretation. Interpretation can be seen as a spontaneous reaction which still demands a mental effort based on identification. Oliveros still insists that "whatever the discipline, responses that originate from Deep Listening resonate with being—inform the artist and audience and make art an effortless harmony ... down to the cellular level of human experience." [29]

She describes a certain experience of art being an effortless harmony. Is it through active concentration on the sound, therefore an effortful state, that we can reach the effortless state of Deep Listening? So is concentration on meaning and interpretation an effort in contrast to a focus centralised on the sound? Are they really different way of experiencing music, one connected to an individualistic state of gathering informations—meanings and the other of connection with the being?

2.4 Content and Container

> Some people have more dedication to, and/or access to the necessary materials, instruments and time for creative production, and express their inner visions and feelings in ways that can find acceptance by others. This means that the creative intent of an individual can take on more significance than an individual response to ones environment and life, and become a social expression as well. [11]

Music can function as a representation or expression of an emotional and ideological condition. Music, as controlled vibratory air, does not contain any meaning per se unless a meaning is encoded by a conscious initiative or decoded by a submitted listener. Therefore, while music and a possible carried attempt of communication are separated things, the

music itself becomes a container for a message while the message becomes the content. In popular cultures musical forms and contents have been strongly shaped by the political and economic circumstances and the consequential reactions of the people. The song became a very popular form of expression among sub-cultures and there are genres of music which are characterised by containing a high amount of political and ideological messages. One clear example is Punk music which, as a development of Rock 'n' Roll, established in the 1960s and 1970s a clear political critique as Neil Eriksen (1980) in its article *Popular Culture and Revolutionary Theory: Understanding Punk Rock* describes:

> ... At the core of the British new wave was the militant working class sub-cultural phenomenon of punk rock. This is especially important in the subject matter taken up, and also in the politics and targets of critique. Specifically, punk rock expression validated, and in fact forcibly injected, an extremely broad realm of social issues and questions as acceptable content in popular music: political questions about dead-end jobs, identity and militarism. ... Needless to say, anarchistic themes abound in punk rock, as do nihilistic themes. [11]

Bands like Sex Pistols in the 1970s started to scream into the microphones mottos like "Anarchy in the UK" and "No Future" while The Clash were recognising that "All the power is in the hands of people rich enough to buy it." These bands were openly expressing their uneasiness in the society through lyrics, distorted sonorities and aggressive attitudes. Music was one of the elements to set up the shows and the impact they had on the audience had been so strong that stylistic movements and ideologies were born from it. The audience was completely fascinated by the subversive attitude expressed in the music. It responded to a general need of certain people and social classes to be confronted to an alternative and free view on the condition of the society. It was not just the ideology which was shared through these bands as Simon Firth (1977) writes:

> Today's teenage frustration is caused, not by fuddy-duddy parents, not by easily shocked adults, but by an intractable economic situation, by a society in which everyone talks a lot about the plight of the youth but no one does anything. This isn't an ideology, it is a mood. [12]

In such a mood, music becomes a container for extra political messages and for needs of emotional expression, a means of communication. Container and the content take different roles although the content (political message) exists without the container (music) and not

the other way around. Probably such an aggressive and extreme music like Punk would have not happened without the historical and ideological circumstances which it developed in. The music becomes a dependent element to an extra musical factor—content. Neil Eriksen (1980), in the already mentioned article, observes the relation between cultural form of a song and its expressive content:

> And while it is true that the cultural form of a song, novel or painting cannot be totally isolated from the content of the ideas and feelings embodied in that form; the two are not mechanically linked in a monolithic unity. For the purposes of analysis it is crucial to be able to discuss the two distinct elements in their relations of relative autonomy to each other. Form, no less than content, is a product of historical development linked to ideology and ultimately to the mode of production. Today the popular song is a form of expression for such widely diverse content as protesting nuclear power and promoting reactionary foreign policy toward oil exporting countries. [11]

After music became a marketing object and commodity, taking part in the industrial capitalist chain of production, and after new technologies allowed an easy and instinctive approach to musical activities, the necessity of expression through popular songs started to particularly increase within the populistic tendency of musical consumption and production. A mainstream musical attitude came to be bounded to an unaltered form for the expression of diverse contents. A passive access and exposure to an accommodating music, limited to be a background container for an expressive content, sets a standard that directly affects the quality of the expectations and motivations for musical activities. This standard tends to create a comfort zone for the musical consumption and intuitive production wherein illusory limits bound the exploration of musical possibilities to an emotional related experience. The inflexible functionality and use of music as a message container may embed in the musical expectations a character of facility and tie to such a character the explorable musical qualities.

As we have seen, music can easily become e container of style, attitudes and emotional/ideological messages. We have also seen that the container (form) and content can be analysed as separate. Could then music exist beyond being a container? Or could it contain something else? And could it be a container for itself? Would then still be a container? Music, being a fundamental member of the arts family therefore not a facility, can be a

container of itself if not bounded to a limited and inflexible function and when a liberation from any operational conditioning is considered in the perspective of a pure contemplative experience. The liberation can happen within the listening process, which from an emotional submission can become deep or sheerly musical, and within the musical attitude, through the challenge of musical habits and expectations pursuing new and unexpected results. An attitude towards music as an experimentation of form is required in order to search for a music of change opposed to one of replication—repetition. Repetitive is the approach and expectation of certain musical attitudes which give birth to genres and styles, establishing habits and presumptions; the music of the expected. The exploration of form, therefore of new attitudes derived by innovational compositional strategies, can be applied to each work of music constantly driving creativity towards the unexpected, towards an ongoing challenge of change. The music of the unexpected will be taken in account in the second chapter. Before arriving there, repetition as an actual musical and sonic quality is discussed farther.

2.5 Music for Transcendence

> While music is commonly intended to affect the listener's mood, compositions have also been designed specifically for the purpose of altering the listener's consciousness. Indeed, entire musical genres (acid rock, trance, rave, etc.) have explored the interplay between mind and music. [44]

It is a human tendency through all the history and many cultures to reserve a space and time for people to experience trance-like states. This happens typically under religious, pagan and subcultural traditions in order to help spiritual and physical growth, therefore consisting mainly of a therapeutic purpose. A trance-like state can be reached through hypnotic sensorial stimulation which can dispose a person towards a meditative condition. Hypnosis can also be self-induced without the support of external stimuli, this case is not centrally under the concern of this text. Example of hypnotic sensorial stimuli can be the contemplation of a captivating landscape (looking out of a vehicle window, water flowing in a river, ocean, city life), smells, touching or being touched, movement and sounds. An important condition for the perceived object in order to be capable of inducing a trance-like state is repetition. Repetition is conceived as rhythm as well as consistency. Unlike rare cases, hypnosis is achieved in a rather long duration of time, it can be reached even in

several hours, and the external stimulation must be fully constant or affected by long-term slow changes. Constancy is made of rhythmical patterns and persistent intensity which, as parameters, can be variated slowly and smoothly or in a constant rhythm. During an exposure of such external sensorial stimuli capable of hypnosis, perception may slowly begin to affect deeply the internal state of a person until the internal and external experiences begin to combine and interdepend, orienting slowly towards a complete internalisation and consequently an abstraction from the external stimuli. People in a trance-like state may experience a radically distorted sense of time and a disconnection from the physical circumstances, an advanced state may also cause hallucinations and mystical events.

The most successful and applied media for trance-like purposes are sound and movement; sound, organised specifically, already has the power to make a person move, or else called dance.

Many religious and tribal rituals often involve a long-time repetition of certain sounds made by musical instruments (e.g. shamanic drums, gongs, Tibetan bells) and human voice (e.g. chanting, mantras). Being part of these rituals, both performers and listeners aim to a trance-like inducement in order to attain a transcendent experience and deeper spiritual connection. Exorcising acts often also follow similar praxis.

Examples of such rituals can be the Sufi Sama[1] ceremonies where whirling dervishes, dressing in their traditional white dress, celebrate the divinity through spinning as a form of dance accompanied by music. The dervishes spin at a constant speed and repetitively for a long duration of time, aiming to reach religious ecstasy. In south America the shamanic tradition is still very present and it is embedded in the culture as a powerful form of medicine. The American audio engineer and sound programmer Earl Vickers in his text *Music and Consciousness addresses Shamanism and Psychedelia* writes:

> Music is commonly used by shamanic healers as an integral part of their healing rituals, often accompanied by the use of plant hallucinogens. De Rios and Katz suggested that the music did much more than merely set a mood; it served as a vital link in bridging separate realities and was instrumental in providing the structure for the experience. ... Peruvian ayahuasca[2] healers learn a vast

[1] The practice of deeper listening to sacred verses, sacred poetry, spiritual music/song for Divine remembrance and in Divine remembrance is a Sufi practice known as Sama or Sema. The word 'Sama' comes from Arabic with a root meaning to listen (as Sh'ma in Hebrew).

[2] Ayahuasca is an Amazonian indigenous brew, traditionally used for shamanic, spiritual and healing purposes. This entheogenic tea, also known as 'Vine of the Soul' is used largely as a religious sacrament.

> repertoire of "magic melodies" known as icaros, which are used to elicit specific visions to achieve predetermined goals: contacting a supernatural deity, revealing the cause of illnesses, etc. [44]

He continues the text quoting a passage from Daniel Pinchbeck's *Breaking Open the Head* where contemporary-shamanism is described through looking back at the psychedelic rock of the 1960s:

> Leary's[3] slick, superficial constructs lacked the deep framework of separation, transcendence, and reintegration that shamanic cultures had developed over 75,000 (give or take) years.
>
> ... [Psychedelics] break the trance of the consensus culture. But neither LSD nor Leary could provide answers to the most profound issue exposed by the LSD trip: once the individual ego was liberated from its social role, from the well-worn grooves of Western society's game machinery, what was it supposed to do?
>
> This agonizing question is refracted, reverbed, and wa-wa pedaled through the psychedelic rock of that era. Psychedelic rock oscillates between contrasting impulses. There is the Dionysian desire to pulverize all the boundaries of space and time - Jimi Hendrix's yearning to kiss the sky, or chop down a mountain with the side of his hand. But the feeling of magic super-potency is countered by its opposite, a childlike helplessness, found in the nursery rhyme pastoralism of Pink Floyd's 'See Emily Play' or the Beatles' 'Mother Nature's Son.'
>
> Psychedelic rock reached its unfortunate endpoint in distorted soundscapes of psychic disintegration... The music traces the sorrowful process of psychic decay, swirling down toward what Freud called 'the oceanic,' a zone of preinfantile undifferentiation. The records describe failed attempts at initiation short-circuited blow outs, made without road map or guide, except for Leary's dangerous manual.
>
> The 1960s pursuit of shamanic knowledge was too shallow, too uninformed, to succeed. Products of a consumer culture, the hippies and flower children

For many indigenous people of the Amazon, Ayahuasca is integral to ritual practices, myths, cosmologies, art, music, and other cultural aspects of their life.

[3]Timothy Leary (1920), after building a career as a noted psychology professor and researcher, become a major, highly controversial advocate of psychedelic drugs during the 1960s.

> tended to treat psychedelics and spirituality as new commodities. Fooled by the immediate psychic transformations of LSD, they thought enlightenment could be quickly achieved. ... The psychedelic culture flourished for a few short years, leaving behind a chaotic legacy of short-circuited brilliance and schizoid tragedy. [44]

There are two keys in regards to these ritualistic practices for transcendence: coordination, in the sense of reaching a state of internal and external connection, and repetition, a perpetual insisting action.

2.6 Coordinated Repetition

From early origins, mankind has been practicing repetition of sounds and movement in various contexts like folk entertainment and spiritual practices. Repetitive and coordinated sounds can strongly influence the perception of time as the English composer and musicologist Wilfrid Mellers (1973) describes:

> The incremental repetition of brief, non-developing phrases, with or without intelligible words, generates and at the same time is generated by an unremittent beat. The continuity of the beat destroys the sense of temporal progression, so that one lives once more in mythological, rather than in chronological, Time. [28]

An example of the use of this effect for religious purposes is the use of mantras[4] which, among various forms, can be also performed sonically. The vocal performance is a repetition of the numinous sounds in a loop following specific resonances and melodies. Practitioners, coming from various cultures, believe that these repeated formulas have psychological and spiritual power, affecting a person state to the extent of a trance. Dance-music genres like techno and trance music also are characterised by the repetition of short and non-developing phrases and seem to be able to effect a crowd to dance for hours. The German composer Karlheinz Stockhausen, interviewed by Iara Lee in 1999, sustains the use of coordinated repetition in music for its presence in body functions and he claims it to be less interesting than the transformation of musical figures:

[4]Especially in Hinduism and Buddhism, mantras are words or sounds that are believed to have a special spiritual power: a mantra is sometimes repeated as an aid to meditation or prayer.

