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Parsimonious relations between Guitar Textural Proposals

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Resumo: A *Análise de Textura Violonistica* é uma proposta analítica direcionada à composição para violão que expõe as relações entre a estrutura textural e os procedimentos técnicos utilizados na performance instrumental. As *Propostas Texturais Violonísticas* (PTVs) são as configurações específicas extraídas através deste processo analítico. No presente trabalho, o foco reside no reconhecimento de movimentos parcimoniosos entre PTVs, isto é, distinções mínimas entre padrões texturais relacionados a determinados usos do instrumento. *Parcimoniosidade* define-se no contexto das teorias da *Variação Progressiva, Neo-riemanniana e Análise Particional*. Os trabalhos prévios de Fabio Adour e dos autores Sérgio Freire e Pedro Cambraia apresentam perspectivas sobre a relação entre textura e performatividade violonística. A série de peças progressivas *Études Simples*, de Leo Brouwer, é adotada como referência. O trabalho traz como resultado uma proposta de ordenamento em rede de configurações técnico-texturais conectadas por relações parcimoniosas.

Palavras-chave: Composição, Violão, Textura Musical, Análise Musical, Leo Brouwer.

Abstract: *Guitar Textural Analysis* is an analytical proposal devised for the composition for the guitar that exposes the relations between the textural structure and the technical procedures used in the instrumental performance. The *Guitar Textural Proposals* (GTPs) are the specific configurations extracted in this analytical process. In the present work, the focus remains on recognizing parsimonious movements between GTPs, that is, minimal distinctions between patterns of use of the instrument combined with respective textural configurations. *Parsimoniousness* is defined in the context of *Developing Variation*, *Neo-Riemannian Theory*, and *Partitional Analysis*. Previous works by Fabio Adour and authors Sérgio Freire and Pedro Cambraia present perspectives on the relation between texture and guitar performance. Leo Brouwer's series of progressive pieces *Études Simples* is adopted as a reference. The work results in a proposal for a ordered network of technical-textural configurations connected by parsimonious relations.

Keywords: Composition, Acoustic Guitar, Musical Texture, Musical Analysis, Leo Brouwer.

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Parsimonious leading is a metaphor widely used in Western music theory and practices, being observed in the fundamentals of counterpoint, the voice-leading of tonal harmony, or in compositional and analytical procedures of the XX and XXI centuries. Ethan Haimo (1996), for example, presents a proposal for analyzing Schoenberg's works based on one of his composition concepts: the *Developing Variation*. He departs from conceiving the process of variation as a compositional procedure divisible into minimal steps. From there, one can comparatively observe a musical object and its relations with derived variations.

> (...) we can deduce what kinds of transformations a motive can undergo in the process of developing variation. Intervals can be expanded, contracted, rearranged, inverted, and reversed in order; notes can be added to the beginning or the end or inserted in the middle; durations can be augmented, diminished, and shifted in metric position; pitches can be doubled, repeated, and transferred to other registers. (HAIMO, 1996, p. 193).

These procedures can be arranged in order to determine a parsimonious route that leads the original structure step by step to a particular derived version.

> (...) if the changes are made gradually, it is possible to transform a motive so completely that a later manifestation might be thought of as a dramatically contrasting idea when compared directly with the original, but still can have been achieved by an eminently logical, and easily audible, process of organic development. (*ibid.*, p. 193).

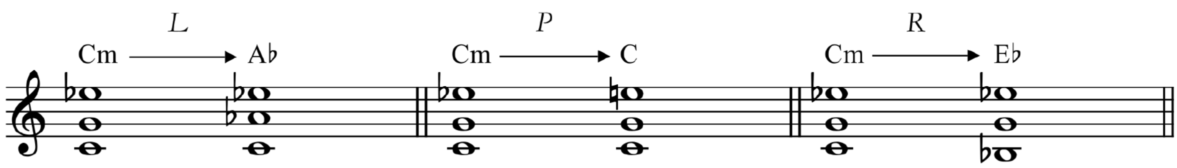
The research literature on parsimonious movements or transformations in pitch and rhythmic fields is vast, including all the analytical works based on Developing Variation.[1] In the scope of harmony, the Neo-Riemannian theory is also based on the idea of adjacency relations between harmonic entities:

> The neo-Riemannian response recuperates a number of concepts cultivated, often in isolation of each other, by individual nineteenth-century harmonic theorists. The following exposition identifies six such concepts: triadic transformations, common-tone maximization, voice-leading parsimony, "mirror" or "dual" inversion, enharmonic equivalence, and the "Table of Tonal Relations". (COHN, 1998)

[1] Walter Frisch (1984) proceeds a detailed analytical work on Brahms procedures from the perspective of Developing Variation. Stephen Collisson (1994) analyses Arnold Schoenberg's string quartets based on *Grundgestalt* and Developing Variation concepts.

Richard Cohn, for example, demonstrated "the potential of consonant triads to engage in parsimonious voice leading" (1997, p. 2), considering a family of trichord transformations that consists of two features: the maintenance of two notes and the articulation by the minimal movement of the third one (half or whole step). This family comprises three basic operations: L (leading), P (parallel), and R (relative; see Figure 1). Cohn shows, by mathematical proof, that the only set class that allows such parsimonious transformations between its internal elements is [037], which represents the consonant triads.

FIGURE 1 – The family of parsimonious transformations between consonant triads applied to the C-Minor chord: L (leading), P (parallel) and R (relative) relations (COHN, 1997, p. 2).



