Audible Ecosystems and emergent sound structures in Di Scipio’s music. Music philosophy helps musical analysis

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Background in music philosophy. What emerges from listening? What phenomenon does listening create? These two questions implement into the field of music researches opened in phenomenology (Merleau-Ponty, 1964) or in discussions about the notion of “emergence” (Varela, 1989, 1996). A simple and short answer to these two relatively similar questions could be: (musical) sound. But if we study more carefully the birth of sound, its emergence as a structure, then new questions appear: what are the—spatial and temporal—limits of this phenomenon? From what is it made? How does it appear as a structure?

Background in musical analysis. In recent music, many composers have adopted the paradigm of complexity, and are working with chaos theories, with cellular automata, etc. The idea of “emergence” is sometimes central to this way of thinking musical composition. This new musical paradigm challenges musical analysis, which is not used to deal with sound structures that emerge. How is it possible to analyse structures that have no independent existence not only from musical material, but also from the listener and from the space in which they take place?

Aims. This paper will focus on Agostino Di Scipio’s compositional researches oriented towards “audible ecosystems” and emergent sound structures (Di Scipio, 2003, 2005a, 2005b; Solomos, 2005; Meric, 2008). It will try to show that music philosophy can help musical analysis.

Main contribution. While composing with an ecosystemic approach, Di Scipio creates an audio system that interacts with the environment, i.e. space. This space, in which and from which music emerges, is also the listener’s space. The notion of emergence is complex: what emerges is the result of a confrontation between the cognitive system of the listener and the audio system. This emergent result can be shortly called musical structure or sound structure, but it is difficult to determine it with precision. Its general outline is unpredictable and unstable. It is dependent on a dynamic musical space, which is constructed simultaneously by an active listening and by an active audio system. To choose either the first or the second as a starting point for the emergent structures is impossible. “I am interested in composing desirable interactions among available elements or components, such that the music is heard as the empirical epi-phenomenon of that network of interactions, not as an abstract discourse written by me and diligently spoken by others”, says Di Scipio (2005a: 385). It is why his music is so difficult to be analysed. While analysing it, we have to focus on this ephemeral moment where music emerges in the interaction between the listener and the product of the audio system, and inside a specific space.

Implications. In this paper, music philosophy, with focusing on listening, will try to show that musical analysis cannot limit itself to “objective” structures (“sound”, “form”, etc.), particularly in the case of Agostino Di Scipio’s music where these structures seem to be only sonic dust.

Agostino Di Scipio’s music: emergent sound structures and audible ecosystems

The Italian composer Agostino Di Scipio (born in 1962) is well known for his musical works for electronics, for live electronics, for electronics and instruments or for his sound installations (Di Scipio, 2005b, 2005c). In these works, he explores new theoretical ideas that he has often presented in published papers (cf. for instance Di Scipio, 1994, 1999, 2003, 2005a, 2008; Anderson, 2005), theoretical ideas that have been sometimes discussed by musicologists (Solomos, 2005; Prominski; Meric, 2008). In this paper, our aim is to discuss the question:
how musical analysis can deal with Di Scipio’s musical works? Therefore, we will not discuss his theoretical ideas. A small résumé should be enough. It is possible to summarize these ideas with the help of two important concepts:

1. Emergent sound structures

Analysing Xenakis’ hypothesis (Xenakis, 1992: 103) of an (auto-)creation of “higher order sonorities” in Xenakis’ *Analogique A et B* (1958-59, for 9 strings and tape), a musical composition which works with the granular paradigm, Di Scipio makes a small shift in Xenakis’ conceptual issue: “Today cognitive scientists and epistemologists would probably describe the hypothesis of 2nd-order sonorities as a question of emergent properties of sound structure” (Di Scipio, 2001: 72). The question of emergent structures can thus be formulated: “In this case [concerning *Analogique B*], the distinction can hardly be made between a model of musical articulation and a model of sound design, insofar as the composer’s action is meant to let the musical (macro-level) structure emerge from sound itself and its internal organization (micro-level)” (Di Scipio, 1997: 165). As regards the “failure” of *Analogique* to create the second order sonorities—failure which, for Di Scipio, is not the failure of the grain’s fusion as it was probably for Xenakis, but the failure of this emergence—, he explains that it is due to Xenakis’ mathematical tools: “One may ask whether the stochastic does really provide as good a means for higher-order sonorities to emerge from a ground-level pattern of minimal sonic units” (Di Scipio, 2001: 73/79). It is why, for his own music, he decided to use complex dynamic systems: “Chaos and the dynamics of complex systems, as accessible with iterated numerical processes, represented for me a way to compose small sonic units such that a higher-level sonority would manifest itself in the process” (Di Scipio in Anderson, 2005). These systems enable him “[to] exploit […] a large] palette of grain arrangements, ranging from random to more patterned textures, across a variety of other behaviors” (Di Scipio, in Anderson, 2005). Thus, Di Scipio, unlike other composers who worked with the help of the granular paradigm—for instance, Xenakis or Horacio Vaggione (Solomos, 2006)—, tends to get rid of everything that would be directly composed as a macroform design. For instance, in his music, there are no dramatic gestures, no dramatic intentions. In one of his first articles (Di Scipio, 1994), he elaborated a “Theory of sonological emergence”, where form (macroform) is viewed as “a process of timbre formation” (Di Scipio, 1994: 205).