> Repetition is based on body rhythms, so we identify with the heartbeat, or with walking, or with breathing. This has been the tradition for thousands of years of basic musical songs, tunes. But since the middle of the century in particular, the music has become very irregular in rhythm. And the invention of transformations of certain figures has become the most important in musical composition. I think it's simply more interesting than repetitive technique. [23]

Such a strong characteristic which is repetition is a clear limit and trajectory for a composer of such a music, and its definition must be expanded with terms like folk, sacred or dance. These terms symbolise the inflexible role that music is supposed to take under these conditions. Limiting the music to such a strict condition is clearly emphasising an extension to its definition and its conception that spread out from the range of being addressed only as music. Under these conditions music becomes submitted to an external established purpose which in this case is a transcendent psychological and physical effect. Within the conception of music for trance—dance, the unexpected is not addressed as a field of creative research. The desired effect is a clear goal embedded in the main creative motivation. Also the experience of listener is made of clear expectations: to be moved, to loose the track of chronological time, to be ecstatic (even if such a state may lead to an experience of something unexpected). The quality of repetition in sound composition have been embedded in many folk genres of music, often connected to dance. Dance-music has an obvious role of triggering body movements and in same cases, of being hypnotising. In these specific cases, the exposure to the music could already be effective without necessarily being dancing. From African rhythms to swing music, from the southern Italian tarantella to disco music, from rock 'n' roll to electronic dance music and all its sub-genres, all around the world, traditions have always provided a sonic experience that, with simple rhythms, simple melodies and their repetition, would involve the listener with an ecstatic drive towards movement and lightheartedness. Dance-music is always accompanied by a certain settings that would facilitate the social experience as well. The individual euphoric experience of dancing reflects plainly a communal occurrence of gathering and unity. Social unity and lightening actions are intrinsic behaviours of communal lifestyles in order to preserve a community in order and sanity.

2.7 Failure

When the process of creation is bounded to clear expectations and purposes, a failure in accomplishing it would consequently be taken as lack of skill. Failure would be considered unsuccessful and success cannot exist where a clear goal is not established. In such a goal oriented conception of music the aim to success rules the creative process and prioritises it over the music itself. Succeeding in leaving up to the qualitative musical expectations becomes more important than the music itself. A music that does not leave space to failure does not also leave space to experimentation. An interesting view on musical failure is from Eldritch Priest (2013), philosopher and composer. He refers to music as an artificial medium for representing reality, a sort of fiction. From this he deduces that a failure in music, what he calls unmusic, is then a failure in representing reality coherently. He calls such a failure a musical fictum, a fiction which corresponds to a reality that is not:

> A musical *fictum*, as opposed to a *fictio* whose metareferentiality is accomplished solely by producing an awareness of the sense of mediality, is subject to metareferential reflection not only when its artifice is made apparent but when it elicits a *comparison* to a reality that it is (supposedly) not, as happens with musical works that trigger a response like: "That's not music!" This statement (negatively) describes a musical *fictum*. It expresses a two-fold metareference in that saying something is "not music" draws attention to the specific behaviour of the sonic medium while at the same time brings to mind the relationship that this medium is supposed to have with reality—namely, that music is an artifice and what is being heard as "not music" is not complying with the fictionality, the artificiality, that music is supposed to adhere to. That said, there is a greater consequence to draw from this kind of meta-multiple. In declaring something to be "not music," and thereby calling attention to the medium and producing a conceptual awareness of the kind that structures the difference between "fiction" and "reality," one is remaindering something whose ontological and epistemological status is radically indeterminate. If not Music, not a musical artifice, then what is "it" that remains? If "it" is not acting as an agent through which processes of expression and communication can take place (i.e. medium), then it is more matter than idea. And if "it" is not, so to speak, feigning a world of impending death such as Mahler's 9th does, then "it" is not even imaginary.

> Paradoxically then, "it," this "unmusic," this acoustic matter impinging on my time and space, is something of a black hole and much closer to music as such than Chopin's *Nocturnes* could ever hope to be.
>
> Unmusic, a "something" on just the other side of discourse, is a species of metamusic in the sense of its being *ulterior* to Music. This departs slightly from the idea of metamusic as a practice analogous to metafiction[5], for this modified definition of metamusic as unmusic is characterized more by a failure than by an explicit reflexivity. While an understanding of metamusic that is analogous to metafiction typifies the operations of a signifying practice that "elicits a cognitive process or reflection on itself, on other elements of the system or on the system as a whole," the sense of metamusic that I am making is based on a failure to be musical (to act as an expressive acoustic medium) and to be Music (to be an object of contemplation, exchange, or study). Thus, what I am calling "unmusic" is a failed event. ... "Not-being-musical" (or if you're of the avant-garde persuasion, "not-being —'anti-musical'") is a fiasco to the listener who expects to hear sounds behaving musically, behaving as Music (or the inverse). [30]

Music, as everything else, is in the realm of subjective perception. If a musical failure is perceived as a lack of credibility in the representation of reality, and if music is meant to represent reality in the first place, there aren't then any possibilities of evidencing such a claim as an objective truth. It sustains the fact that music's appreciation, therefore its expectations, is strictly bounded to the personal experience and interpretation of reality. Therefore the question of credibility in a statement such "This is not music!" is tricky and unprovable. On the other hand, if there would be such a thing as not music, is then possible to purposely make it? Priest tackles the twisted concept twisting it even farther:

> But this leaves a question about how we can even study "unmusic," for how does one stage a fiasco? How does one intentionally fail? In other words, how does one make unmusic? The short and paradoxical answer is that you *unmake* it. The long and much more circuitous answer, which requires a major detour through the way in which meaning in music and language is generated, and how

[5] Metafiction is a literary device used self-consciously and systematically to draw attention to a work's status as an artifact. It poses questions about the relationship between fiction and reality, usually using irony and self-reflection.

> the category of Music can only be understood as a discursive construct such that it is impossible to think of Music apart from language, is that you *fake* it. While this is perhaps not a very satisfying answer, I'd suggest that satisfaction is already out of step with failure, for failure isn't about satisfaction but quite the opposite. Failure is about an engagement with the potential of potential rather than a satisfaction of a potential's ideal. Thus to fake failure is and is not to fail to fail, for failing to fail is a success of sorts whose accomplishment is itself a type of failure (which is a success that is a failure...). And as the previous sentence demonstrates with its convoluted (though mercifully curtailed) recursive logic, to fail is to make nonsense, and to make nonsense is to traffic in contradictions, which is, in a sense, to unmake sense. [30]

Lack of sense is what some kinds of modern art is often accused of. The abstract state which art reached in the twentieth century can be perceived from a certain audience as meaningless. The reporter and professor Zak Stambor (2006) discusses in his article *Lack of Meaning may spur some to dislike Modern Art*. Again we find a strict analogy between the appreciation of art with the view of reality:

> Some people may dislike paintings by Wassily Kandinsky, Jackson Pollack and other abstract artists because the artworks' apparent lack of meaning frustrates their own desire for a clear meaning—an effect that magnifies when people become conscious of their own death due to terror-management concerns. ... Terror-management theory suggests that some people need to maintain a basic meaningful view of reality in order to manage their concerns about their mortality. "Open, creative engagement with art can be inspirational," says lead researcher Mark Landau, a fourth-year graduate student at the University of Arizona whose collaborators Jeff Greenberg, PhD, also of Arizona, Sheldon Solomon, PhD, of Skidmore College, Tom Pyszczynski, PhD, of the University of Colorado at Colorado Springs, pioneered terror-management theory. "But for certain people, modern art's lack of apparent meaning can cause them to miss out on the benefits and rich experience of art". [37]

Copland (1939) also contributes to the issue of meaning:

> Simple-minded souls ... want music to have a meaning, and the more concrete it is the better they like it. The more the music reminds them of a train, a storm,

> a funeral, or any other familiar conception the more expressive it appears to be to them. This popular idea of musics meaning—stimulated and abetted by the usual run of musical commentator—should be discouraged wherever and whenever it is met. One timid lady once confessed to me that she suspected something seriously lacking in her appreciation of music because of her inability to connect it with anything definite. That is getting the whole thing backward, of course. ... [Music] may even express a state of meaning for which there exists no adequate word in any language. In that case, musicians often like to say that it has only a purely musical meaning. They sometimes go farther and say that all music has only a purely musical meaning. What they really mean is that no appropriate word can be found to express the music's meaning and that, even if it could, the do not feel the need of finding it. [8]

The timid lady mentioned by Copland struggles in appreciating music because of the incapacity to connect it to anything definite. Such an inability symptomises a need for a clear referentiality to the world as it is known, expected. For some people what is not tangible is difficult to grasp and often not accepted as real. The ability of abstraction is on the other hand an other way to tackle reality and it has been explored in art to the extent of becoming a stylistic approach. The search of the abstract, the non-representational, the unapparent, took place among visual artists, like the above mentioned Kandinsky and Pollack, just like Surrealist poets who "practiced the intentional disarrangement of the senses in an attempt to destroy mental narration and filtering "[44]. Also in music a similar attempts in experimenting out of the sphere of the conventional representational narration has been taking place in the twentieth century.

On the dictionary *abstract* comes as an antonym to *representational*. In art, the terms contrast each other denoting art on one hand as aiming to represent the physical appearance of things (representational) and the other existing with a degree of independence from visual references in the world (abstract)[3]. The representation started shifting from what can be seen to what cannot, from the visible to the invisible, from the actual to the imaginary, from the material reality to the intangible reality. The conception of reality is in constant change through the scientific research and the artistic need of reflecting this change has found an experimental attitudes among composers and it is addressed in the next chapters. The questions become: how the experimental musical attitudes changed the need of interacting with and representing reality? If not the apparent reality, what is being represented? And

how?

Chapter 3

Change, The Unexpected

3.1 Musical Worth

> "Beautiful" or "ugly" makes no sense for sound, nor for the music that derives from it; the quantity of intelligence carried by the sounds must be the true criterion of the validity of a particular music.[49]

Providing a time and a space for emotional and ecstatic purposes is tolerated by most of the societies, in different degrees and realisations, and music have always taken a fundamental role for the achievement of these purposes. Such an important role empowers music with being a potential tool for mass management and domestication and the musician with being a potential, conscious or not, manipulator or mesmeriser. Again, the definition of a musician dealing with such an empowering music must be extended or shifted to something supplementary from a mere musical role. It is very common among shamans, religious figures, therapists and disk jockeys to use organised sounds in order to achieve the intent of effecting and manipulating mental and physical states; the main concern becomes then the resulting experience of the listener, being therapeutic, ecstatic or hypnotising, and music the tool.

The experimental composer and performer Tim Hodgkinson (2016) writes about his direct interest in shamanic manipulation of the audiences mindset in relation to the Western performer:

> Around 1990, having connected in my mind shamans and improvising musicians, I was still thinking of shamans as performer in a Western sense, but performers

> who had developed skills to manipulate their audiences frame of mind. Possibly this was the way forward that Ken and I (rather arrogantly) saw for our own music at the time. [18]

A composer or performer who aims to induce trance-like effects through the music relies on a property of a role which exceeds the sufficient condition of being a music composer, therefore an awareness and responsibility of such an exceeded and extended role must be present. A lack of clarity of the role of sound and music in the undertaken activity may lead to existential misconceptions and incoherent semantics within the field for confrontation. Hodgkinson admits his arrogance in seeing his own music in the past as a result of a "developed skills to manipulate their audiences frame of mind", like shamans. His lather studies and experiences regarding the topic made him realise his naiveness and pretension in the belief of taking such a role.

Trance and emotions, not being musical properties or parameters, are therefore external relevances to music. Being external, they cannot become relevant criteria for musical judgement and discussion but vice versa: the functionality of music can be a critical point for discussing trance and the induction of emotions. The addressed focus must then be clearly the function of the music and not the music itself.

As we have seen in the previous part of this text, music can affect the listener and the performer in various ways. The question about appreciation could then be what do we like about music? Is it the music itself or the effect it has on us? Or are they the same thing? Appreciating the subjective effect which music induces does not mean to appreciate the music. So how to recognise musical worth must be a fundamental ongoing question for anyone concerned with music.

The English philosopher and sociologist Herbert Spencer (1993) in the essay *The Purpose of Art* addressed two conflicting mental processes, the intellectual and the emotional, being analogue for critical judgement of music:

> The antagonism between intellectual appreciation and emotional satisfaction is essentially the same as one which lies at the root of our mental structure—the antagonism between sensation and perception; and it runs up throughout the whole content of mind, rising to such partial conflicts between thought and feeling as those which accompany critical judgements of music. [36]

The dichotomy between thought and feeling is discussed by the art historian Wilhelm Worringer (1963) under the terminology of empathy and abstraction. Storr (1992) articulates his ideas:

> Empathy and abstraction: categories which are just as applicable to music as to the visual arts with which he was primarily concerned. Worringer claimed that modern aesthetics was based upon the behaviour of the contemplating subject. If the subject is to enjoy a work of art, he must absorb himself into it, make himself one with it. But this empathic identification with the work is only one way of approaching it. The other is by way of abstraction. Aesthetic appreciation is also a matter of discovering form and order, which requires detachment form the work. These two attitudes are linked with extraversion and introversion. In individuals, one or other attitude is usually predominant and, when exaggerated, leads to mutual misunderstanding. Empathic identification with a musical work may so emotionally involve the listener that critical judgment becomes impossible. In contrast, an exclusively intellectual, detached approach may make it difficult to appreciate the musics emotional significance. Many disputes both in psychology and in aesthetics arise because each participant claims that whichever attitude he personally adopts is the only valid one. [38]

Igor Stravinsky (1968) on the other hand claims his criteria to be "absolutely physical":

> What is the 'human measure' in music? ... My 'human measure' is not only possible, but also exact. It is, first of all absolutely physical, and it is immediate. I am made bodily ill, for example, by sounds electronically spayed for overtone removal. To me they are a castration threat. [20]

Fred Lerdahl (1992) in the article *Cognitive Constraints on Compositional Systems*, exploring the relationship between composing and listening, relates comprehensibility and value:

> There is no obvious relationship between the comprehensibility of a piece and its value. Many masterpieces are esoteric, while most ephemeral music is all too comprehensible. On the other hand, if a piece cannot be understood, how can it be good? Most would agree that comprehensibility is a necessary if not sufficient condition for value.

