The Genesis of Acousmatic Music - Espaces Inhabitables by François Bayle

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In today's electroacoustic music scene, all music diffused through speakers is labelled as "acousmatic." In reality, it often fails to truly embody acousmatic conditions, as the mode of diffusing fixed-support music is frequently confused with authentic acousmatic music – a distinct compositional and writing form within electroacoustic music. I will endeavor to delineate these specificities, particularly in relation to the piece under examination.

In recent years, the concept of post-acousmatic has emerged – a phase in the evolution of electroacoustic music that transcends traditional acousmatic boundaries. The post-acousmatic phase implies the conclusion or surpassing of acousmatic conditions, a state that is not definitively consigned to the archives. Therefore, it would be compelling to both define the inception of the acousmatic musical journey and outline its principal characteristics in terms of sonic composition.

The term "acousmatic" traces back to the definition coined by writer Jerôme Peignot (1960) for Pierre Schaeffer's music, referencing the manner in which Pythagoras conducted his teachings: invisible and veiled behind a curtain.

As I mentioned earlier, there is terminological confusion regarding what can truly be defined, in terms of sound writing, as acousmatic; it is certainly not sufficient for the music to be fixed on a medium and exclusively transmitted through speakers.

The issue is not only about listening without seeing, but about producing a different sonic content that requires a different listening attitude and is constructed to be perceived autonomously (Bayle 1999, p. 150)

A piece like *Funktion Orange* (1966) by Gottfried Michael Koenig, for example, is not acousmatic in terms of sound writing. Its connection to past electroacoustic experiences and compositional strategy is far from what can be defined as acousmatic, even though its diffusion can only be achieved in an acousmatic performance context – through a system of speakers, without the sound sources being visible.

Koenig's piece employs a specific series of transformations starting from a signal produced by a variable function generator and then delegates the formal construction of the piece, sequencing and overlapping of generated events, to random operations using a computer program. It is certainly not a mode of acousmatic sound writing.

So, starting from a contrasting example, what are the characteristics of acousmatic music? Furthermore, is it possible to identify the emergence of these characteristics in certain works that may indicate when the genesis of this electroacoustic "genre" began?

Therefore, we will attempt to define some main characteristics of music defined by this terminology, in addition to examining a piece that, in certain aspects, breaks with the tradition of musique concrète, employing modes that anticipate the onset of the acousmatic era.

Acousmatic writing

To begin a brief examination of the characteristics of acousmatic writing, let us use this statement by François Bayle:

> Music constructed in the form of i-sounds is truly and fully acousmatic. In other words, music that establishes in its object as well as in its project, a mode of organization of the morphological and spatial qualities of the sound material that owes its existence and pregnancy solely to the properties of the image. (Bayle 1993, p.179)

From this statement, it is evident that the organization of morphological and spatial qualities of the material (Smalley 2007) serves to produce sound images whose properties form the coherence and substance of the musical discourse. In a further definition, Bayle states:

> Music that can only be conceived in the form of sound-images or i-sounds, and can only be perceived through their projection. (Bayle 1993, p.179)

The term i-sound (i-son) for Bayle means a sound image, the basic element of acousmatic sound discourse, which consists of other hierarchically superior levels. The higher levels somehow refer to Peirce's theory of signs (Hoopes 1991) and involve "three levels of intentionality" (Bayle 1993, p. 97), including that of the i-sounds. The levels of intentionality are understood both poietically, compositionally, and esthetically, perceptively, borrowing the terminology defined by Molino (1975). Contextualized in this way, the three levels defined by Bayle are:

- i-sound (i-son): isomorphic image (iconic, referential)
- d-sound (d-son): selection of simplified profiles (diagrammatic, indexical)
- m-sound (m-son): metaphor/metaform connected to universality or generality (sign).

