

BETWEEN SOUND AND MOVEMENT IN EMBODIED TANGO PERFORMANCE. IMPLICATIONS FOR THE STUDY OF THE PERFORMATIVE STYLE IN TANGO

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ABSTRACT

In a recent work we studied differences that characterize styles of A. Troilo's and O. Pugliese's tango orchestras by analyzing the relationships between phenomenal accents and grouping units of the sonic melodic-rhythmic patterns. In the present work, we continue the stylistic analysis focusing on the expressiveness of the tango performer's body movements. The aim is to observe and describe expressive gestures in the movements of two *bandoneon* performers, interpreting a same tango according to Troilo and Pugliese styles. We analyzed the quality of body movements and effector gestures (Laban, 1971; Godoy and Leman, 2010) in the performance of rhythmic-melodic patterns. As to Troilo, the accentual and gestural conjunction is generally coincident with the metric scheme, and also with the grouping units. As to Pugliese, the melodic-rhythmic patterns are not performed in phase with the metric structure: the temporal distribution occurs at different levels of the metric hierarchy.

1. BACKGROUND

Traditional musicology literature approaches raised the idea of separation between composition, technique and expression in the study of music performance and in the instrumental music education. This theoretical framework left an empty epistemic in the construction of holistic categories that account for the sonic-kinetic-expressive complex in music. In another direction, the psychology of music has tried to study the musical experience from multiple approaches. In this field, some articles have investigated the musical expression (the components of timing and dynamics in instrumental performance) related to the communication of information about the musical structure [5, 13, 14]. Antecedents of the study of movement, approach to academic music, described the way structural features (changes of tempo and chronometric density) shape expressive movement during piano performance [3, 4]. So far, the study of expressive musical movement and sound has been applied more to academic music than to popular music.

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1.1 Correlation between Bodily Actions, Effort-Shape and Musical Gestures in the Movement of the Bandoneon Performer.

In another way, the Laban's theory (1961) proposes and explains an analysis of simple corporal actions that can be easily observed and described in the movement of dancers, musicians, mimes and actors. In the present work, one of the simple corporal actions that interests us in the analysis of movement in the tango performance is manifested through the placement of accents and the organization of phrases. The different combination and sequences of these simple corporal actions are composed of intentional characteristics of the person's action. In turn, each sequence can be expressed by a multiplicity of intentional actions that arise from the particular mixture of the qualities of effort (*correlation process*). It is necessary to clarify that each action produces alterations of the position of the body consuming a certain time (effort-time), it requires a specific amount of muscular energy (effort-weight), and presents a specific fluidity (effort-flow).

On the one hand, Maes and others (2014) in a recent study of musical reception in musicians with and without training, relate the Effort/Shape model that originated in Laban Movement Analysis (LMA) method with specific linguistic descriptions that are metaphorised in the participants. For example: for a sustained time with a high impulsiveness and shaking, linguistic levels such as fast, nervous, energetic and active are presented. On the other hand, Giraud and others (2016) computerised the qualities of the movement inspired by Laban's Movement Analysis (1961) in the movement expressivity during a fitness task. These authors explain that the movement can be defined from the variations of the segments of the body in space and time characterised by parameters kinematics. Following this analysis, they designed five qualities of effort-shape through a system of motion capture.

In the frame of embodied music cognition, Godoy and Leman (2010) categorised the musical gestures according to their specific function; these categories are based on compilations of books, lectures and articles developed by different authors from the same field. Particularly, they defined gestures to produce sound (*effector gestures*) whose sole purpose is to produce or modify the sound and can be subdivided into gestures of excitation and modification. Similarly, conceptualized *communicative*

gestures (they are mainly made to communicate), *gestures to facilitate the sound* (they support several senses the effector gestures) and *gestures to accompany the sound* (they are not involved in the production of the sound, but they are produced in response to this). In the present work, the effectors gestures is the category that we use to observe and describe the movement of the bandoneon performers. The main aim is to discuss this perspective of the specific technical instrumental movement related to *low level*, that is involved in musical expression on the style of execution in tango.