> Care must be taken with this formulation in three respects. First, comprehension presupposes listening competence for the music in question. This competence varies with ability and especially with exposure, but is not less real for that. Second, comprehension pertains to the listening grammar rather than to the compositional grammar. A serial piece may be understood in non-serial ways. Third, we are talking about intuitive rather than analytic comprehension.
>
> ... The mind's music module must be able spontaneously to form mental representations of musical structure from musical surfaces. This is quite different from using the all-purpose reasoning faculty to figure out the structure of a piece. [24]

With his standpoint that "appreciation depends of cognition", Lerdahl then goes "an aesthetic step further" by making two aesthetic claims:

> Aesthetic Claim 1: The best music utilizes the full potential of our cognitive resources.
>
> Many musical surfaces meet the various constraints, but only those that lead to complexity employ "the full potential of our cognitive resources".
>
> ... All sorts of music satisfy these criteria - for example, Indian raga, Japanese koto, jazz, and most Western art music. Balinese gamelan falls short with respect to its primitive pitch space. Rock music fails on grounds of insufficient complexity. Much contemporary music pursues complicatedness as compensation for a lack of complexity. In short, these criteria allow for infinite variety, but only along certain lines.
>
> Aesthetic Claim 2: The best music arises from an alliance of a compositional grammar with the listening grammar.
>
> ... This claim carries with it a historical implication. The avantgardists from Wagner to Boulez thought of music in terms of a "progressivist" philosophy of history: a new work achieved value by its supposed role en route to a better (or at least more sophisticated) future. My second aesthetic claim in effect rejects this attitude in favour of the older view that music-making should be based on "nature". For the ancients, nature may have resided in the music of the spheres, but for us it lies in the musical mind. I think the music of the future will emerge

> less from twentieth-century progressivist aesthetics than from newly acquired knowledge of the structure of musical perception and cognition. [24]

Lerdahl suggests the existence of a certain universal structure of musical perception and cognition. He therefore would address a musical work as good when conceived under such a compositional structure because of the shared grammar between listener and composer. The writer Gordon Graham (1995) in his article *The Value of Music* dive into the topic of valuing music and he observes a certain attitude of some musicians of treating music as a language acquiring therefore the ability of valuing the importance of music by its cognitive contents. He starts with a simple question:

> Can absolute music *say* anything? Many people believe that it can. Some of the most reputable students of music have not hesitated to assert that music is a special sort of language, one in which composers may tell us thing and in which statements can be made. Moreover, and this accords with the general tenor and direction of my argument, some of them have made this claim expressly in order to establish the value and importance of music and to show it to be on a par with other artistic and intellectual endeavours. ... Both musicians and critics have sought to explain the importance of music in terms of its communicative import, and this implies that music has communicative power. Of course, the fact that critics, and even composers, speak and write in this way is not in itself evidence that music can properly be spoken or thought of as a form of communication. ... Still, both composers and interpreters have also striven for more than this and used these communicative terms of music with the intention that they should retain the cognitive import they have in other contexts. In short, they have wanted to say that music is a language. [15]

The Greek composer Iannis Xenakis (1974), on the opposite, claims that our rational processes cannot often grasp the impact that music creates. Whatever effects us is not codifiable as a language and reflects internal movements which are evoked within the listener. He affirms:

> Music is not a language, it is not a message. ... The impact that music produces often exceeds our rational methods of investigation. Movements are created inside you, you can be conscious of them or not, you can control them or not, they are in you. [46]

Music does not contain any power to evoke meaning translatable into emotions or informations since only the listener is capable of evoking. The musical effect happens within the person who receives it and it is not carried in the music itself. If the impact produced by music really exceeds our rational methods of investigation as Xenakis suggests, there isn't then any actual objectivity in discussing it or judging it. Therefore the starting point for any musical appreciation cannot be only the induced effect, and the musician who bases his artistic choices regarding mainly on the effect is reducing his understanding and his judgemental skills to a mere subjective strategy. Experimental composers of the twentieth century like Iannis Xenakis and Gottfried Michael Koenig (among many others) spent their lives engaging in finding innovative compositional strategies inspired by scientific and technological concepts in order to expand the musical thought from a merely subjective view to a broader one. Subjective expression, even when lacking analytical investigation, does not avoid meaningful artistic results, however it limits the field for confrontation and for objective discussion.

3.2 System and Chance

If musical worth is not recognisable and discussible in the musical effect, the musician interested in analytical investigation and confrontation will then explore different modes of creativity, different from subjective expression and effectiveness. Modes of creativity, therefore techniques and aesthetic ambitions, and criteria for appreciation of music reflect a deeper capacity of association with music and its understanding.

Anthony Storr (1992) brings to an end his publication *Music and the Mind* with the following conclusions:

> Music exalts life, enhances life, and gives it meaning. Great music outlives the individual who created it. It is both personal and beyond the personal. For those who love it, it remains as a fixed point of reference in an unpredictable world. Music is a source of reconciliation, exhilaration, and hope which never fails. [38]

He describes music as a supportive means, being created for complementing the lack of meaning of life, mortality and the unpredictability of the world. He does not consider an approach to music which does not try to add meaning to life but explore its meaningless

condition, an approach which removes references enhances change, accepting unpredictability as a quality that cannot be denied in the music. Storr expects music which comforts human fears and existential doubts and which supports the human perspective without exploring others.

In the twentieth century music developed by being explored from different standpoints. Koenig (1968), in the essay *Remarks on Composition Theory*, distinguishes two directions in compositional practice taken after the late 1940s: systematic composition and composing with chance. He also claims many works to not adhere rigorously to either one or the other. However he prefers to discuss the issue by looking at extremes.

Systematic composition:

- the composing of the system itself,
- composing within (according to the rules of) the system.

The greater the continuity with which the system itself is planned, the less remains to be composed in the system.

Composing with chance:

- composing chance itself; or, put in another way: giving chance the opportunity of becoming musically fertile,
- composing in consciousness of the fact that not all details of a work are felt to be necessary, that different sequences of the same values can fulfil the musical sense; or again: to let chance operate where a rule would merely simulate necessity.

Both the practices set for the composer a consistent creative context which is analytical per se, aiming the focus towards a rather top-down approach to music composition. Here the function of the composer becomes totally focused on the music while striving to create a musical system that can stand without 'falling apart'. A musical system which stands is the one that suggests to the listener a certain logic in it, a musical meaning. In the same text Koening introduces the term in relation to perception:

> Musical meaning is not a scientific term. The more one feels that the further development of a work is necessary, there is said to be sense in it; the very readiness of the listener to let himself be led aids apperception. On the other hand,

> the composer may believe that a particular constellation of acoustical elements is a guarantee of musical meaning which introduces itself either spontaneously, or not until after being heard several times, or not at all. Musical meaning could be said to come into existence on the plane of communication between composer and listener, modified of course by the latter's musical education. [22]

Koenig addresses meaning in a completely musical domain. It suggests a sense of development within the musical work and does not refer to any external meaning which the composer is trying to express. The referential gravity for the relativity of meanings shifts from being the composer intent to being the musical intent, therefore from a subjective expression to a musical expression. Musical meaning is an internal architectural logic derived by the perceptive apparatus even if not explainable with words. This can be a result of an architecturally conceived composition, architecturally in the sense of being carefully designed following a certain logic. Finding such a logic, which in architecture is severely locked to the inflexible constraints of physical laws, in music can be part of the explorative attitude of new compositional schemes and rules, towards new forms. The analogy with architecture is therefore partial and it mainly refers to the systematic thinking and the need of a particularly designed internal structure within the conception of a musical work.

3.3 Formalised Expression

> I was not influenced by composers as much as by natural objects and physical phenomena. As a child, I was tremendously impressed by the qualities and character of the granite I found in Burgundy, where I often visited my grandfather... So I was always in touch with things of stone and with this kind of pure structural architecture without frills or unnecessary decoration. All of this became an integral part of my thinking at a very early stage. [42]

Every solid structure is a result of its internal aggregation of the elements it is made of. If we look at the elements as the contents, every natural or artificial construct consists of a structure where contents and forms are embedded in each other, being one the consequence of the other. Content and form are inevitably inseparable because of their practical relation. The function of the contents is primarily to build the structure and the function of the structure is to keep the contents together. This happens in nature spontaneously while

artificially it must be the result of carefully planned designs. Buildings, which are usually constrained to other functions, must prioritise the function of not falling. Therefore a so called building can exist then stand even without accomplishing the higher function of accommodating people or facilitating a service. In art, an architectural construction can be made with the only purpose of existing and being admired. Such an admirable composition, or else called monument, is often intended to transpire a sense of functional congruity and not necessarily to be understood. Just like in front of a stunning piece of nature, a mountain, a rock, a river, the ocean, the sky, we often experience a sensory stimulation that overwhelms our full rational apprehension but fulfils the instinctive need of finding a coherent structure. Such a structure, in this case given by nature, provides to anyone an intuitive understanding which can be enough to experience a spectacle for the senses, keeping aside the necessity for rational comprehension, at least for its duration. The further analytical investigation may get closer to a rational understanding of the structure behind the spectacle but it is not necessary for the instantaneous contemplation. The analysis comes from the need of extracting informations from a structure that per se it is not aiming to any attempt for communication. Understanding or being understood is not a need for the mountain while it can be for humans. The mountain has no embedded languages meant to be deciphered rationally, therefore any attempt to find answers leads up to a subjective result. Music can also be approached as a result of an internal processual development aiming to a formal complex which communicates nothing but itself.

Iannis Xenakis (1978) in the *Introductory notes for Diatope* performance claimed:

> Any musical piece is akin to a boulder with complex forms, with striations and engraved designs atop and within, which men can decipher in a thousand different ways without ever finding the right answer or the best one. [47]

Tim Hodgkinson (2016) wrote about the formalist attitude of his band Henry Cow back in 1976:

> Our approach to progressive culture at the time involved the music itself being progressive on the level of form, and not just acting as rudimentary vehicle for the message of socialism." [18]

The reflection about formalism starts by introducing the idea of art suggested by the theorist Victor Shklovsky, who in his essay *Art as Technique* (1917) wrote:

> ... Art exists that one may recover the sensation of life; it exists to make one feel things, to make the stone stony. The purpose of art is to impart the sensation of things as they are perceived and not as they are known. The technique of art is to make objects "unfamiliar," to make forms difficult, to increase the difficulty and length of perception because the process of perception is an aesthetic end in itself and must be prolonged. Art is a way of experiencing the artfulness of an object: the object is not important... [34]

Hodgkinson specifically dives into Shklovskys ideas of prolonging the aesthetic experience in relation to poetry:

> If prosaic practical language operates an economy of attention, with a relentless drive away from words themselves and toward what they signify, poetic language puts this into reverse and restores attention to words as words. But a word newly attended to in this way is not reduced to its purely sonic or visual dimension and is not cut off from denoting something in a symbolic system. Rather, through its own heightened presence, it opens up the distance within the symbolic relation that is usually hidden and, across the distance, summons its signified into imaginative presence. ... From here develops the idea of art as alienating experience from the automatisms of attentional economy imposed by language mechanisms. The point of poetic imagery is not to elicit an act of recognition but an act of vision in which the thing is seen as if for the first time. [18]

