



Marco Pereira Series

Harmony Books

for guitar

Marco Pereira

Book I

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Introduction

Harmony is the study of the relationships between two of the most relevant technical aspects of musical practice. The vertical is defined by all types of chords, and the horizontal is always associated with the scales.

From a historical perspective, there is a great period that goes from the homophony of the so-called Gregorian Chant to the beginning of the 20th century. The creation of the dodecaphonic system by Arnold Schoenberg and the development of jazz language were the basis of my research and study to accomplish the work I am now presenting. The focus is not only on the profound understanding of the Tonal System but also on fixing the main concepts that define the use of chords from a purely modal perspective.

The theoretical study of Harmony, being based on acoustic and mathematical principles, had a very diverse and conflicting development. The reason for this lies in the countless possibilities of interpretation of the different scales used and, especially, of a vast number of chords, with the possibilities of interval combinations, their connections, and resolutions. Even so, many divergences were generated by the creation of chord progression rules, not based on acoustic principles but on purely stylistic issues.

This variety of concepts resulted in a true Tower of Babel of symbols and nomenclatures, generating a great discrepancy between important theoretical works written on the subject. What we have today, as an inheritance of this diversity of ideas, is a series of relevant works on Tonal and Modal Harmony that present different interpretations and concepts, making it difficult to understand and associate their contents.

The theoretical elements that govern the relationship between chords must be considered an essential tool for understanding the harmonic process and must always be associated with an obstinate work of ear training and instrumental practice. Thinking, listening, and playing, developed in a balanced way, will be the foundation on which the activity of every musician should be based.

The main objective of the work that I now present is to offer guitarists didactic material on Tonal and Modal Harmony that will help them walk through this complex world of chords and scales. The focus will be on the aesthetics of the jazz language and its consequences, without losing, however, the reference to the harmonic practice enshrined in European music in the 19th and early 20th centuries.

The study of Harmony is a long process and requires a lot of discipline and dedication by the student. However, the harmonic sense, which should guide all musicians in this matter, is a natural faculty that does not depend on any previous theoretical study. Note, for example, that a layperson who has not undergone any type of theoretical training and who is also not familiar with harmonic instruments may perceive chord inconsistencies with the original harmonization of a song or a renowned musical composition. This is because the identity of a song or musical piece has, in addition to its obvious melodic line, an inherent harmonic content, which we keep in our memory, and which makes us notice any discrepancies. So, even before any theoretical study, we can say that we all have in our memory enough information about harmonic relationships that allows us to recognize and judge different chord progressions. The main work that must be carried out by the student will be the decoding and organization of all chord structures, whether through theoretical understanding (thinking), ear training (listening), or instrumental practice (playing). The development of any musician should always be based on two main factors: analysis and repertoire. By analysis, being the ability to understand and assimilate harmonic and melodic content from the widest possible variety of musical themes, from different eras and styles. By repertoire, the intellectual and mechanical memorization of countless musical materials elaborated from scales, chords, arpeggios, melodic phrases, and rhythmic articulations. Mastering different musical styles technically will consistently expand the creative and expressive abilities of each musician.

I hope that these books can become pleasant and stimulating companions for all those who are interested in the fascinating universe of Harmony.

