

Presentation of a symbological reform for the functional harmonic analysis of the tonal repertoire

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ABSTRACT

This paper has the goal of anticipating to the academic public in general the functional analytical nomenclature and symbology I have been developing as a tool for the structural harmonic analysis of tonal music, specially the chromatic music of the second half of the 19th century. The proposed symbology is based on research regarding the history of music theory and music analysis, mainly regarding the thoughts and concepts developed by 19th-century theorists.

RESUMO

O presente artigo tem como objetivo antecipar ao público acadêmico em geral a nomenclatura e simbologia funcional analítica que venho desenvolvendo como ferramenta para a análise estrutural harmônica da música tonal, em especial da música cromática da segunda metade do século XIX. A simbologia aqui proposta é fundamentada em pesquisas sobre a história da teoria e da análise musicais, em especial sobre o pensamento e os conceitos desenvolvidos por teóricos do século XIX. TÍTULO: Apresentação de uma reforma simbológica para a análise harmônica funcional do repertório tonal. PALAVRAS-CHAVE: Análise Musical; Harmonia Funcional; Estruturação Musical; Harmonia Tonal.

I. INTRODUCTION

For more than twenty years I have been trying to technically understand the internal logic of the traditional tonal system. Disappointed with the instructional and analytical methods usually taught at universities and conservatories both nationally and abroad, I have dedicated myself to the research of efficient means to graph in a compact, clear, and pedagogical way the constructive coherence of the tonal repertoire, specially that of the second half of the 19th century. My analytical methodology, whose complete explanation goes beyond the scope of this paper, is based on the analytical symbology here presented, which serves as the basic tool for the process of formalization and summarization of the analytical understanding and mapping of the music present in the historical repertoire. Furthermore, this symbology serves as an excellent means for the communication and pedagogical sharing of the concepts of Tonal Harmony. My analytical method, together with its descriptive symbology, is grounded in studies and interpretations of historical music theory texts by authors ranging from Zarlino, Vicentino, and Galilei, until 20th-century writings. Since my main interest is in the late Romantic repertoire, my main sources are, either directly or mediated by recent musicologists, texts from the 19th century and the beginning of the 20th century from authors such as Gottfried Weber (1779-1839), Moritz Hauptmann (1792-1868), François-Joseph Fétis (1784-1871), Arthur von

Oettingen (1836-1920), Carl Friedrich Weitzmann (1808-1880), Rudolf Louis (1870-1914), Ludwig Thuille (1861-1907), Sigfrid Karg-Elert (1877-1933), Arnold Schoenberg (1874-1951) and, specially, Hugo Riemann (1849-1919), whose works were constant guides in my studies. Riemann is considered one of the most important theorists and music thinkers of the 19th century (ver Rehding 2003), and he is the original creator of the discipline currently called Functional Harmony. I also examined the recent texts by the so-called Neo-Riemannian theorists such as David Lewin (1982), Richard Cohn (1998), Daniel Harrison (1994), and Alexander Rehding (2003). Despite my strong revisionist attitude, I made an effort to ground my symbology on the traditional academic nomenclature of the Functional Harmony found in the more modern theory texts.

II. THE PREFERENCE FOR THE FUNCTIONAL HARMONY

Despite the achievements and the historical and musicological importance of the Scale-Degree Theory, the Functional Harmony Theory has always seemed to me to be more agile, direct, and competent to explain the logic of the tonal chord progressions of the Classical and Romantic periods. Nonetheless, I concluded during my research that, in the manner in which this theory is posited and practiced in books such as the ones by Koellreuter (1980), Cyro Brisolla (1979), Diether de La Motte (1976), Dirk Haagmans (1916), and Zula & Marilena de Oliveira (1978), the Functional Harmony is not specially fit to the task of revealing with accuracy and clarity the harmonic pathways of the Late Romantic period. This is not at all surprising if we consider the complexity of that repertoire and the layers of revisions and acute simplifications of the Riemannian original functional concepts present in those aforementioned texts. Because of this, I have been gradually compelled in my analytical studies to return to the original 19th-century and early 20th-century sources, reassembling and reworking the concepts of the functionality of the chords and the logic of the harmonic progressions. This task included the reconsideration of several ideas which were banished during the 20th century such as the major-minor harmonic dualism, for example. This research was mainly conducted from the original works and concepts by Riemann, and this meant for me the important necessity to undo part of the revisionist work of Functional Harmony concepts made by authors such as Hermann Grabner (1944) and his pupils Hugo Distler (1940) and Wilhelm Mäler (1931), whose texts form the theoretical grounds of the Functional Harmony modalities taught nowadays at universities and conservatories all over the world (see Mickelsen, 1977, and Rehding, 2003).

