

## Sound models, metaphor and mimesis in the composition of electroacoustic music

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### *Abstract*

*Different approaches of perceptual sound models are presented as compositional models in electroacoustic music, and are viewed as metaphorical manipulations. The concepts of metaphor and metonymy, as presented by Bernard Mâche, Jakobson and Barthes, are compared; it is then demonstrated that with regard to electroacoustic music these models have a mostly metaphorical status. A three-part classification follows: firstly, the model as an external sound object to be translated into other sound material and its variations; second, the model as an original object which will generate many versions and variations; third, the model, as a primary object, taken as a sample by the composer to collect other sound objects which have some connection with it. Three levels of the model's appropriation are also distinguished: the imitative level, the model taken as a formal structure and the model as a conception generator. This classification is compared with Calvocoressi's conceptions, showing that these levels are found in work with perceptual models in general.*

François Bernard Mâche is the author who has devoted himself most to the subject of sound models in contemporary music. In the last part of his book *Musique, Mythe, Nature* he compares two different approaches to models. Firstly, those models corresponding to non-perceptual rules, the most well known example of which is the work of Xenakis. Second, models conceived as sound patterns, for example, as in the work of Messiaen (Mâche 1983: 116-118).

Mâche considers also the element of sound recording in electroacoustic composition. Here he introduces other classifications, making the distinction between, on the one side, what he calls 'phonography' (radiophonic art, for example), and on the other side what he calls music. In phonography the indexical references of the "sound signs" (a Peircean conception of index) are in evidence (Mâche calls this 'sound causality'); whereas in music, these references are secondary, and it is "sound shapes relations", or "sign qualities", which are in evidence (Mâche 1983:133).

The author also makes a further distinction in the field of music, related to the use of an instance of a sound as a model: between metaphor and metonymy. In the latter, particular aspects of signs in a similar category are in evidence ("the first difference between fraternal beings"); while metaphor "brings together to a new level objects of different categories" ("a first similarity between different beings") (Mâche 1983:134).

On the other hand, the examples used by Mâche to illustrate the use of models on metaphoric and metonymic levels are not at equivalent levels. The example of metaphor ("a

xylophone melody sounding like a water drop falling down from different heights on a basin full of water”) exists on a language articulation axis: the xylophone sounds are related to the sounds of water-drops by virtue of the similarity of the sounds. The given example of metonymy (“the storm as a symbol of the general expression: sovereign violence”) is a semantic articulation that treats the model as a representation.

It is more interesting for us to consider both metaphoric and metonymic poles within the axis of linguistic articulation, as proposed by Jakobson (1963) and Barthes (1985): the system and the syntagm. System, which is related to selection, replacement and similarity, is linked to the metaphorical process. Syntagm, on the other hand, is related to combination, contexture and contiguity, and is linked to the metonymic process (Jakobson 1963:45-49).

One example of a metonymic articulation is, in electroacoustic music, the combination of two sound signs, for example water and birdcall sounds, as a soundscape synecdoche. This resource is often used by composers who work with audio recordings and who consider the sound sign indexicality.

In contrast to literature and cinema, electroacoustic music does not provide a wide range of examples of metonymy, except in the use of soundscapes or narrative music. In the acousmatic genre of electroacoustic music this kind of construction is not often found, because, generally speaking, acousmatic music works in a subtle way with the indexicality of sound signs, involving more complex relations, but which depends much of the time, however, on metaphorical processes.

Jakobson cites Cubism and, for example, the use of cutting in the cinema of D.W. Griffiths, as examples of metonymic constructions (Jakobson 1963: 63). In electroacoustic music, the cut, the proximity, the microscopic manipulation of the recorded sound, is usually a process of generating a new sound which may or may not retain an audible similarity with its model, even when basic elements or traces of the original sound material are kept. This kind of work differentiates the process from a metonymic one. Thus, musical composition with recorded sound models involves mostly metaphorical constructions, as in poetry.

We distinguish three varieties in the procedures with sound models in musical works, which we recognise as poetic operations by similarity, in metaphorical constructions: firstly, the model as an external sound object or pattern to be translated into another sound object and its variations. Secondly, the model as an original object, which may generate many versions and variations. Thirdly, the model, as a primary object, taken by the composer as a model against which to collect other sound objects that have connections with it. This classification is now explained in detail.

### **1.a The model as an external sound object to be translated into another sound object and its variations**

This is the normal procedure of the tradition of instrumental music. The model does not necessarily have a real existence. The composer can generate it only as a mental image.

A well-known example in electroacoustic music is the use of birdcalls as a model, translated by electronic media or other manipulations. In Francis Dhomont’s *Drôles d’oiseaux* (1984), for example, the composer follows the model of singing birds in synthesized sound constructions.

Another example we find in “*Incidences/rèssonances*” by Bernard Parmegiani (*De Natura sonorum*, 1975). Here the composer takes the model of a natural sound envelope (percussion/resonance) from Pierre Schaeffer’s typology and makes the artificial sounds with a combination of cymbal percussion attack and electronically generated sounds as resonance.