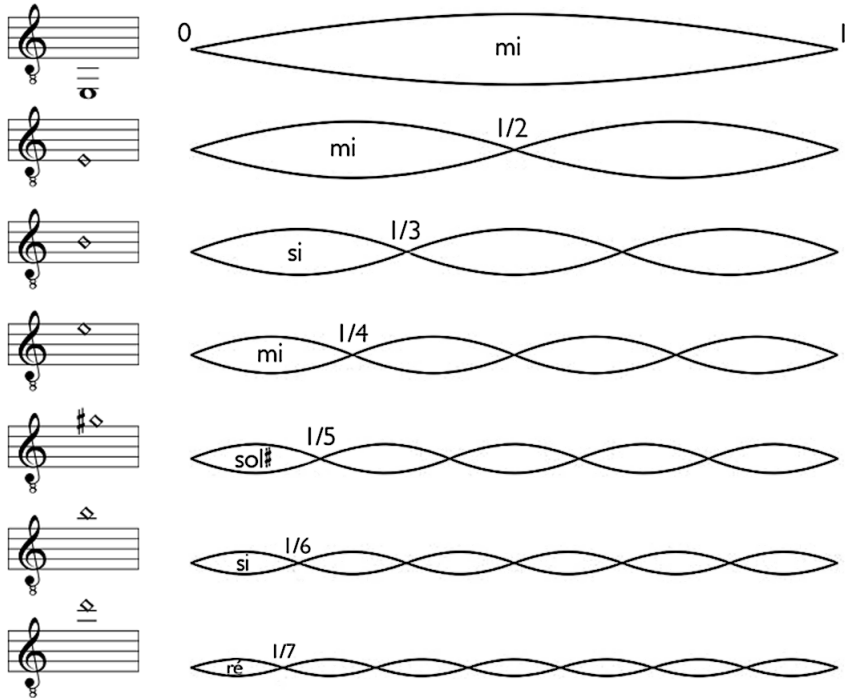
São Paulo, March 20, 2026

Marco Pereira

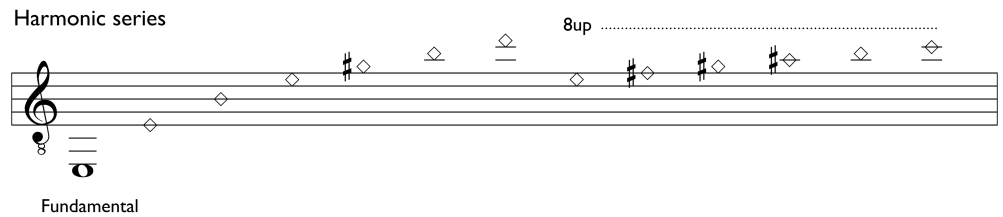
Harmonic series

Harmonics are the result of a physical phenomenon that occurs when certain materials, with defined frequencies, are activated. All frequencies, or real notes, generated in a musical instrument bring with them a set of waves represented by integer multiples of that initial frequency, the fundamental. Thus, we can take as an example the strings vibration on instruments such as the guitar, the piano, and the harp, or the air column of others, such as the flute, clarinet, trumpet, or trombone. We also have metallophones and tubular bells, which are especially rich in harmonics.

The first theoretical studies on harmonic sounds were developed by the Greek philosopher and mathematician Pythagoras. Based on the results obtained by observing the vibrating string of an experimental instrument, the monochord, Pythagoras reported the occurrence of this phenomenon, that is, the physical property of a vibrating string being subdivided into equal parts, generating new sounds. This subdivision occurs through the creation of nodes, fixed points that separate the parts of the string that vibrate independently and that represent fractions of the total length: $1/2$, $1/3$, $1/4$, $1/5$, etc.



On the guitar, the harmonic sounds are obtained by the light pressure of one of the left-hand fingers at one of the points of the division of the string into equal parts when it is put in vibration. This procedure will result in a determined number of equal parts that vibrate independently and are separated by the nodes. See the table below for a summary of the first twelve harmonics in the series:



The harmonics mentioned above do not have the exact height of their position on the musical staff, according to our equal temperament system. The spelling approximates certain notes because the real heights of the series harmonics have the following configuration:

Overtones	Fundamental	1	2	3	4	5	6	7	8	9	10	11	12
Distance	-	-	2cents↑	-	14c↓	2c↑	31c↓	-	4c↑	14c↓	49c↓	2c↑	41c↑
Note	E	E	B	E	G#	B	D	E	F#	G#	A#	B	C

The up arrow represents the spacing towards the high and the down arrow towards the low.

