

**New dimensions of musical enjoyment.
The Analysis problem: Luc Ferrari through the *Aesthetic-Cognitive* Method**

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Abstract

Electroacoustic music has led to profound reflections on sound nature, timbre and music systems. The new dimensions of musical enjoyment have meant that it is necessary the creation of new fields, very close to the musical aesthetics, enhanced by reflection on certain aspects of the composition of the last few decades. The widening of the horizon of historical studies to other civilizations and epochs far removed from ours, refinement of the instruments of investigation and research, the improvement of new methods of historical study from the late nineteenth century onwards, created strong stress to the growth of theories on the *analysis of music*.

The *aesthetic-cognitive* approach by Francesco Giomi and Marco Ligabue is a very powerful method, which allows to analyse music on the basis of *perception*. It starts from a series of studies on the perception of contemporary music and formalizes a set of procedures for the description and analysis of the sound text at different levels.

This paper would like to analyse an opera by Luc Ferrari, *Tautologos I*, and point out some of its characteristics starting from the *aesthetic-cognitive* approach.

Analysis of Music

Electroacoustic music has led to profound reflections on sound nature, timbre and music systems. The new dimensions of musical enjoyment have meant that it is necessary the creation of new fields, very close to the musical aesthetics, enhanced by reflection on certain aspects of the composition of the last few decades. According to Enrico Fubini, musical culture and new models of sound perception induced by massive social phenomena could not have been without influence in the development of new lines and new ways of thinking.

If the avant-garde experience was decisive in recent decades for musical thought, other areas of musicological studies have therefore played an important role. The widening of the horizon of historical studies to other civilizations and epochs far removed from ours, refinement of the instruments of investigation and research, the improvement of new methods of historical study from the late nineteenth century onwards, created strong stress to the growth of theories on the *analysis of music*.

Musical analysis is a very vague concept that refers to any methodology to analyse a piece of music. Obviously, any analytic theory is faced with the problem of privileging the size of the

work that is considered more important than others. However, every choice involves exclusions for which each analytical approach inevitably highlights an aspect at the expense of others and the risk of never being able to grasp what you would like to take a *utopian*, i.e. the totality of the work.

In his formulation of the *spectromorphology*, Denis Smalley emphasizes the need to analyse music. Electroacoustic music provides access to all sounds, in an amazing range of sound that oscillates between the real and the surreal.

So, how to cut an aesthetic path and discover stability in a wide-open sound world? How to explain and understand the electroacoustic music? As Smalley said: «Music is not created from nothing. If a group of listeners finds a piece of electroacoustic music “rewarding” it is because there is some shared experiential basis both inside and behind that music. We need to be able to discuss musical experiences to describe the features we hear and explain how they work in the context of the music».

So, we need analysis to confront and talk about music in a new musical universe, in which score almost no longer exists, and, if it exists, continues to have an ambiguous relationship with the musical product.

The new dimensions of musical enjoyment is particularly shifted toward perception. It is necessary to say that developing a relationship of interdependence between creative and analytical dimension of music is very ambitious. As Luciano Berio said, “*all speech about music is incomplete, by its nature*”. Every great work always implies a plurality of texts, even without this is not identifiable on the surface: sources, quotes, ancestry, who have been assimilated by the author, even unintentionally.

This multiplicity requires the analysis of multiple new perspectives.

The Aesthetic-Cognitive Approach

The *aesthetic-cognitive* approach by Francesco Giomi and Marco Ligabue is a very powerful method, which allows to analyse music on the basis of *perception*. It starts from a series of studies on the perception of contemporary music and formalizes a set of procedures for the description and analysis of the sound text at different levels. It is “aesthetic” because it stands on the side of listening and “cognitive” because, through the analysis, it seeks to identify the mechanisms of perception and interpretation of compositional gestures.

The aesthetic-cognitive approach builds on the concept of sound object introduced in the Sixties by Pierre Schaeffer in his *Traité des Objets musicaux*. Schaeffer intends *sound object* as an object of human musical perception, defined as the smallest self-sufficient identifiable element and qualified in a text sound by means of its typological and morphological characteristics. The intent of Schaeffer is mainly descriptive; for this reason, he deprives it of its referential qualities and he doesn't put it in the specific musical background.

