AUDIOVISUAL COMPOSITION: THE CASE OF "ATLAS OF UNCERTAINTY"

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ABSTRACT

This paper regards the interaction of electroacoustic music with visual elements, outside realtime hypoteses. In particular, this writing tries to suggest how analysis techniques for acousmatic music can help - without the presumption of being general or strictly objective - the creative process for achieving any audivisual work.

In the following article we face the following issues:

- Audiovisual works, repetition and multilevel composition;

- The metaphorical relationships between video and audio;

- Semiotic Units, discretization and sense of form;

- On time management/ temporality;

- The spatial revaluation of sonic and graphic details;

- The importance of coordination with analysis techniques for acousmatic music.

We identified some guidelines followed in the achievement of our recent work "Atlas of Uncertainty", to exploite the potential of sound at different levels of structuration.

1. INTRODUCTION

Video offers the opportunity to create music in which the smallest sonic detail is important, turning seemingly ephemeral, or transitory details into something permanent and particularly meaningful. Outside real time, this allows us to reflect on our sounds, taking advantage of the possibilities of internal development diligently: we identify a sound, we experiment with it, researching its creative potential, innate and latent.

Video also allows composers to extend the meaning of a work, as it enriches a piece of music with extra-musical contents: poetic-literary; pictorial; biographical; descriptive and so on.

In this article we described the experiment of our audiovisual work "Atlas of Uncertainty". The hyletic universe of this work is represented by heterogeneous inharmonic sound materials, in great part natural or electronically generated percussion sounds, explored through various techniques: granular, subtractive amongst the other. Four Classical elements, that typically refer to the Ancient Greece concepts of water, fire, earth and ether were instead used as presupposition and extra-musical factor around which the entire video was built: images were used indiscriminately and alternatively to handle very different sound phenomena.

The music that accompanies this computer - generated video is a sonic continuum, ranging from unaltered natural sounds

This work is licensed under Creative Commons Attribution – Non Commercial 4.0 International License. The full terms of the License are available at http://creativecommons.org/licenses/by-nc/4.0/ to entirely new sounds - or, more poetically - from the real world to the realm of the imagination.

The sounds and the images were combined in wellidentifiable gestures.

2. A MULTILEVEL COMPOSITION

A first level of coordination was reached identifying repetition and variation processes at the musical level. But repetition, which is a major tool for bearing form in musical pieces, may be considered also at visual level. In this way repetition may concern and may lead to a contemporary exploration of the sound and visual detail.

The repetition processes in music can be identified at the level of the sound object (mini-structure), at level of rhythmic patterns (meso-structure) or at an higher organizational level (musical gesture and phrases, subsections, overall form):

Repetition at various levels, are often indicated implicitly by ; various analysis technique (Fig.1 and 2); only sometimes in a explicit way. Amongst these, we can cite: a) Temporal Semiotic Unit, which describes the Invariant Temporal Semiotic Unit by Repetition [1]; b) Roy's techniques [2], in his functional rhetorical analysis and c) the adaptation of Pierre Schaeffer's [3] Typo-morphology by Lasse Thoresen [4], amongst others.

Identifying repetition allowed us to create points of convergence or synchronization between visual moments and a particular sounds, between a movement of the image and sound morphologies. An example of synchronization can be a theme or a sound pattern that accompanies the same type of image. This sound creates a special atmosphere that recalls the image and reproduces itself each time this image appears. In the same way, the dynamics, the frequency, the speed of a sound can follow and reinforce the appearances and thematic variations of the image".

2.1. Audiovisual composition: metaphorical relationships

Therefore the metaphorical relationship between video and audio in *Atlas of Uncertainty*, were not only relation of a) conformity or conformance [5], or Consistency [6]: in the sense that audio and image aim at having the same metaphorical relationship. In fact, in Atlas of Uncertainty, other channels, were activated: b) Complementarity (or complementation): one of the media expresses its potential dissimilar and complementary to the other; c) Conflict (or contest): the two media are in conflict with each other and compete to impose their meaning. In this way the "emerging" meaning of a certain section of the work, is to be understood as an interaction between the various components of the multimedia work [7]. Some theories such as I-son theory by F. Bayle [8] suggests clear visual images - La nuit, L'eau, Le cri, Pulsation, L'air – and can be used to have a quick connection between images of graphic elements (water, air amongst other) and audio. A second level of coordination of sound material with images was considered for the making of Atlas of Uncertainty, and acts at the level of the following associations: a) on the basis of direct or indirect acoustic affinities - also derived sounds - of the starting audio material; b) on the basis of associations with the same class/genre of sound: electronic; natural/concrete; instrumental. c) on the basis of other formal or linguistic associations.