When there are several sound bodies within the same acoustic environment, and one of them is activated, all others that contain similar overtones will vibrate. This unfolding of the same physical phenomenon is called sympathetic vibration. The sympathetic relationship between similar harmonics can be experienced on the guitar as follows: play the E on the second fret of the fourth string of the guitar vigorously and interrupt it as quickly as possible. At the same time, with the fingers of the left hand, the first five strings are muffled, leaving only the sixth string free. The result is that the 6th string starts vibrating at the same frequency as the note played and is interrupted on the fourth string. The most curious thing is that the 6th string vibrates in two equal parts, generating by itself the node that separates the string into two equal parts. Then, the same process can be done with the note of the second open string, which, once interrupted (with the first five muffled strings), causes the sixth string, sympathetically, to be divided into three equal parts and produce

the same frequency as that note, briefly played. The farther the harmonic sound is from its fundamental, the weaker its vibration.

When you play a chord, each note of it will generate harmonic sounds in its overtones. A satisfactory acoustic result will depend directly on the distribution of these notes in the vertical plane. In other words, the harmonic series should be the main reference, both in the assembly of the chords and in the interval, relationship established between their notes. Note that the harmonic series itself shows us the structure of a seventh dominant type chord with the complementary intervals of ninth, augmented eleven, and flat thirteen (see chapter 'Building Chords'). The bass¹ in the fundamental is tripled in octaves 1, 2, and 3, with two right fifths between octaves 2 and 3. The third characteristic of the chord mode appears, for the first time, two octaves above the fundamental sound, and only after the formation of the triad (E, G[#], B) do we find the minor seventh interval (natural D). Above the minor seventh are the extensions of nine (F[#]), elevated eleven (#11), and minor thirteenth (C). We know that these intervals are not exact when related to our equal temperament system, but they still give us an excellent picture of the structure of the chords and the development of the harmonic language itself.

People who are starting in this art should try to respect the physical principle of sound to choose the best distribution of the notes of a chord. It is advisable to always separate its base (root) from the other intervals of the tetrad (3, 5, and 7) and from the extensions (9, 11, and 13). Remember that this information should not be taken as a limiting rule but as a basic model for structuring chords while the students are not familiarized with the best assemblies that will gradually be part of their repertoire.