In the aesthetic-cognitive method, the sound object assumes a different value, as it is considered within the context of space and time offered by the sound composition being analyzed. For this reason, it is preferred the definition of *sound event*, meaning, by that, the sound object contextualized. The sound event is identified with regard to the limit of the perceptual threshold of audibility and it is described through a series of specific characteristics – gathered in a table – that allow definitions of equality, not equality or

similarity. The sound event is treated with an acousmatic attitude, i.e. irrespective of the nature and of the characteristics of its possible source.

The aesthetic – cognitive approach leads its analytical process on the basis of many listenings, by segmenting the text sound at different levels: from the level of the minimum elements (phonemes – distinctive traits) to the identification of syntagmatic chains through the musical unit of signification (monemes – sound events), and parallel the method carries on the formal and structural segmentation of the musical work.

The methodology is characterized by its *reticularity*, i.e. a type of procedure can create necessary multiple interrelationships between its different levels, regardless of a predetermined order.

Targets of this steps are:

- To identify formal and structural characteristics;
- The identification of conscious and unconscious compositional strategies that could emerge from listening;
- The identification of musical strategies of signification of the work;
- Hermeneutical deductions on the aesthetical plan.

The theoretical and pragmatic aspects of the specific phases of the analysis will be introduced during the analysis of *Tautologos 1*.

Luc Ferrari and his *Tautologos 1*

Luc Ferrari was trained in music at a very young age, studying the piano under Alfred Cortot, musical analysis with Olivier Messiaen and composition with Arthur Honneger. His meeting with Edgar Varèse, whose *Déserts* he had heard on the radio, was crucial in his musical approach. In 1958 he co-founded the *Groupe de Recherches Musicales* with Pierre Schaeffer and François Bernard Mâche. He taught in institutions around the world and worked for film, theatre and radio.

The use of ambient recordings was to become a distinctive part of Ferrari's musical language. Beyond the mere acceptance of ambient sounds as musical, Ferrari found that his forays with the professional tape recorder into public places added a level of social engagement to his work. This led him to compose pieces in which the audience becomes voyeuristically involved with a kind of audio home movie. In such a state, a great deal is suggested, which is why radio remains such a powerful medium, even in the face of the wide acceptance of television. The disembodied voice of a human being in Ferrari's work lures in the listener into an intimacy which is palpable.

Beyond his work involving technology, Ferrari has composed a large body of instrumental music, ranging from very early piano solos to works for large orchestra, such as *Histoire du plaisir et de la désolation* (1979-81), a towering 35-minute work in three movements which won the International Koussevitsky Prize for recordings when it was released in 1990. Among his important credits are a series of invaluable television films which he made about the rehearsal processes of Varèse, Messiaen, Stockhausen and others.

Tautologos I, a work written in 1961, is a composition for magnetic tape. It revolves around classic electric organ sonorities, animated with the fizz of less readily attributable sonic particles. This work has a particularly clear compositional strategy: repetition.

The first *sintagma* of the opera, in which almost all sound events of the work are, is repeated several times, forming a music period that emphasizes more the only real thematic change in the work.

In the 1960s, Ferrari was already working on his own conception of minimalism. *Tautologos I* is an example of his effort in this direction. The title itself, *Tautologos*, already seems to focus on a speech that is repeated, "identical" to himself (from τὸ αὐτό, "the same, identical" and λόγος, "speech"). He developed a manner of repeating by *deviation*, so that repetition was prevented from becoming a new rule.

It was only later called minimalism. It was actually inevitable due to the accumulated constrictions of the compositional schools of the time, where perpetual variation was demanded. [...] Suddenly, the only thing that could be a logical musical development was to use repetition. It was to break up maximalism. In my brand of minimalism, the sound is reduced to the least point of recognition with respect to the musical tradition. This is complete minimalism.¹

Ferrari was at the centre of the process of the expansion of music beyond notes to the incorporation of any and all sound during the last century. An influential teacher, composer, and performer.