Beyond the functions of each level, it can be noted how the three levels range from the most "concrete," the spectromorphology of the object (Smalley 1997), to the more abstract, the images associated with the relationships that these spectromorphologies and the sound textures they construct (d-sounds) can stimulate. Two additional concepts that emphasize the specificity of acousmatic writing concern the notions of form and archetype. In a lecture at the Conservatory of Musica G.B. Martini in Bologna,
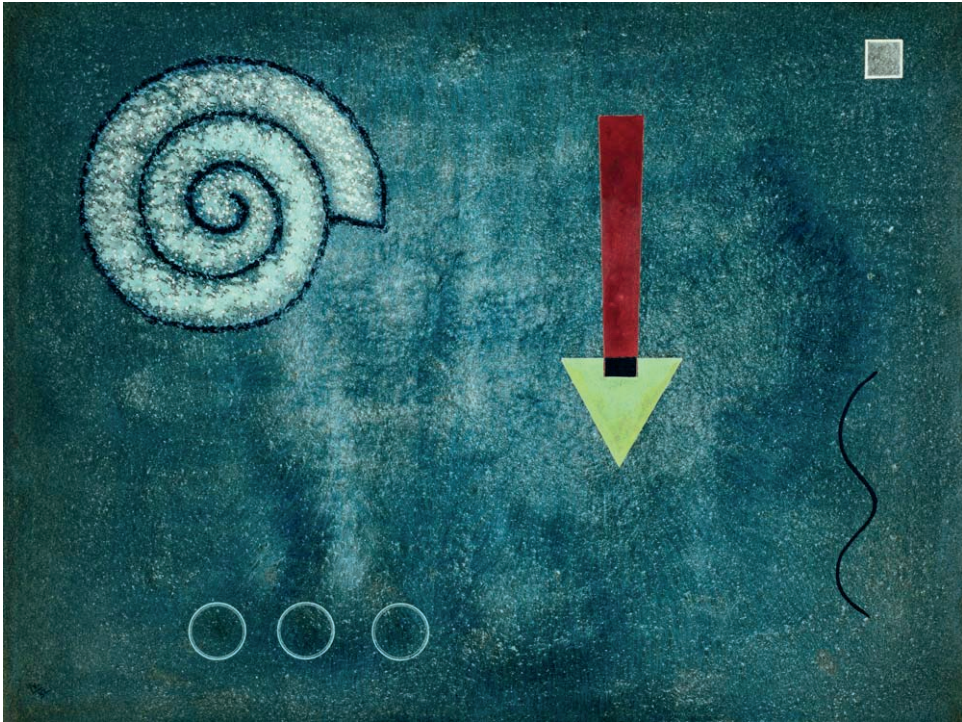
Figure 1. Grüne Spitze (1932).

Bayle (2011) spoke about form as a central element in acousmatic writing. Form is understood not in the sense of the overall structure of a composition but in the spetro-morphological qualities of individual sound objects or complex textures constructed by them. For this definition, he refers to Focillon's definition in his book "Vie des formes," stating that in contemporary art and specifically in music, the domain of forms is one of the foundations of their syntactic construction. A related concept is that of "nothing" (rien), indicating a spatial realm in which forms dialogue through their individual characteristics and relationships. Bayle (2011) provided an interesting example based on a painting by Vasilij Kandinskij, represented in Figure 1.

In this painting, as Bayle asserts, at least four complex forms can be identified: a spiral, a linear form, a directional form, and a dynamic form, whose characteristics are related within a space, the pictorial plane. Forms that have inherent significance and acquire further structural and expressive meaning through their morphology, position, and spatial trajectory in relation to each other. Through this example, one can connect to the notion of archetype, which relates the experiences of human life to the perception of spectromorphologically complex musical structures. Archetypes can be further divided into three types: static, dynamic, and positional. Staticity is correlated with the principle of horizon, landscape, and gravitation, all terms that can be defined through the forms and behaviours of the spectromorphologies composing a piece. Dynamism, on the other hand, concerns all articulations that move or move away from a goal,

anticipate or postpone resolutions, or change characteristics. In this case as well, all these definitions can be correlated to the behaviours of spectromorphologies: timbral mutations, directionality of sound structures, anticipation of certain types of events, resolution due to the stabilization of certain sound parameters, or a deviation due to their sudden change, reaching towards a well-defined structural end (the closure of a section or the piece itself). Position is linked to movement or spatial localization. It involves defining an external or internal space, the distance and proximity of sound sources, the design of the trajectories of spectromorphologies within a well-defined space: stereophonic, hexaphonic, octophonic, or otherwise. The three levels between the concrete and the abstract, the concept of form as an intense and characterizing element with its spectromorphological aspects, and the archetypes form the foundations of acousmatic musical language. They constitute those intentionalities that contribute to musical construction from a poietic perspective and stimulate the activation and elaboration of sensory and metaphorical structures regarding perception. It can be affirmed that acousmatic music possesses properties that tend to correlate, at the level of sound writing, spectromorphological and structural qualities at different levels of meaning, in addition to stimulating mental representations with different degrees of abstraction. This means that acousmatic sound writing aims to create structures formed by complex spectromorphologies that can refer to elements of evidently mimetic character or to a much more abstract level, where the evoked images have a lesser definition in terms of their relation to real concepts, actions, or meanings. The structures in question are based on the organizations of parameters related to space, time, spectral types, morphologies, and different types of sound identity. The broad definition of the properties of acousmatic writing leads us to consider two aspects. The first concerns its connection to previous electroacoustic musical experiences. Consequently, the close connection that acousmatic music has with musique concrète has already been implicitly stated; both for composers who have participated in both musical experiences and for the common elements between these two types of electroacoustic musical writing. The second concerns the historical moment in which the experience of musique concrète began to change its nature with the introduction of elements specific to acousmatic music. Therefore, it is not difficult to identify in the work of one of the composers who has experienced both musical experiences; a sort of genesis of acousmatic music, in which we witness the introduction of certain types of this sound writing into a historically related musique concréte composition. I think it can be affirmed that one of these musical compositions is *Espaces inhabitables* (1967) by François Bayle.