Examples

Track 01 - Harmonic sounds of the fundamental E, sixth string of the guitar.²

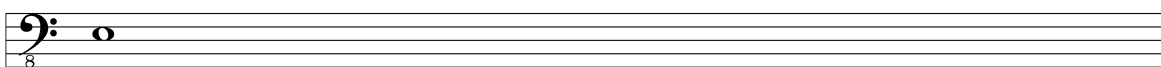
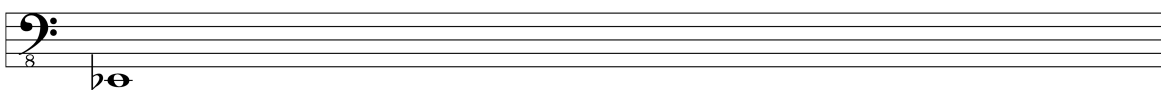
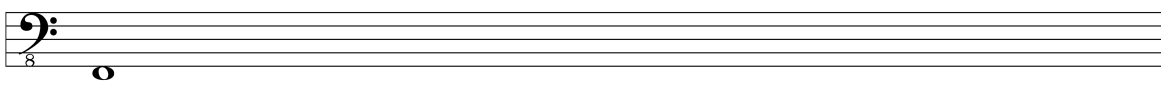
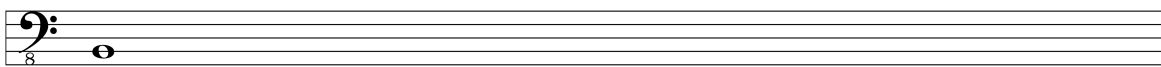
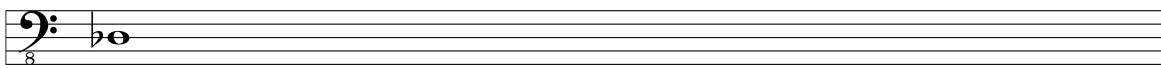
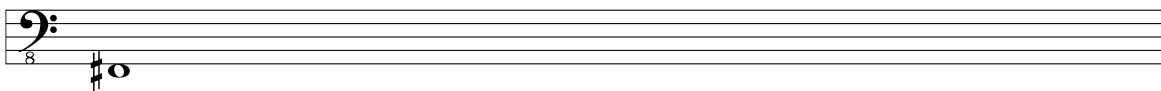
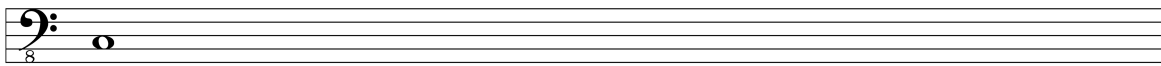
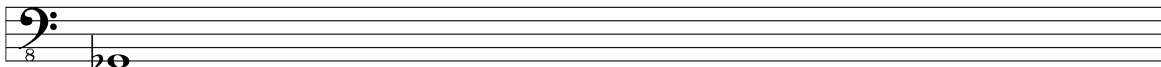
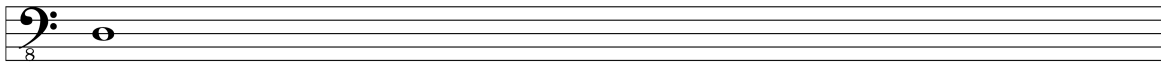
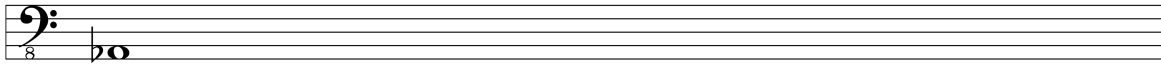
Track 02 - Harmonic sounds of the sixth string of the guitar tuned in D.

¹ The lowest note that appears in your writing or performance is called the bass of the chord. This name is used because the bass was the lowest voice in vocal polyphony, and this old reference is still very present in the Harmony nomenclature. For the same reason, the notes that are part of the chords are called voices.

² The harmonics heard on tracks 1 and 2 were adapted to the temperament of the chromatic scale. They are not, therefore, exact pitches, but approximations of the notes that the harmonic sounds of the series represent, just for the purpose of illustrating the physical phenomenon of sound.

Exercise

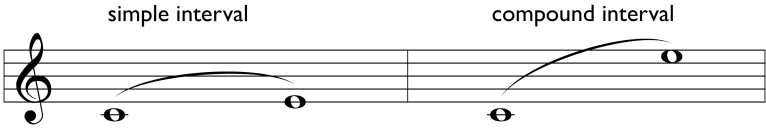
Write the first twelve harmonic sounds generated by the following notes:



Intervals

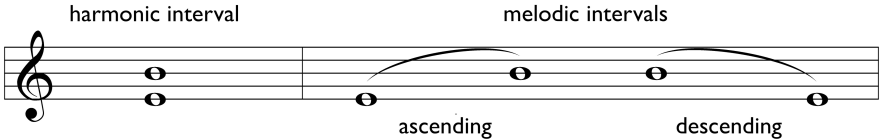
Interval is the distance between two notes.¹

The intervals can be simple or compound. Simple intervals are those that are within the octave limits. Intervals that exceed this limit are called compound intervals.



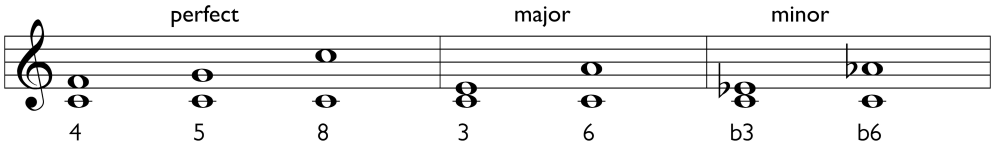
We use semitones to measure the distance between two notes, and a semitone is also the smallest interval used in the study of Harmony as well as in occidental music.