Analysis Technique	Repetition Process (Indexes)
Schaeffer (SCHAEFFER, 1998)	Redundant Sounds (Hx ; Hn ; Tn - Tx Special
	Weft)
Lasse Thoresen (THORESEN, 2007)	Accumulation; Iteration; Impulses
Vande Gorne – Figures d'Espace	Accumulation; Envahissement; Scintillement;
(VANDE GORNE, 2002)	Vague
M.I.M Temporal Semiotic Unit	Invariant T.S.U. (Waves, Spinning, Obsessive)
(http://www.labo-mim.org)	
Roy (Functional Analysis - Process) (ROY,	Intensification/Accumulation;
2003)	Attenuation/Dispertion
Roy (Functional Analysis - Rhetoric)	Thème; Réitération; Affirmation; Articulation;
	Déviation
Roy (Functional Analysis - Stratification)	Mouvement
Roy (Functional Analysis - Orientation)	Extension; Prolongement; Engendrement
Bayle I-Son (BAYLE, 1999; 2000)	Le murmur; Le cri; Tapage; Pulsation

Figure 1: Analysis technique for acousmatic music and indexes of repetition. Sonic phenomena can have correspondents at the audio-visual level.

Analysis Techniques	Accumulation Processes (Indexes)
Lasse Thoresen (THORESEN, 2006)	Accumulation;
Vande Gorne – Spatial Figures	Accumulation; Envahissement
(VANDE GORNE, 2002)	
M.I.M Temporal Semiotic Unit	Chaotic followed by suspension/ suspending;
(http://www.labo-mim.org)	questioning
Roy (Functional Analysis - Process) (ROY,	Intensification/Accumulation followed by
2003)	Attenuation/Dispertion
Bayle I-Son (BAYLE, 1999; 2000)	Le murmur; Le cri; Tapage; Pulsation

Figure 2: Accumulation Processes and Analysis technique for acousmatic music.

3. SOME GUIDELINES

Particularly, in the composition of "Atlas of Uncertainty", some guidelines have been followed:

1) Narrative and dramaturgical dimension prevail [9], avoiding trivial exact repetition on the two perceptive levels. That said, it was possible to manage the sound repetition phenomena, gradually changing the graphic element of the

circumstance: the repetition (varied) at the audio level does not have a corresponding redundancy in the video material

2) The time has been managed in four different ways: a) Continuation: no change, stasis; b) Slow transition: moderate change; c) Quick transition; d) Juxtaposition: co-existence or simultaneous presence of elements. Particularly, in the second part of the video - from 4.00 to the end of the piece - fast transitions and the juxtaposition between different elements prevail. This obeys a precise narrative intention, indicating that we are going towards a stage of more development or

excitement;

3) Temporality is influenced by the way in which the sound sustains the scene, through its variations or irregularities; from the predictability of the sound on the image and the time. Timbre, frequency, amplitude, speed of sound had, in this context, an important role and a significant impact on perception. In this way we were able to enhance some internal characteristics of a sound;

4) We tried to balance structure and expression, knowing that discrete elements carry structure and continuous variation carries expression. We avoided to glide continuously through several dimensions of sounds and images, helping the listener to acquire much of a sense of form.

5) We tried to describe and emphasize spatial movement not only in the acousmatic piece, but also in the video, shifting the attention from general to details and vice-versa;

6) We tried to develop our video using suggestions derived from analyses techniques of acousmatic music. This effort of coordination suggested us new ways of interpretation of music, increasing the overall efficacy of the whole work.

3.1. Discretization and sense of form

Sculpting sonic material into gestures or phrases, which are the middle layers of musical structures - involves mediation between the nature of raw sound materials and the poetic of the composer: a mediation that is not always easy and it's not immediately successful. Things, moreover, become more complicated if we combine sound and images.

In our work, gestural organization of sound objects and of visual elements was intended as an intermediate level of "aggregation", which allowed us the creation of "discrete entities" that, sometimes, correspond to "semiotic units". This discretization process can guide the listenings and watching processes, helping the spectator acquiring much a sense of a form. To reaching this aim we particularly read the acoustic surface of the piece using techniques of segmentation proposed by MIM researchers, that, for the first time, talked about TSUs [10]: "TSUs are not Schaefferian sound objects because they are not isolated from their context according to the same segmentation criteria. The Schaefferian sound object is extracted from its context in accordance with purely gestalt laws and not with meaning units like TSUs, in which a minimal segment corresponding to a well-defined meaning is searched". These semiotic units, identified in the piece through MIM techniques, were coordinated, exalted or exaggerated by images, to be more easily recognizable and to allow a more immediate contemporary understanding of the sonic and visual fact. What J. McAdams [11] expresses for music, regarding discretization, is also valid in visual organization:

"We remember discrete entities easierly than continuous or unclearly demarcated ones, at least for the memory of structures. This does not mean that continuous variation is not important in the appreciation of musical form. It is certainly vital for expressive variation of musical gesture".

Discretization of sound and visual elements are aspects that allowed us to clearly divide the piece and the video into sections and sub-sections, also thanks to:

1) the aid of transitions 2) the aid of other sound phenomena suggested by the narrative evolution of the piece and labelled by analytical theories as «Apparition/Disapparition»; «Invasion»; «Fluctuation»; «Suspension/Resolution»; «Divergence»), favoring a clear reading of the acoustic surface [11] and of the visual one.

