# Ornamental functions in textural domain from the proposal for a textural contour

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**Abstract**: Textural Contour is a proposal for textural analysis that emerges from the approximation between Partitional Analysis and Musical Contour Theory. Partitional Analysis provides a mapping of all possible textural configurations inside a specific number of sound sources through the translation and expansion of concepts of Theory of Integer Partitions to the musical domain. The ranking of partitions from the simplest to the most complex enables to create a contour of textural complexity, which also allows the establishment of ornamental functions derived from the interpretation of contour elements as melodic structures.

**Keywords:** Textural Analysis. Partitional Analysis. Musical Contour Theory. Textural Contour. Ornamental functions.

**Funções ornamentais no campo da textura a partir da proposta de um contorno textural**

**Resumo**: O Contorno Textural é uma proposta para a análise da textura resultante da mediação entre a Análise Particional e a Teoria dos Contornos. A análise particional fornece um mapeamento de todas as possíveis configurações texturais dentro de um número específico de componentes sonoros a partir da tradução e expansão de conceitos da Teoria das Partições de Inteiros no campo musical. O ranking das partições da mais simples à mais complexa possibilita a criação de um contorno de complexidade textural, o que também propicia o estabelecimento de funções ornamentais derivadas da interpretação de elementos do contorno como estruturas melódicas.

**Palavras-chave:** Análise textural. Análise particional. Teoria dos contornos. Contorno textural. Funções ornamentais.

## 1. Introduction

Classic music in Twentieth Century was marked by significant changes in compositional practices, resulting in the overcoming of the tonal system and its traditional pillars based on harmony, melody, rhythm and musical form. New theories were developed intending to reveal the construction of the new musical discourse. Although most of them still focuses on pitches and their relations, other musical parameters, for instance, the musical texture, became prominent.

Despite the importance of the texture in contemporary music, most related theoretical approaches were intuitive, or considered the texture only as a combination or result of other musical parameters. The early studies on texture were, in fact, dedicated to describe verbally the textural changes through traditional labels. Wallace Berry's approach (1976), on

the other side, provides, for the first time, a set of basic methodological tools and concepts for a more objective textural analysis, allowing the development of a formalization of the field.

Berry claims that the texture can in fact assume a structural importance in the exposition of the composer's idea: "textural progression and alteration are of course fundamental techniques in thematic development as in any manipulation of motivic materials in a generally unstable context." (BERRY, 1976: 236). Berry also refers to the delineation of form caused by the textural changes in Josquin's motet *Tu pauperum refugium*. Besides the articulation of musical form, texture can create also differentiation for sections with contrasting melodic themes. Textural configurations can emphasize a rhythmic or melodic idea, create coherence from their repetition and arouse emotional responses.

Using numerical representations that show the interactions of sounding components and concurrent musical ideas, Berry proposes a measurable and comprehensible coding for texture. This framework inspired the formulation of the Partitional Analysis (PA – GENTIL-NUNES, 2009) by the mediation of Berry's textural analysis and the Theory of Integer Partitions (see, ANDREWS, 1984). In PA, textural configurations are read as partitions and analyzed in their structural and dynamical aspects. PA can be understood as a development of a more embracing, precise and conscious textural analysis, mainly by the construction of an exhaustive taxonomy, and includes original concepts, graphics, compositional applications and computational tools.

## 2. Textural Contour

Musical Contour Theory (MCT), mainly developed by Robert Morris (1987 and 1993), allows the establishment of relations among distinct musical structures, departing from the abstraction of the absolute value of a given parameter. Numerical representations describe levels of musical behaviors and their relative position in time according to some criterion. The levels are ordered from the lowest (represented by "zero") up to the highest (represented by *n*-1, where *n* is the number of different levels in the structure). MCT developed mainly in the melodic domain, although other parameters were also addressed[1].

According to Morris, a contour is "a set of points in one sequential dimension ordered by any other sequential dimension." (MORRIS, 1987: 283). This definition suggests that any musical parameter structurally linear can be related to a contour. The basis of Textural contour is ordering the textural progressions from the simplest to the most complex in a vectorial structure[2] (MOREIRA, 2015b).

Textural Contour establishes a ranking of all textural configurations, applying hierarchical criteria derived from PA on the partition set[3]. The levels of complexity inside the vector are relative and their positions reveal their grade of textural motion. The main objective of Textural Contour is the organization of the textural progressions through the reading of their internal structural configurations as points in a curve of complexity. As a contour, it can be manipulated by transformational operations (like inversion, retrograde, retrograded inversion, rotation, etc.).