Harmonic intervals are those that have their notes heard simultaneously. When interval notes are heard in sequence, they are called **melodic intervals**. The melodic intervals can be ascending or descending. Harmonic intervals are always measured from bottom to top, that is, from the lowest note to the highest note.



The intervals are classified as consonant or dissonant. The consonant intervals are as follows:

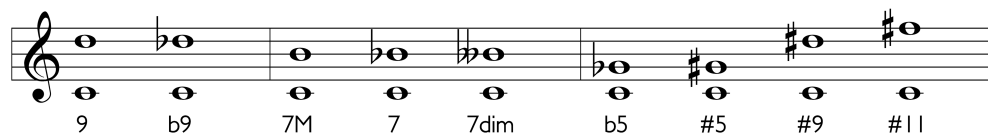
- Perfect** (fourths, fifths, and octaves)
- Major** (thirds and sixths)
- Minor** (thirds and sixths)



The dissonant are:

- Second** (major and minor)
- Seventh** (major and minor)
- Diminished and Augmented**

¹ We classify intervals between two notes, not between two sounds. For occidental music, the base is always the equal temperament tuning system.



Consonances and dissonances are traditional theoretical concepts based on acoustic principles and are not related to the musical aesthetics explored in different styles over time.

According to some theorists, the intervals can still be understood as follows:

Light consonance - major third and major sixth

Dark consonance - minor third and minor sixth

Pure and open consonance - perfect fifth and octave

Hard consonance - perfect fourth

Soft dissonance - major second and minor seventh

Strong dissonance - minor second and major seventh

Rough dissonance - tritone (augmented fourth or diminished fifth)

The interval formed by equal notes with same pitch is called a unison.

Inversions

The intervals can be inverted since they are simple intervals, that is, they are at the limit of the octave. A major third (C-E), in the inversion, becomes a minor sixth (E-C). The sum of the intervals, natural and inverted, must always total the number nine; that is, a second inverted will be a seventh, a fourth inverted will be a fifth, etc. The interval's quality is also complementary when it is inverted: major becomes minor, minor becomes major, augmented becomes diminished, and diminished becomes augmented. Perfect intervals remain perfect when inverted.

Intervals can be abbreviated as follows:

b2 and **b9**: minor second or minor ninth

3 and **6**: major third or major sixth

#11: augmented eleventh

b5: diminished fifth

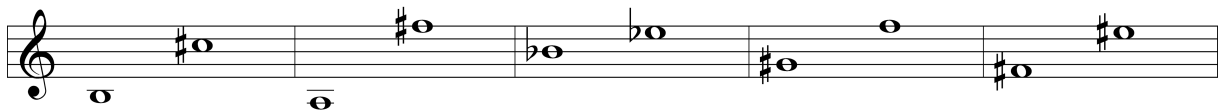
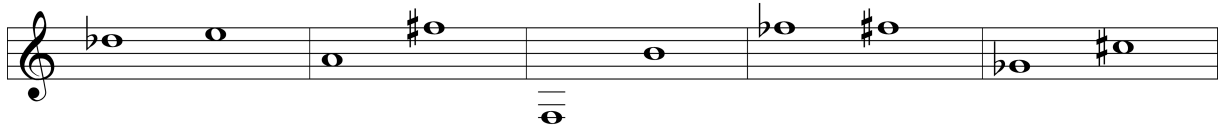
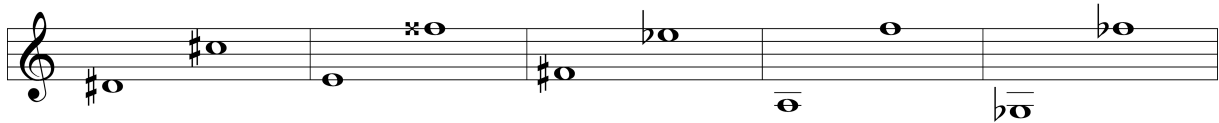
#5: augmented fifth

5: perfect fifth,

etc.