For the classical manuals of the technical of the bandoneon in tango, it is suggested that the instrument should be supported on both thighs and unnecessary movements of other parts of the body should be avoided to have a better control of the sound and the fluency musical expressive. This statement has to do especially by the relation of the weight and the movement dynamics of it. But in a merely descriptive observation of tango orchestras we can affirm that the bandoneon performers show a different intentional-expressive repertoire of movement according to the particular modes of producing musical sense. Therefore, it is stated that the works surveyed here can be used as background to characterise the features of the expressive intention that is put into action in the performance of tango.

2. HYPOTHESIS

The characteristics of the expressive movement of the *bandoneonistas* during musical performance, as part of the sonic-kinetic complex of tango, correlate with the relationship between the temporal unfolding of phenomenal accents [11] and the grouping units of the sonic melodic-rhythmic-expressive patterns that were studied in a previous work [2]. Therefore, the communication of the interpretive style is related to the expressive movements (such as physical descriptions and quality of movement in the performance) that the musicians put into evidence in the practice of tango.

3. AIMS

In this study of two cases it is proposed: (i) to observe and describe the expressive gestures in the movements of two bandoneon players, performing the same tango according to the styles of Aníbal Troilo and Osvaldo Pugliese; (ii) to link the analysis of (i) with the musical discursivity manifested in the rhythmic-melodic-expressive patterns [2] and the temporal unfolding of accents in the melodic contour; and (iii) to characterise the stylistic identity based on the multimodal keys of the execution in both styles of tango.

4. METHOD

In the present work we propose a qualitative methodology to study and analysis videos recordings of historical performances in tango. This methodology pretend to address the investigation of movement in popular music starting from a perspective of descriptions of second person and exterior space of the subject [9] and no intend to measure components of movement and sound. But quantitate perspective can reinforce the initial observation and analysis of the aspects of the expressive movements in tango.

4.1 Experiment

4.1.1 Stimuli

Fragments have been selected from two video recordings of historical performances of the tango from the 20's "Chiqué" (original Lyric and Music by R. Brignolo) performed and arranged by Anibal Troilo's quartet and by the Osvaldo Pugliese's orchestra.

The two selected vintage videos belong, one to Anibal Troilo's quartet recorded in 1971 in the Argentine program "*Tango Saturdays*", and the other to the Osvaldo Pugliese's orchestra recorded in 1989 in the "*Musical Tour*" they made in Netherlands.

4.1.2 Appliances

The observation of videos and the annotation of the movement were made in Elan 5.0.0-alpha (2016) software. The software makes it possible to introduce the video in a standard format of mp4, avi and others with its respective sound signal in WAV and allows reducing the sampling speed of the video without audio for its exact annotation and segmentation of the movement.

4.1.3 Procedure

The analysis of the movement focused on the execution of the bandoneon, performed by Aníbal Troilo himself, and by Roberto Álvarez (Osvaldo Pugliese's orchestra). The analytical procedure included: (1) observation and annotation of bodily-intentional movement using Laban categories (1961) to link the descriptions of simple corporal actions and the movement quality (Time-Effort and Flow-Effort); and (2) observation and characterization of the effector gestures produced by each interpreter related to the movement of the instrument (eg: opening and closing of the air column/*fueye*).

The next table (table 1) samples the analytical correlation between: i) effector gestures and simples movements (*physical descriptions*); ii) simple corporal actions and Time-Effort (*movement quality*); and iii) temporal musical structure, phenomenal accents and grouping units of the rhythmic-melodic patterns (*units of expressive-musical sense*).