III. BASIC CHARACTERISTICS OF THE ANALYTICAL SYMBOLOGY

The analytical harmonic symbology here presented was conceived according to a series of requisites and needs established by my analytical methodology. These needs resulted in the postulation of the eight basic symbological traits explained next. First, the notation must be as clean as possible, without trying to convey excessive and unnecessary amounts of information. Second, it needs to reveal by itself and clearly the results and conclusions from an analytical work, revealing above all the logic behind the use of the chords in the specific contexts of the musical text. This means that the symbology must not end up by being a sort of musical shorthand, a simple reduction of that which is effectively read in the musical text. The analytical notation must instead be the formalization of an understanding of the contextual effect of a harmony, serving not to label it but to explain its behavior. Nonetheless, the symbology must never be ambiguous: every symbol must correspond to one and only one harmonic structure. Third, the notation must be reasonably compatible to the modern Functional Harmony symbologies in current use. In spite of that, since I question or reinterpret several usual academic theoretical viewpoints, there will obviously be marked differences in some respects. There must also be a precise conversion method between my symbology and the one of the Scale-Degree Theory, which serves nowadays as a *lingua franca* between the theorists of the world. This guarantees that the use of this new nomenclature will not alienate its user from the rest of the world, but it will instead serve to support an improved comprehension of the musical contexts, a fact which will most certainly have a significant impact in the reformulation of the use of the Scale-Degree Theory and in the reformatting of its symbology. Fourth, the notation should reveal harmonic entities abstracted according to universal and basic principles, and not according to their historical particularities of use. Thus we avoid inconvenient situations such as the multiple forms of notation used for certain chords in De La Motte (1976), a procedure which, despite its undeniable historiographical value, serves only to cloud the understanding of a universal harmonic phenomenon, hiding it under the guises of historical particulars. Fifth, the notation must propose a defined theoretical stance on the notorious question of the correspondence between function and scale-degree. In Riemann, this matter is addressed in a deliberately contradictory way in relation to his dualist theory, for he decided to respect the usage of certain historical terminologies (see Rehding, 2003). In my analytical methodology, the harmonic functions are circumscribed not exactly to specific scale-degrees but instead to the logical tasks of harmonic coherence, in the manner explained by Riemann (see Mooney, 2000). The consequence of this stance was the revised addition of elements from the Riemannian dualism to the nomenclature. Sixth, in consequence of this aforementioned stance and in a much pondered way, the symbology must try to recover concepts from the 19th-century harmonic dualism. Thus, it will be recast as a duality of polarities between harmonic fields. This implicated in a preference for the terminology by Grabner at the expense of the one by Mäler for, although both are of monistic orientation, the former is much closer to the original dualist notation by Riemann. The later, excessively monist,

does not use specific signs to indicate modality, just letter-case variations of the basic letters. This characteristic, in my opinion, causes a series of inconveniences, for it makes it difficult to visualize operations of modal borrowing. Seventh, the notation must reflect a theoretical redefinition of the concept of chromaticism, separating the concepts of real chromaticism and harmonic borrowing. For the analysis of Extended Tonality works, I became convinced of the importance of a theoretical separation between the chromaticism pertaining to operations of harmonic borrowing, which I call "illusory chromaticism", and that which I call "real chromaticism", which is the chromaticism pertaining to operations of artificial creation of individual leading-tones, without the recourse of actions of harmonic borrowing. Eighth, the proposed nomenclature should not aim at indicating a harmonic structure by itself. First of all, its goal is to graph the basic scheme of polarizations and of natural voice leading of the structure, mapping its logical contextual position inside the musical discourse. It is worth to remark here that it is the basic scheme of natural voice leading that ultimately gives breath to the harmonic functions.

