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Film Music: Interactive Audio-Visual Approaches

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Abstract: This work deals with the analysis and composition of film music. After presenting the principal approaches in musical multimedia research, the work proposes a general music analysis tool that considers extra-musical aspects of a movie. The tool examines film-music from points of view related to the narrative of the film. It presents categories that point to functions of the music in an audio-visual context. The categories are non-exclusive. Each film requires the selection of the categories for analysis which are relevant to it. The goal is to avoid granting superiority to the visual plane, and to remark the analog influence of the two channels, sound and image, on the creation of the meaning. Afterwards, a few ideas for the application of the tool in learning music composition will be suggested.

Keywords: film music, soundtrack, audio-vision, tools and categories for analysis

Introduction

According to Cook (1998:123) the main difficulty in composing for films resides in the identification and ranking of the codes that give meaning. The traditional music analysis which focuses on melodic, harmonic and traditional rhythmic analysis cannot exhaust the examination of all the specific aspects of the music in an audiovisual work. The analysis has to look also at the cinematographic codes (Gorbman 1987:3). It should consider not only the significance of each channel, sound and image, independently but mainly their connection with themselves and with the narrative. The present work proposes a general music analysis tool that takes into consideration the different aspects of a movie. The tool examines film-music from points of view[1] related to the narrative of the film. The goal is to avoid granting superiority to the visual plane, and to remark the analog influence of the two channels, sound and image, on the creation of the meaning. "We do not see a film. We hear/see it". (Chion 1994: xxi)

General approaches to multimedia research

Three different approaches can be recognized among researchers who dealt with film music. The first approach rests on classical cinema theory and assumes that the meaning

[1] Michel Chion (1994:91-93) calls them "points of audition".

of the film originates in the image. The role of music is determined in relation to the significance that exists in advance in the visual level. One medium, the visual, is the source of meaning, and the second medium, the auditory, will be defined according to a relationship of similarity or difference with the visual (Cook 1998: 115). According to this approach, and probably influenced by Eisenstein's theories of audiovisual counterpoint (Eisenstein 1928:83), it is customary in the analysis of films to reduce the functions of music into two categories, parallel and counterpoint. In the function of parallelism, the purpose of music is to strengthen, describe or decorate the meaning that derives from the image. The music just amplifies the meaning. In the counterpoint function, the meaning of the music opposes the meaning of the picture. Music, then, adds another dimension, information of its own.

The second approach refers to the ability of the music to change the meaning of the picture. As early as 1947, Adorno and Eisler defined cinema as essentially a visual art (Dovev 2005:160), though they acknowledge the boundaries of the picture, being the role of the music to add the "spontaneous, human element."

"The fundamental task of the film composer, says Eisler, is to compose music that 'fits' precisely into the given picture ... By 'fit' Eisler means precise temporal synchronization." (Cook: 63)

In the last quarter of the twentieth century a number of researchers have studied the ability of music to influence in a multimedia system. For example, according to the Marshall and Cohen (1988) model, often referred to as "Congruence-Associationist Model," spectators are mainly aware of structures and meanings that overlap between the media. At the same time, they assign superiority to the image in the formation of the meaning.

Additional models of analysis of sound and image relationships evolved on the basis of the ability of music to influence the meaning of an image. These models define the function of music in relation to its connection to action, to the situation in the scene, to the feelings of the characters, to the general view or to the scene environment (Karlin 2004: 135; Wierzbicki 2009: 218; Cohen 1999a). As stated, all those models recognize the ability of the music to influence the meaning; however, they give relative superiority to one plane, the visual one.

The third approach, which refers to the reciprocal relationship between the media, rejects the dual division parallel/counterpoint which assumes that the image and the music are autonomous, each channel providing an independent and unique meaning in the eyes and ears of the viewer. In contrast, the third position is based on interaction and lack of hierarchy between image and music. This approach does not necessarily detract from the

comparison between the two components, but from the hierarchical ranking among them. It is still possible to establish an affinity or an opposition between the meaning of the music and the meaning of any other cinematic component. But the significance of the entire system results from the very relationship and not from one of the particular constituents.