PHYSICAL DESCRIPTION OF THE MOVEMENT																
Head Movement Describe head movements in two simultaneous directions <i>up-back down-forward</i>	Torso Movement Describe torso movements in one direction <i>back forward center</i>	"Fluye" Movements They describe movements of the instrument's air column, touching open or closed. Describe effector movements in the instrument (eg: transition of opening of the bellows, recovery of air, etc.)														
MOVEMENT QUALITY																
Simple corporal actions		Effort categories														
Velocity the speed of movement is recorded as slow, normal or fast (Laban, 1971) <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>▬ = fast accent</p> <p>▬ = normal accent</p> <p>▬ = slow</p> </div> <div style="text-align: center;"> <p>∇ = light accent</p> <p>∩ = weak accent</p> </div> <div style="text-align: center;"> <p>▬ = marked</p> <p>∩ = rigorous</p> </div> </div>	<table border="1"> <thead> <tr> <th>Time</th> <th>Flow</th> </tr> </thead> <tbody> <tr> <td>Sudden</td> <td>Restricted</td> </tr> <tr> <td>Sustained</td> <td>Free</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Impulsiveness</th> <th>Smoothness</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>Low</td> </tr> <tr> <td>Low</td> <td>High</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Shaking</th> </tr> </thead> <tbody> <tr> <td>High</td> </tr> <tr> <td>Low</td> </tr> </tbody> </table>	Time	Flow	Sudden	Restricted	Sustained	Free	Impulsiveness	Smoothness	High	Low	Low	High	Shaking	High	Low
Time	Flow															
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Sustained	Free															
Impulsiveness	Smoothness															
High	Low															
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Shaking																
High																
Low																
UNITS OF EXPRESSIVE-MUSICAL SENSE																
Categories generated to link the description of the physical movement and the quality of the movement with the musical structure. In each annotation it may or may not be linked to any of the three descriptions below																
Metric marks/Tactus In this type of movements, the markings are configured with some part of the body (head, arms and torso) of the tactus as of other metric levels																
Grouping units expressive movements that describe the relationship between phenomenal accents and grouping units (Lerdnal and Jackendoff, 1983)																
Patterns rhythmic-melodic-expressives expressive movement linked to the technique of variation of the rhythmic-melodic, articulatory components of the instrumentation and the control of the general progress of the tonal deployment																

Table 1. The table shows the three categories used to describe and record the movement of the musicians in the selected fragments (*physical description of the movement, quality of movement and expressive-musical sense units*). Below each category are descriptions of their respective annotation values.

For the analysis of the textual surface, it is proceeded to: (3) Analyse the musical surface in order to describe the links between the recurrent movement patterns and the musical structure.

Particularly, the musicology analysis consisted of: listen and record melodic passages executed by the right hand of the *bandoneonists* that contained *staccato-accent-local legato* articulations (rhythmic passages), and presented rhythmic-melodic patterns. In this work the transcription was made using all available signs to account for the writing of the components of height, rhythm and articulation in the melodic plane. The notation of accents were made within the convention of the specific musical annotation in tango, in this manner usually appear in originals arrangements for typical orchestra. These were combined with annotation of the harmonic rhythm and passages of referential links to other instruments (see figures 2 and 3). Other symbols were also used as sounds with air in the bandoneons that emulate the drag of the string. The criterion of musical segmentation for the analysis presented a problem in the first instance. In the case of A. Troilo to be equal the amount of samples of videos that were identified in the execution of R. Alvarez had to take as segmentation all the A section (17 bars),

while in Álvarez the first semifrase of A was selected which contains 11 measures. This was due to the fact that the repertoire of movements performed by Álvarez varies a lot in short passages. Particularly this kind of segmentation was key for the accomplishment of the conclusion of the comparative movement between both musicians. Then it is proceeded to: (4) analyse the rhythmic-melodic surface of these passages, describe their structural features, establish the grouping units [11] and the phenomenal accents, and finally note in the score the placement of accents in the movement/phrase and the speed with which they are used (see symbols of Laban's annotation in table 1)

Finally, an analytical interpretation was elaborated based on the connections between (1), (2), (3) and (4).

Figure 2. Section A of the tango "Chiqué" arranged by Anibal Troilo's quartet. This score is a transcription of the superior voice of the bandoneon (right hand) performed by A. Troilo, with the clarification of the structural harmony used and some referential passages of other instruments.

Figure 2. Section A of the tango "Chiqué" arranged by Osvaldo Pugliese's orchestra. This score is a transcription of the superior voice of the bandoneon (right hand) performed by R. Álvarez, with the clarification of the structural harmony used and some referential passages of other instruments.

