

# TEMPORAL CONVERGENCES IN MIXED ELECTRO-ACOUSTIC WORKS

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## 1. Summary

This paper will address the notion of *temporal convergence* as one of the various levels of interaction between the acoustic instrument and the pre-recorded electronic material in mixed electro-acoustic works. The ideas developed here stem from my experience as a performer and are based on Denis Smalley's concepts of interactive behaviour in acousmatic music as proposed in *Spectromorphology: explaining sound-shapes* (Smalley, 1997). A series of terminologies and classifications have emerged from the observation of different *temporal convergences* acting in a mixed electro-acoustic framework. *Horizontal* and *vertical temporal convergences* are presented as organizational forces in musical discourse that deserve consideration in the processes of composition and interpretation of mixed works. The systematic application of this approach in an interpretive context aims to contribute to the consolidation of a performance tradition of this repertoire. Additionally, it intends to offer new perspectives into the collaborative interactions between performers and composers. The musical examples mentioned here are available at [www.iracemadeandrade.com](http://www.iracemadeandrade.com)

## 2. Introduction

According to Jerrold Levinson, the rendering of a musical composition goes beyond the sonic reproduction of the work's constitutive elements. It represents the performer's implicit decisions on the manner in which certain ways of playing may be more effective in achieving a better expressive projection of its contents and essential structure. The reconstruction of the musical text in a performative interpretation encompasses the performer's understanding of the score and his/her choices in how to play its defining parameters of tempo, rhythm, dynamics, accent, and phrasing. The author defines that:

*... a performance interpretation is just a considered way of playing a piece of music, involving highly specific determinations of all the defining features as given by the score and its associated conventions of reading.* (Levinson, 1996:63).

In this scenario, it is possible to single out various aspects that make the difference between the interpretation of mixed electro-acoustic works and the interpretation of the traditional repertoire. The score not always provides the composition's defining features nor the conventions of musical reading seem to be enough to build up an interpretive concept of a mixed work. The implementation of new sonic fields in electro-acoustic music has imposed a situation difficult to solve when referring to interpretive processes focussed on the analysis of the score. For the performer, decoding the available written information in order to formulate an interpretive concept is not enough, since there is no immediate relationship between the notation and the ultimate sonic result. In a mixed work, the constitutive sonic elements of the electro-acoustic part, its interactive behaviours and their relationship with the instrumental part, have become themselves another object of decoding and interpretation for the performer.

The analytical concepts acquired in the traditional practice of music may function as indicative models but will be insufficient for their application in this musical context. The problem of notation and the examination of its contents impose the need to explore new strategies for learning and performing works that combine acoustic instruments and electro-acoustic sounds. Under these circumstances, I consider that it would be appropriate that the performer's creative process should be based on the aural analysis of the pre-recorded electro-acoustic material. In the mixed work, one part of the composer's message is already sonically manifested through the pre-recorded sounds fixed in support. This material as well as the score should determine the performer's interpretive process. This approach to mixed electro-acoustic repertoire requires a way of perceiving and understanding sound other than the parameters of the conventional instrumental practice.

### 3. Performing mixed works

The performance of mixed electro-acoustic works in fixed medium has raised practical issues as far as the temporal coordination is concerned. It's worth pointing out that in spite of the fact that rhythm has ceased to act as a structuring element in the acousmatic musical discourse, many of the pieces belonging to the mixed electro-acoustic production have made use of different levels of temporal interactivity, including explicit rhythmical relationships based on pulse and meter in order to guarantee the integration between the instrument and the electro-acoustic part in fixed support. In the same way that in the mixed repertoire works that allow a high degree of freedom of temporal coordination are plentiful, works that demand rigid and punctual synchronicity levels can also be found.

Some musicians have considered this repertoire as being very restrictive due to the lack of temporal freedom concerning the coordination between the acoustic instrument and the electro-acoustic sounds. These opinions are based on the perception that the performer has to undergo a musical tempo that is alien to his/her own musical tempo apparently being warded the full responsibility to keep the control over the flow of time. This subordination while performing a piece with mixed electro-acoustic sounds in fixed medium becomes evident during those moments where absolute synchrony between instrument and pre-recorded sounds are demanded. In such instance it could be considered that the performer is at marked disadvantage since all imperfections concerning the control over the temporal coordination could be understood as mistakes or inaccuracies in his/her playing (McNutt, 2003).