IV. DESCRIPTION OF THE ANALYTICAL SYMBOLOGY

A. Initial remarks

My analytical symbology had as point of departure the simplified functional theory proposed in the texts by Brisolla (1979) and Koellreuter (1980), both derived from the revisions by Grabner. The symbological revision proposed by Mäler, whose influence can be seen in texts such as De La Motte (1976), Oliveira (1978) and Menezes (2002), was completely rejected by not permitting the clear visualization of a change of modality as a polarity change. From this point, the process of recreation of the functional symbology was grounded in the readings of theoretical texts from 19th-century authors, specially Riemann's own works, and in analytical observations of mine of historical repertoire, which served as a methodological testing ground. The result of this process is the symbology which will be presented next. The symbols were planned to be read always in the same way, avoiding interpretation doubts and ambiguities, and their components are classifiable in three basic groups: letters, signs, and numbers. As a rule, one should first read only the letters and the signs associated to them, always in vertical columns starting from bottom to top and from right to left. After this, one proceeds by reading the numbers and their signs.

B. Letters

Faithful to the functional Riemannian tradition (see Riemann 1893), I continue to adopt the letters T, S, and D, always in upper case, to denote the main functions of Tonic, Subdominant, and Dominant, respectively. These letters can be used alone or combined with the letters "r" (relative substitute) and "a" (anti-relative substitute), always in lower case, which are placed to the inferior right of the upper-case letters of the main functions. These smaller letters serve to notate the two basic types of feigning consonances (*Scheinkonzonanz*), which can serve as substitutive harmonies to the main ones, as shown in the examples from figure 1a. These are, respectively, the relative substitutes

a) T = C minor b)

c)

Bittencourt:	°Ta	°T	°Tr	+T	+Ta	+Ta+
Riemann:	⌘	°T	°Tp	T+	⌘	⌘ ^v
Mäler:	tG	t	tP	T	Tg	TG
Grabner:	°Tg	°T	°Tp	+T	+Tg	+Tg ^{3<}

Figure 1. Examples of the symbolical use of letters, and a comparison of historical symbologies.

(*Parallelklänge*), previously notated with a "p" both in Riemann's texts and in Grabner's and with an "r" in the Brazilian texts, and the leading-tone substitutes (*Leittonwechselklänge*), previously notated in Riemann's texts with a < (in major) or a > (in minor) crossing the main letters. These last ones are also known as anti-relative or counter-relative substitutes (*Gegenparallelklänge*) in the revision by Grabner (see Mickelsen, 1977), and they are notated with a "g" in German texts and with an "a" in Brazilian texts. Figure 1c shows a small comparison between the different historical symbols. I also kept the special Riemannian notations of a double D and a double S for the chords of the dominant-of-the-dominant and the subdominant-of-the-subdominant, respectively (see fig. 1b). To correct the problem relative to the association of the function of a chord not exactly with a scale degree but with a dialectic stage of a harmonic progression, it was necessary at this point to include dualist elements to the symbology with the addition of the mirror images of the letters D and S (see figures 2a and 2b) to denote, respectively, the Inverse Dominant (also known as the Regnant in the terminology by Oettingen [1866], represented by the chord of iv, always as a minor chord) and the Inverse Subdominant (Oettingen's Supra-Regnant, represented by the chord of v). The idea of using inverted letters was in a certain way inspired by Karg-Elert's symbology (see Mickelsen 1977).

a) T = F# minor b)

Figure 2. Examples of the notation for regnants and supra-regnants.

C. Signs added to the letters and to numbers of symbols

Part of the proposed signs are to be aggregated to the letters and numbers of the analytical symbols in several occasions and contexts to indicate modal polarities (° e +), real chromatic alterations (< e >), the omission of structural members of the harmony (⌘), the antipode substitute relationship (ψ), a region or tonality (—), a harmonic field of borrowed origin (parentheses), and dualist inversion of intervallic logic (↓). The first marking to be explained, the inverted solidus, is a cut through the main upper-case letter of the function (see fig. 3a). This marking denotes the omission of the root of the harmonic structure, if the letter is