Another example is Stockhausen’s *Unsichtbarenchöre* (1979). In this piece, between the parts where the choir sings Hebraic texts, the choir is required to produce noise-effects using the mouth with the general effect of making a kind of rain-like sound. There is no doubt that this was a natural sound model - that of falling water drops falling.

**1.b** A second variation of this procedure, that deserves mention, occurs when the original model is part of the traditional code or music and will be reconstructed (sometimes as a parody) with a totally distinct sound material.

One of the most brilliant examples of this kind of procedure is Pierre Henry *La Dixième Symphonie* (1979). Here the composer makes a homage to Beethoven, throwing together an amusing and impressive collage of very small fragments of recording of music by the German composer, creating a new ‘Beethoven-Henry’ musical work.

In Michele Bokanowski’s *Cirque* (1994) we find another example. In the Scherzo, she builds, over a musical gesture in the piano part, a rhythmical texture comprising recordings of the audience at a circus laughing. The piano part is cut off and in the third part of the music a new rhythmical texture is composed entirely of material derived from the recorder laughter. Each laugh has the role of a new musical rhythmic pattern.

**1.c** A third and last variation of this procedure occurs when the model is itself a complex sound structure, and may thus itself be considered as a “soundscape”, seen as a sum of the sounds of a natural or urban environment etc. The composition of soundscapes or sound-environments are recognized as a specific genre in electroacoustic music (Guerin:1993, 9-31). They can also constitute part of a composition in another genre.

Although a naïve reception of this kind of music might deduce that the results of such compositions are often the result of chance, merely the simple record of a sound environment, this is not the case. Michel Chion, for example, in his book *Le Poème Symphonique*, remarks that: “a recording of an event may tell its story badly or in a confused way, be illegible or less than expressive. The noises of elementary natural phenomena like the sea or the wind, reduced to themselves and heard via loudspeaker, don’t necessarily transmit what we believed they expressed when we were present in the moment of the recording, experiencing there all the space in which they reverberated” (Chion 1993: 332-333).

Luc Ferrari can be seen as the initiator of this poetic style, with his *Heterozygote* (1963). He has made the following personal statement about this composition:

*One day I went away... with a borrowed tape recorder. I did not travel very far, but nevertheless travelled a lot and I recorded things of life. So was Heterozygote born, the first music of a genre I called “anecdotal music”<sup>•1</sup>. This means, I intended to produce a language that situates itself between the musical and the dramatic field. The employment of elements of reality allow me to tell a history, or allow the listener to create images, since the montages propose ambiguities... (Chion, Reibel 1976: 66)*

*Heterozygote* is the result of a strong montage of recorded materials or long and a little edited sound objects - signs in which extra-textual references are directly exposed. Nowadays this compositional procedure is common, but in 1963, when the work was composed, (under the influence of Pierre Schaeffer) it signified a break in musical frontiers, and challenged the taboo on the use of directly recorded sound and its referential implications in composition.

We can cite a number of Luc Ferrari's works as having the recorded environmental sound as both model and material: *Music promenade* (1969), *Presque rien n.1* (1971), *Lever du jour au bord de la mer* (1971) and *Presque rien avec des filles* (1989). In France, we can find also in the music of Michel Redolfi some works that are in a similar poetic style: *Desert tracks* (1988), *Mata pau* (1992) and *Carnets amazoniens* (1993). This style or genre increases with the new generation of composers in France - consider *Lieu clos* (1995) by Dimitri Coppe, to take only one example.

In the United States and Canada this genre is highly developed. We begin the list of composers who can be cited with the name of Murray Schafer, composer, educator and the writer of number of proposals on acoustic aesthetics. The work of other composers such as Annea Lockwood, Hildegard Westerkamp, Bill Fontana, Dan Lander, Carl Stone, Maggi Payne also generally belong to this genre of electroacoustic environmental music.

The work of the English composer Barry Truax is also relevant in this field. As is found in many of his articles, he gave a special name to his music: "Soundscape composition". In his music, the recognition of the original sounding object and the references of the recorded sound are taken as an integrated part of the composition (Truax 1996: 14).

We should not confuse this kind of environmental music with another parallel genre in electroacoustic music - that is, narrative compositions which also use environmental sounds, as is often found in French music. In the first case, the expressions "landscape" or "soundscape" help us to define a kind of musical repertoire that, also when an imaginary environment is taken as a model, has no relation to the idea of "telling a story" or creating a dramatic narrative (although this distinction is not clear in many musical works).

Another kind of variation is the translation of an environmental sound model (as a source of conscious or non-conscious inspiration) into another sound material, which has nothing in common with the original environmental sound.

As an example of this we may cite Horacio Vaggione's *Nodal* (1997). This work was the object of research about the composition process and the reception of the musical work done by the GRM researchers at their Seminary cycle in 1997. Speaking about his creative process in this piece, Vaggione does not mention any link to an environmental model. Instead, he comments on the meticulous process of working with sound objects to create sound textures and polyphonies (Delalande 1997). But the research about the reception of the work, made by Denis Dufour at its world première in Paris, indicates a very different impression for the public. The statements of composers and musicologists who heard the work agree that listening to the piece suggested an "organic" structure, environmental open-air spaces, a storm, wind and waves, and so on (Dufour 1997).