5. RESULTS

Figure 3 shows the result for the first three grouping units in Troilo's version. It's observed in the grouping unit 1 that the initial corporal position start with the torso in the center and with the head slightly inclined forward and down (plays the group of eighth note and four sixteenth notes). The first placement of gesture accent it's directed toward the G note (red circle, quarter note), through the movement of the torso backwards and the head up and back. Continually this movement sequence it's repeated in the last two attacks of the grouping, but here we interpreted that the descent movement of torso and head accents the first triad (red circle, see figure 3). All the accentuations in the movement are executed with accents towards tension combine with a normal and fast velocity, respectively. The movement quality here its define as impulsiveness-shaking sudden, this particularly organization of the phrase demonstrate a recurrent expressive movement (given by the alternation of velocities in movement) that as well it's observed in the analysis of the following groupings.

In the grouping unit 2 it's observed that torso it keeps in the center, but the head repeat the swing down and up as it happened in the analysis of grouping unit 1. The accents are in two notes (see figure 3, red circles) product of head movement up, the first appears in the upbeat and the other in the downbeat that close the grouping. In the grouping unit 3 it's observed the same order of the movement of the head that we explains in grouping unit 2, but here its accents happens in the downbeats (see figure 3, red circles). So the movement quality its define for both groupings as a sustained impulsiveness with a sudden shaking in the close. The sustained impulsiveness is caused by slight head movement that is reiterated while the sudden shaking is produce by a net acceleration of the head movement up in the close of groupings. In the three grouping units the common characteristic is the type of flow. This is a restricted flow (the flow is contained), we suppose it's the result of the *staccato-accent-local legato* articulation, in subsequent analyses its will try to prove this interpretation.

Figure 4 shows the result for the grouping units 4, 5, 6 and 7. Here we focus on the movement of instrument. All the openings and closings of the air column (*fueye*) include moderate and little movements. In general it's observed a gradual transition of opening of the *fueye* covering each grouping units. Between groupings happens an air recovery by the *fueye*'s closing. That is, each grouping is executed with the same air flow. As for the analysis of the movement of torso and head it's the same observation as in grouping units 2 and 3, but here the up head movement is littler than in the others. This particular movement of the head is the result of a normal velocity employed in placement of accents in the phrase. That velocity is sustained along the groupings. Again the accents in the movement alternate between downbeat and upbeat.

Nevertheless there is a predominance of recurrence accents in the downbeat, so the up head movement is more pronounced in the beat. Finally the movement quality is a sustained impulsiveness with sudden shaking in the close.

In figure 5 appear a global *legato* phrase and in the end of the A section resumes the *staccato-accent-local legato* articulation. So here the analysis presents new observations about the physical description of the movement and the movement quality characteristics. In the grouping units 8 and 9 the torso keeps in the center and its observed a gradual slight rolling of the head backward the close of grouping 9 (see the two red circles in measure 3, figure 5). The detail here is that this two last rhythmic cell are execute with the *fueye* closing, so it is produce a change in the instrument's timbre. All the accents annotated below the transcriptions are accents towards relaxation; this is the result of the employed slow velocity and the global *legato* articulation, which not produces movement of tension. The movement quality here its define as a sustained smoothness. The smoothness level is low because is observed in general a little head movement along the grouping units; is predominance stillness expressive (the expressive movement, perhaps, focuses on the face). Both groupings converge with a free flow; this observation is sustained for temporal fluctuation of the melodic expressive timing (the corporal attitude indicates that the movement prioritizes a concentrated relaxation). In grouping unit 10 the return of the *staccato-accent-local legato* articulation have a correlated with the expressive movement organization analysed in other grouping units. So the movement quality characteristics present a sustained impulsiveness, a sudden shaking in closing grouping and restricted flow. The accent is in the last note product of head shaking movement backward-up that conclude the A section.