These parsimonious relations between chords or sets are represented by graphs, which is an essential aspect of the neo-Riemannian theory.

> From a theoretical point of view, parsimonious graphs provide a visual representation of group actions on families of chords. This can prove useful to those who have a limited background in group theory as well as those whose background is more extensive. For those with a limited background, these graphs offer a convenient way of seeing (literally) parsimonious organization within families of chords, thus providing an intuitive sense of the complexities of group actions on these families. For those with a more extensive background, parsimonious graphs can provide a way of discovering relationships between group structures and families of chords. (DOUTHETT and STEINBACH, 1998)

Carlos Almada (2008), based on David Kopp's "system formed by 13 classes of operations (...) which exhaust the possibilities of connections between triads with common notes" (p. 2), developed vector representations that formalize triad transformations, enabling computational analyses based on neo-Riemannian approach. In a computational program implemented in Matlab, "vector K is employed for determining which is the operation that connects each couple of triads entered as input" (p. 9); vector G is used for the production of graphs based on trajectories of the *Tonnetz* (see COHN, 1997).

Based on the exhaustive list of relationships between elements in a given field, some authors proposed a similar approach in recent years but applied to the musical texture.

The starting point is the work of Wallace Berry (1976, p. 184-199). He proposes vertical groupings' formalization following varied criteria, such as the coincidence between points of attack, durations, and voice leading movements. In this proposal, Berry graphs these configurations as stacked numbers, which represents the textural configurations. We will call this approach here as *Textural Analysis*. In three separate papers, Pauxy Gentil-Nunes (2006, 2014, and 2018) evaluates in detail some relevant to the present study issues raised by Berry's approach.

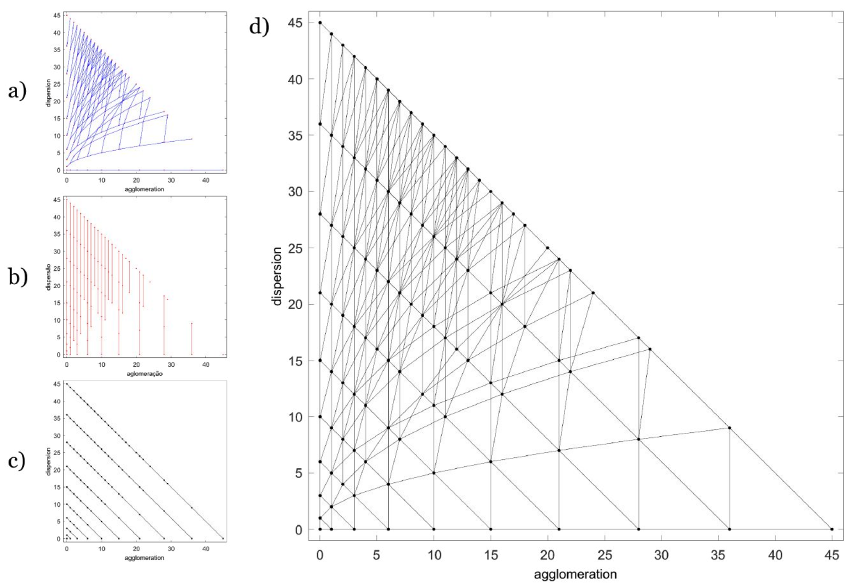
These three texts also elucidate the critical differences in approach between *Textural Analysis* and *Partitional Analysis* (PA - GENTIL-NUNES, 2009). Among the distinctions, PA provides an exhaustive assessment of the adjacencies between the textural configurations (now treated as *partitions*). This proposal leads to the formulation of a general map of vertical grouping possibilities, now departing from any arbitrary criterion, which can be either the one already presented by Berry or any other proposed by the composer or analyst. Their inclusion relations are classified then as *operators*, of which the main ones are *resizing* (***m***), *revariance* (***v***), and *transference* (***t***):

1. *Resizing* (***m***) is the relation between two partitions in which one part has a unitary difference in thickness, all other parts being identical. This is the case, for example, between [1,2] and [1,3], or [1,1,2] and [1,1,1]. When inserted in a temporal context, it is called positive (***m***+) or negative (***m***-), according to the successive addition or suppression.
2. *Revariance* (***v***) is the relation between two partitions in which the number of parts has a unitary difference, caused by a distinct unitary part. This is the case, for example, between [1,2] and [1,1,2], or [1,1,1] and [1,1]. When inserted in a temporal context, it is called positive (***v***+) or negative (***v***-), according to the successive addition or suppression.
3. *Transfer* (***t***), on the other hand, is a composite relation between two partitions, which exhibit a resizing and a revariance between them, but in opposite directions (***m+ and v-*** or ***m- and v+***). These combinations can be understood as a transfer of a unit from within a part to a new distinct unit part or vice versa – for example, [5] and [1,4] or [1,1,1] and [1,2]. When inserted in a temporal context, it is called positive (***t***+) or negative (***t***-), according to the unit

part's successive dismemberment or absorption. The transfer quality grows toward the most dispersed (polyphonic) partitions.