The idea of emergent sound structures is related to the elaboration of a *sub-symbolic* musical strategy. In the “Theory of sonological emergence”, the emergence of a high level should happen through grains, samples, which are not symbols as they are located in a low level (cf. Di Scipio, 1994: 207). With composed interactions (cf. infra), Di Scipio puts the interaction directly into the signal level: all the information exchanges have a sonic nature (cf. Di Scipio, 2003: 272). We can draw a parallel between this strategy and the model of emergence in cognitive sciences. To the question: “What is cognition?”, the “computationalist” model answers: “A data processing: the manipulation of symbols from rules” (Varela, 1996: 42), while the emergence model answers: “The emergence of global states in a network of simple components” (Varela, 1996: 77). As regards music, what is at stake here is the following idea: if we want that the higher level (the macroform) appears as an emergence and not as an independent construction, we have to work only in the lower level, abandoning the intermediate level, which is the level of symbols.

2. Audible ecosystems

According to the emergence theory, the emergence of sound structures is possible thanks to the fact that the composer develops systems (in the sense of cybernetics) close to living systems, which are characterized by the capacity of *auto-organization*: “The passage of a system or process from a given structural organization to a new state of order which is recognized as a function of the qualitative properties of the former, is what we call here a phenomenon of emergence […]. Similar phenomena can be described with rules of *morphostasis* (conservation of coherence, identity) and *morphogenesis* (dynamical
behavior, change), which together capture the main peculiarity of social and living systems: self-organization” (Di Scipio, 1994: 206). To make sure that the system is auto-organized, Di Scipio uses a “circular causality” (Di Scipio in Anderson, 2005), which extends the idea of feedback. For instance, in Due di Uno (2003, for violin, piccolo recorder and adaptive DSP), the instrumental sounds, which are electronically transformed, are also used as input for controlling these transformations (cf. Di Scipio, 2005a).

Thanks to this circular causality, Di Scipio redefines the usual notion, in live electronics, of “interaction” (cf. Di Scipio, 2003). In the usual notion, interaction operates as an information flow: a sound source is transformed. So, in reality, the system is not very interactive. For Di Scipio, composition itself could be the action of composing interactions. Thus, “a principal aim would be to create a dynamical system exhibiting an adaptive behavior to the surrounding external conditions, and capable to interfere with the external conditions themselves. [...] A kind of self-organization is thus achieved [...]. Here, ‘interaction’ is a structural element for something like a ‘system’ to emerge [...]. System interactions, then would be only indirectly implemented, the by-products of carefully planned-out interdependencies among system components [...]. This is a substantial move from interactive music composing to composing musical interactions, and perhaps more precisely it should be described as a shift from creating wanted sounds via interactive means, towards creating wanted interactions having audible traces” (Di Scipio, 2003: 271).

We could say that, for Di Scipio, the notion of process is decisive: the process is more important than the result—and also than the origin.

But interaction happens also with the acoustic environment: another important element in Di Scipio’s approach is the idea of “ecosystem”. In the set of pieces called Audible Ecosystemics (2002-2005, live electronics solos; Di Scipio, 2005b), which offers musical achievements of composed interactions (cf. figure 1), the ecosystem is a triangular interaction between the musician, the DSP computer and the sonic ambience (cf. Di Scipio, 2003: 272-275). This idea leads to an important role played by noise. To simplify, we would say that, in Di Scipio’s music, noise is not disturbance (like in traditional music) neither sonic material (like in modern music). It is one of the agents of the interaction, as it is produced by the concrete place where happens the interaction: it is part of the system. In Audible Ecosystemics, “the role of noise is crucial [...]. Noise is the medium itself where a sound-generating system is situated, strictly speaking, its ambience. In addition, noise is the energy supply by which a self-organizing system can maintain itself and develop” (Di Scipio, 2003: 271).