Sound Content and Significant Events

The first step of the aesthetic-cognitive approach is to identify the significant sound events. The description of sound objects is through the use of a table that allows a quick and enough detailed characterization. The table is based on the formalization of a paradigm of distinctive features, and uses the system in use in phonology present tract / absent tract, with the addition of other symbols.

Each table is divided into three parts: the first of these is devoted to spectral quality across eight parameters, six of which are presented coupled according to their degrees of relationship (mass / making, duration / change, height / mass thickness – in sense of frequencies, timbre, texture). The second area includes the dynamic characteristics and temporal envelope of the event. The third considers instead the contextualization of the sound within the opera: the importance of local and global position in real and virtual space. There is also a box reserved to the number of repetitions and duration of the event.

Tables are used in two ways: the first is a diachronic comparison; the second is the synchronic comparison of events from the typological and morphological point of view.

It is possible to divide *Tautologos I* into two sections, as it will be later do, on the basis of the type of sound events and the interaction between them. Some of the most important events will be described, then, in order to justify what could be a *coherent* formal subdivision.

¹ Brigitte Robindorè and Luc Ferrari, "Luc Ferrari: Interview with an Intimate Iconoclast" – see references.

It is possible to classify the various events as:

- Materials related to acoustic instruments, probably from:
Organ (elements clustered);
Piano (mostly metallic elements, perceived as plucked strings-scratch);
- materials of electronic type, created with various technique of synthesis.

As regards the first category, they have a considerable global importance. These elements are not only present with metamorphosis and spectral envelope, but also with their distinctive timbre, as *concrete* events.

The three clusters that opened Ferrari's opera come from an organ; they are repeated several times in the first section, always in the same sequence, but in different relationship between them. The first cluster appears as a tonic group, with a continuous *finish*, an abrupt attack, a flat envelope, and it occupies the low-mid frequencies. The second one has a broader spectrum, but evolves almost like a pulse. The last, finally, deals with the low frequencies, and evolves dynamically and spatially in second plan related to a series of percussive events, with a rubbed *grain*, leading to the conclusion of the first semi-phrase, with a rapid repetition of the three clusters (approx. 00:00:04) and towards the second semi-phrase.

These three elements just described are repeated at the beginning of each change and are recognizable for their height and their tone, but their envelope is always transformed: at their first variation (about 00:00:17), the equilibrium of time is changed, with the first cluster that has an almost tripled duration, and the next two that develop as stroke. At 00:00:22, that is the second iteration, the relationship between the heights of three elements are met, but everything is shifted to higher frequencies; in addition, the second cluster has a glide attack, which caused him to lose the impulsive temper, and it is doubled by a sound event of the same height, probably from a piano; in this variant, the third cluster arrives later, with an attack in *sforzando* and a percussive event on its tail. The variations of the three clusters begin to make them unrecognizable from 00:00:43 thereafter; nevertheless, the structure of each *sintagma* continues to follow that of the first phrase. Even the first percussive events (about 00:00:03) of the main clause maintain the structure of the three repetitions and have some correlation with the height progress of the cluster, as well as the first event due to the piano (00:00:03.5).

Piano events are of various kinds: they range from cluster to scratched chords, from *glissando* to pedal at low frequencies, to blows on the soundboard. They sometimes enhance, sometimes clarify the sentence presented by the organ clusters. Some events take on a greater importance as repeated several times, as the band at 1'09", presented in five repetitions (00:01:09, 00:01:14, 00:01:18, 00:01:25, 00:01:29), with a slightly different attack, which is even doubled with a delay (00:01:25 onwards); this band is a constant in the continuous evolution of the first *sintagma*. While in a first region piano elements are used across all the spectrum of frequencies, even with several filters, in the last part of the work there is a prevalence of low-frequency components, which evolve as a long pedal on short acute events reserved for electronic items.

The *percussive elements* are mainly of two types: in a first region, they occupy almost always high and medium frequencies and have a *tonic* mass. Their role is fundamental, above all for the particular structure of the work: they have the vital task of signing the flow of time in which primary cell develops, emphasizing the imperative pace of the whole opera. The tonic

shots that follow one another in all the work interrupt the flow of the various phrases, or, for example, introduce new elements, such as the piano at 00:00:53; at other times, they evolve in different events with a different envelope (at 00:00:39 they become scratched strings).