Resizing, revariance, and transfer are *adjacency* relations between partitions (that is, relations where there is no possibility to find intermediate elements). Inserted in the temporal flow, they form leading structures, which can be used by the composer to create connections or disruptions, in the same way as the voice leading. These relations' exhaustive taxonomy form networks that express the possibilities of parsimonious movements or gaps between textural configurations. Three nets are formed by resizing, revariance, and transfer: respectively, *mnet* (Figure 2a), *vnet* (Figure 2b), and *tnet* (Figure 2c). We can plot each textural configuration by counting all the binary relations between its components and classifying them according to its collaboration or contraposition nature. From this operation, two indices emerge in each textural configuration: the *agglomeration* and *dispersion* indices. They are then used to locate each specific configuration in this *phase space*, covering all possible states of a given instrumental setting. This exhaustive taxonomy defines the *lexical set* of textural configurations, or, for short, *lexset* (for instance, the string quartet has *lexset* 8, considering double stops; the guitar has *lexset* 6; in the examples of Figure 2, there are 9 presumed sound sources, e. g., *lexset* 9).

FIGURE 2 – The three primary nets between textural configurations: a) *mnet*; b) *vnet*; and c) *tnet* in the *partitiogram* (in this case, *lexset* = 9). The union of these nets forms the background structure (d) from which the analyst or composer can assess the trajectories and patterns delineated in musical works (see GENTIL-NUNES, 2017).



The union of these three primary networks (*mnet*, *vnet*, and *tnet*) provides a general map of the adjacencies between vertical groupings in general (Figure 2d). The analysis of the trajectories and patterns that appear on this map departing from musical works is one of the analytical methods used in Partitional Analysis. This graph, where the coordinates are the agglomeration and dispersion indices, and the adjacency relations are evaluated in this network of discrete points, referring to partitions, is called a *partitiogram*.

The composer or creator can apply these configurations to several musical fields or even extra-musical ones. For example, he can drive the rhythmic texture (grouping through vertical comparison between attacks and durations of simultaneous parts) but also timbre, melodic texture, spatialization, choreography, or narrative structures, among other fields. This feature also means that fields with remarkable differences in its sensitive nature can acquire automatic and reciprocal isomorphism, which can be very useful for converting one surface to another or generating different surfaces from a single structural sequence of textural configurations. Gentil-Nunes (2017, p. 116-117) gives some examples of this possibility at the elementary level.

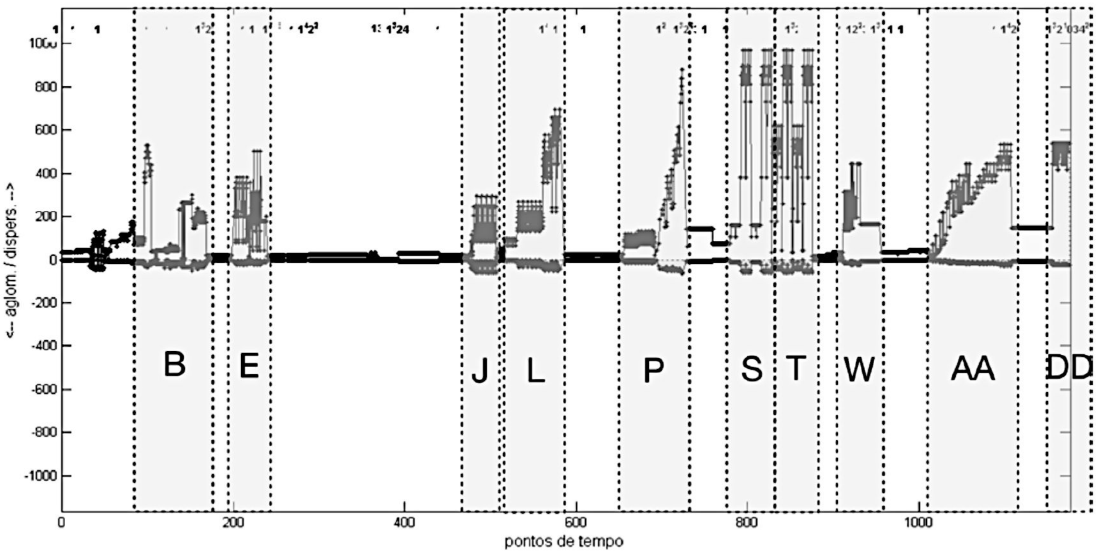
Didier Guigue, for example, has developed some algorithms using PA as a basis for assessing orchestral amalgamations and fissures in Webern's *Variations* Op. 30, for orchestra, and applying the concept of *partition* to the grouping of instrumental colors, what he calls as *instrumental partitioning*.

> In terms of orchestral writing, Webern is known for his economy and pointillism, which our analysis highlighted. The expectation, then, is to be, in most of the time, in front of fine and transparent textures. (...) To support this hypothesis, we developed an algorithm, Relative Voicing Complexity (RVC), based on Partitional Analysis, a theory proposed by Pauxy Gentil-Nunes ([5]), which refines the methodological proposal of Wallace Berry ([2], p. 184). The more the instrumental parts are agglomerated - that is, the more they form homophony and/or homorhythmy - the more the texture becomes "simpler", and the reverse when dispersed. (...) line ((Partition) (crit.)), shows the format we use so that the parsing analysis is intelligible for OpenMusic and SOAL, encoded in Common Lisp. (GUIGUE, 2018, p. 125)

A similar approach was used by Thiago Cabral Carvalho (2017, p. 184) to analyze the orchestration of Hermeto Pascoal's *Sinfonia in Comics*. Through the partitional analysis carried out using the ***Parsemat®*** software (GENTIL-NUNES, 2004), Thiago selects the sections of the work in which there are more significant instrumental heterogeneity and greater timbre diversity (Figure 3).