cut only once, and the omission both of the root and its third, if the letter is parallelly cut twice. This is an original marking by Riemann and in the traditional texts it is usually drawn in the opposite direction of my version: /. By an aesthetic choice, I preferred the other way in order to avoid eventual collisions with numbers placed at the superior right. Basically, this marking serves to notate subsets of dominant seventh and dominant ninth chords, a very old concept of derivation which had already appeared in theoretical works by Heinrich Christoph Koch (1749-1816) (see Riemann 1898). The signs < and >, also used by Riemann, serve to indicate the aforementioned chromatic alteration of the real type. They are placed to the right of a number, denoting the chromatic rising or lowering of its intervals, respectively. These signs are mainly used in connection to the chromatic rising or lowering of the fifth of the dominant harmony (see figure 3f). In some extremely rare cases, it is possible to also extend this possibility of real chromaticism to the seventh of the dominant. The next two signs, ° e +, serve to indicate the borrowing of elements from the harmonic field of inverse polarity, or rather, the region of the modal parallel. These signs must be read respectively as "parallel minor" and "parallel major". It is important to remark that these same signs are also used in the traditional Scale-Degree Theory with the very different meaning of diminished and augmented, respectively. Historically, the sign ° was already used to mean diminished since the symbology proposed by Gottfried Weber (1821). As far as the signal + is concerned, its use was added by Friedrich Richter in 1853 (see Riemann 1898). According to Riemann, Oettingen was the one responsible for the association of these same signs with the meanings of minor and major. Since Riemann, the signs ° and + have been adopted by the Functional Harmony with the meaning of minor and major, and this continues to be used by its Grabnerian branch, which is what we see in modern texts such as the ones by Koellreuter (1980) and Brisolla (1979). Riemann used those signs in a dualist manner, with the symbol for minor placed to the left of the letters, and the one for major placed to the right (see fig. 1c). In the texts by Grabner, Brisolla, and Koellreuter, these signs are always placed to the left of the main letter. Something I find interesting about the use of these signs for minor and major is that they show the modality of a triad in a visual way, almost like an electric indication of polarity. In opposition to this practice, both the traditional notation by Weber via roman numerals and the functional notation by Mäler trust the indication of modality to the cases of the letters (see fig. 1c). In a certain way, this practice represents in an iconographic manner a monist concept of modality, with the minor world being characterized as a simple variant of the major. During

T = C major

a) D^7 D^9 b) Tr_+ Tr c) Ta_0 D^9 d) $D^\circ = {}^\circ 2$ e) D_{a+}^{9+} D_r^{90} f) D_5^7

Figure 3. Examples of the use of signs added to the letters and numbers.

the development of my ideas, I felt the need to resuscitate the 19th-century dualism not in the way it was originally conceived but as a dialectics of two harmonic fields. This duo is formed by the major harmonic field, here observed with its specific distance relationships and its polarity fluxes, and its isometric transformation by reflection, in other words, its "upside-down" inverted double, which is the minor harmonic field. This one possesses, as consequence of the very process of reflection, identical distance relationships to the major field, although in an inverted way and with the opposite polar orientation. In my symbology, this return of the dualism meant initially the necessity of maintaining the Riemannian manner of notation, rejecting the one by Mäler. Nonetheless, while in Oettingen's and Riemann's texts these signs serve to indicate individually the polarities and the essentially constructive orientations of a triad (from bottom to top in the major triad, and vice-versa in the minor), in my symbology the signs serve to indicate the harmonic field of origin of a harmony, understood with its implications of polarity. According to this, the signs $^\circ$ and $+$ are used in two different positions: to the superior left of the main letter and to the right of the main letter (see fig. 3b and 1a). The difference of meaning between these cases is due to the reading rules mentioned earlier. For example, Tr_+ means, in full and literally, "the major parallel of the relative substitute of the tonic"; $^\circ Tr$ means "the relative substitute of the tonic of the parallel-minor region"; $^\circ Ta_0$ means "the minor parallel of the anti-relative substitute of the tonic of the parallel-minor region" (see fig. 3b). In order to simplify, we can omit the modal signs of the harmony symbols if the main tonality is well marked with its modality indication at the beginning of the analysis (see fig. 1a), or also if the harmonic structures belong to the context of a tonality which is well indicated as a region in the analysis. A consequence of the direction reading rules is noticed in the notation of the dominants, which will be reasonably different than the usual functional notations. Because a dominant always includes a leading tone no matter the modality of the key (since the harmony of v , by lack of polar efficiency, cannot operate functionally as a dominant), there is no difference between a structure marked as $+D$ ("the dominant of the parallel major region") and one marked as $^\circ D$ ("the dominant of the parallel minor region"), for in both occasions these are major triads, therefore coincident. The same occurs with the Inverse Dominants (the Regnants) of the modal parallels, which are always minor and therefore always coincident. By the way, if we wish to identify the harmony of v as a parallel minor version of a D , we will indicate that with a D° : "the minor parallel of the dominant" (see fig. 3d). The most important usefulness of these coincidences is in the identification of the nature of the