Partitions form a partially ordered set, which implies that the ranking is not linear and some partitions are, in fact, incomparable. According to Morris, a partially ordered set (*poset*) is composed by "elements whose ordering is not necessarily totally defined; some elements are defined to follow or succeed others, but not all need be so constrained" (MORRIS, 1987: 345).

The incomparable partitions are assigned with the same level of complexity in Textural Contour. In order to differentiate them, an appended sub-level, that expresses the amount of real components is included. Additional attachments of sub-levels are not practical, because of the fractal nature of partitions set, where the recurrence of incomparable partitions is inevitable mainly at very high levels. Considering the lexical partitions set for $n = 6$ and their respective levels and sub-levels, in a total of 29 partitions, only 13 different levels are implied and two of them share also with the same level and sublevel ([2 3] and its pair [1 5] and [1 $2^2$] and his pair [$1^2$ 4])[4] (Table 1).

| Levels | Sub-levels | Partitions |
|---|---|---|
| 0 | 0 | 1 |
| 1 | 0 | 2 |
| 2 | 1 | 3 |
| 2 | 2 | $1^2$ |
| 3 | 1 | 4 |
| 3 | 2 | 1 2 |
| 4 | 1 | 5 |
| 4 | 2 | 1 3 |
| 4 | 3 | $1^3$ |
| 5 | 1 | 6 |
| 5 | 2 | 1 4 |
| 5 | 2 | $2^2$ |
| 6 | 2 | 1 5 |
| 6 | 2 | 2 3 |
| 6 | 3 | $1^2$ 2 |

| Levels | Sub-levels | Partitions |
|---|---|---|
| 7 | 2 | 2 4 |
| 7 | 3 | $1^2$ 3 |
| 7 | 4 | $1^4$ |
| 8 | 2 | $3^2$ |
| 8 | 3 | $1^2$ 4 |
| 8 | 3 | 1 $2^2$ |
| 9 | 3 | 1 2 3 |
| 9 | 4 | $1^3$ 2 |
| 10 | 3 | $2^3$ |
| 10 | 4 | $1^3$ 3 |
| 10 | 5 | $1^5$ |
| 11 | 0 | $1^2$ $2^2$ |
| 12 | 0 | $1^4$ 2 |
| 13 | 0 | $1^6$ |

Table 1: Ranking partitions with sub-levels from 1 to 6.

An important feature of Textural Contour is the ability to compare two distinct textural progressions, relating them to the same basic contour. It is also possible to check

contour relations between external musical parameters (such as melody, rhythm and form) and the texture in order to grasp recurrent gestures in heterogeneous musical fields.

### 3. Ornamental functions in texture

The linearity of the curves of textural contour, resembling the shape of a melody, allows the application of traditional tools of melodic analysis to the textural progression. The methodological approach proposed here considers the specific function, either structural or merely ornamental, that each partition plays in textural narrative.

Two ornaments are set for textural analysis: a) passing texture – textural configuration located, sequentially, between a higher and a lower level; b) neighbor texture – textural configuration preceded and succeeded by a same level (higher or lower).

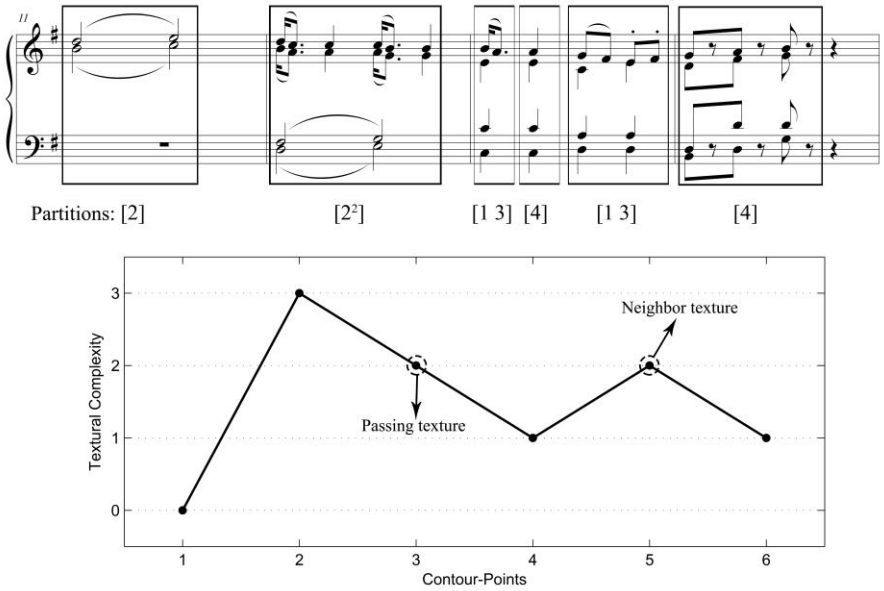


Figure 1: Textural contour of Mozart's *Eine kleine Nachtmusik*, m. 11-14, with ornamental texture.