On the poietic side, Liduino Pitombeira (2017) provides a remarkable example of compositional planning based on the extraction and systemic modeling of structures of the partitiogram. The relations between the rhythmic partitions of an excerpt of *Ponteio n ° 3*, by Camargo Guarnieri (Table 1), serve as part of a model for the compositional design of an original Pitombeira's piece called *Tejido*.

FIGURE 3 – Identification of the sections with higher instrumental complexity in Hermeto Pascoal's *Sinfonia in Comics* (CARVALHO, 2017, p. 184) using Parsemat® software (GENTIL-NUNES, 2004).



On the other hand, Daniel Moreira (2019) expanded the applications of PA to the various tasks of the composer during his creative process. Several examples of applications to timbre, articulation, contour, voice leading, among others, are presented, generating a series of innovative concepts and tools for the constitution of a new field called *Textural Design*.

One of the most recent applications of Partitional Analysis comes from the observation of how texture conditions certain types of couplings between instruments and the bodies of performers. This application is called here as *performative partitioning*. This type of research arises as a natural consequence of the focus on texture, which emerges from a centrifugal movement from the musical structure to the musical surface. Much of the relations between partitions results from interactions that occur at an even more superficial level, between instrumental combinations and their techniques. From this observation, some researchers of PA have developed new concepts and tools covering more specific fields, such as the textural issues arisen by the composition of solo pieces for guitar (RAMOS, 2017), monophonic instruments (GENTIL-NUNES, 2016), and piano (MORAES, 2020). Daniel Moreira's work (2019) also falls within this scope by focusing on AP's applications to the compositional process.

TABLE 1 – Consecutive rhythmic partitions and their relations in *mnet*, *vnet* and *tnet* networks in the initial section of *Ponteio n °3*, by Camargo Guarnieri (adapted from PITOMBEIRA, 2017, p. 10).

Bar number	Partition	Relation with next partition
0	[1]	2*v
1-3	[1,1,1]	2*m
3	[1,1,3]	2*t
	[1,1,1,3]	-2*t
	[1,1,3]	2*t
	[1,1,1,3]	-m and -v
4	[1,1,1]	2*m
	[1,1,3]	2*t
	[1,1,1,3]	-2*t
	[1,1,3]	2*t
5	[1,1,1,3]	-2*t

Guitar textures and the emergence of *Guitar Textural Proposal* (*GTP*)

Fabio Adour (1999), when thinking about guitar composition, does it from the point of view of texture. Adour divided the research by traditional textural categories – monophony, homophony, polyphony, etc. In each section, Adour meticulously described the technical implications of implementing these textural categories on the guitar. For instance, in the *polyphony* section, the author presents a progressive approach, from two voice-leading with a passive one (a pedal as limit) to four-voice polyphonic structuration (which is challenging to play and rare in the guitar repertoire). He analyzes the technical problems and proposes compositional solutions. The idiomatic guitar textures – blocks, arpeggios, broken chords, etc. – are also described and analyzed. In short, Adour's work intends to be a supplement for the poor informational material in the instrumentation literature about composition for guitar:

> Helping to enrich the sound palette available to those who write music is always an extremely urgent and useful task. As far as we are concerned, we will use every effort to fill a specific gap: information about the guitar. Insufficient publications on the instrument, in fact, have inhibited many composers from writing for it; some do not even consider the possibility of taking advantage of its unique sound. On the other hand, those who try to use it are either guitarists, or do not explore its various possibilities, or try to obtain information directly from the interpreters. (ADOUR, 1999, p. 2.)

Adour was aware of the insufficiency related to the traditional approach of the textural parameter:

> What is it, anyway? Accompanied double melody, characterizing a variant of the homophonic texture? Counterpoint with accompaniment, characterizing a variant of the polyphonic texture? Or just one of the textural possibilities that academic classifications fail to address? For us, it does not imply to point out new and supposedly sufficient categories; we just should notice the insufficiency of the traditional ones, as they cannot limit our work. Therefore, we will use them very freely, allowing us to expand their concepts to the maximum, always with well-defined purposes (p. 11).

Focused on the performance aspects, Sérgio Freire and Pedro Cambraia (2015) also work from a textural perspective, aiming to produce information about how performers play basic textures founded on guitar repertoire. They take as objects of analysis performances of excerpts extracted from pieces that are remarkable examples of specific configurations, namely two-voice polyphony on Bach's *Bourrée* (from the *Suite for Lute* in E-minor); choral texture on Brouwer's *Etude 2; arpeggios* on Villa-Lobos's *Etude no. 1*; and fast tempo monophony on Brouwer's *Etude 7*. Electronic pickups applied on a guitar and connected to a computer provides information. The note event, defined by some parameters, is the focus of *low-level descriptors*. The list of these variables includes event number; time of the event (*onset* or *offset*); the number of the string in use; fundamental frequency; amplitude; spectral centroid; slur flag; the presence of bend or vibrato (op. cit., p. 1-2). The *mid-level descriptors*, directed for excerpts analysis, are divided into six categories: global, guitar-specific, rhythm, pitch, amplitude, and spectrum descriptors. Based on these tools, they present a study of five excerpts and discuss the advantages and difficulties of this method. This work is an example of the concern with the relationship between texture and technique in the guitar field.

The *Guitar Texture Analysis* (RAMOS, 2017) is an analytical tool devised for the guitar repertoire that deals with relations between the textural aspect and the instrumental performance's technical resources. Here we read texture departing from *Rhythmic Partitioning Analysis* (see GENTIL-NUNES, 2009, 2017, 2018), in which integer partitions represent the textural configurations. One of this approach's applications was already realized on Leo Brouwer's *Étude Simples* series (1972; for the analyses, see RAMOS, 2017, p. 51-99). Ramos individually analyzed all the 20 pieces and has done comparative studies. Between the results achieved, Ramos observed the most used textural configuration by Brouwer in the Etudes. This result is the starting point of the present work, as will be discussed below.