From concrete to acousmatic – Espaces Inhabitables

In the 1968 discographic edition of *Espaces Inhabitales*, music critic David Risin makes this intriguing statement:

> The normal reaction (of musique concrète) has been to want to forget, eliminate, the slightest anecdotal trace in the sounds used. Today, it can be observed that composers

like Pierre Henry and François Bayle are once again assimilating, with a significant deviation, the poetic and extramusical value of electroacoustic sounds. (Risin 1968)

Already from this assertion, entirely adherent to the content and sound writing of the composition, one can infer an initial break, or deviation to be more precise, from some postulates of musique concrète. Postulates that were necessary at the beginning of this experience to avoid being accused of creating a sort of anedoctal representation of a sonic context. Assumptions that had to be overcome, considering the potentialities arising from the access to the entirety of the sonic world.

Risin's consideration provides an implicit indication of the types of sonic materials used in the piece; sound events recorded in different environments that bring along their original context, which, in this case, is not reduced in the sense of reduced listening formulated by Schaeffer (1966 pp. 270-272), where the cause and source of the sound are ignored, privileging exclusively the spectromorphological traits of the sound.

Espaces Inhabitables consists of five movements, maintaining the typical suite structure of musique concrète. However, the titles of the movements already indicate a certain narrative interest of the composer:

1. Jardins de rien
2. Géophonie
3. Hommage à Robur
4. Le bleu du ciel
5. Amertumes

In Risin's reflection on this piece, Bayle is related to Pierre Henry for the intention to include extramusical elements in their compositions. In this piece, there is another element that connects Bayle to Henry, that of melody. Henry has always expressed his interest in musical construction based on overlapping lines with varying degrees of independence. In this composition, Bayle explicitly speaks of melodies, understood as sound lines, each with its specificity for each movement: 1) Interrupted melodies; 2) melodies transposed into a sound accumulation; 3) ostinato melodies; 4) melodies developed in a continuous line; 5) fused melodies and traces of melodies.

The term "melody" should be understood as a sound line or profile and not in the traditional sense. Nevertheless, it is interesting to note how the line, understood as an event moving through time within a frequency range, is one of the basic elements of the composition and one of the unifying features of the different movements. The five movements, while having their structural coherence, still have connections; not by chance, the last one can be seen as a kind of recapitulation of the other four. Bayle's words highlight how this is a compositional decision belonging to the acousmatic musical language:

There comes a time when you have to resist the modernist temptation to move forward by always changing, because I think it's very important to keep the memory alive. The

time of acousmatic sounds, which is therefore a time of memory, associates you with very varied representations. Thus, you have to take charge of the contexts of memory and you should have some flashbacks. (Chion, Vande Gorne 1994)

The musical construction based on the recapitulation of the fifth movement should not be seen as a simple re-presentation of some materials but as a decision based on the fact that acousmatic sounds stimulate various types of representations recalled and contextualized in a different structural framework. It is not about "recalling" only the sound morphologies (i-son) but also the abstract images they evoke (m-son). A decidedly acousmatic approach.

Jardins de rien

The first movement is based on two non-sonic models referring to solid and liquid matter. Reference is made to archetypal forms, typical of the acousmatic language, as mentioned earlier. The relationship between these models and sound material is established according to the following criteria:
1. The solid model is defined through melodic gestures.
2. The liquid model is defined through granulated sound textures.

A very important gesture is a prepared piano sound, a kind of "signal" that also returns in the concluding movement. This type of sound, modified in various ways, becomes a discursive element contrasting with the other sound textures not only because it represents the "solid" sound model but also because of its instrumental identity.