Such a view to poetry can be easily paralleled to music substituting *words* with *sounds*. A fully aesthetic experience is suggested over an interpretative one, like a baby seeing the world for the first time. Interpretation, based on the subjective condition which develops patterns of individual experience, is a common reaction to listening to music and to any sensory stimulation. There is a moment when we listen and a moment when we rationalise or identify. Listening and identification, the latter being a consequence of the former, are separated functions that affect each other. Including a message in the music raises the expectations of success to a communicative degree: if the message doesn't get through then the music fails. In order to pander such an expectation, music, treated then as a language, must submit to certain constraints of clarity and accessibility. For the purpose of communication, constraints need to be universals, at least for a particular group of people, the

target of the message. The universality of the constraints leads to an establishment of rules imposed on the musical process and reception. The musical process must be free to find and built its own constraints in the independence and self-sufficiency of each work. Hence constructions of universal constraints, therefore rules, is inconvenient in the setting up of a self-standing piece of music which result would only be related to its own process and not to higher functions. The interrelation between process and result reflects a focus on the construction of an internal structural architecture, opening a field for processual experimentation which leads to continuous questioning of existing rules in order to find others. A conception of music without universals is in fact an attention towards the embedded interrelationship between process and result, the result being the consequence of the process. Such a focus can create a gravity pushing towards the experimentation on processes and new structures in order to achieve different results in opposition to the reliance on the same process in order to accomplish different communicative purposes. An example of the latter can be the fixed verse-chorus structure (with variations and solos) used in rock music. The development from a verse to the chorus with a bridge in between is a basic pattern used in rock music and in many other styles like pop and folk. The fixed and repetitive structure is what characterise such a style and the experimentation with it is minimum through its history. The given structure of the music is then not something to question but something to accomplish. The diversity happens in how this structure is achieved and how it is filled in with contents such as melodic lines and lyrics. We see again how music can be approached as medium, a container, for expressing an external meaning. This approach can be opposed to the music of Alvin Lucier for instance, composer who mainly focused on acoustic and electroacoustic phenomena and experimented with the processes which are behind them. The diversity of his music is driven by the explorations of different processes and each of his work finds its own structure out of a them. A documentary about Lucier has been made under the title of *No Ideas but in Things* (2012) and a filmmakers note reflects their way of working with the one of the composer:

> We decided to portray Alvin Lucier primarily on the basis of his work. This should come as no surprise since with the line "Don't ask me what I mean, ask me what I've made" by the American poet William Carlos Williams, Lucier himself draws attention to his works. [1]

When communication of emotions and ideas is the central focus for an artist then music itself is not the most effective tool, and adding an external form of symbolism would be necessary

in order for the communicative attempt to be successful. In music, the composer has little control on the emotional and insightful impacts produced on the listener. Text and poetry are usually added to the music in order to achieve a clear communicative purpose imposing an extra dimension of expression. The composer concerned only with music would then quickly find inappropriate and limiting to motivate music creativity by a communicative aim and he would consequently realise than an other orientation is needful. Therefore, as the visionary composer Iannis Xenakis in his book *Arts/Sciences: Alloys* (1985) claims:

> It seems that a new type of musician is necessary, "an artist-conceptor" of new, abstract, and free forms, tending towards complexities, and the towards generalisations on several levels of sound organisation. ... The artist-conceptor would have to be knowledgable in such varied domains as mathematics, logic, physics, chemistry, biology, genetics, palaeontology (for the evolutions of forms), the humanities and history; in short, a sort of universality, but on based upon, guided by and oriented toward forms and architectures. [48]

Abandoning the linguistic communicative purpose and addressing musical forms as the primary source for creative research becomes then the strategy for working towards a purely contemplative musical result. Not involving the music composition in informative purposes liberates the musical thought from clear trajectories and leave space to experiment and failure. Failure, in this case being not as dangerous as a building falling apart, would be then as meaningful and successful as a favourable result. The freedom of failure is freedom of experimenting. Music, made of elements without meaning therefore not being a language, must then be a field of experimentation in its construction, therefore forms, and not in its functional effectiveness.

Obviously music is performed in time and it can be perceived as a series of connected events, like a narration. Its conception can although be approached as a system where all the possible developments ideally coexist, as being part of the same whole. The construction of musical plausible developments is then conceived as a network of possibilities under a circumstantial causality, controlled by humans or machines, in spite of a linear chronological causality. In a network of possibilities, the coexistence of the elements suggests an untimed designed organisation resulting in a multi-optional performance as opposed to a time constructed logic of the relation between events. This leads to an internal structure which makes limitless possible forms available.

The composer Edgard Varese (1966) wrote:

> There is an idea, the basis of an internal structure, expanded and split into different shapes or groups of sound constantly changing in shape, direction, and speed, attracted and repulsed by various forces. The form of the work is the consequence of this interaction. Possible musical forms are as limitless as the exterior forms of crystals. [43]

This being the case, content and form become interrelated functioning both as a unity made of internal pluralities; in other words a distinction between content and form is inessential:

> Connected with this contentious subject of form in music is the really futile question of the difference between form and content. There is no difference. Form and content are one. Take away form, and there is no content, and if there is no content there is only a rearrangement of musical patterns, but no form. Some people go so far as to suppose that the content of what is called program music is the subject described. This subject is only the ostensible motive I have spoken of, which in program music the composer chooses to reveal. The content is still only music. (Varse, 1966) [43]

3.4 Technological Assistance towards Complexity

> I am not overly worried about the existence of undetected patterns. We have been reading lengthy and complex messages in just about any manifestation of nature that presents jaggedness (such as the palm of a hand, the residues at the bottom of Turkish coffee cups, etc.). Armed with home supercomputers and chained processors, and helped by complexity and "chaos" theories, the scientists, semi-scientists, and pseudoscientists will be able to find portents. [39]

Music has been developing hand by hand with the development of technologies in several ways. The performative technologies, therefore the available musical instruments, clearly define the sonic possibilities and compositional choices. The printing press, invented in the fifteenth century, made mass-production of music possible with all its intrinsic consequences. The advent of sonic reproduction and recording technologies radically expanded the compositional, performative and productive possibilities. Attali (1977) wrote:

> In music, the instrument often predates the expression it authorises, which explains why a new invention has the nature of noise; ... it contributes, through

> the possibilities it offers, to the birth of a new music, a renewed syntax. It makes possible a new system of combination, creating an open field for a whole new exploration of the possible expressions of musical usage. Thus Beethoven's Sonata no. 106, the first piece written for the piano, would have been unthinkable on any other instrument. Likewise, the work of Jimi Hendrix is meaningless without the electric guitar, the use of which he perfected. [4]

Within the field of experimental and systematic music, the raise of electroacoustic devices have been pushing the possibilities formidably forward thanks to powerful computational and data management abilities. In facts, "computer algorithms are embedded in complex (and heterogeneous) systems, within which they are used as processing tools."[40]

Technological development, being a fundamental element of the scientific progress, reflects and supports modern discoveries in physics and all their philosophical implications, and this also artistic implications. Just like more than 2500 years ago when Pythagoras and his disciples were joining mathematics, music and studies on the cosmos, the exchange between science and music is still open. Particle physics, quantum mechanics and chaos theories have all been strongly influencing the post-romantic musical world, reminding the composer a different perspective of inspiration.

An example can be the Brownian movement, firstly observed in 1827 by the botanist Robert Brown and then farther explained by Einstein (1905)[10] in his paper *On the movement of small particles suspended in a stationary liquid demanded by the molecular-kinetic theory of heat*, which has been applied in music by Xenakis (e.g. in *Pithoprakta*) and others. An other example is the quantum representation of sound described by Gabors paper *Acoustical Quanta and the Theory of Hearing*[13] which became vital for the later developments of granular synthesis.

In Formalized Music (1992), Xenakis described the acoustical quanta:

> All sound is an integration of grains, of elementary sonic particles, of sonic quanta. Each of these elementary grains has a threefold nature: duration, frequency, and intensity. All sound, even all continuous sonic variation, is conceived as an assemblage of a large number of elementary grains adequately disposed in time. So every sonic complex can be analysed as a series of pure sinusoidal sounds even if the variations of these sinusoidal sounds are infinitely close, short, and complex. [49]

Xenakis was also very aware and inspired by the granular notion of sound, such natural phenomena as "the collision of hail or rain with hard surfaces, or the song of cicadas in a summer field"[49] and, in general, by all the knowledge that could be gained by the sciences and mathematics and the metaphysical inquiries. In an interview with Henning Lohner (1986) Xenakis stated:

> As I see it, music is a domain where the most profound questions of philosophy, thought, behaviour, and the theory of the universe ought to pose themselves to the composer. The role of the musician must be this fundamental research: to find answers to phenomena we don't understand, and to enlarge our powers of conception and action. So it is perpetual exploration. [26]

In order to keep the exploration perpetual, a constant search for objective knowledge must be accounted. Electroacoustic development, being an extension of our sensory apparatus and intelligence, is an unignorable field and source of media that can expand and support the musical thinking.

Pauline Oliveros, interviewed by Cory Arcangel (2009), claimed:

> Its about the human/machine relationship or interface—the power of technology to expand the mind. You find solutions to creative problems and those solutions lead you into new territory where new solutions have to be found. [2]

The power of new media must be then exploited through abandoning the idea of full control but embracing the idea of mutual assistance. Undoubtedly there aren't machines able to be artistically creative without human interaction, however new technologies came to a point of being so efficient to an extent to be a fundamental contribution to the perceptual exploration. Modern aesthetics must then consent new media to contribute substantially to the artistic result shifting the level of choice from an aesthetic established by taste to an aesthetic established by process. And from an audience's perspective, "the more people use modern means of communication, all kinds, they call this the media, the more they are interested in the possibilities. And when they encounter works of art which show that using new media can lead to new experiences and to new consciousness, and expand our senses, our perception, our intelligence, our sensibility, then they will become interested in this music."[23]

Human creative abilities when left alone tends to follow clear processual patterns bounded to personal history and its cultivated habits. Such a personalised view can potentially reach

beautiful and appreciable results, however it relies on what is already experienced and known reforming inventively the informations escorted by glimpses of intuition. New media expand the practical efficiency as much as the creative abilities, allowing the exploration of new fields of experimentation, and "using computers drives music activity to an expansion of its formal categories."[40]

What is source of inspiration for a composer, from reproducing the known, the visible, shifts towards a search for the unknown, the invisible. Rolf-Dieter Heuer (2013), German particle physicist and Director General of CERN, in the book *LHC: Large Hadron Colider* aligns art and science on the same visionary perspective:

> Art sets out to expand our awareness, to create room for new concepts that are just now being researched in science. Or, as Paul Klee once said, arts does not reproduce the visible; rather, it makes visible. The same applies to science, especially pure research: it goes far beyond the visible. Sometimes it is the visions of science that open up new forms to art, and sometimes it is the other way round. But at all events both of them, art and science, pursue similar visions. Both deviate form the beaten track of thought and perception to conquer something new with great purpose and creativity. Both risk going down the wrong party in order to take a shortcut or discover new territory. Neither has it easy, because they question the tried and tested and upend the familiar. But it is art and science that advance mankind. [17]

Approaching the unknown is an attitude which represents consciousness about the uncertain and indeterministic condition of the world. The deterministic view of the universe as a predictable system where "nothing occurs at random, but everything for a reason and by necessity." (Leucippus) is confronted with the idea of the individual being an unremovable component of an unpredictable complex system, therefore being a result of apparently random circumstances.

Werner Heisenberg (2011), one of the pioneers of quantum mechanics introducing the principle of indeterminacy, wrote:

> When we know the present precisely, we can predict the future, is not the conclusion but the assumption. Even in principle we cannot know the present in all detail. For that reason everything observed is a selection from a plenitude of possibilities and a limitation on what is possible in the future. As the statistical

> character of quantum theory is so closely linked to the inexactness of all perceptions, one might be led to the presumption that behind the perceived statistical world there still hides a "real" world in which causality holds. But such speculations seem to us, to say it explicitly, fruitless and senseless. Physics ought to describe only the correlation of observations. One can express the true state of affairs better in this way : Because all experiments are subject to the laws of quantum mechanics, and therefore to equation (1), it follows that quantum mechanics establishes the final failure of causality. [5]

Complexity and indeterminism are now embedded qualities of the modern physics view on the world and the musician concerned with research, gaining knowledge from this domain, must implant these characteristics in the research as given foundations.

The sonic limitations and the notational constraints of orchestral technologies became in the early 20th century a clear disadvantage for the attitude that was being cultivated by some composers involved with the musical experimentation. With the advent of computers a new lens became available: composers could zoom in on the conception of sound through the power of the manipulation of individual digital samples, finally passing beyond the threshold of what is perceived as one acoustic unity towards the design of accurate micro-sonic structures.