Figure 1. Agostino Di Scipio (2003: 272): composed interactions for the Audible Eco-Systemic Interface.

About musical analysis

Emergent sound structures, processes and composed interactions, sub-symbolic strategy, ecosystems: all these elements converge. What is music?, asks Di Scipio. Is it a sonic result? No, as we have to compose the process itself and not the result. Is it a voluntary gesture (from one or more humans,
the composer, the performer or the listener)? Not only, as the environment is part of it. Is it a language (where the mediation of the symbol creates a dichotomy between matter and meaning)? No... “I am interested in composing desirable interactions among available elements or components, such that the music is heard as the empirical epiphenomenon of that network of interactions, not as an abstract discourse written by me and diligently spoken by others” (Di Scipio, 2005a: 385).

For musical analysis, the question is: how should we analyze Agostino Di Scipio’s music? Musical analysis—music theory—is an old practice. Born in the frames of teaching instrumental performance and above all composition, it became progressively an independent discipline, even if it was always criticised either for being useless¹ either for the fact that it is supposed to isolate music from its other (this last criticism is today very widespread because of the influence of cultural approaches, which reject for instance the idea of “structural listening” (cf. Dell’Antonio, 2004)). For those who believe in its utility, and for those who subscribe to the idea that the so-called “autonomy” of music can be a way to speak about its heteronomy (cf. Adorno, 1970) and not a way to get rid of it, the question is: what approach to choose? Indeed, the choice of the approach is crucial as what one searches determines what one finds. And there are a lot of analytical approaches. Indeed, after having explained how a musical composition works (description), the analyst can give very different orientations to his questions. It is possible to group together the analytical approaches into two kinds of categories.

The first searches for the way that music was composed. This research can be related to biographical, psychoanalytical, cultural, aesthetic, etc. aims; then we are not, strictly speaking, in the frames of analysis. Or it can be related to studies about the sketches, the different versions, etc. of the musical work; in this case, the old discipline of analysis was renewed by the so-called “genetic” method. With these studies, the analyst focuses on philological aspects, other—if he combines them with the question of the “rules” of the piece— he tries to find—or even to (re)invent— the generating process of the musical work.

The second category of approach works on the level of music “itself”. It starts from the “result” (of the generating process), i.e. from the musical work “itself”. With this approach, the analyst believes that “the ‘rules’ given by a composer prove nothing about the consistency of his music, in contrast to the case of the scientist, for whom the rules (collectively understood, if not shared) are all that he can show to legitimise his work” (Vaggione, 1997: 270)². So he has to deal with music as a determinate and finished world. In this way of thinking analysis, what we listen is as much important—or even more important—as what “lies under” the perceived structures, or as the compositional intentions. The analyst starts from the hypothesis that music (the musical work to analyse) is an entity, which is fixed, which is there, ready to be analysed as a construction. In the case of electroacoustic music, the result—the “world”, the “entity”, the construction, which is “there”—is “sound”: it is a sound world, a sound entity, a sound construction. In the realm of electronic music, there is a really important analytical tradition using this approach, would it be based on the schaefferian notion of “sound object”, on Denis Smalley’s spectromorphology, on methods inspired by phonology, on the “paradigmatic”, “functional”, “generative” or “implicative” methods³, on methods more or less empirical, etc. Sometimes the focus is on the question of sound’s visualisation, and the analysis consists in visual transcriptions—as it is the case with GRM’s software Acousmographe—, showing also articulations or other meta–sonorous elements.

In our research about Agostino Di Scipio, our aim is not to find the generating process of his music, neither the study of philological details. We are not searching for how the music was composed. So remains the choice of the second type of approach. But what means music itself? And what is a result? We saw that Di Scipio don’t think music as a “result”. More precisely, what is a sound result?
An analytic image