According to this last approach, major researchers –i.e. Claudia Gorbman, Michael Chion, Nicholas Cook-, advocate a position that emphasizes the interplay between image and music. For these authors, the meaning of the music alone has no much relevance in the overall meaning of the film. This overall meaning is created only in interaction with a particular non-musical context: the narrative.

Following this line, each one of the researchers proposes a model of film music analysis. All three models are similarly based in the "masking" technique, that is, they analyze each channel separately while muting the other channel. But a detailed and in-depth analysis of a soundtrack is hampered in the attempt to implement the proposed research instruments. Their methodologies prove not always effective in the identification and the ranking of the codes that give meaning.

Categories of visual-auditory interaction

Starting from Gorbman, Chion and Cook approaches, this work will next propose a model of film-music analysis. This model, based on the Karlin and Wierzbicki functions/categories (see above), analyses the music in a film from points of view related to the narrative. In contrast to the original application of the categories the goal is to avoid giving superiority to the visual plane, and to illustrate the effect of the two channels, both sound and image, in the comprehension of the plot. The original categories are expanded and redefined proposing additional tools for exploration that observe other angles of the two-channel relationship.

The model presents seven categories, trying to encompass most possible functions of the music in a film. The categories are not exclusive. Most of them work simultaneously and the function of the music in each scene can be determined from the perspective of each one of them. At the same time, it is possible to determine the main and secondary functions, taking into account their correspondence and influence to the central plot.

Action

It refers to the occurrence of parallel events in the music and in the image. Every event in the image has a simultaneous reference in music (and vice versa). The mickey-moussing technique, which implies a temporal synchronization between musical and visual events, is the extreme representative of this category.

In the "action" function, the music targets the "objective" of the scene, that is, the goal that a character wants to achieve in the scene (Stanislavski 1989:116). In this function the rhythm of the music is synchronized with the movements of the characters. Once the connection between visuals and sound is established by the analogue movement in both, the "action" function keeps going even if the character stops, or if the frame focuses in another location. This function is easily identified and used in most persecution scenes in action films. It is often followed by the tension stage in the "expectation" function.

Expectation

The function relates to the tension of the music in a film sequence. The ITPRA theory of expectation (Huron 2006) can be adapted and applied to our model. Although originally developed to analyze music alone, it provides an instrument that may prove effective in the identification of expectation processes in film-music. This theory refers to the term "expectation" in a broad sense, as a process. The expectation process entails five stages – Imagination, Tension, Prediction, Reaction and Appraisal- sorted in two groups considering whether the stages occur before or after an event. Each stage is characterized by the specific behavior of musical parameters. In a film, music is able to relate to each stage of the process; it can even determine the stage. For our model we will consider only the first four stages –imagination, tension, prediction and reaction- because of the difficulty in identifying the last stage –appraisal- in a film context:

- *Imagination*: The stage takes place long before the event and indicates the possibility of occurrence of the event. In a film, this stage corresponds to the "action" category of our model.
- *Tension*: The stage occurs immediately before the event. It tries to target mainly the timing (when), the type (what) and the intensity of the event. In film-music, the tension is often recognized by the gradual change in any musical parameter, usually in pitch, tempo, dynamics or texture. The point is in the gradualism of the change and not in its direction: crescendo-diminuendo, accelerando-rallentando, rise-drop of pitch, both ways indicate a tension process leading to an event.
- *Prediction*: The prediction stage is a very short response that comes immediately after the event, and is a reply to the accuracy of the expectation; namely, whether the event occurred accurately according to expectation or the expectation failed to predict the result. This stage is often found and easily identified in horror films. In this genre, movies are plenty of tension scenes in which the character frequently fails to prevent the exact outcome, its timing or its intensity. Moreover, in horror films, music and sound effects use to complement each other, particularly in this stage.

Sound effects usually intend to describe the event itself while the music looks to emphasize the emotion aroused at this brief stage. In genres other than horror film, the music points less to this response and more to the next stage of the expectation process, even muting during the event.

- *Reaction:* A stage occurring immediately after the "prediction" stage. It relates to the reaction that the event provoked. It does not relate to the accuracy of the expectation, as at the prediction response stage, but to the response as consequence of the event. In films, music at this stage of the expectation process may help us to understand how the event affected the character. The "reaction" stage may also function as an "imagination" stage of a new expectation process.