François Bayle, in a very abstract and subtle way, also "paints" virtual soundscapes in some works, sometimes using environmental recorded sounds like in *Grandeur Nature* (1980), in which birdcalls are composed with electronic sounds.

## **2. The model as an original object which will generate many versions and variations**

This is the most generalized sound processing model with audio recordings in electroacoustic music. We can distinguish the procedure of sound material production (when the model is like a raw material and the sound objects generated from it don't retain any audible similarity) from the kind of sound object generation whose original sound trace is kept with the conscious aim of its be recognised. In our commentaries the latter procedure will be considered.

The classical example of this is in Pierre Schaeffer and Henry *Bidule en ut* (1950). In this work a recorded musical theme for prepared piano is presented and then transposed to different velocities. The model is always recognizable and the piece appears like one in the form of theme and variations.

Another more recent example is *Passy pazi mou woudé* (1982) by Xavier Garcia. In this piece we find the same procedure as in *Bidule en ut* but in a much more sophisticated construction. The musical form is not like a theme and variation, but a recorded voice sample is edited and transformed, keeping its audio traces recognizable during the entire piece.

### **3. The model, as a primary object, taken as a sample by the composer to collect other sound objects that have a connection with it.**

In this procedure the composer can take the model for its morphological resemblance aspects, or its tone color, etc.

In *Baton de pluie* (1995) by François Bayle, for example, the composer (probably fascinated by the discovery of the Brazilian instrument *pau-de-chuva*) firstly presents his original model, the sound of this instrument with its structure, its form. Later in the piece he presents other sound constructions with the same granulation but with a very different sound material, here, sounds of the flute accumulated together.

Bernard Parmegiani, on his side, considers himself literally as a sound materials collector (Thomaz, Mion, Nattiez 1982: 109). In his work *De Natura Sonorum* (1974/75) many parts could be shown as examples of this third procedure of composition with models, namely, metaphorical construction. In "*Géologie sonore*", he presents one by one, many but similar continuous textures of recorded orchestral sounds. In "*Dynamique de la résonance*", we hear a real inventory of varied percussive sound attacks of the same instrument. In "*Matières induites*" he builds a very long and gradual metamorphosis of different sound accumulations, each having a specific degree of similarity with the former one.

In more subtle levels or with small sound objects, this 'sampling by similarity' procedure is very common in electroacoustic music. For example, Marc Favre's *Clepsidre* (1981) (*Illusion acoustique*) presents the sound of a door creaking decelerated up to the point where we hear its granulation. After this he reproduces this grain with further sound materials, like guttural sounds and others.

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After the classification of three varieties in the procedures with sound models in electroacoustic composition, which we recognize as poetic operations by similarity, in metaphorical constructions, we can now identify three other levels of model appropriation. The first one is the imitative level in which the objective is the partial or complete reconstruction of the model. In the second, the composer extracts the organizational laws of

the model and uses it as a formal structure. In the third, the model provides an idea to the composer, a mental image and has no direct association, sounding or morphological resemblance with the musical result. These three levels are connected to further classification discussed by Michel Chion in his book *Le poème symphonique* (Chion 1993: 36-40). Chion quotes a text by Michel Calvocoressi (*Encyclopédia Lavignac*) that distinguish three levels of programme music. These levels are the imitative, the descriptive and the representative:

*Imitative music is... in the strict sense, that which “imitates” the sound phenomenon taken as model [...] Descriptive music is that which ‘transposes’ to its own domain sensations and phenomena that are not exclusively sonorous [...] Representative music, in Calvocoressi’s typology, is that which is neither the imitation of sound phenomenon, nor the transposition appealing to sensory equivalence. (Chion 1993: 37-39)*

Calvocoressi’s distinctions are different from those discussed above because they were to be applied to instrumental programme music. What he classifies as imitative is equivalent to the second level of the model appropriation in our classification (the morphological one), since the sound material of the imitation in programme music (orchestral instruments) was completely different from the one of the model given above (the sounds of a natural environment, for example). In the same way, between our first and second level, is the composer’s intention, a recreation of a sounding texture which is aurally related to the model, or being interested in a model structure or organization in which the result must not have aural relations with the model.

What is really interesting in the Calvocoressi theory is that he points to something beyond the subject of our analysis, the sound models. What he calls descriptive music is related, as we can see, to an inter-semiotic translation, or better expressed, an inter-modal translation, for in this case the sounds describe impressions of another modal sense: the movement of sea-waves (visual model) translated into sound in the music by Debussy, for example.

The model appropriation levels are not exclusive in the work of sound models, and they can be applied to work with perceptive models in general. Calvocoressi’s differentiation between imitative and descriptive music is accurate, for the imitative translation can be applied only into the same modal sense territory, and an inter-modal translation cannot reconstruct the specificity of a model of another modal sense. These questions, very old and also essential, should be the object of further studies in the future.

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<sup>1</sup> For French composers, the expression "anecdote" has a particular meaning; referring to the indexicality of the sign, with regard especially to environmental sound.