Usually those points of view are used to privilege mixed electro-acoustic works that employ real-time sound processing since they are regarded as more flexible when we refer to temporal coordination levels. Flo Menezes makes the following note about this issue:

*The decisive factor of the 'rigidity' or absence of 'rigidity' of musical time is not the physical medium, but rather the way in which the composer organizes his/her structural and expressive elements.* (Menezes, 2002: 306).

As a recitalist I have been able to observe that it is possible to accomplish considerable levels of temporal freedom while performing mixed works in fixed medium without compromising accurate temporal coordination. This achievement depends on the performer's sensitivity regarding the need to understand significant behavioural patterns and motion processes in order to establish connections between the instrumental and the electro-acoustic parts. Detecting interactive behaviours in the temporal dimension in mixed works acquires an outstanding role in the performer's interpretive process, and consequently in determining the refinement and precision of his/her performance. In this context, the performer's comprehension of the manner in which the composer organizes his/her materials is of the outmost relevance in conquering different degrees of freedom from the 'temporal prison' that the 'tape' part may represent. It's worth mentioning that the use of the click track or stopwatch might be at first an appealing way out to solve the main problems in assembling the instrumental part with the pre-recorded sounds. More often than not, its use becomes an obstacle rather than a real solution: visual in the case of the stopwatch and aural in the case of the click track. Furthermore, from my perspective it reduces to an automated level the relationship between the instrumentalist and the pre-recorded material.

In the temporal unfolding of a mixed work, unavoidable cause-effect associative connections between the performer's action and the electro-acoustic material come up. The awareness of these connections makes the identification of significant events in the musical discourse possible, facilitating the listeners' apprehension of the piece. In this sense, Denis Smalley points out that:

*We hardly need reminding that in an acousmatic music behavioural relationships are carried by spectromorphologies alone, and that in mixed work the perceived behavioural relationship between the visible, gesture-bearing performer and the surrounding acousmatic context will be crucial to the work's understanding.* (Smalley, 1997: 107).

The ability to identify the different behaviours of electro-acoustic sounds and the way in which they build a relationship with the instrumental part may prove to be an important tool for those interested on the practice of mixed music. It could be suggested that an adequate attentiveness by the performer of these behavioural relationships, their constituent elements and the associated connections of cause-effect among the sonic events in the structure of the musical discourse will be a fundamental element to successfully communicate the meaning of the mixed work.

This work intends to provide the performer with a system of identification for different types of coordinated impacts among electro-acoustic and instrumental spectromorphologies thus facilitating the processes of practising and learning the mixed repertoire in fixed medium. Recognising and understanding how interactive behavioural patterns operate in the temporal dimension may allow the performer to plan his/her interpretive strategies within some degree of temporal freedom at the same time accomplishing high levels of punctual precision in synchronization.

#### 4. Interactive behaviour in the temporal dimension

Denis Smalley uses metaphorically the term *behaviour* to designate different relationships among spectromorphologies acting in an acousmatic framework. According to the author, behaviour encompasses two interactive temporal dimensions: vertical and horizontal respectively. The horizontal dimension refers to the *motion passage* (coordinated course between successive contexts); and the vertical dimension is concerned with *motion coordination* (simultaneity of events) (Smalley, 1997).

Whereas in acousmatic music these interactive behaviours are established solely amongst electro-acoustic spectromorphologies, in mixed works these relationships are stretched out to include also interactions with instrumental sounds. Through the aural analysis of the pre-recorded material and the experience of performing mixed works, I have been able to distinguish different types of interactive behavioural patterns between the instrument and the pre-recorded material in the horizontal and vertical dimensions. I have decided to employ the term *temporal convergence* to designate the directional motion towards points of expressive impact between two or more (either electro-acoustic or instrumental) spectromorphologies in the vertical and horizontal dimensions which generate meaningful events in the temporal continuum. These displacements and coordinated contacts are mainly concerned with triggering an onset on another spectromorphology thus impelling time forward or they can also alter the development of ongoing musical events. These points of sonic confluence or intersection can take place by collision, interpolation, crossing or superposition of instrumental and electro-acoustic spectromorphologies. In this sense, *temporal convergences* are classified according to the features of these impact coordinated points resulting from trajectories of spectromorphologies converging to a particular goal in a specific moment in musical time.