The three identical and equidistant shots (00:00:45, 00:00:47, 00:00:48) have a key role because they are unperturbed while the other events of this variation continue rapidly, and they exacerbate, in comparison, the feeling of great speed; in addition, they have high local significance because they are the only unchanged *ingredient* of the successive sentences.

In the second region of the work, however, the shots occupy the low frequencies and are reverberating; their continuous pulse enriches the deep band, due to the piano. Finally, the final shots leading up to the silence have a reverb that makes them feel like they are coming from *inside*, almost like heartbeats going to fade.

Electronic events are immediately introduced in the tail of the main theme, first as an iterative band that comes from the piano cluster (00:00:07), then as a siren (00:00:12), clear revelation, without filters, of the former band. The main feature of these elements is their nearly pure spectrum, sophisticated and decidedly unnatural, especially in comparison to the filtered items obtained from acoustic instruments. They are mostly with fast evolution and a preponderance of high frequencies. Furthermore, some electronic events are almost ironic, since they stop the drama filled with the exasperating variations: the totally synthetic birds at 00:01:28, the glissando at 00:01:32, the riff at 00:01:44, made of successive tonic objects in the high frequencies, are all events that refer to a fantastic imaginary, like a game, and that very contrast with the seriousness of the main *sintagma*.

Finally, the rise to very high frequencies from 00:02:15 leads to the final band that closes with a significant intervention by the piano deep band: this extreme and rapid contrast justifies the formal division of the work, that from this moment underwent a radical change. In the last section, the events keep their electronic characteristics of purity; this creates an even greater contrast with the low-frequency band in background, which seems to trap them with its constant throb.

Pauses are used very sparingly, as fast breaks at the end of each transformation; this gives greater unity to the whole piece.

The only moment of *silence* is really evident (00:00:43) because it is followed by a long tail of an electronic element that decreases until it disappears, creating a stalemate that concludes the first repetitions clearly related to the first phrase and opens a series of convulsive changes, with the introduction of new elements, in an always new exposition of the theme.

As regards the movements on the stereo front, there are few clear trajectories, but elements just appear and vanish on one or in the other channel.

Formal and Structural Analysis

The structural level is responsible to represent the internal modes of organization of the composition.

The criteria for the subdivision that are used are:

1. *Timbre morphological criteria*: these are divided into three sub-categories of pairs that represent the three main zones of the table description of the events.

2. *Density criteria*: describes the distribution of events in a given time in terms of relative density with respect to the structure of the sections.
3. *Criteria of motion*: allows to evaluate the status of the section from the point of view of the rhythmic impulsion.
4. *Tension criteria*: It refers to the feeling that you are listening to the perceptual parts of the composition.

It is possible to split *Tautologos* into two sections:

• **SECTION A** (00:00:00 – 00:02:30) This first section is very fast, with a hysterical rhythm, and this is the result of the extreme rapidity with which clusters and electronic elements from first phrase come in succession, sometimes superimposed on the same floor space. That *sintagma is the tautological element* which clearly refers to the title of the composition (00:00:00 – 00:00:17). The section evolves gradually changing the whole sentence of the first exhibition, explaining the origin of some items and adding new events. The long moment of suspension (00:00:41 ca) leads to new variations of the theme, more and more frantic; from about 00:01:44 onwards, the presence of electronic elements becomes prevalent and their intervention breaks the dramatic exasperation linked to the constant repetition. The last part of this section is occupied by the counterpoint of these new electronic items and events that have permeated the whole first part.

The section ends with an ascent to high frequencies which results in a long *diminuendo*.