The liquid sound identities, on the other hand, have two different levels of surrogacy: remote textures and textures composed of sea sounds. The movement is based on a progressive revelation of the sound source (sea sounds) from which, through transformation, granulated sound textures derive. Therefore, the sound discourse is based on both the dialectic between "solid" sounds, the prepared piano, and its transformations, and the different orders of surrogacy of sea sounds.

The sound of the prepared piano and its transformations mark the different sound sequences of which the piece is composed. As can be seen from the following figure, the presence of this type of events is more concentrated towards the end, a way to resume the initial gestures as a "memory" element, contextualizing them in the conclusion.

Géophonie

This movement exclusively employs sound types based on noise. In this case, the dialectic is between textures based on a saturated spectral consistency and a granulated morphology. Granulated sound material is found in the first and last sections of the piece, while the saturated one includes most of the piece, the central section, where it develops through sound structures based on the percussion-resonance model; rapid
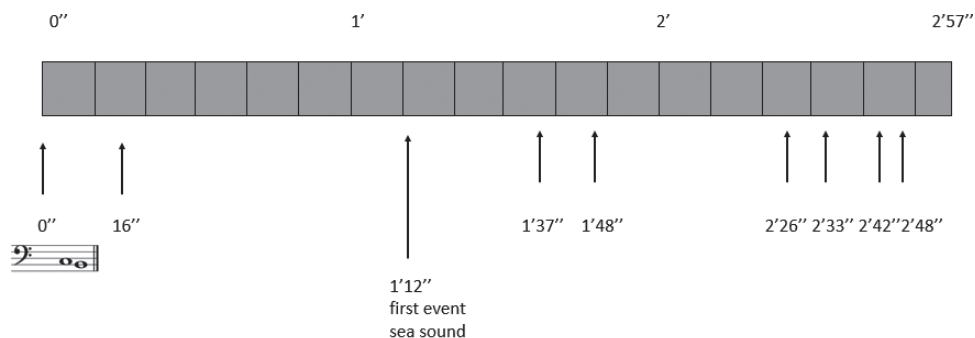
Figure 2. Distribution of prepared piano sound and its transformation in Jardin de rien structure.
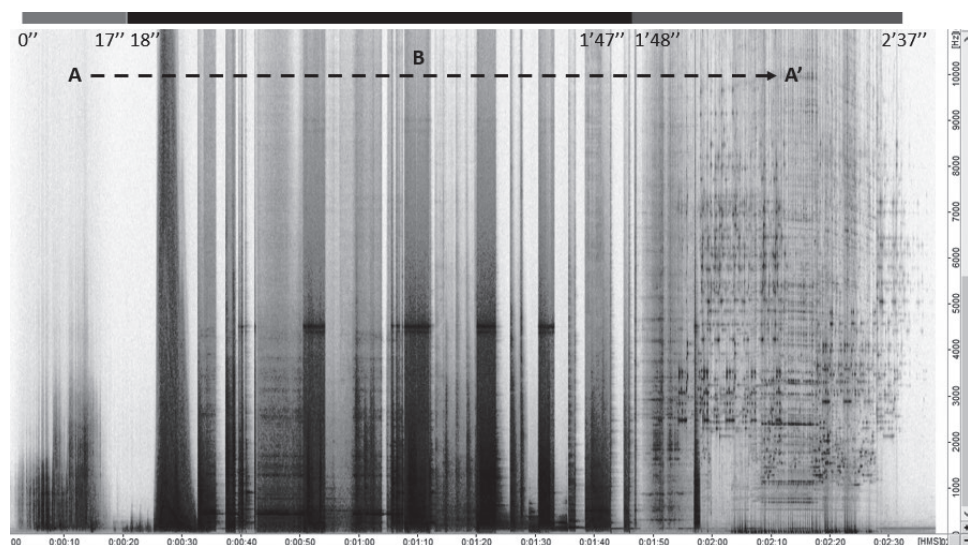

Figure 3. The segmentation and the spectral space of Géophonie.

attacks with a decreasing sound tail of varying length. We can then speak of an A B A' form, where the A sections are distinguished by a different use of spectral space, more compact the first, subdivide in bands and acute the second. Section B tends to saturate large parts of the spectral space and could be seen as a kind of parenthesis between the first and third sections (A and A'). In the following figure, both the segmentation and the occupation of the spectral space can be seen, more saturated in the central section.