Varese was already envisioning a machine that would achieve precise design indications[43] in order to obtain a liberation of sound:

> And here are the advantages I anticipate from such a machine: liberation from the arbitrary, paralysing tempered system; the possibility of obtaining any number of cycles or if still desired, subdivisions of the octave, consequently the formation of any desired scale; unsuspected range in low and high registers; new harmonic splendors obtainable from the use of sub-harmonic combinations now impossible; the possibility of obtaining any differentiation of timbre, of sound-combinations; new dynamics far beyond the present human-powered orchestra; a sense of sound-projection in space by means of the emission of sound in any part or in many parts of the hall as may be required by the score; cross rhythms unrelated to each other, treated simultaneously, or to use the old word, "contrapuntally" (since the machine would be able to beat any number of desired notes, any subdivision of them, omission or fraction of them)—all these in a given unit of measure or time which is humanly impossible to attain. [43]

Almost 80 years later the liberation highly desired by the visionary composer was fully established as the Argentinian composer Horacio Vaggione (2001) describes in the article *Some Ontological Remarks about Music Composition Processes*:

> By using an increasingly sophisticated palette of signal processing tools, composers are now intervening not only at the macro-time domain (which can be defined as the time domain standing above the level of the note), but they are also intervening at the micro-time domain (which can be defined as the time domain standing within the 'note'). [40]

James Harley (2004), Canadian composer and researcher, writes about Xenakis:

> In music, having grasped that human perceptual capacity could only grasp the global outlines of complex sonorities, Xenakis sought to apply processes such as those used by Shannon to describe the passage of information through communication channels. He also saw parallels in scientific thought, in which the classical principles of causality were being supplanted by the statistical conceptions of quantum mechanics and relativity. [16]

He continues by quoting the Greek composer:

> If, thanks to complexity, the strict, deterministic causality which the neo-serialists postulated was lost, then it was necessary to replace it by a more general causality, by a probabilistic logic which would contain strict serial causality as a particular case. ... 'Stochastic' studies and formulates the law of large numbers, ... the laws of rare events, the different aleatory procedures, etc.... They are the laws of the passage from complete order to total disorder in a continuous or explosive manner. [49]

The methods of probability theory and statistics have been using to describe fields with an inherently stochastic nature, solving problems in the domains of physics, biology, chemistry, neurology and also sociology. Xenakis presents a musical application as a reaction to the issue of serial music, which had been striving for musical complexity, being "in the process of deflation, for the completely deterministic complexity of the operations of composition and of the works themselves produced an auditory and ideological nonsense"[45]. He proposes instead a less specific causality made by a probabilistic logic, therefore stochastic, in order to escape from what he calls the "linear category"[45] in musical thought.

The introduction of stochastic procedures in musical composition was crucially supported by the power of calculation of computers and Xenakis was one of the pioneers: after he already introduced the use of stochastic functions in musical composition, in the 1960s he started using computers to accelerate the numerous operations required by these methods. Concurrently he began theorising about the possibility of using stochastic functions to synthesise sounds [27]. Xenakis involvement with mathematics and its musical application through programming offered a dimension of musical abstraction where mathematical and programming ideas could become musical ones[6].

From 1967 to 1972, at Indiana University in Bloomington, Xenakis first used a computer to synthesise sounds with a computer using probability functions.[27] Such a method for sound synthesis based on stochastic behaviours often results in complex sonorities that remind of urban or rural concrete sounds of a stochastic nature (e.g. wind, rain, traffic, explosions), usually characterised by noisy sonic qualities.

One of the first models he has designed is the *Dynamic Stochastic Synthesis* (1977):

> This approach to sound synthesis represents a non-linear dynamic stochastic evolution which bypasses the habitual analyses and harmonic syntheses of Fourier since it is applied to the f(t) part on the left of the equal sign of Fourier's transformation. This approach can be compared to current research on dynamic systems, deterministic chaoses or fractals. Therefore, we can say that it bears the seed of future exploration. [49]

The future explorations took place in different developments of the Dynamic Stochastic Synthesis and the sonic outputs were used in several works like *Polytope de Cluny* (1972), *La Legende d'Eer* (1977) and *Erod* (1997).

Also Koenig assisted his compositional activities with compositional abstractions. Paul Berg (2001) wrote in the article *Music and the Art of Programming*:

> Gottfried Michael Koenig generalized from his own compositional activities and expressed compositional abstractions as principles for selecting from previously accumulated material in his program for instrumental composition PR2 and his sound synthesis program SSP. In his case, musical thought led to programming which led to musical thought.
>
> ... The programming of musical constructs by Xenakis and Koenig demonstrates

> that programming simplifications of musical activities actually assists in the development of compositional thought processes which transcend the humbleness of their origins. The clarity of a complex formulation is built on the foundation of the programmed abstraction. [6]

Striving for complexity brought some composers to find in the assistance of the computer an essential strategy for algorithmic composition, supplemented by random decisions and chaotic behaviours, towards an auditory meaningful and indeterminate complexity opposed to the rigid and definite attitude of integral serialism.

Lerdahl (1992) explains why serial organisations are cognitively opaque:

> I must emphasize that the issue is not whether serial pieces are good or bad. As with tonal music, some serial pieces are good and most are bad. Nor am I claiming that listeners infer no structure at all from musical surfaces composed with serial techniques. What listeners in fact infer from such surfaces is an interesting question, one that deserves theory and experiment in its own right. But this is not the issue here. The issue is why competent listeners do not hear tone rows when they hear serial pieces. ... The little research that has been directed towards serialism (as in Francs 1958; Dowling 1972; Deutsch 1982; Bruner 1984) supports the contention that permutational structures are hard to learn and remember. Since other human activities are not organized in such a fashion, it is hardly surprising that the issue has in general been ignored by psychologists. ... Ironically, Schoenberg was much preoccupied with the issue of comprehensibility. I suspect this is one reason why in his 12-tone phase he adopted Classical motivic, phrasal, and formal structures. ... But the permutational basis of his pitch organization assures a gap between the compositional and listening grammars. [24]

Lerdahl calls opaque a system that cannot be perceived through the same grammar which it was made with. He defines this as a gap between the compositional system and the cognised result. On serialism, his argument is focused on the inaudibility of the series and the mental incapability of recreating a mental representation. I do not think that issue is whether the rows are audible or not although whether integral serialism is an efficient compositional method or not. A serial attitude, when strictly applied as the only logic of a composition, offers a completely mechanical and deterministic compositional framework

because of the lack of intuitive or programmed interferences. The deterministic logic and fully controlled by humans choices can be challenged and expanded by including chance and probabilistic factors. Dice are added to the Olympic Games. Thanks to powerful operative digital abilities mathematical formulas can be easily applied to the production of textural and structural complexities acting on both the micro and macro composition. The systematic attitude implicated with stochastic variations tends to set a framework for experimentation where phenomena we don't understand may be explored further and the boundaries of musical thought can be expanded. "In fact within human limits, using all sorts of manipulations with these grain clusters, we can hope to produce not only the sounds of classical instruments and elastic bodies, and those sounds generally preferred in concrete music, but also sonic perturbations with evolutions, unparalleled and unimaginable until now. The basis of the timbre structures and transformations will have nothing in common with what has been known until now." [49]

The unexpected can be explored by the introduction of interfering and nonlinear factors in the musical system. In thermodynamics, systems which allow external interactions are called open system and they handle the complex condition through self-organisation. Self-organisation is a natural consequence to the nonlinear interaction between the systems components and it spontaneously leads to new states. These new states may introduce a lack of order that, in order to balance it, results in the creation of new unexpected patterns that influence the behaviours of the components of the system.

Vaggione (2001) wrote:

> Computer music can be envisioned as one such complex system in which the processing power of computers deals with a variety of concrete actions involving multiple perspectives, in terms of time scales and levels of representation ... The role of the composer here is not one of setting a mechanism and watching it run, but one of setting the conditions that will allow him or her to perform musical actions. [40]

Evidently, the role of the composer is not just of "setting a mechanism and watching it run" but a stage of the creative process. Compositional abstractions are the starting conceptual step for composition, in particular algorithmic, and the execution is the practical continuation. Setting and execute the procedure is the gate to enter and establish the sonic musical world while observation (listening) is the way to trigger creativity beyond the personal context, therefore the role of the composer is to open up the musical thought to extraneous

influences.

Opening up musical thought, therefore its systematic application, to external influences, opposed to the self-expressive based inspirational source, is the way towards the unexpected, the unknown, the constant strive for leaving space to new concepts and expanding the awareness. The conscious attitude of introducing chaos to an established order, on any scale, is an active induction of noise. Such an act is raised by the awareness that "there is no order that does not contain disorder within itself, and undoubtedly there is no disorder incapable of creating order". [4]

3.5 Noise: Self-Subversive Order

> Noise is about fascination, the antithesis of meaning. If music is a language, communicating moods and feelings, then noise is like an eruption within the material out of which language is shaped. We are arrested, fascinated, by a convulsion of sound to which we are unable to assign a meaning. We are mesmerised by the materiality of music. This is why noise and horror go hand in hand—because madness and violence are senseless and arbitrary (violence is the refusal to argue), and the only response is wordless—to scream. [9]

A representative circumstance and concept for complex indeterministic behaviours is noise. Any sound or signal interfering with the reception of a message by a receiver is called noise therefore noise is generally an unwanted phenomenon.

R. Murray Schafer (1993), in his book *The Soundscape: Our Environment and the Tuning of the World*, addresses noise as an acoustic environmental issue and he tackles it on the field of ecology. He confronts noise as being an assumption given by lack of education in the appreciation of the acoustic environment:

> Noise pollution results when man does not listen carefully. Noises are the sounds we have learned to ignore. Noise pollution today is being resisted by noise abatement. This is a negative approach. We must seek a way to make environmental acoustics a positive study program. ... Only a total appreciation of the acoustic environment can give us the resources for improving the orchestration of the world soundscape. For many years I have been fighting for ear cleaning in schools to eliminate audiometry in factories. Clairaudience not ear muffs. [32]

In music noise is described as non periodic, indeterminate signal, therefore unpitched. In the early twentieth century composers such as Edgar Varese were led by the influence of modernism to enlarge the orchestral sonic possibilities with the use of noise-based sonorities. At the same time, in Italy, the Futurist Luigi Russolo was creating experimental instruments called intonarumori ("noisetuners") in order to make a "noise orchestra".

Luigi Russolo (1913) wrote The Art of Noise where he claimed:

> The Middle Ages, with the developments and modifications of the Greek tetrachord system, with Gregorian chant and popular songs, enriched the musical art. But they continued to regard sound in its unfolding in time, a narrow concept that lasted several centuries, and which we find again in the very complicated polyphony of the Flemish contrapuntalists. The chord did not exist. The development of the various parts was not subordinated to the chord that these parts produced in their totality. The conception of these parts, finally, was horizontal not vertical. The desire, the search, and the taste for the simultaneous union of different sounds, that is, for the chord (the complete sound) was manifested gradually, moving from the consonant triad to the consistent and complicated dissonances that characterise contemporary music. From the beginning, musical art sought out and obtained purity and sweetness of sound. Afterwards, it brought together different sounds, still preoccupying itself with caressing the ear with suave harmonies. As it grows ever more complicated today, musical art seeks out combinations more dissonant, stranger, and harsher for the ear. Thus, it come ever closer to the noise-sound. [9]

The exploration of noise-based sonorities led to a liberation of noise from being undesired as a musical element. The liberation of noise and its acceptance as no more an interference can be read as part of the ongoing affirmation of intervals as consonant through the history of music.

Attali (1977) affirmed:

> Subversion in musical production opposes a new syntax to the existing syntax, from the point of view of which it is noise. Transitions of this kind have been occurring in music since antiquity and have led to the creation of new codes within changing networks. Thus the transition from the Greek and medieval scales to the tempered and modern scales can be interpreted as aggression against the

> dominant code by noise destined to become a new dominant code. Actually, this process of aggression can only succeed if the existing code has already become weak through use. [4]

The Pythagorean system is based on the contributions of Pythagoras to mathematics and philosophy. He developed his theory of numbers to explain all natural laws: he determined that everything progresses in predictable cycles. His mathematical discoveries were also involved with musical intervals. He defined the consonant acoustic relationship between strings of proportional lengths. By this method he discovered the octave, the perfect fifth and the perfect fourth, the first three intervals derived by the first steps of the overtone series. Continuing up through the overtone series infinitely, all the other intervals can be derived. If we see the development of the overtone series as a parallel to the development of the acceptance of consonant intervals through the history of Western music, we may realise that we finally arrived to a point where all the intervals are accepted as consonant. Arnold Schoenberg (1951), in his affirmation about the liberation of dissonance, states that "the expressions consonance and dissonance, if referred to an antithesis, are erroneous; it depends only on the capacity of an analytic hearing to become familiarised with the higher harmonics." [35]

Vaggione (2001) reinforced his statement about analytic hearing which "affirms the possibility of "music" beyond the musical world based on a given functionality (tonality, in this case) by stressing the fact that there may be other equally conceivable musical assumptions and constraints to which the perceptions of a given musical world are to be related." [40]

In other words, consonance ceased to be a relevant criterion in musical systems where the assumptions of tonal music fall through. In a sonic world of civilisations marked by machines, traffic and industries, noise becomes the main character and background of everyday urban life. Varese, living in New York, in 1917 claimed that "our musical alphabet is poor and illogical. Music, which should pulsate with life, needs new means of expression, and science alone can infuse it with youthful vigour". The visionary composer was also dreaming of "instruments obedient to my thought and which with their contribution of a whole new world of unsuspected sounds, will lend themselves to the exigencies of my inner rhythm." [41]

The superficially ordered and structured life of the industrialised societies, claiming harmony and progress, pulsates internally at the rhythm of noise, of chaotic organisations

of power, of corrupted values for equal rights. The inner rhythm of the people resonates with the inner rhythm of the city, therefore noise:

> There is a widely held view that beauty and harmony are a lie, presenting a bourgeois vision of nature and society as fundamentally balanced and ordered. And that we have an obligation to listen to noise because it shows us the grim truth of reality. [9]

If harmony presents a view of a balanced and ordered society, noise would then represent a lack of them and a superficial attempt to present harmony symbolises the underlying existence of disorder.