In grouping unit 1 (see figure 6) it's observed a movement without sound as preparatory movement. The head and shoulders go up and return to the previous position to start playing. The employed effort is a sudden impulsiveness in rigorous accent toward relaxation. Then the grouping is executed with a quiet corporeal position and accents toward relaxation. These shoulders movements accentuate the first and the last note of the grouping unit (see red circles in figure 6). For it part grouping unit 2 start with the head movement goes forward and down that accentuated two consecutive eighth notes (see red circles in figure 6). The movement quality is a sustained impulsiveness in light accent towards tension (the movement velocity is slow). The end of the grouping show a shoulder movement that go up coincide with ascendant glissando between the E note and the A note. The grouping unit 3 repeats the same movement organization as in grouping unit 2 analysis. But here appear more accents at the level of the eighth notes (see red circles in figure 6). The close of the grouping is performed with the same shoulders movement as in grouping unit 2. Finally the grouping unit 4 started again with the head goes forward and down that accentuated the beat and no the eight notes as in the previous cases. The movement quality its define

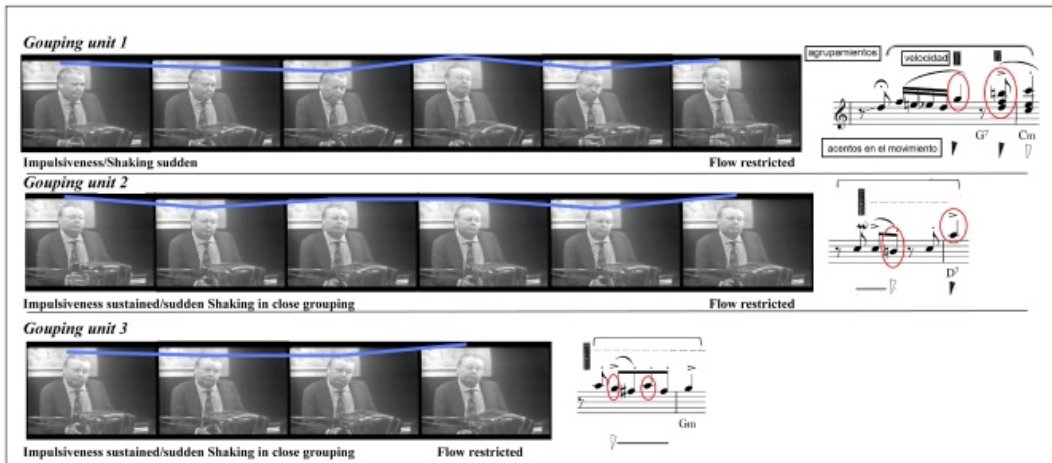


Figure 3. The grouping units 1, 2 and 3 of the tango “Chiqué” from A. Troilo’s version. In the left side is the photogram with the frame a frame of the video image, the line blue shows the different movements of the head forward and back-down. Below each photogram is the interpretation of the movement quality (impulsiveness, shaking, etc.). On the right side is the transcription of each grouping unit with Laban’s symbols notation. The movement notation represents the different types of accents in the movement and its respective velocity. The red circles indicate the organization and placement of movement accents in the phrase

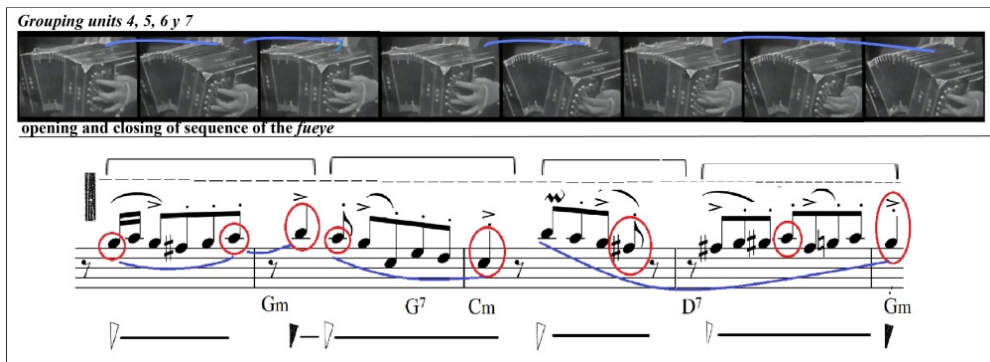


Figure 4. The grouping units 4, 5 and 6 of the tango “Chiqué” from A. Troilo’s version. The photogram above is the result of the movement of the instrument, the sequence of opening and closing of the *fueye* (air column). Below is the transcription of each grouping unit with Laban’s symbols notation. The movement notation represents the different types of accents in the movement and its respective velocity. The red circles indicate the organization and placement of movement accents in the phrase.