We've previously mentioned that, for Agostino Di Scipio, the process is more important than the result. Therefore this idea seems to be problematic when we want to analyse his music. To get a result—a sound one—by delimiting and analysing it, may be a misinterpretation. With *Audible ecosystemics*, the only result we may have is a subjective and ephemeral listening. What “I” have listened cannot reappear. This assertion is not a pure solipsist idea: we only take the emergent particularity of these musical works. In *Audible ecosystemics*, the ecosystem is not only a triangular interaction between the musician, the DSP computer and the sonic ambience, it includes also a close interaction between the work and the listener. Both are components of the ecosystem: “Listeners are a very special kind of external observer or hearer, because their mere physical presence in the room acts as an element of acoustical absorption. Hence there are rather an internal component of the ecosystemic dynamics. As it is well-known, audience-less rehearsals are far from replicating the real performance context, and even a relatively small audience can deeply modify the room response. In the AESI [Audible Eco-Systemic Interface] project, this is not considered as a problem, nor an element irrelevant to the music: changes in the ambience will reveal peculiar changes in the overall ecosystemic dynamics, and therefore in the audible results themselves” (Di Scipio, 2003: 274).

The listener and the work are in the same space- and time-domain: it is not possible to delimit a special space- and a special time-domain for music (cf. Meric, 2008). This point is crucial for musical analysis as making this kind of demarcation is usually the first step for musical analysis. In other words, the analyst begins by choosing a point of view, and by delimiting what is supposed to be objective from what is supposed to be subjective. Thus the work is supposed to have a specific space and a specific time; it is supposed to be a specific world, an entity with its own structure.

Then, the work becomes nothing but an image. Indeed, the musical analysis of a work can be usually considered as an image analysis. The analyst uses different tools to describe, to dissect, to simplify. He doesn't directly observe the musical work or what he is listening, but the image he rebuilds. What does that mean? When the analyst translates the musical work into an image, he dreams up a static and universal entity. Anton Ehrenzweig’s explanation of the opposition between “syncretistic vision” and “analytical vision” may account for this situation: “The undifferentiated structure of primary-process phantasy corresponds to the primitive still undifferentiated structure of the child’s vision of the world. Piaget has given currency to the term ‘syncretistic’ vision as the distinctive quality of children’s vision and of child art. Syncretism also involves the concept of undifferentiation. Around the eighth year of life a drastic change sets in children’s art, at least in Western Civilization. While the infant experiments boldly with form and colour in representing all sorts of objects, the older child begins to analyse these shapes by matching them against the art of the adult which he finds in magazines, books and pictures. [...] What was happened is that the child’s vision has ceased to be total and syncretistic and has become analytic instead. The child’s more primitive syncretistic vision does not, as the adult’s does, differentiate abstract details. The child does not break down the shape of some concrete object into smaller abstract elements and then match the elements of his drawings one by one. His vision is still global and takes in the entire whole which remains undifferentiated as to its component details” (Ehrenzweig, 1967: 5-6).

The analytical vision must be static. Each element, each detail must have a specific place in time and space, more precisely: in the time and the space of an image. No more movement or transformation can appear. Conversely a syncretistic vision can only be a continuous movement, with no specific limits.

**Prints, track, mark, trace, empreinte**

It's very difficult to have an analytic perception of Agostino Di Scipio’s music. Nothing in his music can be considered as static. In *Audible ecosystemics*, there are no
specific sounds—no instruments, samples, or recordings. For instance, *Audible ecosystemics* 3a—*Background noise study* “starts with ‘nothing’ [we usually do not pay attention to barely audible sound events; unconsciously, we remove them from our auditory focus] and attempts to make ‘something’ with it” [Di Scipio, 2005b: 20]. In *Audible ecosystemics* 3b—*Background noise study, with mouth performer*, “the source is any small sound involuntarily produced in the mouth and throat” [Di Scipio, 2005b: 20]. All these sounds are unpredictable and usually inaudible. They are caught by 2 microphones in the room (only one in *Background noise study* 3b, with mouth performer, which is kept into the mouth or close before the lips), and they are routed—having become numerical signals—in the DSP unit. Inside this DSP unit, there is no linearity or direct run: the input signals are routed through different ways. Some of these ways are going through different audio signal processing blocks and others through control signal blocks. Analysing the DSP network for *Audible ecosystemics* allows us to discover a multitude of loops: when it goes out of a block, a signal is routed through others blocks—which control or process the signal—, which routed again new signals through others blocks, and so forth. Sooner or later, a part of the original signal will return through the first block (cf. *figure 2*).