ninths of a dominant, which will never be marked with the signs $<$ and $>$ for chromatic alteration. This analytical subtlety is due, in my concepts, to the importance of the theoretical separation between modal borrowing and real chromaticism. In this view, the major or minor nature of a ninth of a dominant is solely due to the modality of the harmonic field to which the dominant belongs, and an eventual modal borrowing will be correspondingly indicated as being an imported harmony from the harmonic field of opposite polarity. As an example, if in the context of a major key we borrowed the dominant ninth chord of its parallel minor harmonic field (which naturally possesses a minor ninth), we would indicate that occurrence as $^\circ D_9$ and not as D_9° or even $D_9>$ (see figures 3a and 3c). Only in exceptional cases (but still with the connotation of an inversion of modal polarity and not of a real chromatic alteration) we will indicate the major ninth with a $9+$ and the minor ninth with a 9° , whenever there is the need to indicate a special modal borrowing in cases of extraordinary dominants (see figure 3e). An extraordinary dominant is a substitute harmony of the main dominant, which is constructed and effectively connected to the tonic harmony according to procedures based on the voice-leading schemes found in the most typical deceptive cadences and the cadential six-four. This collection of accessory dominants, whose idea is inspired by suggestions made by Karl Friedrich Weitzmann in his *Harmoniesystem* of 1860 (see Rudd 1992), is of great importance for the study of the repertoire of the second half of the 19th century. Figure 4 shows a basic inventory of these extraordinary dominants, which can still be further appended by varying those structures by means of the combined action of the addition of a major or minor ninth, of real chromatic alterations in the fifths, and also of omission of roots and thirds. In the way proposed, the combination of the signs for chromatic alteration and modal borrowing comes to tame the conflicting profusion of signs used for the same harmonic functionality by Riemann and subsequent theorists, an unnecessary complication given my concerns for the observation of the functional phenomena in their universality, reducing all particular versions to one single common model of usage. For example, to indicate an eventual borrowing of the harmony of I in the context of a minor key region, Riemann used in several occasions the symbols $T+$ (major tonic), $^\circ T3<$ (minor tonic with a raised third), and $^\circ Tv$ (variant of the minor tonic). In my symbology, such particularities get reduced simply to $+T$ ("tonic of the parallel major region"), a choice which recognizes the use of modal borrowing as the universal source of all those particular contexts. The sign \downarrow , a dualist atavism in my theory, is rarely used and it is connected to the Inverse

based on:

based on:

* may also connect with the tonic parallel

Figure 4. Basic inventory of the extraordinary dominants of the region of C (major and minor).

Dominant, the Regnant. When used, it is written to the superior right of the main letter of the function and immediately before the numbers indicating dissonances, meaning that the marked intervals are to be calculated downwards from the fifth of the basic triad (see figure 2b). This detail represents the most radical infiltration of the Riemannian dualism in my methodology, and because of this it is most modestly used and only for the sake of demonstrating some important functional equivalences of the Extended Tonality. An example of this kind of equivalence can be seen in figures 8c and 8d. In 8c, the same chromatic progression of three chords is seen according to two different points of view, one of them using dualist concepts. In 8d, we see a dualist explanation for a progression which includes a harmony derived from an augmented-sixth chord. The sign ψ , placed immediately above a main functional letter, indicates that the symbol does not refer to a harmonic structure but it instead indicates and names a tonal region, thus incorporating Schoenberg's theory of regions (1954) to the Functional Harmony (see figures 5b and 6). More than a simple expedient to name regions, this symbology serves to map the positioning, the distances, and the kind of the relationship between regions. To exemplify this idea, the table from figure 6 shows the indications of the relationships between the region of C major and all the other regions, measured in the most direct way possible. In order to notate certain special substitutes to the dominant function, there is the sign ψ , which serves to indicate the special relationship of the antipode substitute. We understand as antipode substitute of a structure its transposition at the tritone level, in any enharmonic spelling. This sign gives full consequence to the rationalization and mapping of the functionality generated by the voice-leading relationships found in the augmented-sixth chords and the like (see fig. 5c), and it is to be placed at the inferior right of the main D of the function, at the same place where a lower-case letter would stand. Continuing with the explanation, the signs between parentheses serve to indicate the origin of a harmonic-field borrowing. In Riemann, Grabner, Mäler and all the Brazilian texts here referenced, a relationship such as an applied (or secondary) dominant is traditionally indicated by circumscribing the harmony symbol inside parentheses, i.e.: (D), this if the applied dominant is immediately followed by the target-harmony to which it refers. In other cases, the