The textural progression of the Mozart's (1787) *Eine kleine Nachtmusik,* for exemple, is < [2][$2^2$][1 3][4][1 3][4] >, which results in textural contour < 0 3 2 1 2 1 >. Level 2 has two ornamental functions: (a) passing texture by connecting level 3 to level 1; (b) neighbor texture by alternating with level 1 (Figure 1). In fact, the prefix-like role performed by level 2 in relation to level 1 can also be observed in the rhythmic structure, since the blocks of the level 1, (partition [4], in third and fourth measures of the Figure 1) occupy both the longest duration of the measure, in the first case, and the downbeat in the second.

Both ornamental functions in Mozart's Quartet are articulated by adjacent levels. Such elements may also occur considering distant levels, as in the fifth piece of Webern's *six Bagatelles for string quartet*, op. 9 (Figure 2).

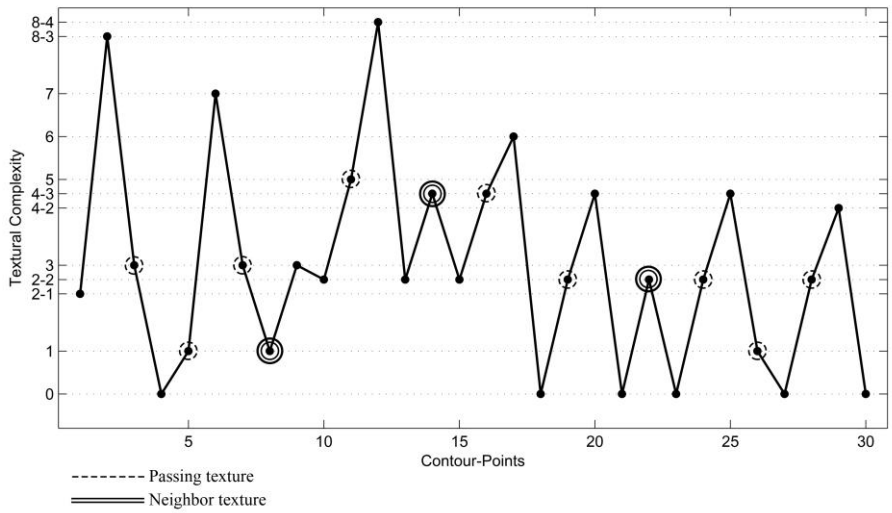


Figure 2: Passing textures and neighbor texture in Textural Contour of Webern's *Six Bagatelles work for string quartet*, op. 9, V.

In MCT, the temporal issue is normally disregarded, considering only the simple succession of levels (contour-points) and leaving out the information about sequential repetitions and durations. However, temporal relations in the case of a textural progression may be very critical. For example, in the final section of the Introduction of Stravinsky's *Rite of Spring*, the interval expansion of first motif < 0 1 2 1 >, caused by a change in the last level, resulting in < 0 4 5 3 >, would be not clear without temporal information (Figure 3).

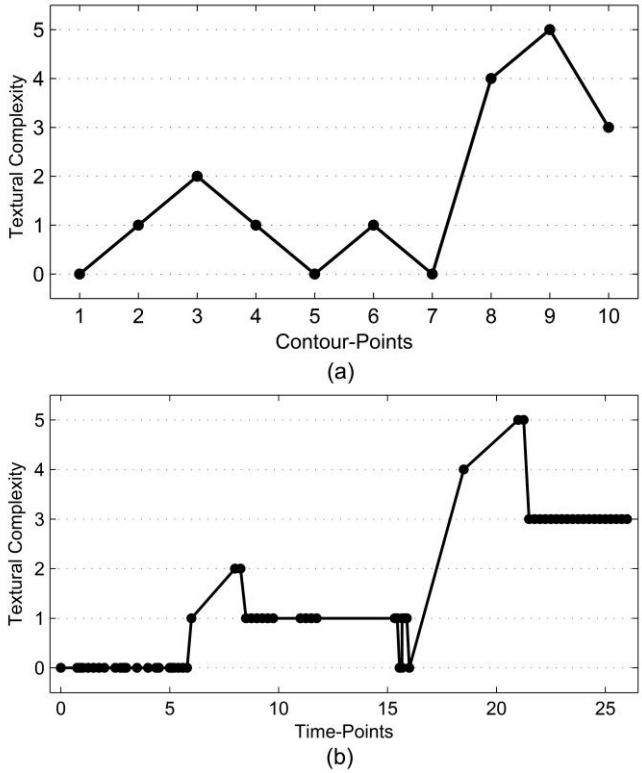


Figure 3: Textural Contour of Introduction of Stravinsky's *Rite of Spring*, m. 66-75, with (b) and without time dimension (a).