As a first step, we will consider the following basic elements, which can be found on *Etude No. 14* (BROUWER, 1972, Figure 4).

a) *Blocks*: groups of notes with coincident attacks and the same duration (Figure 4a), considering the number of simultaneous notes. In the case of blocks with two sounds, the structure is represented by the number [2];
b) *lines*: rhythmically independent notes or sequences (Figure 4b), each represented by the number [1].

Isolated and overlapping occurrences of such elements in the example in question (Figure 4) are represented by the partitions [1], [1,2], and [1,1,2].

FIGURE 4 – *Etude 14*, excerpt (BROUWER, 1972, c. 31-33). Unitary parts (letters *b*) and two-note blocks (letter *a*). The color bars illustrate the juxtaposition of the simultaneous parts, generating the partitions [1], [1,2], and [1,1,2].

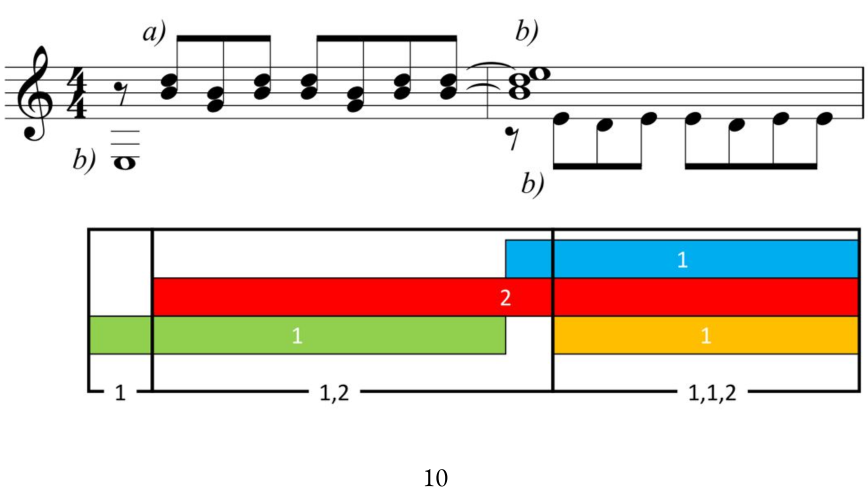
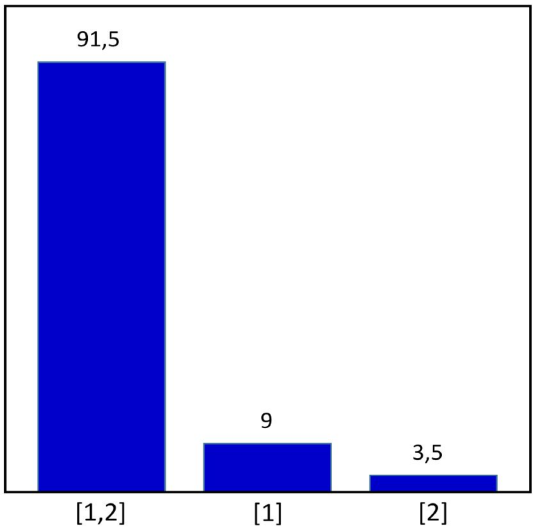


FIGURE 5 – a) *Etude No. 1*, excerpt (BROUWER, 1972, c. 1-2).[2] b) Diagram of its GTP. The letters in italics indicate the fingers of the right hand that articulate the parts nearby.[3] The numeral [0] on the upper left side of part [2] indicates that the part is performed using notes located on open strings.[4]

Among the structures observed by the Rhythmic Partitioning Analysis, one or a small set of partitions can represent the global textural structure of the piece (see RAMOS, 2017) or the excerpt in question, thus defining its *Textural Proposal*. For example, *Etude No. 1* (BROUWER, 1972; Figure 5) consists of a bass line accompanied by two-note blocks, generating three partitions: [1], [2] (this one with very residual occurrences), and [1,2]. The latter predominates in terms of global duration, with a large difference in relation to the others (Figure 6). Also, partitions [1] and [2] are exclusively the result of eventual part silences, which creates then the *subpartitions* of the main partition [1,2] (see RAMOS, 2017; GENTIL-NUNES & RAMOS, 2018). We said that, in this case, the partition [1,2] is the *Textural Proposal* of *Etude No. 1*. In this sense, the Textural Proposal constitutes a referential configuration that prevails and characterizes the piece's main textural mode.

[2] Transcribed using an alternative note grouping for illustrative purpose.
[3] In guitar writing, the fingers of the right hand are traditionally represented by the letters *p* (thumb), *i* (forefinger), *m* (medium), *a* (ring).
[4] Partition [2], although not occurring in the selected fragment (c. 1-2), occurs sporadically on the piece (see Figure 6 and RAMOS, 2017).

FIGURE 6 – Sum of the durations relative to the occurrences of the partitions contained in *Etude No. 1* ([1,2], [1] and [2]), measured in time units.