Exercise:

Classify the intervals below.

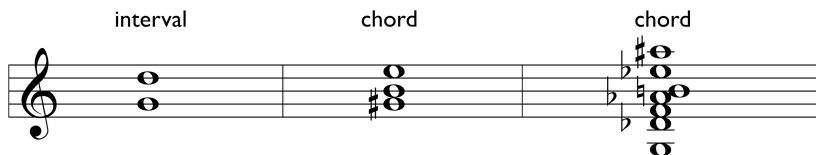


Chord structures

The first type of chord that the student will study in this method is formed from four basic scales, which I define as Tonal Scales.

In the process of tonal harmonic structuring, all scales have their notes grouped vertically, superposed in thirds. Each note on the scale represents a different chord, and those chords will always be related to their positions within those scales.

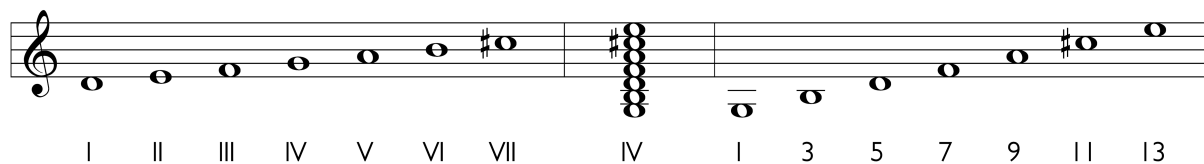
By definition, a chord is the minimum structure of three notes and can be up to seven. The seven-note chord in tonal procedures represents the limit of superposed notes that can be practiced. The grouping of three notes, following the principle of superposition of thirds, is called the triad, and that of four notes is called the tetrad (seventh chords).



The groupings of more notes are so-called:

- Five-note chords: ninth chords
- Six-note chords: eleventh chords
- Seven-note chords: thirteenth chords

The superposition of the notes of a diatonic scale gives us the following configuration:

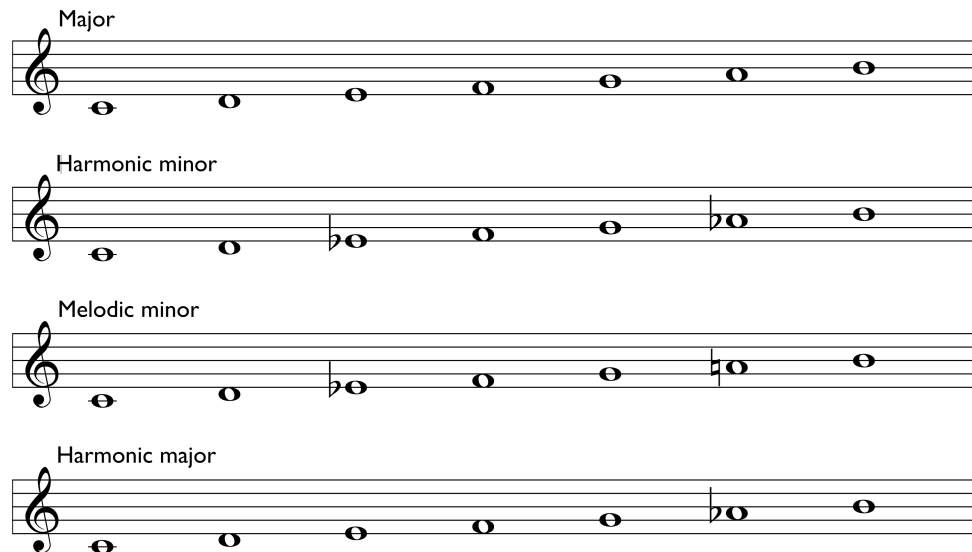


From these considerations, we deduce that the only intervals with theoretical significance in the tonal harmonic structure are those that go up to the thirteenth:

- I 3 5 7 9 11 13

Tonal Scales

The **Tonal Scales**, which we will use to start the study of Harmony, have the following interval configuration:



The seven notes of these scales will be treated as degrees and those degrees encrypted by Roman numerals: I, II, III, IV, V, VI and VII.