Several expectation processes occur simultaneously in any scene. The music points to the process relevant for the intended plot. It underlines the process, denotes it.
Huron's theory of expectation can also be applied in a macro sense, in the structural level of a film. The "event" is represented by the turning point of the main character –or of the plot. The film exposition is the stage of "imagination". The "tension" phase precedes the event. The "prediction" stage takes place immediately afterwards. The stages of "reaction" and "appraisal" correspond to the development and conclusion of the film.

Continuity

The category refers to the ability of music to connect scenes that are distant in time or space. That is, the music plays continuously while remaining indifferent to visual changes. According to this function, the music is able to bridge over the visual interruptions, to unify the sequence of images and to create an atmosphere that acts as the framework that contains the picture (Chion 1994:47). Chion distinguishes between time continuity -the role of music is to connect scenes that take place at different times but in the same space- and spatial continuity -the ability of music to connect scenes that occur simultaneously, but in different spaces.

Diegesis[2]

The category refers to music that belongs to the reality of the characters. The source of diegetic music does not have to appear necessarily in the image, but to be part of the characters' experience. A particularly interesting sub-category of this function is the metadiegesis. That is, music that exists only in the mind of a character. It can take the form

[2] Score/source music

of a dream, nightmare, hallucination, memory, etc. For example, in the film *Blue*[3] (Kieslowski 1993) Julie reads a piano score and we listen to the music that is written, although nobody is playing. The music we listen to is implicit in the character's world, which allows us to listen to what she hears, revealing us her feelings. The music is the memory. It takes her –and us- away from the place and time, from the circumstance. The piano sounds, but the music exists only in her reality. Therefore, the metadiegetic function.

Both the "continuity" and "diegesis" functions work often together, complementing each other. One scene may present characters in a live music ambience; then, the next scene may show a different location while the "live music" remains unresponsive to the location and dramatic changes. It is still possible to classify the function of the music independently in each scene, although the main function is probably to unify the sequence, the "continuity" function. For example, in the well knows sinking sequence of the Titanic movie, music played on bridge (diegetic function) continues with the same intensity even after the scene changes to the interior of the ship (continuity function).

Emotion

In this category, the music relates to the emotional state of the character. It does not point to the emotions produced by the music on movie viewers, but to the ability of the music to communicate the emotions.

The emotional potential of the music is always present. It is always possible to analyze the emotional content of the music in any of the other categories of this model.

Acoustic signals involved in the communication of emotions are the matter of several researches. Juslin and Laukka (2003), for example, conclude that music and dialogues display identical acoustic signals to convey the same emotions. Both channels are equally accurate in transmitting the information. Thus, dialogue and music can be treated as a single unit, while ignoring on one hand the content of the text, and on the other hand the musical cultural cues (scales, harmonies, instrumentation, etc). Their study is based on the concept of "fundamental emotions," which states five general emotions from which all other emotions derive: anger, fear, joy, sadness, and love.

Table 1 below resumes and sets out the results of Juslyn and Laukka's (2003) research. Their conclusions have been schematically categorized and adapted to the present work, in order to enable a quick study and application of the acoustic patterns involved in each emotion. It is important to remark that the table does not intend to provide a statistical formula to provoke emotions, but a summary conclusion about how the emotional messages are apprehended.

	ANGER	FEAR	HAPPINESS	SADNESS	TENDERNESS

[3] Blue. Directed by Krzysztof Kieslowski. Original music by Zbigniew Preisner. France, 1993.

TEMPO	*fast*	*fast*	*fast*	*slow*	*slow*
DYNAMICS	*loud*	*soft (except in panic fear)*	*medium*	*soft*	*soft*
DYNAMICS VARIABILITY	*much*	*much*	*no data*	*little*	*little*
PITCH LEVEL	*high*	*high*	*high*	*low*	*low*
PITCH VARIABILITY	*much*	*little*	*much*	*little*	*little*
PITCH CONTOUR	*rising*	*rising*	*rising*	*falling*	*falling*
TONE ATTACKS	*fast*	*no data*	*fast*	*slow*	*slow*

Table 1. A schematic summary of Juslyn and Laukka's (2003) research.

From the findings the researchers conclude that the same cue can be used in the same way in more than one expression. Moreover, decoders use the cues in flexible ways by occasionally shifting from a cue that is unavailable to one that is available (i.e. to vary the loudness instead of the timbre to express anger).