If there are any behavior patterns in the use of technical procedures – fingering of both hands, use of open strings, simple or composite slurs, etc. – indicated or suggested on the score, they are associated with the previously determined textural proposal. For example, in *Etude No. 1* (Figure 5a), the bass line (part [1]) is performed exclusively with the finger *p*. In contrast, in the upper accompaniment (part [2]), a static behavior predominates – an articulation of blocks formed by two notes (Sol2 and Si2) located on open strings, performed with the fingers *i* and *m*. This analytical procedure is called *Guitar Textural Proposal* (GTP), represented by a diagram (Figure 5*b*). The parts are indicated within circles and arranged vertically, reproducing its register placement. Technical elements of the right hand are shown on the right side of the chart, and, on the left side, left-hand procedures. The GTP diagram is useful for formalizing the instrument's technical uses, guiding musical analysis, and being used as a tool for compositional design (RAMOS, 2017).

In *Rhythmic Partitioning*, as we see before, there are relations between partitions that define parsimonious movements or transformations between configurations. On the other hand, when working on the instrumental uses of the guitar, it seems to be a more complex task to make such a definition. This situation occurs because of the large number of technical variables involved in the very act of playing the guitar. Moreover, such variables do not belong to the field of traditional musical structure, leading the analytical work to embrace its connection with the scope of instrumental techniques and vocabulary.

The present work is an investigation of the possibility of determining parsimonious transformations in GTPs. As the material for a case study, each piece of the *Etude Simple* series (BROUWER, 1972) was previously analyzed (see RAMOS, 2017). Seeking to establish a suitable research field, we delimit the present work to pieces of the series with the partition [1,2] as referential. This partition is the most widely used in the *Etudes*, generating a considerable diversity of GTPs.

This work's specific goal is to establish an ordering of the GTPs related to the selected repertoire in an increasing scale of complexity, trying to possibly establish a *parsimonious variation net* that connects such structures.

Plotting a *GTP parsimonious variation net*

The GTP of *Etude No. 1* represents the simplest structure inside the progressive scale of complexity, considering the scope of the present paper (GTPs based on partition [1,2]). In this case, the GTP is formed by a bass line (part [1]) and a static accompaniment (part [2]), the latter composed by a pair of notes located on open strings, resulting in the textural proposal [1,2] (see Figure 5a). In a hypothetical exercise of performing a parsimonious *recessive* movement, that is, slightly reducing the GTP complexity in question, just one alternative would be available.

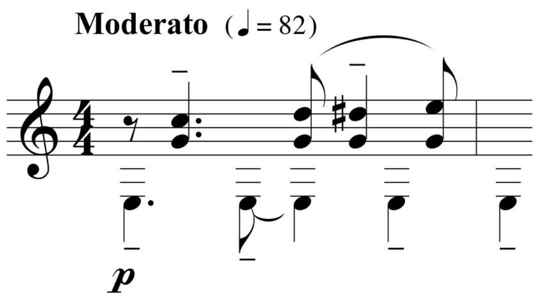
FIGURE 7 – a) *Etude No. 4*, excerpt (BROUWER, 1972, c.4-10). b) GTP diagram of the piece. The right-hand fingering pattern is indicated in italics.

Negative resizing or revariance would lead only to GTPs outside the realm of [1,2], which would be beyond the scope of this paper.

Simplification in the technical parameters by itself would not be feasible either: the accompaniment (part [2]) already represents the floor of such complexity by not requiring any action but that of the right hand. In turn, the bassline (part [1]) could be reduced in complexity, becoming static, for example, as is the accompaniment. In this way, we only could have a structure composed of bassline and accompaniment, both in open strings, which does not occur in Brouwer's *Etudes*.

The next element of this progression must be a parsimoniously more complex GTP than that found in *Etude No. 1*. For example, part [2] could acquire linear motion, requiring the left hand's use. This situation, which happens sparsely in *Etude No. 1*, is, in fact, the structural behavior of *Etude No. 4* (Figure 7).

FIGURE 8 – Example of a structure formed by partition [1,2], whose upper register part - two-tone blocks (part [2]) - is performed using the third string (Sol3) open and pressed notes on the second string - Re3, Re♯3, and Mi3, located on the frets 3, 4 and 5, respectively. Original concept of the present authors.

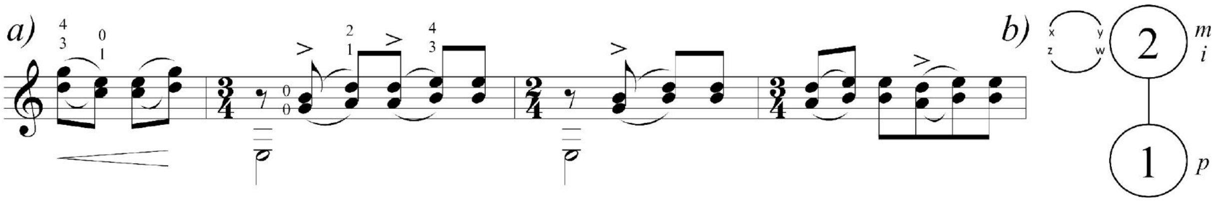


Using a strict criterion, there would be an intermediate step between the two quoted configurations: the linear movement of one of the accompaniment notes (part [2]), keeping the second note as a pedal, located in an open string. For example, we can observe the sequence Sol2-Do3, Sol2-Re3, Sol2-Re♯3, Sol2-Mi3, in which Sol2 is located on the third string (Figure 8). However, one more time, this is a procedure not found within the repertoire in question. A further step towards increasing technical complexity would be applying slurs in the execution of one of the parts, which is not the case in *Etudes* 1 and 4. The most straightforward alternative would be to proceed with such an application to the melodic element – the bass line (part [1]). Accompaniment would require more complex procedures – simultaneous slurs – because it is composed of blocks of two sounds (part [2]). In fact, Brouwer takes the second option in *Etude No. 13* (Figure 9). If, on the one hand, it represents a gap relative to previous configurations in our conceptual framework, on the other, the use of the resource is carried out in a considerably uniform and simplified way: employing only the ascending slurs. Moreover, such actions start exclusively from a pair of notes located on open strings, significantly reducing the left hand's tension.