Attali (1977) wrote:

> Since it is a threat of death, noise is a concern of power; when power founds its legitimacy on the fear it inspires, on its capacity to create social order, on its univocal monopoly of violence, it monopolises noise. Thus in most cultures, the theme of noise, its audition and endowment with form, lies at the origin of the religious idea. Before the world there was Chaos, the void and background noise. In the Old Testament, man does not hear noise until after the original sin, and the first noises he hears are the footsteps of God.
>
> Music, then, constitutes communication with this primordial, threatening noise-prayer. In addition, it has the explicit function of reassuring: the whole of traditional musicology analyses music as the organisation of controlled panic, the transformation of anxiety into joy, and of dissonance into harmony. [4]

The impractical promises of consumerism and capitalistic production and the vulnerable structure of individualism give a ground for an illusory order while injecting uncertainties in the people that are dancing on an inexistent rhythm, the rhythm of noise. The harmonious and simplistic interpretation of the manifestation of life is a limited and superficial view of the phenomenological world which is being deeper explored by science as complex and unpredictable. The musician dealing with harmonious sonorities and rhythms represents a (conscious or not) acceptance of the given rules of society and its apparent order and, "like the musician in representation, he remains a musician of power, paid to perfect the sound form of today's technical knowledge." [4] The musician who questions the grantable rules of society and a possible universal harmony, explores beyond the appearance, aiming

for a deeper perspective of a constant enquiry. "Liberated from the constraints of the old codes, his discourse becomes nonlocalizable." [4] He embodies as an individual the underlying deficit of order, the uncertainties of the unrhythmic patterns, the complexity of the universal system, in an other word, noise.

> But the whole discourse of noise-as-threat is bankrupt, positively inimical to the remnants of power that still cling to noise. Forget subversion. The point is self-subversion, overthrowing the power structure in your own head. The enemy is the minds tendency to systematise, sew up experience, place a distance between itself and immediacy. [9]

The embodiment of disorder in music is introduced as a recurrent reaction to a given set of rules, to order. Disorder must then be the assumption while order being the aspiration. The awareness of disorder and the strive for order set an antithesis between two states that are constantly effecting and calling each other demanding a perpetual reconsideration of the given rules. Given rules install determined schemes of interactions and establish a steady condition of habitual actuality without considering its constant transformation and need to readaptation. Fixed rules represent repetition and repetition is an embedded quality of harmony, the latter dictating a certain state and refusing the other. Repetition and harmony can be an instance of the unpredictable basal pattern, therefore transforming, and their establishment is an unrealistic and romantic conviction. In order to embrace the underlying incessant change between the disordered and ordered states, the musician "must throw himself and his chosen criteria into question all while striving to start from scratch yet not forget. We should not "monkey" ourselves by virtue of the habits we so easily acquire due to our own "echolalic" properties. But to be reborn at each and every instant, like a child with a new and "independent" view of things." [49]

Musical rules must then exist in a contained scope and better considered as constraints, being applied to one particular work opposed to common practice:

> One can say that constraints become rules if they exceed their use within a particular musical work to become part of a common practice. ... The rules we learn at the conservatory are the result of a long historical effort of codification of evolving practices ... These rules (at least a good number of them) are pedagogical in nature. Their purpose lies in describing a certain musical practice so that we may imitate it to become cultivated musicians. [40]

When the pedagogical purpose is accomplished and all the rules are learned, that is the moment to transform the practice from a common to a present state, to bring music to life. In the interest of music of the present, thus a reconsideration of a customary state, change becomes the factor towards freedom:

> The Being's constant dislocations, be they continuous or not, deterministic or chaotic (or both simultaneously) are manifestations of the vital and incessant drive towards change, towards freedom without return. [49]

The return can be here intended as repetition, as the antithesis to change and to freedom. Repetition is an anti-developing condition for comfort and homologation; it slaves the freedom of thinking while it aids the freedom from thinking:

> Today, universalising, despecifying degradation is one of the conditions for the success of repetition. The most rudimentary, flattest, most meaningless themes pass for successes if they are linked to a mundane preoccupation of the consumer or if they signify the spectacle of a personal involvement on the part of the singer. The rhythms, of exceptional banality, are often not all that different from military rhythms. To judge by its themes, neither musically nor semantically does pop music announce a world of change. On the contrary, nothing happens in it anymore, and for twenty years it has seen only very marginal, or even cyclic, movement. Change occurs through the minor modification of a precedent. Each series is thus repeated, with slight modifications enabling it to parade as an innovation, to constitute an event. The singers of the 1950s are back in fashion in the 1970s, and todays children enjoy their parents records. At times, however, the quality improves, song becomes critical and music blasphemous: repetitive, detached, as though denouncing standardisation; it heralds a new subversion by musicians cramped by censorship, who stand alone in announcing change. [4]

The lonely state of announcing change is noise. It is a countercurrent against the flow of repetition and establishment of style. Although noise has been treated itself as a musical style, regarding music made mainly of noise-based sounds, it is here addressed not as a specific attitude or style but as a mental state of awareness and self-subversion. The first step to take for awareness is recognition of a current, a style, a tendency, a trend. Tendencies can be cultivated by an individual or by a group and the two can be one the consequence of the other. The recognition of such a mechanism based on replication and repetition faces

the individual with a decision between taking part of the repetition or becoming noise: inertial organisation versus updating organisation. A renovation of an existing system and reorganisation of its elements is revolutionary and an exposure to it is exposure to noise. A continuous awareness of universals is a rebellious act against their imposition. Discovering disorder within order is active listening to noise and such an action does not come from mere ideologies. Neither ideologies nor styles emphasise the moment as the perpetual necessity of a new order but a repetition of the past, in fact an active state of perception is required:

> Whenever I listen to music I don't want to consider any ideology whatsoever beforehand. I just want to listen and understand what happens, which I think is the problem of what you [Morton Feldman] are trying to say with style. I think style means a kind of environment. You build up your own niche in the beginning and from the beginning it should go through the piece and end in the name style. Why is it like this? It makes no sense! When you write music, you should have the same naive approach to music as the listener often has. Start all over again with listening and understand what happens without any knowledge of what you have read or heard before. Of course, if you come with some well-defined rules and you compare them with what you hear, you will be lost because the rules don't exist a priori. They should not be a priori, they should be born out of what you hear, otherwise you're repeating, you're making an imitation of something that you have as a memory. [14]

Self-subversion of order is a state of constant questioning of any attempt to establish order. Order is established through rules and regulations. and, in order to avoid establishments, rules must be in permanent innovation. The unpredictability of the chaotic condition of the world affirms the absurdity of an everlasting set of rules. Rules made for the present are unlikely as relevant for the present as for an unpredictable future. Absence of rules is utopian while an establishment of rules is authoritarian. Reaction (present) to the present (past) is noise: the moment you react is already future to the present you are reacting to. Awareness of the present is the first step towards reaction. What is left without awareness is an inertial unconsidered imitation.

Chapter 4

My Music

Ideas of complexity, chaos and noise have been influencing my musical works since I started to approach new technologies as an assisting tool for composition. This renovating approach has been made possible with my arrival in Sonology and its captivating environment of research and experimentation. What mainly captivated me is the support of technology in facilitating the creation of systems and processes able to produce musical material and structures expanding the possibilities of choice from taste and intuition. There is something about the abstraction of sound and its organisation into mathematical formulas and voltage manipulation, followed by the stage of being performed, that fascinated me. This came as a contrasting approach to the one I was mainly exposed to till I entered the walls of Sonology: I was used to see sounds as a catalogue of possibilities that can be chosen and composed further. The starting material is sound and the result is also sound. The way that electronic music production is mainly offered by the market clearly suggests a distinction between user and designer. DAWs and commercial synthesisers come as a closed box with sophisticated interfaces. Here the constraints are already given and the output strongly linked to them. In the last years I realised the immense field of experimentation in blurring the distinction between engineer and composer: in arriving to music not starting from sound but from the idealisation of how sound can be made and manipulated. This field is made of a closer attention towards electrical circuits, number computation, digital to analog converters and ultimately the transducer. My interest didn't go as deep as building my own circuits or softwares but it stayed on a general level of understanding the logic and the thinking behind in order to use them for compositional purposes. The main tools and languages that supported my exploration are the analog studio BEA5, for the immersion and close contact

with voltage techniques, SuperCollider, for the algorithmic approach to composition, and english, for communicating with other musicians and being able to collaborate.

What follows are the works which mainly represent my development as a composer in the field of electroacoustic experimental music and are a few among many others, the latter being ramifications of the same starting point made of curiosity and will of experimentation. These ramifications, one being my own live performances, have been crossing other artistic fields through collaborations with choreographers, dancers, performers and visual artists, however, not being the central point of my research but rather consequential opportunities, they will not be under the concern of this text.

4.1 Analogue Studio

BEA5 is the analogue studio developed by the Institute of Sonology through the history, now still well maintained and used. It is designed in order to be able to create quite complex patches that can run and give interesting results without any further need of interaction. In other words, setting up a path for the voltage, from the sound source to the speaker going through different manipulative modules, and then listening to the result without controlling anything manually. All the controls can be automated. This approach emphasises two stages of musical conception (the abstraction and the execution) and challenge creativity towards building a system that can self stand, imposing a logic and its constraints: an internal processual architecture. In contrast to instrumental music, which starts from a given instrument capable of playing particular sounds, electronic music starts with the idea of the sound which must then be realised[21]. The challenge stands in abstracting a process that can result musical and stimulate composition. The focus on a process which succeeds without further human interaction is what I perceive as architectural conception of music and BEA5 is the place where I started to discover this approach.

I will consider as instances of analogue studio's compositions two works fully made in BEA5: *Sequence* (2012) and *Bonuskaart* (2014).

4.1.1 Sequence

Sequence (2012) is the first fixed-media work I composed fully in the analog studio. The aim, given by Kees Tazelaar as a compositional activity, was to compose a piece with sound sources produced by a patch that would have the sequencer as the main module.

Given this limit I designed a system that would create rich sound material with an internal development and the possibility of a high level control of it. This allowed me to start composing with a series of already complex materials which, being all variations of the same starting system, carry a coherent and intriguing quality. Spreading the material on a timeline became spontaneous and rather quick because of the strong starting material: a sequence of blocks, being variation of the same nature, gave a possible structure to the piece as a consequence of juxtaposition of shorter musical forms. This sequence could have been itself varied, changing the order of the blocks, and the piece would have no need to change title because of the non narrative nature of the material. The material was conceived as a network of possibilities which don't belong to an embedded chronological order. This work was the starting point in realising how an internal logic in the abstraction may be reflected in its execution and, strongest the logic, strongest the coherence of the material. Here the overall structure comes as suggested by the internal development and quality of the material which are given by the constraints of the conceptual logic therefore the composition of form is consequential to the composition of sound. In other words, the musical structure is integrated to the characteristics and development possibilities of the sound itself and hence it can be seen as a potentiality of the sound itself. Abstraction, sound and structure enhance the music by being strictly interrelated and functioning as multiple dimensions, one being the reflection of the other. Therefore the first stage of setting boundaries and constraints, when achieved logically and accurately, is fundamental in solidifying a base for the music to emerge. Such a base cannot be always the same if aiming to compose different pieces of music. For this reason focusing and experimenting with the design of processes is vital in order to attain change, opposed for instance to the attempt of merely satisfying personal taste and intuition. The orientation of the creativity, from going towards an expected goal, shifts towards an unexpected goal, or to better say, a surprise.

4.1.2 Space

After the production of the material and besides its time organisation, an other compositional choice was the one regarded to space. BEA5 provides a 5.1 channel sound system and the idea of working with surrounding sounds was fascinating me from the very beginning. The capability of giving up the conventional habit of stereo music reproduction came to be an other motivation for experimenting and searching for new approaches to music. Space turned to be a relevant parameter which had to be considered. The use of multiple speakers

as a field where to move sounds around did not captivated me much and I soon started using the speakers as individual sound sources. The first technique to deal with space that I came across is to take the recorded output of one patch for example of four minutes and split it in four sections of one minute each. I would assign each session to each speaker (front and back) in order to overlap the material while coming from different locations. This technique would create an effect of total immersion in one sonic environment, sometime giving the impression of movement of sound, when a similar sound would appear with a short time dislocation on more speakers, and often of a dialogue among the speakers. I began to see multiple loudspeakers as a means of superposition of sounds rather than their movement. The superposition of sound events that belong to different times (according to the original output) creates a field of perceptive relations of sound in a much shorter timeframe (from a duration of 4 minutes to a duration of 1) and it is aided by the different localisations which makes the perceptive relations possible also in space rather than just in time. This often results in a complex field of relations that tends to immerse and at some points even overwhelm the listener. I have spontaneously cultivated a tendency to deal with multiple sound sources in a non hierarchical manner: each speaker is a possible source for the sound to appear. When a block of sonorities arrives, it comes as an entity manifesting its qualities from all around, leaving then the space and letting an other one or a variation to take over. Furthermore the loudspeakers collaborate for the sound to be formed and to articulate and rarely they present contrasting sonorities in different obvious locations.