Every signal—each part of the signal—can be considered in the same time as sonic data and as processing data. In other words, the signal is both the material and the gesture that shapes it. The process exists when a sound emerges from one of the 8 loudspeakers: this sound helps to improve the background noise (the loudspeakers are turned backward, facing the walls and close to them), which is immediately caught by the two microphones. Then, we come back to the beginning, making a loop. In conclusion: there is neither end nor beginning. Each element is both end and beginning of the ecosystem: “Eco-systems are systems whose structure and development cannot exist (let alone be observed or modelled) except in its permanent contact with a medium. There are autonomous (i.e. literally, self-regulating) as their process reflects their own particular

![Figure 2. Part of the DSP schema for Audible ecosystemics 3a/3b (Di Scipio, 2004-2005: 6). On this figure, we can see a loop: [Hp2nd] → [integrator] → [delay] → [InAmp0] → [scale: InAmp0 / freq: (100+(lag100))hz] → [Hp2nd].](image)

Every parts of the ecosystem—inside or outside the DSP—is always a source of energy for the other parts, and is always using the energy that the others have processed. In
this closed structure, the listener can be considered as an element of the structure too, likewise a block in the DSP schema, with an input (the background noise he is listening to and which emerges from the loudspeaker) and an output (the modification he makes to this background, before it is caught by the microphones).

This description of the listener situation seems to be simplistic and caricatural. However, the “input” of the “listener block” is simply the ordinary answer to the question: “what are we listening to?”. It is what is going out of the loudspeakers... The traditional identification of “music” with the loudspeakers sound that we are listening to, seems to be inappropriate. Why? A music analyst who begins working with this aim—with the question: “what are we listening to?”—is looking for a static image, an image, which would have its own structure (its own space and its own time). While doing so, he isolates the listener from the ecosystem and he considers that “sound” is merely a musical material, the only “heard” material. However, we've observed that, in every step of the ecosystem, sound—to be more precise: sonic signal—is both the material and the gesture that shapes it. In Audible ecosystemics, what we're listening isn't a sound. It is its own “prints”, “track”, “mark”, “trace”—empreinte.

To understand the idea of empreinte, we will quote the philosopher and art historian Georges Didi-Huberman: “L'empreinte nous touche et nous échappe d'abord en ce qu'elle forme un malaise dans la représentation : une 'ressemblance symptôme'. Dans chaque empreinte singulière, en effet, le jeu du contact et de l'écart atteint, bouleverse, transforme les rapports attendus de la ressemblance, en sorte que l'optique et le tactile, l'image et son processus, la mémeté et son altération se réintriquent soudainement, au risque de troubler une pensée qui, pour les besoins de sa propre clarté ou distinction, tendait spontanément à désintriquer les choses contradictoires. L'empreinte nous touche aussi, et nous échappe, en ce qu'elle forme un malaise dans l'histoire : un 'symptôme-temps'. Dans chaque empreinte singulière, en effet, le jeu du contact et de l'écart bouleverse notre rapport au devenir et à la mémoire, en sorte que l'acte et le retard, la tuchè et la technè, le maintenant et l'Autrefois se réintriquent également en une formation inédite et troublante pour la pensée” [Didi-Huberman, 2008: 310].

Further in his book La ressemblance par contact, Didi-Huberman explains the importance of the ichnologist's (who studies trace fossils) work for the art theorist. We could say the same as for music, and especially as for understanding the notion of musical structure, particularly in the case of Di Scipio's ecosystemics structures: "[L'ichnologue] est obligé de reconnaître la complexité des formes, il est obligé de savoir que les formes sont des processus, et pas seulement le résultat de processus ; que ces processus, à proprement parler, n'ont pas de fin, que l'image actuellement vue n'est que le 'présent anachronique' d'un jeu ininterrompu de déformations, d'altérations, d'effacements et de 'revenances' de toutes sortes. D'autre part, l'ichnologue n'a nul besoin de questionner ce qu'il regarde comme l'iconographie d'un contenu ou l'expression d'un désir mimétique. La ressemblance offerte dans chaque empreinte est d'un tout autre ordre ; en elle rien ne peut être désintriqué, les formes de la matière par exemple. Car ici, les formes sont des substrats, ou plutôt le processus dialectique des modifications du substrat par un geste quelconque. L'ichnologue, enfin, n'a pas la naïveté de situer ce qu'il voit comme un point unique, intangible de l'histoire. [...]. Il sait donc que les formes sont des temps à l'œuvre, des temps contradictoires intriqués dans la même image : temps de la terre et temps du pied qui, un instant s'y est posé pour toujours". [Didi-Huberman, 2008: 324-325].