The GTP of *Etude No. 14* (Figure 10) is precisely a variation of that found in *Etude No. 13*, in which the scope of possibilities is expanded, including descending slurs and those with initial and final notes located on pressed strings.

FIGURE 9 – a) *Etude No. 13*, excerpt (BROUWER, 1972, c. 1-4): the articulation of the part [2] using simultaneous slurs originating from open strings (III and IV, in this case); b) GTP diagram for *Etude No. 13*: zeros represent notes on open strings, *x* and *y* refer to notes on pressed strings.

FIGURE 10 – a) *Etude No. 14*, excerpt (BROUWER, 1972, c. 20-23): use of simultaneous ascending and descending slurs, including pressed notes as the origin of gestures. b) GTP diagram for *Etude No. 14*: the letters *x* and *z* represent source notes of the slurs, y, and w describe the arrival notes.



Etude No. 15 presents a considerably more complex formal structure than those found in the pieces analyzed so far, also showing a wider textural variety. Among the GTPs found, two belong to the partition [1,2]. The first one is articulating the element on the upper register (part [2]) in *FPA*[5]. In the context of Guitar Textural Analysis, the articulation of a chord in FPA is interpreted as a derived form of a block (see RAMOS, 2017). For the analysis, we transcribed the FPAs in the GTP diagram as blocks. We signal the operation by a qualitative indication of this specificity, in the form

[5] *FPAs: Fixed Position Arpeggios*. It consists of sequential execution of notes of a massive structure (block). It differs from the simple (monophonic) arpeggio by the obligatory location of notes in distinct strings, so that each note will continue to sound over the following ones (see more details in RAMOS, 2017). In the tradition of classical guitar, the term arpeggio often refers to FPAs.

of an arpeggio line (Figure 11). In fact, the GTP of *Etude No. 15* is not a new element of the ongoing sequence. Left-hand procedures in *Etudes* 13 and 14 produce variations in part [2] - the slurs. Changes in the right-hand behavior in *Etude No. 15*, on the other hand, generate the variation expressed in the execution of the blocks in FPA. Therefore, this configuration sets a bifurcation in the overall structure of GTPs, ahead of our pathway.

Another situation in *Etude No. 15* establishes a transformation not yet addressed – the register inversion of parts (Figure 12). In this excerpt, both elements work without any of the resources found in *Etudes* 13 and 14; however, part [2] is at the lower register, while part [1], previously positioned as the bassline, is in the upper register. Thus, a new branch germinates at the second node of the net, next to the GTP of *Etude No. 4* (see Figure 13). Hence, a new question arises: which GTP is more elementary concerning the guitar vocabulary? The answer lies in the guitar idiomatism: the organization found in the former GTPs. The bassline against upper blocks implies a right-hand gesture. The thumb (*p* finger) acts in rhythmic alternation with the simultaneous action of the other fingers – index and middle (*i* e *m*), changing to index and ring fingers (*i* e *a*) in some cases. *Bassline-block* textural configuration is a traditional accompaniment pattern, not only for the guitar. Moreover, the thumb's anatomic opposition to the other fingers is an essential factor favoring the two elements' rhythmic alternation.

FIGURE 11 – *Etude No. 15* (BROUWER, 1972, c. 18-21), excerpt. a) original notation (simplified for illustration purpose); b) transcription with FPAs rewritten as blocks and the GTP diagram of the example. The wavy line on the right side of the part [2] indicates the FPA *arpeggio* pattern.

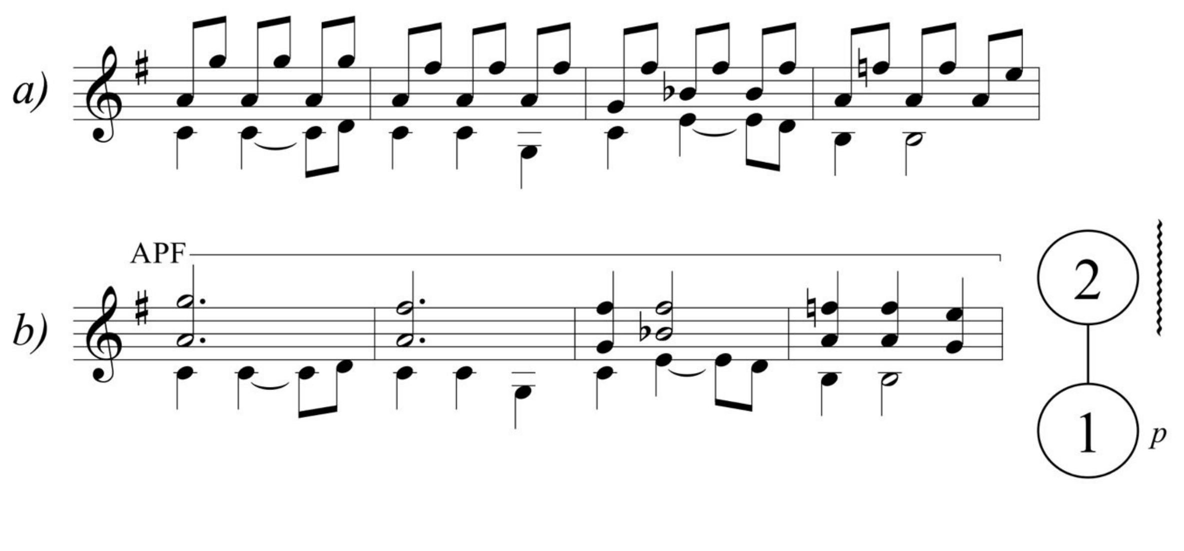
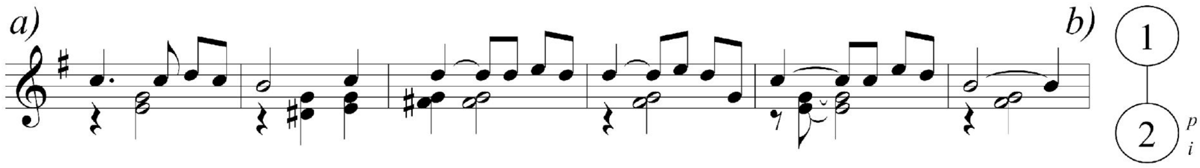