4.1.3 Bonuskaart

Working in BEA5 continued through over my four years studies in Sonology. *Sequence* was the first piece accomplished in the analogue studio and it established certain compositional attitudes: generating starting materials characterised by complex qualities in terms of sound and internal development produced as a series of blocks of immersive sound forms; the blocks are then composed further on a timeline in order to give the overall structure of the piece, presenting and sometime mixing the materials. Extra further adjustments to the sound materials like transposition and filtering were also part of the editing process, usually without following a systematic strategy but rather perceptive.

In *Bonuskaart* (2014) the compositional task, still under the guidance of Kees Tazelaar during the Composition Workshop class, consisted in, giving a limited starting material, finding a series of transformations where through the sounds would be mutated over and

over. This technique would create so a XY-diagram made of the series of starting materials (on the X) and all their transformations (on the Y). The resulting diagram can be seen as a map of possibilities of the sound variations and its transformations. The map is the piece and a possible path taking through the blocks can be one of the manifestations of the piece. This idea of walking from block to block of sonic entities, being themselves related but still leaving up the choice of what path to follow, inspired to me further the idea of an architectural conception: blocks of sound ideally coexisting which can be experienced perceptually as a series in a chronological order, therefore music. In the same manner of a city made of districts which can be arranged from being spread out in a two dimensional structure and rearranged on one line, one street, to be walked in order to experience them all in a specific order. In music, the shift from two to one dimension is a parallel to the shift from a network of possibilities (abstraction) to the temporal execution (performance).

Bonuskaart happened to be the fixed performance resulted by the experimentation I made in the analogue studio following this compositional idea. This working method is systematic in its conceptualisation but rather versatile in its accomplishment: it does not impose any stylistic constraints in how the sounds should made or transform and on the opposite, it pushes the composer to fully concentrate on the composition of sound, letting the final structure of the music transpiring from it.

4.2 Composing with Algorithms

Working in the analogue studio offered me a view on automated systems that made a solid ground for my further algorithmic experiments. The working environment of the analog studio has some limitations dictated by the physical nature of it: limited is the number of oscillators and all the other modules you have therefore limited is the degree of complexity in the system that can be created, although already quite high regarding to BEA5. Such a limitation offers an efficient and creative framework where ideas can be approached straightforwardly. Opposed to this limitation, a programming environment for algorithmic composition and DSP like SuperCollider provides a platform with an extremely rich amount of possibilities, maybe infinite. SuperCollider comes as a blank page and, besides the already made objects (which are of a great number and can be updated and programmed), it does not suggest any particular working method but many ways to approach and to solve a problem.

The first explorations of composing with algorithms I attempted were not following clear trajectories of ideas. I obtained many failures and also few satisfying results which, however, did not create a vaster framework for experimentation.

A more solid ground was found when my interest shifted more towards the preparatory stage of composition: the design of the sound producer, or else called synthesiser, and a control system. The interest grew towards the design of a synthesiser characterised by simple operations of oscillation and filtering and unconventional interrelation of some parameters, therefore a transversal quality of the control (e.g. deriving the density of the granulation from the Q factor of the filter). Focusing on the construction of a synthesiser became the preparatory step where the first constraints and interrelations are made, decisions which already aim to the creation of a synthesiser with a strong character and limitations in order to give the base for a composition rather than a versatile synthesiser. After designing the fundamental sonic constraints of the system I soon realised that a control system was then needed in order to explore the sonic possibilities of the synth. The first attempts came as a system made of a graphical user interface. This approach, based on human interaction therefore relatively intuitive, was highly unsatisfying according to my interest in exploring *all* the possibilities of the synthesiser while not being restricted by my taste. The question of how to program such a control device was consequentially raised. I started to find a solution in what Koenig has defined as parameter field: the description of the limit values of the parameter and its relative characteristic distribution (scattering)[21]. I interpreted the idea of parameter field as the introduction of two main parameters of the control system:

- the boundaries of the possible values of the parameter, tendency mask;
- the distribution among the boundaries.

The reason why I call them parameters, distinguished by the parameters of the synth, is because they are the variables of the control system.

As a general foundation for all the developments of this idea:

- the way the control parameters varies is in blocks, not interpolated, and they act independently on each parameter;
- time is calculated in terms of amount of events: the number of events within each block defines the duration of the block before to switch to an other and it is dependent on the duration of the event. An event is the duration that takes to change from one

parameter value to an other, regardless the output being made of discrete (envelope on the amplitude) or continuous sounds. The duration of the events is therefore a parameter of the synth and it is treated like the others and I will call it event-duration. The duration of the block is given by the amounts of events within a block and I will call it block-duration. Block-duration is an high-level parameter which is applied to all the parameters.

I will use now as an example a simple synthesiser producing a continuous sine-wave with only frequency and duration as only available parameters in order to give a clear example, yet not chosen for its sonic quality.

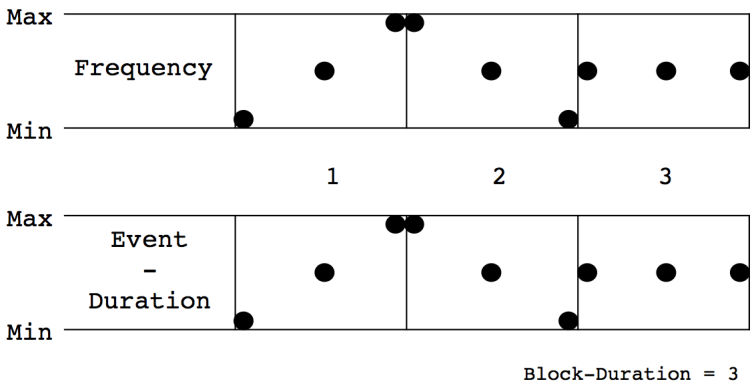

Figure 4.1: (a)

In the image (a) the blocks are on a line which does not describe their orders. The blocks are possibilities which in all the systems I developed following this principles they are chosen by chance procedures, independently per each parameter. Therefore the sake of the numbers 1, 2 and 3 is for distinguishing them and not for suggesting a chronological order.

Let us now give the limits of frequency from 100 Hz to 200 Hz and duration from 1 second to 3 second. The block-duration is 3. Three different blocks are designed with same limit values and different distribution: 1 is first value minimum (for frequency 100 Hz and event-duration 1 sec) second value half (150 Hz and 2 sec) and third value maximum (200Hz and 3 sec); 2 is the mirror of 1 and 3 is made of three same values of half between minimum and maximum (150 Hz and 2 sec).

Starting the system, two blocks would be chosen randomly for each parameters: for example frequency 1 and duration 2. This would result in a sine-wave behaving in the following manner: 100 Hz for 3 seconds, 150 Hz for 2 second and 200 Hz for 1 second. When this is complete, after 6 seconds, it would directly move to an other combination of blocks without interruption. Such a system would run forever and possibly get through all the attainable combination of blocks.

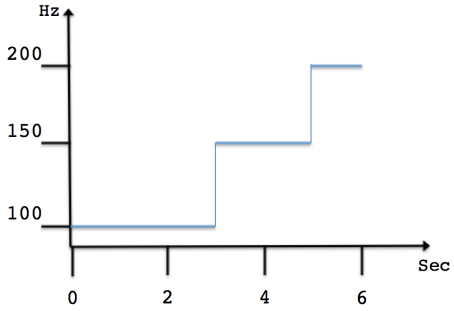

Figure 4.2: (b)

Regarding my aim to have a control system which would explore unexpected and numerous constellations of parameters, I upgraded it by adding more chance calculations, larger ranges of possibilities and less arbitrary decisions. Instead of having blocks that share the same limit values and different distributions I decided to apply to each block a different set of limit values (ranges) and the same distribution.

For choosing the ranges, I would take the full possible range of the parameter (in the case of the example, frequency would be from 20 Hz to 20000 Hz) and divided in as many sub-ranges that are desired with a chosen criteria (e.g. logarithmic or linear). Each of the sub-ranges would be assign to each block and to one block would be assigned the full range. The number of blocks would then fit the number of sub-ranges plus the full range. How to choose the values within the given ranges? I have been mainly using random distributions like random walk, beta and full random. In this way the block-duration becomes a very flexible and important parameter of high control which could already perform various and interesting results without altering the lower settings. The block-duration can be seen as the amount of time (or events) spent on one block before to go to an other and its manipulation can have a great difference on the outcome.

Image (c) gives an example of the settings for range and distribution with the simple sine wave oscillator:

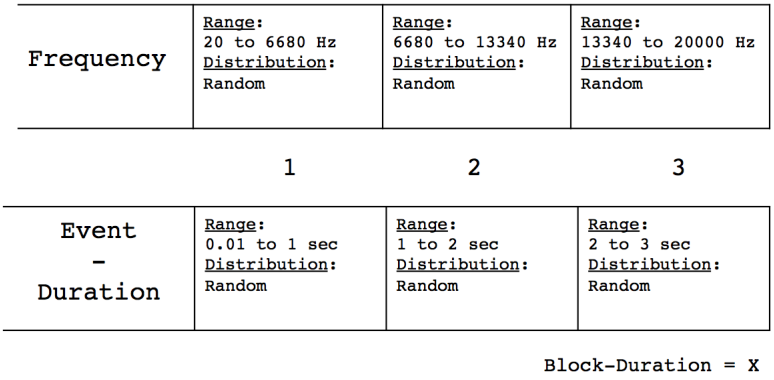

Figure 4.3: (c)

Here the output of such a system can be already much more complex, unpredictable and interesting in comparison with the example above. As the material coming out starts to be more satisfying I still found a problematic while dealing with this configuration: the change in the sound would always occur suddenly jumping from one set of parameters directly to an other. To avoid the synchronised change of all the parameters I experimented with, giving a block-duration, dislocating it while adding or subtracting a percent of it from it. This technique would create a sort of polyrhythm of the blocks change introducing in the output of the system a completely different development. This development is characterised by the qualities of polyrhythms (depending of the ratio between the rhythms) though applied to the underlying structure. This application also solved the problem of the jumps from one constellation of parameters to an other, having the individual parameters assigned to a different block-duration. In this way the amount of percent becomes an other high control parameter with a very relevant impact on the output.

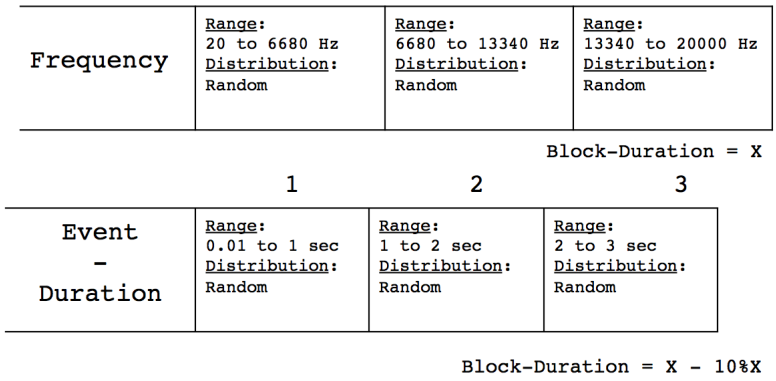

Figure 4.4: (d)

Here are the SuperCollider codes of the examples explained above, they don't represent any musical example although the basic scheme of the compositional idea. The synthesiser and the settings chosen are merely for the sake of exemplifying. This scheme is the starting realisation for the works I developed in this manner, through expansions and variations.

```
// Synthesiser definition of the simple sine-wave
(
SynthDef(\sine, {
        arg freq = 100;
        var sig;
        sig = SinOsc.ar(freq, 0, 0.3);
        Out.ar(0, sig)
}).load
)


//Execution of image (a)
(
Pmono(\sine,
        \freq, Prand([Pseq([100, 150, 200]), Pseq([200, 150, 100]), Pseq([150,
    150, 150])], inf),
        \dur, Prand([Pseq([3, 2, 1]), Pseq([1, 2, 3]), Pseq([2, 2, 2])], inf).
    trace,
).play
)
```

```
//Execution of image (c)
(
var blockduration = 30;
Pmono(\sine,
        \freq, Prand([Pwhite(20, 6680, blockduration), Pwhite(6680, 13340,
    blockduration), Pwhite(13340, 20000, blockduration)], inf),
        \dur, Prand([Pwhite(0.01, 1, blockduration), Pwhite(1, 2,
    blockduration), Pwhite(2, 3, blockduration)], inf),
).play
)

//Execution of image (d)
(
var blockduration = 30,
    percentage = 10,
    dislocation = percentage/100*blockduration; //10%30 = 3
Pmono(\sine,
        \freq, Prand([Pwhite(20, 6680, blockduration), Pwhite(6680, 13340,
    blockduration), Pwhite(13340, 20000, blockduration)], inf),
        \dur, Prand([Pwhite(0.01, 1, blockduration-dislocation), Pwhite(1.0,
    2, blockduration-dislocation), Pwhite(2.0, 3, blockduration-dislocation)],
     inf).trace,
).play
);
```

4.2.1 Rocky

Rocky (2013) is the first piece I composed by following and expanding the system. It came as the result of several etudes and attempts. The format is a live output of the patch therefore always different in the structure however consistent in the sound quality. It is based on one synth definition which deals with filtered noise.