Hommage à Robur

The sound material of this movement is similar, in its original source, to that of the previous one; sounds produced in a shipyard. What changes are the modes of
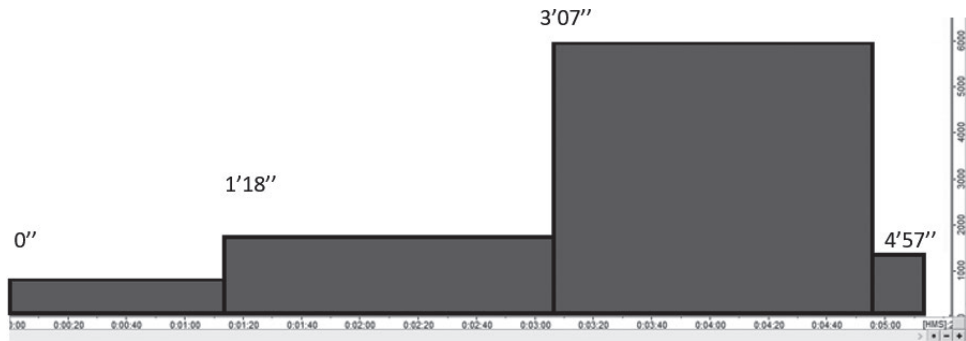
Figure 4. The spectral occupancy in the overall form of Hommage à Robur.

transformation and organization of the form. If Géophonie is structured with an A B A' form, Hommage à Robur is based on a continuum in which, over the course of the piece, the sound texture occupies an increasingly wider spectral space, with a repeated pitch (A flat) as if it were a signal. Not by chance, the closure of the piece is indicated by a more marked glissando movement, in order to dissolve the stabilizing function embodied by this pitch.

There are two other features to note. The sound texture has an internal glissando movement, and the expansion of the spectral space is not gradual but in steps. This form may be employed to avoid the gradual nature of the continuum and thus create a more articulated form. In the following figure, the stepped evolution of the spectral space occupation over time can be seen.

Le bleu du ciel

Similarly to the previous one, this movement presents sound material derived from a specific sound type and its transformations. The difference lies not only in the type of sound employed but also in how the piece is constructed. The musical construction here is fragmented, the opposite of the continuity of the previous one. The form is articulated in a kind of theme with variations, in the sense that the three sections function as follows: the first exposes the type of material, the prepared piano sound in its original gesture, while the two subsequent ones are articulated by sound events derived from transformations with different types of surrogacy orders. Another aspect derived from this mode of form organization concerns the progressive departure from the initial source. Unlike the expansion of the spectral space occupation in the previous movement, in this case, there is a progressive distancing from the initial source of sound material. In the following figure, the formal subdivision of the fourth movement of *Espaces Inhabitables* is represented. The arrow indicates the progressive introduction of sound events derived from increasingly remote transformations of the original sound material, the initial gesture of the first movement.

0"   43" 44"   1'37" 1'38"   2'26"

A	A'	A"

Figure 5. The structure of Le bleu du ciel.

Amertumes

As mentioned earlier, Amertumes is the recapitulative and concluding movement of the composition. In this last piece, the "traces of melodies," as defined by Bayle, are actually traces of identities, events, and sound textures presented in the previous movements. The connection with the previous movements is important because the sound images presented in the first four pieces produce further ones, through the acquisition of a different context and function; for this reason, Bayle speaks of the time of acousmatic sounds and their varied representations.

The recapitulative nature of this movement leads it to have a fragmented structure. The four sections it is composed of are progressively shorter, always containing material from the first movement, combined with one of the others, except in the last one. The fact that the sound material of the first movement is prevalent and the closure of the piece occurs with the sound of the prepared piano suggests that this movement can be understood as a kind of extension of the initial movement. The following figure presents the structure of the fifth movement. The numbers below indicate the movement to which the materials in the respective section refer.

Although each movement of *Espaces Inhabitables* has its specific sound and formal characteristics, except for the concluding one, the composition in its overall form has ties both at the level of sound events (the prepared piano gesture) and at the discursive level.

The concepts of solid, liquid, saturated, granulated are implemented through sound textures that have peculiar characteristics in each movement, but connected through these and other types of sonic metaphors. If acousmatic music is based on "forms and forces," then this composition certainly introduces models pertaining to this type of sound writing.