The durations of the levels can produce ornamental effects depending on the relation between adjacent pairs. From temporal consideration, other three ornamental functions are set for textural analysis:

a) Textural appoggiatura – textural configuration with a short duration, followed by an adjacent level, in compensatory movement, establishing a resolution sense;
b) *Echapée* texture – similar to textural appoggiatura, consists in a textural configuration, also with short duration, followed by a distant level in opposite direction;
c) Pedal-Texture – textural configuration that repeats continuously, sequentially or not, creating a pedal-point effect.

For example, the textural contour of Villa-Lobos' *Choros no. 1* for solo guitar presents a large recurrence of textural appoggiaturas between levels 3-1 and 2-1 (noted by dotted circles). *Echapée* texture (indicated by double circles) occur twice in the most complex level forming the larger peaks in the contour. The constant repetition of levels zero, 2-1, 2-2 and 3-1 creates a pedal-texture sense (Figure 4).

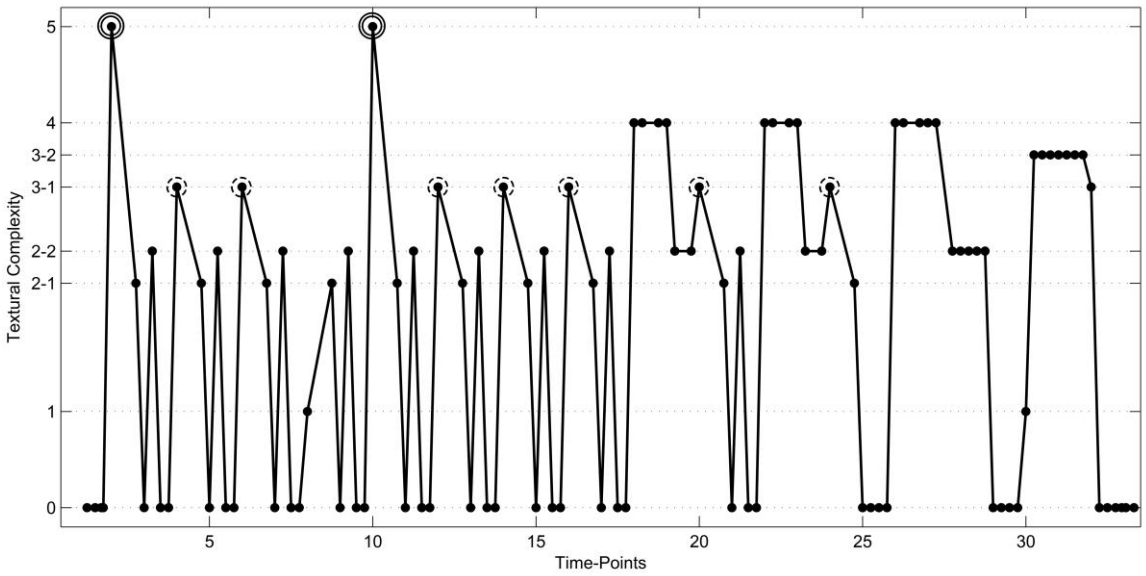


Figure 4: Textural appoggiatura, escape and pedal texture in Textural Contour of Villa-Lobos' (1920) *Choros no. 1* for solo guitar.

### 3. Texture as a motive

The perception of textural discourse as a group of motives also allows the investigation of the employment of transformational processes by variation techniques. It can

be observed in the textural contour of the first theme of third movement of Beethoven's *Sonata no. 8 (Pathetique),* in C minor, Op. 13 (Figure 5).