The material of the piece consists of nine variations of the control system. The limits values of each parameter are given and what varies is the block-durations and the distributions between the limits. The block-durations are three, one short, one medium and one long. Per each block-duration there are three control systems characterised by the distributions: random, brownian motion and beta. These are the general constraints which

functioned as starting ideas and, even if often followed, exceptions and fine-tuning were sometime necessary for convenience and practicality.

I designed and extra control patch for managing the nine control systems. It functions as an automated mixer that moves among a series of stages. The stages are set arbitrarily and made of a maximum of three control systems occurring at the same time (meaning three layers of sound). The transitions between one stage and an other varies from interpolation of different lengths to sudden jumps. Each layer of sound, even if muted, is subject to an independent inner development given by the polyrhythm of change of the blocks. The inner development can be slow (depending on the ratio of the different rhythms of change of the blocks) and it allows to avoid repetition when the same layer comes back as effected by a slight alteration in the relation of the rhythms of shifts from one block to an other. That being the case the structure of the music can be both short (few to ten minutes) or long (even infinite if presented as a sound installation), presenting in both cases a consistent and interesting result. The piece has been presented in the concert hall as a 7 minutes composition in 8-channel. Also the amount of channels as the duration can be adjusted to any number.

Two more pieces are the outcome of the exploration of this algorithmic approach: *Inder* and *Fracas*.

4.2.2 Inder

Inder (2014) is a 4-channel fixed-media composition. In this case, designed the synthesiser, three outputs of the same control system (same settings of limit values, distribution and block durations) of the same duration are superimposed. Further arrangements are made on the timeline like filtering and minimal transformations of the sound in order to arrange sonically the three layers. This layering technique, with such a material of the same nature but with different internal developments, succeeds in achieving a quite complex result creating unexpected relations and sense of movements among the layers. Because of the already rich individual materials in terms of development and sonic quality, the superposition of them was enough to reach a satisfactory musical result. This work showed me again the importance of the preparatory stage where all the focus is on the production of the sound material. In this process a strong character is given to the material which would consequently and easily guide the next stage of composition, the one of structuring the music. From rich and coherent material, the music seems like spontaneously emerging from it, as

all the needed musical information are seeded within the first decisions taken.

4.2.3 Fracas

Fracas (2016) is an 8-channel fixed-media composition. The challenge taken for this work was to achieve a longer duration of the musical structure, over 15 minutes. Here the SuperCollider patch functioned only as a sound producer without an embedded longer form within the raw material. The material is derived by a series of variations of systems which control the same synthesiser. For this piece, the several outputs are designed in order to be synthesised directly as shaped and finite short musical forms, opposed to the previous pieces material originally planned without a programmed end. The various materials are then categorised according to the formal development of the sonic and spatial movements. What is categorised as one kind of material, when played directly from the code, never repeats because of the random development of the micro-structure, however it is still recognisable as the same type of material for the fixed tendency masks applied to the macro development. Each type of material has been recorded with several variations of itself in the perspective of being further transformed through the analogue studio. The analogue technique is equivalent to what discussed in the previous chapter Analogue Studio. The original material and all its transformations result in being all the elements which will constitute the final composition, in the same way of preparing the bricks in prospect of erecting a building. The first stage of the work is in fact the composition of short musical forms from few to around 15 seconds duration. The second stage consists of zooming out to an other scale of composing musical forms: a scale of around one minute, made of one or two types of material (including the transformations). After the construction of the bricks, this is the moment of building the walls. Here the composition happens on an editing timeline, manually, aiming to a coherent organisation of the material in a musical form. The third stage is involved in reaching the final scale of the piece: the total duration. This is achieved through juxtaposing and superimposing the several one-minute shapes aspiring to a final musical consistence. A solid building is made of solid walls, solid bricks and solid practical and abstract fundaments.

4.3 Per Fortuna Sonora: Prepared Improvisations

> In the realm of scientific observation, luck is granted only to those who are prepared. [19]

Per Fortuna Sonora (PFS) titles a project which contains several experiments. I have been developing them under the same umbrella of prepared improvisations for musicians. Generally, PFS aims to provide introspective and inspirational creative journeys for the participants and it centres on radical experimentations with musical instruments and new technologies. It is meant to offer the participants a fresh set of circumstances that encourages an original perspective, where they can explore musical improvisation, new levels of interaction and creativity in both unusual and unorthodox ways.

PFS have occurred in various formats: performance, live and private, consisting on one experiment and workshop, consisting on a series of them. In both cases, the participants are guided to experiment sonically and record their improvisations, doing so individually and collaboratively, as well as participating in deep listening sessions with additional discussions focused on reflecting upon these experiences.

PFS is born as an intent to explore fresh and original approaches to musical activities and to provide the participant with the opportunity to investigate intuitively their own personal musical habits and tendencies in a sonically inventive environment. Besides the experiential nature of the project the parallel interest was the one of composing through prepared improvisations, with me being the composer and not the performer.

The three main experiments are named: *The Fourth Phase*, *The Lucky Phone* and *A Prima Sonata*.

4.3.1 The Fourth Phase

The Fourth Phases setting is composed of one musician and reproducing and recording devices. It is divided in four parts and the first three are the repetition of the first one: musician set up with headphones on, ready to play any chosen instrument/s. The given instruction would be to react to what is played back in headphones with a relaxed mood, giving up musical ambitions and expectations and giving the concentration over to an intimate and free relation with the produced/heard sounds. Every type of reaction is welcome such as silence, leaving the room, screaming, relying on the supportive intention of the participant towards the experiment. A fixed composition (sonic environment) is

played back on headphones with the only condition to be original and never heard before; no description of it is given to the participant. The sounds produced by the musician are recorded for all the three times (phases), in three different takes, happening one after the other. What is called the fourth phase is the fourth part and conclusion of the experiment: listening back from loudspeakers to all the three takes, superimposed without the sonic environment. The only taken adjustment would be to spatialise the three tracks in a possible and helpful way, according to the sound system (e.g. on a stereo system: first phase on the left, second in the centre and third on the right).

Important parameters for the experiment: the identity and state of the player (musical background, interests, mood, physical state, etc.) and the knowledge he/she has about the experiment: obviously, knowing about the conclusion (fourth phase) would strongly influence the three phases. The ideal state is when the musician does not know and think about what is going to happen after the improvisations in order to help the active listening mood and concentration, although I would not refuse someone who wants to repeat the experiment or to do it for the first time even if aware of the whole dynamic of it. In most of the occurrences the players did not know what was planned to conclude the experiment.

I've been performing this experiment/method many times, with different kind of musicians (also not musicians), and it happened to be the starting point for this stream of improvisational explorations. All the results are recorded and most of the time made privately, for my own sake of experimenting, and only once the full process have been proposed in a live setting. Through all the performances I realised how the final composition made of the three recordings overlapped (the fourth phase) is not the main goal of the process: the FP is a path to walk on, for one individual and the audience, without aiming to a specific result but to the full experience. I've found myself always extremely fascinated by listening to the FP results. Although I recognise how the relevance and interest improves after listening to all the phases, live. At the same time, the intimate quality of the environment have been always very fundamental to the experience, that is the main reason why I have been questioning and have presented it in a concert only once. In many cases, the layering method came to be a very suitable strategy for producing material for further compositions in the same manner of the layering technique I sometime applied to the recorded outputs of digital and analogue algorithms.

4.3.2 A Prima Sonata

Electronic music performed can vary in different degrees of relation between the sound and the performers physical interaction. Turning knobs and slides or pushing buttons does not say much about the process behind the production and manipulation of sound. At the same time it may offer a rather accessible interaction/exploration of an instrument possibilities to anyone, without any need of a specific physical training. With the advantage of this, I designed a controller of an electronic instrument made only with buttons, knobs and faders in the perspective of letting it be played by someone who has never played/seen it before.

A Prima Sonata has been performed two times in the same concert under the following settings. Two copies of the instrument were set up on stage. I marked with a small red sign four concert programs before the beginning and mixed them with all the other programs. This was the strategy for choosing four participants from the audience: whoever would have found the red sign on the paper. After my announcement about the dynamics of the experiment, two of the lucky ones were asked to come on stage and assigned to one instrument. After explaining shortly about the instruments, and especially about the restriction of only one (non-indicated) button for triggering the sound, the only instruction was to perform with them for a limited time around ten minutes.

The design of the instrument is rather simple in the control and complex in the possible sonic outcome. The aim is to immerse the participants in a performative and listening mood where they cant relay on the technique, the confidence or on the personal ambitious in order to play music but rather on the present moment of happening. Intuitive responses to sounds are therefore constantly explored without being able to fully predict or control what is going to occur due to the unknown character of the instrument. While the performance goes on, hopefully a sense of developing skills and control would appear. The performative aspect characterised by the different stages of approaching an unrevealed instrument and the possible establishment of a clearer understanding of it is what mainly appealed to me.

4.3.3 The Lucky Phone

The Lucky Phone is a guided group improvisation. It is inspired by The Broken Phone (or Chinese Whispers), a game played all around the world, in which one person whispers a message to another, passing it through a line of people until the last one announces the message to the entire group. The message often accumulates errors and interpretations

transforming from the begging to end of the line. My version of the game is made for the musicians and what is whispered is a musical signal.

In the same room the musicians are placed, each musician equipped with headphones and a microphone, besides the chosen instrument. The musicians are isolated from each other as more as the room allows, not facing each other. Lets imagine a setting of three musicians in this order: number one, two and three. The instruction given to the musicians is to react with the instrument to and only the sounds heard in headphones in any desired way. To the headphones of number one is played back a fixed track. This track is composed by me for the only sake of this piece; it is usually made of abstract sounds and without following any clear rule of harmony or rhythms. The reactions played by number one are picked up by the microphones and played back to number two. Same procedure between number two and three.

An other version of the piece is made for electronic instruments capable of receiving a signal, manipulating it and output it. The dynamics are the same of the previous but in this case the original signal is the only sound material which travels and transforms through the electronic devices. This version is actually closer to the idea of the game which inspires it. In this case the question comes of what to outputs to a possible audience. All the three layers of sonic activities were played simultaneously when it has been performed live.

In both cases the performative space of the musicians, therefore the interaction or better to say the reaction, is virtual because occurring in the headphones. The experience of the audience is in an other space, the physical space. The listening experiences of audience and musicians are obviously radically different; the limitation of the musicians of being able to listen and react to only one voice while cooperating to a whole which cannot be listen as such is the main strive in the development of this experiment. This limitation turns into being a strength for the musician, being supplied with a clear goal of action in an intimate situation. Liberating the musician from the responsibility of a full awareness of improvised music but preparing him/her to concentrate on only one element creates a coexisting duality made of individuality and cooperation, an unaware collaboration through introspection. As a compositional method The Lucky Phone produced results of surprising coherence and musicality and as a performative experiment offers to the musician an innovative context for free improvisation with an emphasis on putting into question personal tendencies of conventional improvisational settings.

Chapter 5

Conclusions

It is by nature that we tend to extrapolate from our surrounding behavioural rules in order to adapt and survive. For example, moving to a different country demands an adjustment to its bureaucracy and regulations; every kid willing to play a sport with others needs to learn the rules first; playing in an orchestra needs conformity to its dynamics and conventions. In systemised societies and institutions rules are intrinsic factors of the organisation of the system and the reasons of their impositions may sometimes seem evident and some others not. However, taking the rules seriously is an important requirement given by whoever makes the rules. Every game is made by its rules. When the rules are not taken seriously, the system looses its authority and the game ceases to exist. Therefore it is very important to not misjudge the functions of rules and their importance. Nevertheless there is a big risk lying behind this requirement of seriousness: to end up confusing the rules with the game. When the rules are taken too seriously their purpose may be forgotten and the game itself may end up being taken overly seriously. In this case the initial playfulness of the game would be corrupted. For this reason one main rule should be always added to every game: do not forget it is a game. It is not serious, it is just a game. Music, art, sports, science, dissertations and life are all full of important rules, one among them, the most important: do not forget it is a game.

As a musician I have been put in front of many rules that have been established under the umbrella of what is called music. There have been moments when the seriousness of these rules made me doubt the whole game and to stop recognising its playfulness. Fortunately enough I found myself studying in an institute that did not teach me rules anymore but it thought how to make my own. I quickly realised how fascinating and lively is the freedom

of making my own rules. Since then I've been constantly avoiding any establishment while embracing change in order to never loose that freedom. Every piece of music deserves its freedom to be ruled freely, like every other game, like every moment.

This is the attitude which I found more efficient, to constantly question what is already there and to not loose sight of what is behind it. There are infinite possible games, infinite possible rules, infinite possible attitudes and infinite possible expectations. None of them is the only one, they can be constantly changed and reinvented so new games can arise. Exactly like in music.

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