It is necessary to point out that *temporal convergences* alternate and are balanced at different organizational levels, coexisting simultaneously with other types of interactive behaviours in the context of a piece. However, for practical reasons they will be introduced separately as isolated categories operating in specific musical works. The terminology used for classifying *temporal convergences* has been drawn from extra-musical analogies derived from Euclidian Geometry as follows:

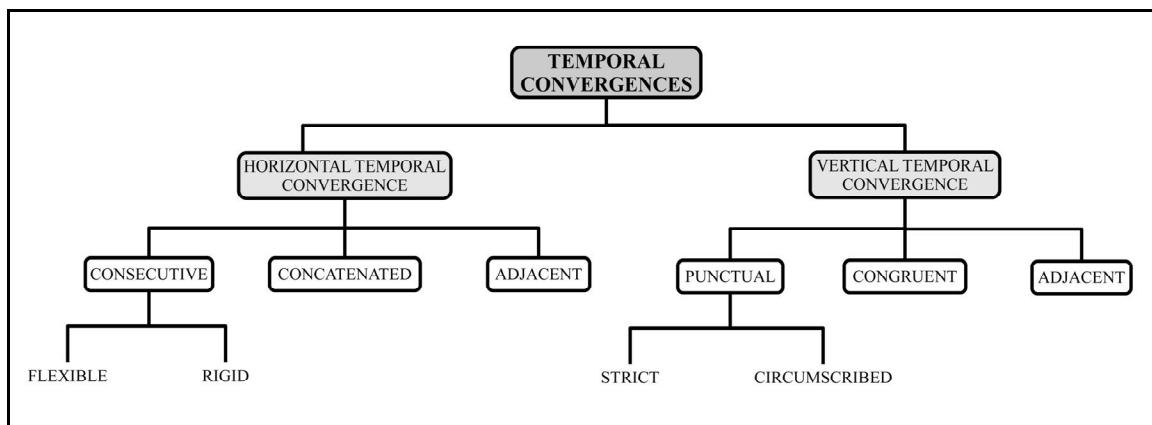


Figure 1. Temporal Convergences

#### 5. Horizontal temporal convergence

The temporal relationships of horizontal quality are found in trajectories initiated by instrumental spectromorphologies that cause an immediate response in the electro-acoustic part and/or vice versa. This type of convergence tends toward the coordinated movement of sonic events of a linear quality. The *horizontal consecutive convergence* connects linear trajectories of spectromorphologies without a pulse sensation. An underlining beat is not perceived due to the lack or excess of internal details in the temporal distribution of sonic material in both parts. The levels of coordination are given through the coincidence between interventions spread over in a linear and synchronic way in the temporal unfolding of the work.

The *horizontal consecutive convergence* can be either *flexible* or *rigid*. The *flexible* type is characterized by a sonic trajectory initiated by an instrumental spectromorphology that triggers a movement of an electro-acoustic spectromorphology. This type of convergence implies a more malleable nature as for the accuracy in the temporal coordination. Its execution comes close to the concept of *expressive time transformation*, idiosyncratic in the instrumental practice and close related to the use of *rubato*. Success in the accomplishment of this type of coordination lies on the performer's ability to distribute his/her intervention over the chronological time, so it is

completed or reaches its climax in a coincidental way with the intervention of the electro-acoustic spectromorphology. (Audio 1).

The *horizontal consecutive convergence* of a *rigid* quality on the other hand, is initiated by an electro-acoustic spectromorphology and answered in an immediate way by an instrumental intervention. The demand of temporal precision in this category has a punctual nature and requires that the coordination of such events be met through the performer's immediate reaction to the stimulus triggered by the electro-acoustic spectromorphology. (Audio 2).

The *horizontal consecutive convergence* may be presented in a *concatenated* way. This convergence is characterized by continuous lineal interactions of stimulus-response between the instrument and the electro-acoustic material generating a quasi counterpoint effect. This action creates a sense of forward movement between the different spectromorphologies of one passage or section. In this case the perception of pulse is non-existent due to the irregular grouping in the sonic sequences. It is the performer's task to find an underlying rhythmic pattern that guarantees significant temporal coincidences between the concatenated horizontal events. (Audio 3).