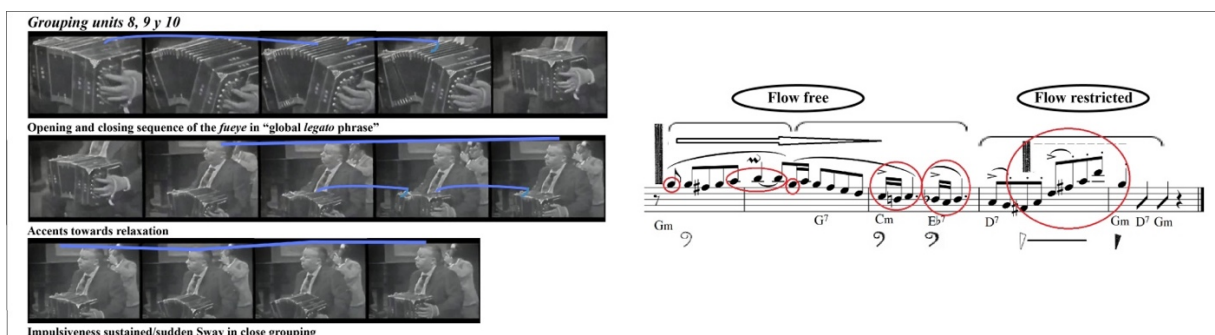
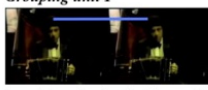



Figure 5. The grouping units 8, 9 and 10 of the tango “Chiqué” from A. Troilo’s version. In the left side is the photogram with the frame a frame of the video image, the line blue shows the different movements of the head forward and down. Below each photogram is the interpretation of the movement quality (impulsiveness, shaking, etc.). On the right side is the transcription of each grouping unit with Laban’s symbols notation. The movement notation represents the different types of accents in the movement and its respective velocity. The red circles indicate the organization and placement of movement accents in the phrase.


Grouping unit 1



Accents towards relaxation/Flow restricted




Movement without sound

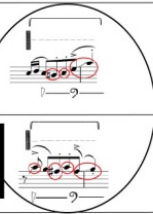
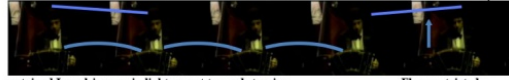


Preparatory movement: sudden Impulsiveness in rigorous accent towards relaxation

Grouping units 2 and 3




sustained Impulsiveness in light accent towards tension Flow restricted

sustained Impulsiveness in light accent towards tension Flow restricted

Grouping unit 4



sustained Impulsiveness with net acceleration values from low to high Flow restricted



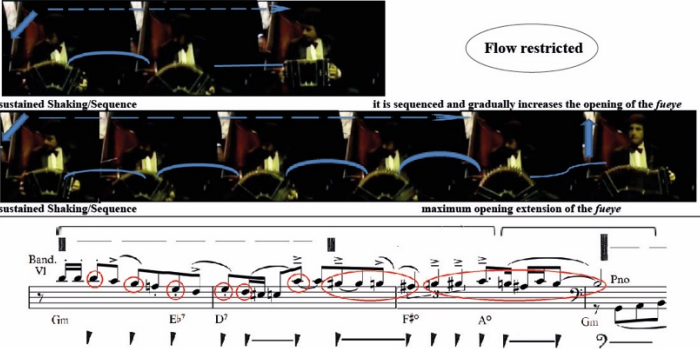


Figure 6. The grouping units 1, 2, 3 and 4 of the tango “Chiqué” from O. Pugliese’s version. In the left side is the photogram with the frame a frame of the video image, the line blue shows the different movements of the head forward and backward, and undulate blue line display the instrument’s opening and closing. Below each photogram is the interpretation of the movement quality (impulsiveness, shaking, etc.). On the right side is the transcription of each grouping unit with Laban’s symbols notation. The movement notation represents the different types of accents in the movement and its respective velocity. The red circles indicate the organization and placement of movement accents in the phrase.