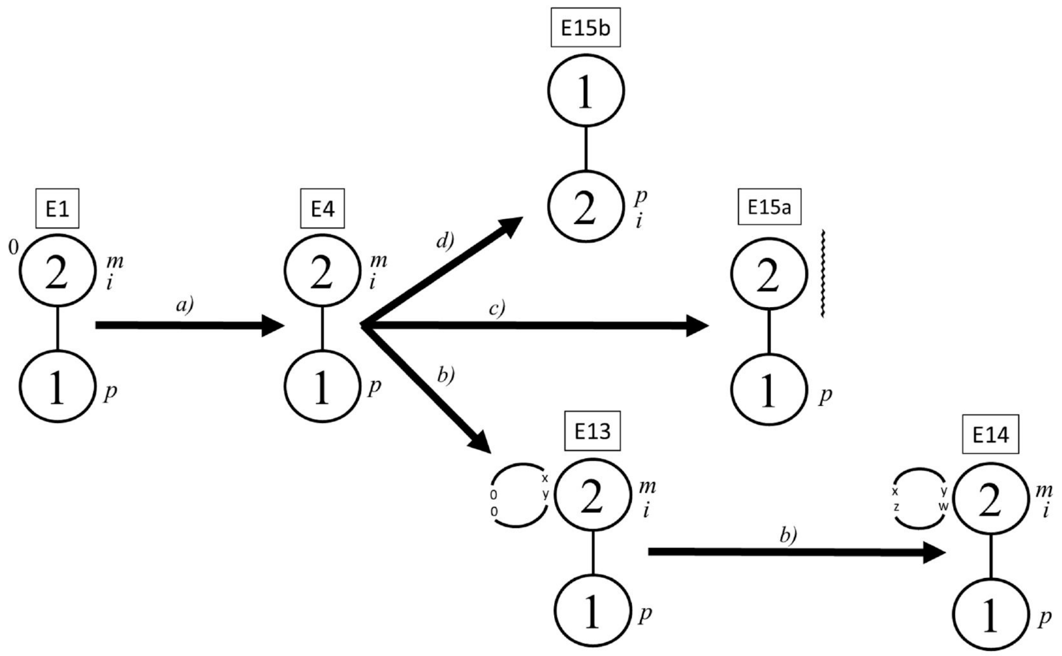
FIGURE 12 – a) *Etude No. 15* (BROUWER, 1972, c. 42-57) excerpt. b) GTP of the example. Part [2] is in the lower register, with right hand fingering in italics.



With all GTPs constituted by partition [1,2] addressed, it is possible to reconstitute the overall outline made by the present work (Figure 13):

1. Variation by assigning linear motion to static element performed on open strings, requiring pressed ones. (Figure 13a).
2. Variations by left-handed procedures (Figure 13b): application of ascending followed by ascending and descending slurs.
3. Variations by right-hand procedures (Figure 13c): blocks presented as FPAs.
4. Variation by inverting register between parts: Part [2] of partition [1,2] assumes the lower register, while [1] takes the upper one (Figure 13d).

FIGURE 13 – *Etudes 1*, *4*, *13*, *14*, and *15*: net of parsimonious variations in the scope of GTPs formed by partition [1,2]. a) assignment of linear motion to one part; b) left-hand procedures (ascending and descending slurs); c) right-hand procedures (FPA); d) inversion of register between parts.



Conclusions

Brouwer's *Études Simples* are part of the canonical repertoire of the concert guitar. The instrumentalist and analyst, working on the complete series, are introduced to a vast vocabulary of techniques and textures (see analysis of the 20 pieces in RAMOS, 2017). By delimiting the observation field using only GTPs [1,2], it is possible to compose a net of parsimonious relations, based on the elementary technical and textural structure of *Etude No. 1*. In some cases, we suggest hypothetical intermediate structures that have to fill in adjacencies not occupied by the GTPs used in Brouwer's studies. The overall resulting structure is not linear but branched: the high number of parameters considered in the formation of GTPs causes several bifurcations (see Figure 13). Texture and performativity interlace themselves in the guitar score's realm. This interaction leads to a view where the limit between structural and performative aspects is blurred. In the present authors' view, this patchwork can bring some remarkable insights into the analysis and performance of guitar works.

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