3.2. About temporality

Another important tool to combine sound object and video together, is a wise management of temporality. Sound has the ability to give a sense of linearity to what could, instead, be perceived as abstract on a visual level. This function can be easily found in many acousmatic videos, where the use of abstract images is very widespread. In *Atlas of Uncertainty* the management of temporality has followed different adresses [12]:

- the «temporal animation»: it's the ability of the sound to change the perception of the spectator, transforming it from "static" to "moving" and vice-versa;

- «temporal linearization»: sounds give a comprehensible logic to - apparently - disordered images and disrupted actions;

- «directional properties»: the sound has the property of leading towards a predefined objective, a plausible or comprehensible end. These three functions play an important role in the building of the weave; «directional properties» , particularly, were used in Atlas of Uncertainty to mark the starting point and the end of panels/sections, with the aim to help the spectator to understand the structuring processes thought by the composer.

3.3. The shift of attention to details

The enhancement of sound detail is an element that contributes to produce added value in several visual works. The concentration on details is important for various reasons:

- to fill perceptive gaps of images;

- to enhance some internal characteristics of sound of particular interest, that is the way in which it evolves spectrally, or in amplitude, or in frequency;

- to give importance to spatial movement inside images, moving from the general to the local or vice-versa: in this way we avoid strict redundancy in a "spatial" sense: spatial movements and figures [13] are not only important in the musical piece, but can importantly regard the video section for the reason that we have told.

3.4. From acousmatic analyses techniques to visual structuring

In the management of various phenomena indicated by analytical techniques with terms such as «Suspension»; «Fluctuation»; «Invasion»; «Accumulation»; «Suspension/Resoulution» we avoid one-to-one predictable relationship among sonic gesture and images. In this way the effect of the two elements – sounds and image combined together - is more powerful and expressive than that of each part taken together. In fact:

1) the phenomena of «Suspension» (Roy), of «Fluctuation» (TSU/MIM) are rendered through slow camera movements; sometimes, trying to give additional readings, through transitions and interferences, suggested by the internal movements of the acoustic substrate;

2) the chaotic phenomena of «Accumulation» (TSU/MIM) or «Invasion» («Envahissement» in «Figures d'Espace» analytical model), are rendered through faster camera movements;

3) the phenomena of «Appearance» and «Disapparition» («Apparition/Disapparition» in the Spectromorphology, and in Orientation Categories in Roy) are visually rendered through a suction of the images only in two points in the video, points that, obviously, have particular significance in

the story and on the dramaturgical plane. In other sections of the video, phenomena of «Apparition/ Disapparition» remain operative only at the audio level and do not have a visual correspondence, creating a clear conflict between sound elements and images;



Figure 3: Element Earth (excerpt): progressive exploration of sound and images details.



Figure 4: Element Earth and gliding moon (excerpt). In the second part of the "Atlas of Uncertainty", fast transitions and juxtaposition between different elements prevail.



Figure 5: Acousmographe: screen shots in sequence. The study of recurrence of visual events help the memory of structures.

4) «Suspension» (TSU/MIM) or «Resolution» (Spectromorphology: structural functions) phenomena are, instead, rendered by means of slight disconnections or transitions, or even by means of "combinations" of sudden images, which represent an element of novelty in the visual path . Sometimes, they are the result of an editing operation, of a compositing process through which an image is superimposed on / in a previous image;

5) The phenomena of «Chaoticity» or «Divergence» (T.S.U./M.I.M.) can, moreover, be expressed through several levels of reading on a graphic level or through the deeper exploration of the image details.

4. CONCLUSIONS

In an era in which the representation/notation of electroacoustic pieces is effectively difficult, due to the lack of universally accepted notation systems that could surely help to understand a piece, well- built visuals could help to lead to a more complete discourse on a compositional work, highlighting and emphasizing many aspect of a composition. Video can explore details, concentraiting on spectral evolution of certains sound-object or other sonic aspects at ministructural level; it can illuminate on gestural or phrase organization which are the middle layers of musical structure; video can clarify the subdivision of a piece, exalting transitions, or other sound phenomena, labeled by analytical theories as «Apparition/Disapparition»; «Suspension/Resolution»; «Divergence», just to name a few; it can awakens the attention of the spectator and ease or deny a certain directionality of music; it can also allow a more rapid storage of information by the spectator. In other words, well-built audiovisual works can help to have a better understatement of the overall structure of a piece and can highlight important aspects regarding mesostructural, ministructural and macrostructural organization.

The goal of our work "Atlas of Uncertainty" was to create a good balance between perceived structure and expression, exaltating and coordinating both the directionality of music and images.

Audiovisual composition allows to increase the possibilities of communication of the music as it is thought, thanks to the novelty of keeping the original message of the composer intact. In this way, video is not a passive instrument for a possibile re-presentation and integration of sound materials, but shows a potential organizational function.

5. **REFERENCES**

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