notation $\leftarrow(D)$ is traditionally used whenever such dominant is preceded by its target, and the notation $D[x]$ is used when the target-harmony (represented by the x) is not immediately found present. As a commentary, I remark that the existence of these last two cases is contested by my theory, in which a harmonic structure is prevented to be interpreted as an applied dominant if its target does not immediately follow either directly or via a related substitutive harmony. Thus, I chose for my notation the marking of the $D[x]$ kind as a general and only way of indication. Nonetheless, I relocated the [x] part underneath the main functional letter, and I substituted the brackets with parentheses, which then start to indicate the harmonic field (or rather, the region) of origin of a harmonic borrowing. In this way, all kinds of borrowings between harmonic fields will be notated with the function symbol of the harmony on top of another symbol between parentheses denoting the region of origin of that harmony. Since the notation between parentheses always indicates a region, there is no need to add to the symbol the sign ψ (see fig. 5a). This type of notation is also very useful to indicate modulatory relationships between regions (see fig. 5b). In the occurrence of a long chain of applied dominants traveling across dominants through a cycle of fifths, one can use the symbol \downarrow to simplify the visualization of the notation of the regions involved. In this case, the arrow is placed inside the parentheses substituting the notation for the region of origin of the dominant, indicating that the target of the applied dominant is the next harmony. Completing this section of explanations, the sign \cong , placed above a main functional letter, indicates that the harmony in question operates as an enharmonic equivalent of the function indicated by the symbol (see figure 8c).

D. Signs that indicate relationships between harmonies

Other signs serve to indicate equivalences and identities between two harmonic structures or regions. The sign = (diatonic equivalence) is used between two symbols to indicate functional relationships between diatonic pivot chords and identities between regions (see figures 3d and 5c). The aforementioned sign \cong (enharmonic equivalence) is also used between two symbols to this time indicate functional relationships between enharmonic pivot chords and enharmonic identities between regions (see fig. 7a). The sign \approx (affinity by chromatic transformation) is used to

a) $\begin{matrix} D \\ (Sr) \end{matrix} =$ harmonic borrowing of the harmony of V from the harmonic field of the relative subdominant region

b) $\begin{matrix} \bar{T}_r \\ (\bar{D}) \end{matrix} =$ region of the tonic relative in the context of an area centered on the region of the dominant of the main key


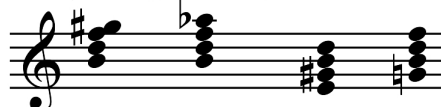
c) T = C major 
 $\circ \mathbb{D}_{5>}^9 = D_{\psi}^9$
 Ex: region of F# minor, if T=D major

Figure 5. Examples of the indication of harmonic borrowings, regions, and the antipode substitute.

	C	D _b	D	E _b	E	F	F _#	G _b	G	A _b	A	B _b	B
M	+ \bar{T}	$\circ \bar{S}_a$	\bar{D}	$\circ \bar{T}_r$	+ \bar{T}_{a+}	+ \bar{S}	\bar{D}_{a+}	$\circ \bar{S}_a$	\bar{D}	$\circ \bar{T}_a$	+ \bar{T}_{r+}	+ \bar{S}	\bar{D}_{a+}
m _c	$\circ \bar{T}$	$\circ \bar{S}_{a\circ}$	+ \bar{S}_r	$\circ \bar{T}_{r\circ}$	+ \bar{T}_a	$\circ \bar{S}$	\bar{D}_a	$\circ \bar{S}_{a\circ}$	\bar{D}°	$\circ \bar{T}_{a\circ}$	+ \bar{T}_r	$\circ \bar{S}$	\bar{D}_a

Figure 6. Table of relationships between the key of C major and all the other regions, measured in the most direct way possible.

a) T = C major 
 $\mathbb{D}_{r+}^9 \cong \circ \mathbb{D}^9 \rightarrow D_{r+}^7 \approx D^7$


b) 
 $\mathbb{D}_{r5<}^9 = \bar{D}_{5>}^7 \rightarrow D_{r7}^{\circ} \approx \bar{D}^7$

Figure 7. Examples of the use of relationship signs.

indicate relationships of transformational affinity between the members of a family of extraordinary dominants (see figures 7a and 7b). Two harmonic structures have transformational affinity if some variant of the first harmony (with an added ninth, with a chromatised fifth, with root omissions, etc.) is identical to some variant of the second harmony, either in a diatonic or enharmonic way.