Although systematic, this table may prove effective in understanding the emotional content of music in a film scene. This content can refer directly to a character, or it may function as an overview of the scene in general. But its scope is limited. In order to obtain a deeper analysis of the emotional charge of the scene, this table should be complemented with an analysis of the cultural codes involved in other musical parameters, such as scales, harmony, etc.

Symbolic

The category refers to the semiotic ability of the music and the image. This ability works in both directions. The influence on the channels is mutual. The music impacts the image as the image impacts the music. Between sound and image there is a "transfer", a "contamination" (Chion 1994:9) of attributes. "Transformed by the image it influences, sound ultimately re-projects onto the image the product of their mutual experiences" (Chion 1994:22). Following Chion's concepts of "transfer" and "added value", Cook proposes a model of mutual influence between the channels based on the linguistic concept of metaphor. [Metaphor means] …"understanding and experiencing a thing in terms of another" (Cook 1998:70). Similar to what happens in a metaphor, several features in film-music -or all features- of one medium become available in the other medium. We perceive the image in terms of the music, and the music in terms of the image.

Cook argues that a prerequisite for the metaphor to fulfill its purpose is the presence in both channels of a few analogue features. In a film, the analogue features can be found in aspects of the visual channel, which can also be identified in the auditory channel. For example, the exact synchronization of sound with a character's movement, the beginning of the motion matching the musical in and out cues. These analogue features, discerned in both channels, enable the juxtaposition of media of a different nature such as music and image. And they allow the transfer of other attributes between the media. As soon as the connection between the media is established, the transmission of other features is possible.

"…once an analogy is made between A and B, a whole gamut of associated meanings also becomes available. Not only B is like A in a certain way, but any and all of A's properties now became fair game to be absorbed into B". (Cook 1998: 70)

The symbolic function is present in all movie genres. Parting from the general codes[4] found in most animation movies, where the sound "paints"[5] the image conferring its attributes; passing through specific signs commons in feature movies (for example: leit motives); and till acquired cultural codes, that require sophisticated decoding in advertisements, video-art, etc.

The breakfast sequence in *Citizen Kane*[6] can illustrate both the "symbolic" as well as the "continuity" categories. The sequence shows several scenes of Kane and his wife having breakfast in a single location, but at different times. The music by Herrmann, in Theme and Variations form, bonds between the temporal gaps by using the same motif during each scene (time continuity function). Besides that, the music parallels the deterioration of the relationship between the characters (symbolic function).

Overview

The category refers to the ability of the music to interpret the film; the music comments the story from a different perspective than that of the characters in the scene. Unlike the "action" category, in which the music points to the objective of the scene, in the category of "overview" music refers to the super-objective of the film. The super-objective is an over-reaching objective, linked to the overall outcome in the film. It serves as the final goal that a character wishes to achieve (Stanislavski 1989:271).

In the "overview" function the music may also aim to the essential idea, the theme of the film. It relates the plot not in first but in third person. Like a storyteller, the music acts as a filter between the image and the viewer, distancing us from the present time of the

[4] In the Model of Musical Competence (Stefani 1987:15) codes are sorted and ranked according to the scope of their reference; general codes are perceptual and logic schemes.
[5] "Like painting, music can outline objects". (Engel in Katz 1992:128)
[6] *Citizen Kane*. (1941). Directed by Orson Welles. Music: Bernard Herrmann.

action. An example of this function can be found in Kurozawa's film *Ran*.[7] In the battle scene, without ambience sounds or dialogues, the "mahlerian" music by Takemitsu does not intend to describe the brutality of the actions or to provoke empathy with the actual suffering of the warriors. It neither refers to the objective of the characters during the battle. The music suggests an unseen story; it adds a new dimension. We perceive the scene as if somebody told us not a present, but a past tale. Kurosawa explains: "What I was trying to get at in *Ran*, and this was there from the script stage, was that the gods or God or whoever it is observing human events is feeling sadness about how human beings destroy each other, and powerlessness to affect human beings' behavior" (Kurosawa 1986). During the battle scene, the music functions as a commentator, bringing us the core of Kurosawa's message.