0"   2'14"   3'32"   3'59"

A	B	C	A'

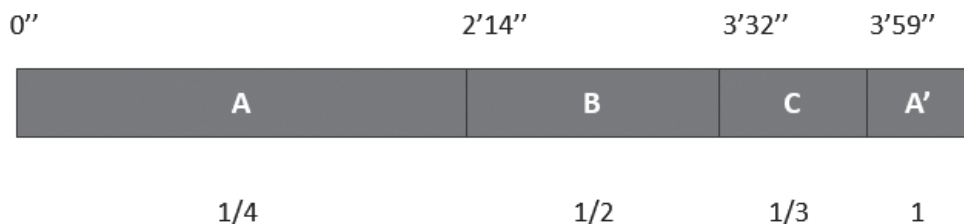1/4   1/2   1/3   1

Figure 6. The form of Amertumes.

Conclusion

In an era predominantly characterized by post-acousmatic discussions, it proves intriguing to rewind the clock and scrutinize a pivotal moment – the transition from the era of musique concrète to that of acousmatic music. In a recent article (Adkins et al., 2016), though acknowledging the distinctive features of acousmatic language compared to its post-acousmatic counterpart, certain assertions are subject to debate. Claims such as acousmatic music replacing the harmonic musical teleology of the European musical tradition or its inclination towards prioritizing gesture over texture may be contested. What goes unnoticed, however, is that within the realm of acousmatic music, access to the entirety of the sonic world represents not merely an expansion of the sonic palette. Indeed, the broadening of the available sonic world pertains to the potential for these sounds to influence the modes of composition articulation, along with the ability to employ sonic and non-sonic patterns as archetypes shaping the musical construction of a piece or a segment thereof. It is also accurate to assert that acousmatic music relies on sonic forms and forces whose individualities inhabit a spatial realm through which they relate to one another, contributing to the structural characteristics of a sonic and musical construction.

The first movement of *Espaces Inhabitables* is titled "Jardin de Rien." Its title encapsulates two elements inherent in acousmatic music in general and in Bayle's work in particular. In a previously mentioned lecture, Bayle (2011) spoke of "nothing" (rien) as the constitutive element of his music, a metaphor for space. One of the characteristics of acousmatic music is the "construction in nothing," i.e., the musical construction that "fills" a specific spatial domain. The other metaphor is that of the garden. Bayle (2011) emphasizes that the garden is not nature but an artificial construction where plants and trees of various types, sizes, with leaves and flowers of different colours and shapes coexist. They have different growth times, foliage, and flowering. The different aspects of these elements form the structure of the garden, resulting in relationships between different types of plants, the timing of their growth, and transformation. Sounds in an acousmatic composition have their own metabolism (another Bayle metaphor) that articulates them in the temporal structure and produces relationships between their morphologies through the interaction generated by the "random" overlap of their forms and, at times, constrained within a predetermined form. Another acousmatic composer, Bernard Parmegiani, stated that there are essentially two modes of sonic writing: allowing sounds to live their own lives or constraining them within a previously fixed structure (Mion, Nattiez, Thomas 1982). Even a composer like Smalley asserts that sounds often indicate their position and trajectory within the composition (Smalley 1996). All these characteristics seem to be of fundamental importance for the sonic writing of acousmatic music.

Characteristics that can be found, if not fully, at least in an initial form in *Espaces Inhabitables*, whose sonic forms engage in dialogues within textures and spaces of varying complexity, referring to metaphorical representations: the complex network of relationships among i-sounds, d-sounds, and m-sounds in acousmatic music.

Furthermore, the metaphorical aspect is crucial to emphasize the distance from the experience of musique concrète. Bayle, speaking of the final movement, affirms:

> And then Amertumes, I had the idea that it would be salty, evocative of the sea. (Chion, Vande Gorne, 1994)

The metaphor of the sea recurs throughout the composition, as do those of solid and liquid materials, continuous and granulated sound materials, or references to instrumental gestures.

Furthermore, Bayle himself states that in this composition he did not seek to evoke impressions or replicate the real world through sound traces, but rather to evoke the laws upon which nature rests (Gayou 2003, p.92): a concept that is linked to that of archetypes. Bayle reinforces this kind of thinking, invoking a statement by Picasso:

> I do not copy nature, I work like her. (Gayou 2003, p.92)

None of this could fit within the aesthetics of musique concrète, where the reduction of listening becomes a central element to focus exclusively on the typological and morphological aspects of sounds, rather than their connection to real and hypothetical sources or the extramusical contexts to which they belong. *Espaces Inhabitables* breaks away from this approach to sonic composition, embarking on the adventure of acousmatic music.

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