E. Numbers

Similarly to the functional tradition, arabic numbers are used in several positions around the main letters to indicate complementary information regarding the harmonic structures such as the structural bass tone and the presence of structural and semi-structural dissonant intervals added to the harmony. By structural dissonances we mean the essential dissonances of the 7th and the 9th of the dominant (do note that whenever there is a 9th, a 7th is also implied), the fifths with real chromaticism (indicated followed by the corresponding chromatic sign), and the exchanged-sixth, which can substitute the fifth of a perfect triad. All these occurrences must always be present in the symbols (see fig. 8a). As for the non-structural dissonances, which we understand as being those generated by the action of non-essential tones such as passing tones, neighbor tones, suspensions, ritardations, pedal tones, etc., these should never be added to the symbols (in my analytical methodology, these

dissonances are identified in the very score by crossing their noteheads with a solidus). Nonetheless, a note usually considered as non-essential can sometimes acquire a bigger importance, almost gaining the status of a structural tone. In these cases, we consider the dissonance as being of the semi-structural type, and we add a marking of that fact to the symbol in recognition of its importance, sometimes of a historical order. Included here are the suspension sevenths (specially those on the harmony of ii), the 11th and 13th of the dominant (which when present infer at least the imaginary presence of the structural 7th and 9th), the added sixth chord (specially that on the harmony of iv or IV, which forms a six-five chord on ii), the appoggiatura six-four chord (specially the cadential type on V) and its five-three resolution (see fig. 8b). Thus, when placed at the right of the main letter of the structure, vertically from top to bottom in decreasing order, the numbers serve to indicate the intervals of the structural or semi-structural dissonances of the harmony, measured upwards from the root of the structure. Here the notation is practiced in a similar way as the ones by Riemann and by the majority of his revisers. Also as seen earlier, if the intervallic numbers are placed to the right of the sign ↓, it means that the intervals are to be measured downwards from the fifth of the structure (ver fig. 8c). When placed underneath the main letter and positioned slightly to the right, the numbers serve to indicate the note used in the

Figure 8. Examples of the symbolical use of numbers and other signs..

bass, with the number 1 standing for the root of the structure, 3 for its third, 5 for its fifth, etc., just in the same way practiced by Riemann and his revisers (see several instances of these markings in fig. 8). Since the basic idea behind the symbols is to analytically denote the functionality of a harmony according to its context, the information about the inversion of a harmony is generally of little interest and thus it can certainly be omitted from the symbol. Anyway, I remark here that the identification of the inversional position of a harmony can be easily read from the very score. Nonetheless, it is sometimes useful to mark down the inversions on the symbols in cases when the inversion bears some special meaning which one wants to emphasize in the analysis, and also whenever pedagogical goals demand such precision of information, as in the case of the preparation of harmonic writing pedagogical exercises in which one needs to specify a particular bass line. Aiming at a certain simplification, whenever a dissonant interval to be marked is occurring in the bass, it is possible to relocate it from its usual place putting it at the spot reserved for bass-tone notations (ver fig. 3f).

V. FINAL CONSIDERATIONS

These analytical tools and the theoretical concepts here presented are currently in the process of formalization in a treatise on Harmony and Functional Tonality still under preparation. They have demonstrated considerable pedagogical usefulness in my teaching work, being of great help in the explanation of the internal logic of the tonal system both in its classical and extended versions. Because of this, I have been continuously proposing this analytical symbology to my students of Harmony and Music Analysis, always in a comparative fashion and counterposed to the classic tools of the Scale-Degree Theory and the Functional Harmony. In this paper, I tried to demonstrate the historical grounds for my symbology, emphasizing its ability to graph the harmonic language of the 19th-century extended tonality.

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