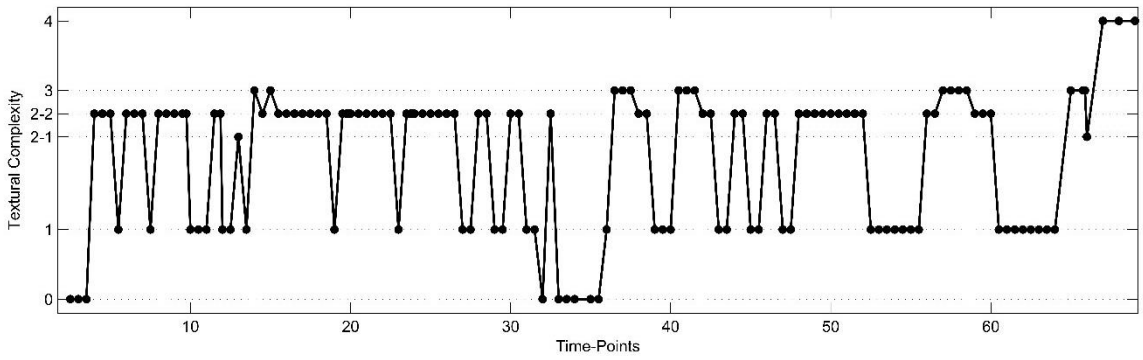


Figure 5: Textural Contour of Beethoven's *Sonata no. 8 (Pathetique).*

The theme's contour shows constant use of pattern repetitions, including neighbor textures. Intending to facilitate the visualization of transformational processes applied in the motive structures, it is proposed a transcription of levels of textural contour in traditional musical notation, with each staff line referencing a specific level and the real durations of each level in textural progression (Figure 6).

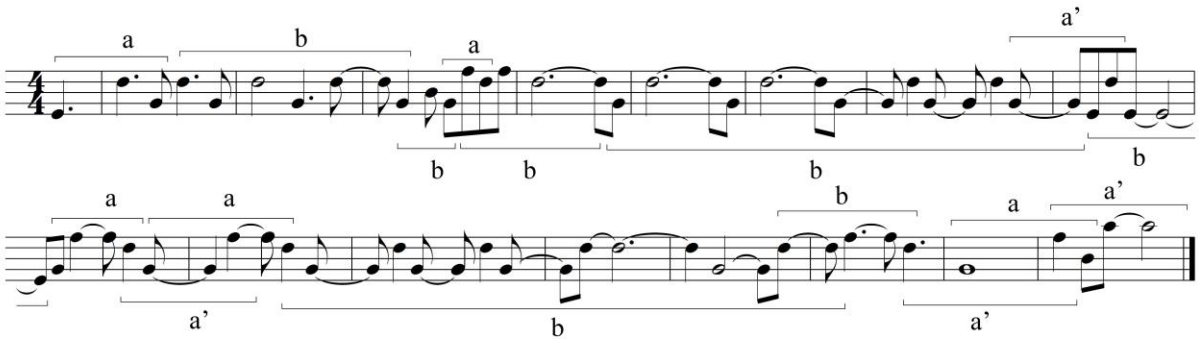


Figure 6: Transcribed version of Textural Contour Beethoven's Sonata.

Two basic textural motives (< 0 2 1 >, marked as *a*, and neighbor textures, marked as *b*) are combined and repeated literally or with variations, interval expansion and contraction and concatenation of consecutive versions of both. These motives present typical temporal enlargement and compression founded in traditional motivic development. The motivic structure forms a pattern considering a combination (*a* + *b*) which is repeated, with variations, ending with the incomplete pattern (only with motive *a*), suggesting that the conclusion will come in the continuation of the Sonata.

**Conclusions**

Textural Contour presents an original perspective for textural analysis, providing a set of tools that can be applied in musical analysis and composition as well. Consideration of the roles of textural configurations as part of the textural narrative allows the establishment of a hierarchy, with a clear stratification of structural and ornamental textures.

Observation of considering as a motivic element can reveal recurrent gestures and patterns that can guide the composer's creative process. The translated version of Textural Contour to traditional notation allows the application of other techniques of motivic analysis, providing different views of the textural behavior.

For future research, the comparison between textural and other kind of contours can led to the formalization of new relations that eventually can be also exploited in composition, attempting to refine the musical comprehension in the realm of macro-form.

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[1] See, for example: Morris (1993), Sampaio (2012), Marvin (1988 and 1991).

[2] Although the expression "textural contour"' has already been used by Robert Clifford (1995), the proposals are quite different, because Clifford considers texture as an organization of pitch events (like melodic contours and chords) and defines his concept of textural contour as a series of movements in pitch space.
[3] For a detailed explanation of how the ranking is applied in the partitions set, see MOREIRA (2015a and 2015b).
[4] In abbreviated notation, the bases show the parts and the indices show its multiplicity (GENTIL-NUNES, 2009).