Grouping units 5 and 6




sustained Shaking/Sequence the grouping units are executed with the same air flow



Flow restricted



sustained Shaking/Sequence It is sequenced and gradually increases the opening of the fauce



sustained Shaking/Sequence maximum opening extension of the fauce

Figure 7. The grouping units 5 and 6 of the tango “Chiqué” from O. Pugliese’s version. On the top is the photogram with the frame a frame of the video image, the line blue shows the different movements of the head forward and backward, and undulate blue line display the instrument’s opening and closing. Below each photogram is the interpretation of the movement quality (impulsiveness, shaking, etc.). On the bottom is the transcription of each grouping unit with Laban’s symbols notation. The movement notation represents the different types of accents in the movement and its respective velocity. The red circles indicate the organization and placement of movement accents in the phrase.

Grouping unit 7



sustained Impulsiveness Flow free




sustained Smoothness Flow free

Figure 8. The grouping unit 7 of the tango “Chiqué” from O. Pugliese’s version. In the left side is the photogram with the frame a frame of the video image, the line blue shows the different movements of the head forward and backward, and undulate blue line display the instrument’s opening and closing. Below each photogram is the interpretation of the movement quality (impulsiveness, shaking, etc.). On the right side is the transcription of each grouping unit with Laban’s symbols notation. The movement notation represents the different types of accents in the movement and its respective velocity. The red circles indicate the organization and placement of movement accents in the phrase.

as sustained impulsiveness with net acceleration values from low to high. This characteristic is observed in the gradual opening of the *fuete* (see figure 6). The torso movement is irrelevant for the analysis here, most of the time stayed in the center. In all grouping units it's employed a restricted flow, as in the same way as A. Troilo's version.

The grouping units 5 and 6 (see figure 7) present the head movement goes down and forward that accentuated, at the beginning, the beat position (blue dotted line in figure 7). All accents are marked accents toward tension. This movement repeat is accompanied by the torso forward and with a fast velocity. In measure 2 and time 3 with the change of the phrasing melodic, the movement is modified in relation to this readjustment phraseological. All the accents coincide with the notes that have a kind of rhythmic syncopation. Both grouping units are executed with the same air flow and the opening of the *fuete* it's sequenced and gradually increases (achieves the maximum opening extension of the *fuete* in the last four notes, such a climax). The movement quality its define as sustained shaking sequence and with a restricted flow. All the values are high that would lead us to analyse other parts of the body.

In figure 8 appear a global legato phrase in the *bandoneonistic* performing that expand the section A to the repeat of the melody by violins string. At the beginning it's observed a preparatory movement that anticipates the execution of grouping unit 7. The head movement up and backwards is accompanied by the torso; this movement employed a slow velocity. Then when is started the first attack (with an ornamentation) the head movement goes down and forwards, and the *fuete* opening achieves the most extension in A section (see figure 8). The movement velocity moves slow toward a fast velocity. The movement quality its define as sustained impulsiveness with a free flow. Finally the last rhythmic cell combines head movements in several directions. First goes down, forward and to the right side, then return up, backward and to the left side and finish in the center. The *fuete* present another opening form (plane aperture, see figure 8). The time-effort employed is interpreted as a sustained smoothness with a free flow. So these movements of the head, torso and the instrument seem a complementation of the initial movements. The conclusion here is that some expressive movements correspond to sound production and others accompany the phraseological and temporal modification.