• **SECTION B** (00:02:31 – 00:04:20) The major band that opens this section, with a variable trend and a pulsed rhythm, is a new element in the homogeneity of materials that characterized the first section. Its constant evolution in time and space remains in second place to the electronic elements, also with pulsed rhythm. The contrast is more evident because they occupy the upper-middle region of frequency. From 00:03:15 onwards, the deep spectrum band is enriched by middle frequencies, with a consequent frequential raising of the electronic interventions; the event to 00:03:25 is particular, more reverberated with a new *echo* element on its tail, repeated on a different spatial perspective and in *mp*. The element at 00:03:39 begins a *diminuendo*, a slowing area of the section; the band becomes more evident. The final event of the opera is certainly at 00:04:03, when high frequencies are followed by a final slowing down, which dampens the pulse that had moved across all the section.

Strategies of Signification

The analysis of the compositional strategies, in the light of the data collected at different levels, allows the identification of a number of strategies of conscious or unconscious signification put in place by the author.

Among the strategies used in the composition, it is certainly possible to highlight *anticipation* and *recovery*: they are two strategies of signification typical of musical storytelling implemented at all levels through the compositional strategies of flashbacks and prolepsis. Such procedures shall denote the intention to link different sections at the level of significance of the composition in the search for a sense of continuity.

Another strategy is that of the *narrative through timbres*: certain types of timbres are chosen to characterize each section.

Analytically Deductions

From all the elements analysed so far, it is possible to advance a series of deductions on the hermeneutic and some evaluation on an aesthetic level.

Without prejudice to the autonomy of the analytical framework conducted at various levels, it is possible to make an interpretation in relation to the thematic suggestion of the title of the composition. This allows to verify the relevance of operation which the composer has used to return the narrative suggestion proposal through this title.

In his musical language investigation, *Tautologos 1* is placed in Ferrari's endeavour to build his own conception of *minimalism*, a trend characterized by a process of reduction of reality, impersonality, emotional coldness. In music, the architecture of minimalist music consists of short and simple melodic cells, rhythmic figures, and unravels the creative speech on *repetition*, often obsessive, of these modules. In this sense, *Tautologos 1* is a first step of this process: it is possible to find in it a simple main theme, that we called *sintagma*, and this cell is repeated, with extreme variations, until a radical change, a *deviation*, which brings to the end. In Ferrari's brand of minimalism, sound is reduced to the least point of recognition, with respect to the musical tradition.

The theme of the whole work is *repetition*. This issue is dealt with through the aggravation of an initial fragment, which is repeated and turned frantically in the first part of the work, and through the *absence* of repetition, which is highlighted in the final section, which flows into the extinction of the pulse that made it living, in which everything flows without a fixed point, without any reboot, to a slow decline. The complete contrasting nature of the two sections most strikes the finality of the first, leaving a feeling of emptiness almost unbridgeable transported from the long and regular band of the last part.

About Ferrari's peculiar use of sound, when Brigitte Robindoré asked him if he was attracted to certain sounds and situations more than others, he answered that he would never interpose his will on the sound, only on the manner in which he recorded it. He use electronics as a completely new instrument. "Why cut, mix, and assemble electronic sounds into the same kinds of gestures one finds in instrumental music? This seems absurd to me".

His idea in treating sound is particularly clear in this work, as can be seen since the very first listening. Moreover, the type of materials used makes the first section an uniform one, despite the constant repetition interrupts the musical flow.

Conclusions

As shown in this paper, the *aesthetic-cognitive* approach is a very powerful method, which allows to analyse music on the basis of *perception*.

The different levels of the analytical process allowed the deduction of compositional and signification strategies and they are an attempt to understand the overall logic of the piece. In relation to an analysis conducted exclusively on the score, the aesthetic-cognitive approach allows us to highlight certain aspects otherwise undetectable, as Salvatore Sciarrino said about the analysis conducted on his "Come vengono prodotti gli incantesimi?" carried on with this method.

Nevertheless, the analyst must take care to place the examined work in an evolutionary history of the composer. This perspective is the one of *his* poetic. Analysis, as well as music itself, makes sense when celebrates a permanent dialogue between ear and mind, between perception and sense of sound. Analysis should not be a mere speculative instrument or a tool for the theoretical conceptualization of music.

When we apply it to the topology of becoming and of the transformation of musical forms, it can be a profound contribution to the creative process.

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