The *adjacent horizontal convergence* coordinates two adjoining events with different structural functions. This temporal convergence acquires an important role as a connecting point that indicates the end and beginning of two different sections in a piece. Its function in the organization of the work's temporal dimension can be apprehended in the global context of structure. (Audio 4).

## 6. Vertical temporal convergence

*Vertical convergences* operate in the sphere of simultaneous vertical impacts between instrumental and electro-acoustic spectromorphologies. They will act mainly in the kinetic domain, establishing an immediate gestural relationship between the interpreter and the pre-recorded material. Sometimes the vertical coincidence of events may also operate in a metrical context, articulating strict levels of temporal coordination between both parts. Concepts of rhythm and pulse acquire a relevant role in organizing behavioural patterns between the instrumental and electro-acoustic materials.

In the *vertical convergence*, simultaneity between the intervention of the instrumental and electro-acoustic spectromorphologies may acquire a *punctual* nature of a *strict* kind. (Audio 5). This type of convergence demands a high degree of precision between the instrument's attack and the pre-recorded sounds, occasionally also coordinating silences between both parts. (Audio 6). Sometimes attacks of concurrent impact in the *punctual vertical convergence* may have a *circumscribed* quality. These attacks allow a certain degree of flexibility when the instrument's intervention must be enclosed within the space of a given sonic object regardless of the coincidence with the on set of these events. (Audio 7).

In some pieces, simultaneity can be impregnated with a *congruent* rhythmic quality where events in both parts are interpolated over a clear steady beat imposed by the pre-recorded part. This prevents the existence of any kind of temporal fluctuation regarding the interpretation of the instrumental part. As a result, the performer is totally subject to the temporal coordination imposed by the electro-acoustic sounds. The precision in his/her playing will depend on the detection of clear cues that prepare simultaneous attacks. These cues may be thetic or anacrusic regarding a pre-established pulse. (Audio 8).

As in the *horizontal convergence*, the *temporal vertical convergence* can also be *adjacent* and function as landmark delimitating structural boundaries. (Audio 9).

## 7. Final considerations

The implementation of new sonic materials and structuring processes in electro-acoustic music has demanded the development of different interpretive strategies in the performance practice of mixed works in fixed medium. The performer of this repertoire will always be facing the challenge of controlling different levels of temporal coordination. Understanding the electro-acoustic material with which he/she has to interact, as well as the instrumental role in the electro-acoustic musical discourse, must be the goal to establish an interpretive mediation in the realm of synchronicity.

Identifying different behavioural relationships in the temporal dimension may prove to be a helpful tool in the interpretive process of works that combine instrumental live performance and pre-recorded materials. The proposed categorization of temporal convergences is intended to contribute to the consolidation of an interpretive tradition in this repertoire. This approach is not final since it is part of an ongoing researching project. It ultimately seeks to offer some insight on the subject of interactive behaviours in mixed works, since there has been little discussion on the matter from the performer's perspective.

## References

- EMMERSON, Simon, *Acoustic/Electroacoustic: The Relationship with Instruments*, Journal of New Music Research, 1998, Vol. 27, No. 1-2.
- \_\_\_\_\_, SMALLEY, Denis, *Electro-acoustic Music*, *The New Grove Dictionary of Music and Musicians*, Second Edition, Stanley Sadie, Ed, 2001.
- LEVINSON, Jerrold. *Performative versus Critical Interpretations in Music*. The Pleasures of Aesthetics, Philosophical Essays, Cornell University Press, 1996.
- MCNUTT, Elizabeth, *Performing electroacoustic music: a wider view of interactivity*, Organized Sound, 2003, Vol. 8, No. 3.
- MENEZES, Flo, *For Morphology of Interaction*, Organized Sound, 2002, Vol. 7, No. 3.
- SMALLEY, Denis, *Spectromorphology and Structuring Process*, en S. Emmerson (Ed.), *The Language of Electroacoustic Music*, Basingstoke, U.K.: The Macmillan Press, 1986.
- \_\_\_\_\_, *Spectromorphology: Explaining Sound Shapes*. Organized Sound, 1997, Vol. 2, No. 2.