**Back to musical analysis: What is moving...**

If we analyse a musical work as a static image with its own structure, we won't take into consideration what Didi-Huberman says about form. When we find a structure in a musical work, we must not forget it is only a fragment of space and time. In Audible ecosystemics, this assertion is even more
obvious: we are listening in the same time the process and the sound. The sound that we are listening to is a single step of this overall process and, consequently, of the overall structure.

The fundamental question of musical analysis—what are we listening to?—reveals its limits, as it’s looking for a static image with separate space and time. As the listener is forming a part of an ecosystem work, he belongs to the same time, the same space than the work, than the sound. We have to set the question in another way: what is moving inside what we are listening to? This question prevents us to search for the inaccessible steps of the ecosystem, and doesn’t stop time and space. When we are searching for what is moving inside what we are listening to, we are not looking for a result, but for a structural process. Then the listener remains inside the ecosystem. The movements or the processes we are listening to are an ephemeral emergence of the all ecosystem. What is emerging here can be considered both as objective and as subjective: it’s not an end of the circular interactions. The movements that we can hear, describe and analyse constitute a little part of other several movements that we can only imagine. For instance, a little click that we hear in Audible ecosystemics cannot be considered as an object among the others or as a detail of a structured image (which would be the all work that we can listen). It is the emergent tip of interweaving, of matching and clashing movements, which are not emerging and which are not audible. Only our imagination can reach this part of the ecosystemic structure. This click has no interest without this imaginary and inaudible history. Every sound that is audible doesn’t build a structure; it has direct relationships. It constitutes moving empreinte of an underlying moving structure. If we start an analysis with the question: “what is moving inside what I am listening to?” instead of: “what am I listening to?”, we are looking for immersing us more easily in the genesis of this little click. Thus we do not concentrate on an object—a delimited part of time and space—but on why and how a particular sound emerges simultaneously in music and in the listener’s imagination.

To go back to musical analysis: we could start an analysis by searching for the genesis of a sound—in other words: a process—that we can listen in Audible ecosystemics. Such a sound may be any sound, which we would grasp at random. It would emerge from a particular process and a particular listening, namely an ecosystem. As was mentioned previously, we have not to consider this sound as a delimited and static structure entity: it appears just once and it never emerges again. We have not to consider it more than a particular case, an example.

What is moving inside this particular sound? With this question, we don’t analyse a “sound”—a sound object—but a moving phenomenon. Thus, one specific sound becomes a complex and multiple phenomenon—a single sound is composed of a lot of movements. When we look at what is moving, we have to define the space that is created by the movements, and in which they emerge. We have to question the relationships between all these movements. With these actions, we question what we perceive and what we imagine. Little by little, and from movement to movement, this sound—as an entity—vanishes, and we build up an imaginary complex structure. In this image, listening is not the result, the aim or the end of musical analysis but the beginning of it. In Agostino Di Scipio’s Audible ecosystemics, structure is an underlying phenomenon; strictly speaking, it is inaudible and invisible. The question: “What is moving inside this particular sound?” allows us to partially reach a structure.

This question allows us to analyse the musical composition too. Its answer—movements, which we are looking for—is the composed process too. We can try to understand why and how this particular sound—this process—emerges. Understanding the composed interactions (cf. Audible ecosystemics’ DSP score) can help us to understand the origin and the aspect of the specific sound we want to analyse.

Finally, a musical analysis of Agostino Di Scipio’s Audible ecosystemics would be the analysis of the relationships between what we have listened, what we can only imagine and the compositional techniques.
References


1 “L’analyse est stérilé par définition”, used to say Varèse, 1983: 37.

2 The case of serialism is typical of this situation, and it is why Boulez itself says that, in analysing serial music, he starts directly from the result: “Est-ce bien nécessaire d’analyser les œuvres à partir de leurs procédures ? Je
pense qu’il est préférable de les analyser en tant que résultats. Je me suis moi-même très vite aperçu en analysant Webern à partir du comptage des notes de la série que cela ne me donnait pas de clé. Ce qui m’intéresse par exemple dans le premier mouvement de la Symphonie opus 21, ce n’est pas de voir que les douze sons ont été respectés, ou qu’il s’agit d’un canon, mais pourquoi on n’entend pas le canon, pourquoi il disparaît sous la sensation harmonique” (Boulez in Albéra, 2003: 10). For an analytical proposal of Webern’s Symphony "beyond" the analyses of the compositional structures, see Solomos, 1998.

3 The four last methods are used in Stéphane Roy, 2003.

4 To translate the French word empreinte, we use several English words.