Similar musical material appearing in several scenes through a film can fulfill in each a different function. For example, in *Waltz with Bashir*[8], the first musical cue based on Schubert's andantino from sonata no 20, appears -with variations- in 8 additional scenes achieving diverse main roles: "action" in the dogs dream scene, "continuity" in the character's flashback, "diegesis" in the ice cream truck scene, "emotion" during the helicopter flight, and so on. Furthermore, this leitmotiv proposes a symbolic link and a plot connection between the scenes ("symbolic" and "continuity" categories), enabling the transfer of the connotations of each scene to the others.

Conclusion

Models of multimedia analysis are often based on individual analysis of the image and sound channels separately –the masking method. The method of muting one channel while focusing on the other channel is relatively relevant for testing the music channel of the film, but is ineffective for the comprehension of the visual channel: silencing music mutes also the other components of the soundtrack, dialogs and effects. The screening of the film without the soundtrack generates additional meanings, which are foreign to the movie, such as association with silent movies, loss of dimension, and loss of the characters' human sense.[9] In addition, the method of masking does not take into consideration cinematographic codes.

The interactive analysis proposed in this work is grounded in theoretical methods from the field of musicology, semiotics and cinema research. It focuses mainly on the music channel. The model does not renounce the use of traditional music methods of

[7] *Ran*. (1985). Directed by Akira Kurosawa.
[8] *Waltz with Bashir*. (2008). Directed by Ari Folman. Music: Max Richter.
[9] Eisler and Adorno (2007) compare music in movies with a potion against the impression of seeing ghostly figures; this impression caused by looking at life-size people who do not make noise.

analysis that examines harmonic, melodic, rhythmic, and formal processes. In addition to them, the model is assisted by other tools that explore extra-musical aspects. Those tools were also briefly described and adapted to the model.

Although extensive, each one of the categories proposed in the model, by itself, cannot comprehend all possible influences of the music in a film. The categories are not exclusives, and a combination of categories, that is of approaches, is necessary in order to broader the analysis scope. For example, the inspection of the emotional potential of the music in each of the scenes of a movie does not contribute to understand its overall role in the film. Additional approaches that offer other points of view are necessary. The conclusion here is similar to what happens in the analysis of different music pieces, in which each work requires the election of the appropriate analytical tools. Such need arises too in film music. Each film requires the selection of the tools and approaches for analyses that are relevant to it.

Applications of the analysis tool in the study of composition for films

As an application of the presented tool, some exercises are proposed below. The composition and analysis exercises are grounded in my own experience as film composer and soundtrack designer, and proved effective through years of teaching the subject. The exercises aim to highlight the functional role of music in a film, its intrinsic link with the narrative idea and its part in the shared production of meaning.

Action music: audio composition

- Compose music that follows the action in a persecution scene.
- Use only 1 pith class (may use duplications).

This exercise avoids the use of cultural codes such as scales, harmony, etc.

Mickey-moussing: audio composition + video

- Compose and replace the music of an animation film scene. Use mickey-moussing technique.
- Compose and replace the scene again changing the quality of the animated character through music.

This exercise refers both to "action" and to "symbolic" categories of our model. Changing the nature of the music is necessary in order to change the quality of the character. That is, how we apprehend the character based on the music we hear.

Tension composition: video + audio compositions

- Analyze a scene that includes a tension process in the music. Indicate which parameters participate in the process. For example, the tension process in the music may be produced by gradual changes in pitch and in dynamics.
- Compose and replace the music of the tension scene using the same parameters changes.
- Compose and replace the music of the tension scene again using different parameters (for example, gradual changes in tempo and texture).
- Compose and replace again changing the function of the music to "overview".

This exercise refers to the "expectation" and "overview" categories.

Diegesis analysis: video

- Present a scene in which the music changes its function from score to source (or the opposite).

This exercise refers to both "diegesis" and "continuity" categories.

Emotions: audio compositions

- Compose monophonic melodies, each one referred to one of the basic emotion categories: anger, fear, happiness, sadness, tenderness. Each melody based on the "Sumary of Acoustic Cues for Emotions" by Juslin and Laukka.

Symbolic: audio composition

- Compose music that represents an object that does not produce sound.
- Analyze the sheared attributes between the object and its musical representation. Indicate how the music influences the perception of the object.

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