6. DISCUSSIONS

As to Troilo, it was observed that the movement of head, torso (sustained impulsiveness and sudden shaking) and the instrument are communicating features of the melodic phrasing that correspond to particularities of temporal and rhythmic organization of the phrase. The intentional corporal action and sound organization of the phenomenal accents are coincident within musical phrases. The placement of accents and the organisation of phrases

demonstrate a recurrent expressive movement, particularly in the employ of an impulsiveness effort in accents in the upbeat and shaking sudden in the downbeat that close the grouping (with a ascendant melodic resolution). This accentual and gestural conjunction is generally coincident with the metric scheme, and also with the grouping units. As to Pugliese (by Álvarez) it was observed that the expressive gesture of head and torso is modified by the temporal-melodic alternation between *rubato* and the regular *tactus*. When the head movement goes down and forward and it's co-articulate with the regular *tactus*, is related to the sound of *yumba*, a rhythmic pattern of the stratum of accompaniment [1]. In the grouping units was found that instrumental movement has performed a *fuete* opening that has a progressive and gradual augment in each motivic repetition. Usually achieve the most extension opening in the phrase final (such a melodic climax). However, the phenomenal accents and the expressive sound patterns are not performed in phase with the metric structure: the temporal distribution occurs at different levels of the metric hierarchy in the same phrase. Its define on the one hand, that in Troilo, the in-phase metrical accents are used to elaborate the durational rhythm and the melodic variation at *the local phrase level*. On the other hand, in Pugliese, discursivity is elaborated based on out-of-phase expressive accents, resolved at *the global level of the grouping units*. These results coincided with the analysis of the compositional and performative components that was studied in a previous work [2]. Intrinsically the expressive movement style and the variation of rhythmic-melodic patterns contain invariant features; this means that there is a way of varying, which is more identified with one of the modes of production of musical sense rather than with the other. It's could say that there is a movement style *troiliano* and another *pugliesiano*.

Finally similar expressive movements were observed in both musicians. The head movement down and forward, and up and backward are common sound production gestures and accompany the phraseological and temporal modification in the *bandoneonistic* tango performance. So these characteristic gestures are a part of the movement repertory of the musical expressive that the musicians put into evidence in the practice of tango. For its part the Flow-Effort presents a restricted flow as a result of the *staccato-accent-local legato* articulation, and a free flow for global *legato* passages. This definition has implications for the instrumental pedagogy of bandoneon in the tango execution.

To conclude the discussion it may say that the music performance provides insights for the observer to construct schemes, types or cognitive representations of the motor action displayed by the musicians. That as seen in the present study the representation is in general associated with exclusively sound cognitive material. This means, perhaps, that the music style generates in the audience cognitive representations that allow it to recognize the variations of the compositional and performative components. So the sound and visual information would be intertwined by the communication of the motor action made by the stylistic execution of the musicians. Never-

theless the observations of the movement in tango performance review the category of effector gestures [7, 10]. First it's complicate to separate the gesture in micro analytical categories such communicative gestures, gestures to facilitate the sound, gestures to accompany the sound or effector gestures. There is no an effector gesture that could be observed, there are a lot of movement that are related in simultaneous, and many of this gesture refers to an expressive manner of musical execution. For example the movement of head as alternation down, up, backward and forward are no effector gesture, is not related to the instrumental technique of the motor action or to a communicative gesture but they are mixed together to express the specific sound production. So the body movement and the sonic form combine to shape a multimodal-stylistic communicative complex in tango performance. In addition this definition of the gesture itself introduces both a material and conceptual dimension, by explicitly conceiving that motor behavior in a musical situation is a cornerstone of the mediation between mind and physical environment, leave the Cartesian dichotomy intact, limiting itself to introducing the action corporal as a mere intermediary of this opposition. Although we do not intend to provide a unique definition of *gesture*, we believe that it is useful to compare the various definitions and point out the specificity of this topic in the musical domain, especially in a concrete communication fields as is in popular music of Latin-American. These studies try to contribute definitions and debates to the embodiment frameworks and others theories of investigation of movement and sound in musical performance.

7. CONCLUSIONS

In this work we analyse the quality of body movements [8] and effector gestures [7, 10] in the execution of the rhythmic-melodic-expressive patterns of two tango *bandoneonists* in order to describe the sound-kinetic complex resulting in each performative style. Subsequent studies should incorporate analysis with mediation technologies (quantitative analysis) and in videos of the current typical tango orchestras, considered some “*troilianas*” and others “*puglesianas*”. The analysis of the link between musical gestures, as carriers of meaning based on an action-oriented ontology, and the musical structure, provide a more holistic explanation of the meaning of the style construct and the modes of production of musical sense in the tango.

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