From the functional point of view of Harmony, we can classify the most representative degrees as follows: ¹

- I - tonic
- IV - subdominant
- V - dominant
- VII - leading tone

The **tonal scales** have in common the intervals of major second, perfect fourth, perfect fifth, and major seventh. Consequently, the four-note chord built on the fifth degree of each of these scales will be a common chord, and from now on, it will always be treated as the **dominant seventh chord**. This specific chord is the main element in the **motion-rest** relationship that characterizes the Tonal System (see chapter 'Tonal System'). If a '**dominant seventh chord**' type (major third,

¹ The other degrees of the tonal scales also have specific names: II = supertonic; III = mediant; VI = submediant. However, because these names do not lead to an understanding of the harmonic quality of the chords they represent, we simply chose to use the figure in Roman numerals. It is understood, by way of example, that the chords of II and VI have a subdominant function and should not be treated as 'supertonic' and 'superdominant'. In modal scales, sometimes we have the seventh degree as subtonic

perfect fifth, and minor seventh) is outside the **V**, it means that the scale in question is a **modal scale** and will only serve for **modal** processes (see “*Harmony Books*” volume 3).

The chord structures formed from these scales will be divided and analyzed according to the following:

Tetrads (seventh chords)

three thirds over a root using only notes of the scale.

Extensions - 9, 11 and 13

intervals that will be added to the tetrads. The extensions give color and sophistication to the chords without changing their function.

Triads

structures of three notes - two thirds over a fundamental note.

In the verticalization process of tonal scales, the dominant tetrad will always be the same. The other degrees of the **tonal scales, III and VI**, when added as ninth and thirteenth in the dominant seventh chords, will give us four different extensions (9, b9, 13, and b13), as we can see in the example below:

$G7^{13}_9$
 $G7^{b13}_{b9}$
 $G7^{b13}_9$
 $G7^{13}_{b9}$

major
harmonic minor
melodic minor
harmonic major

The eleventh is not applied over the dominant tetrad, as it forms a specific branch of the **Dominant Chord Family** called the **sus branch** (see chapter ‘*Family of Dominant Chords*’).

Henceforth, the chords will be represented by their tetrads, which will give them their real harmonic meaning (*harmonic function*).

Note.

The application of seven-note chord structures does not happen often. Due to its degree of density and sophistication, its application is quite rare in the practice of Tonal Harmony. Normally, chords are presented in four or five parts (voices) and combine notes of the scale to which they belong, always in the same way: 1, 3, 5, 7, with the fifth frequently omitted so that there is the inclusion of one or two extensions. In regular structures, they always remain fixed at the fundamental and

third. The role of the interval in the chord structure should not be confused with the number of parts (or voices) that are included in it. A thirteenth interval in a dominant seventh chord will not determine seven notes (or parts, or voices) for that chord. The basic structures are the tetrads, and the ninth, eleventh, and thirteenth intervals are complementary to these tetrads. These extensions are 'harmonic ornaments' that do not alter the function already established by the tetrad. The meaning of the extension is only to add more color and sophistication to the functions already established.

About the altered extensions of the chords:

Altered extensions of the chords are all those that are not found in structuring chords from the tonal scales.

Modal chords have a series of harmonic complementary intervals that will be analyzed in due course. In the Tonal Harmony approach, what is beyond the possibilities generated by the major scale chords will be considered altered intervals or without application (see chapter 'Tonal Harmony Intervals'). The combinations of extensions that generate a minor second between them, such as major ninth and minor ninth, major thirteenth and minor thirteenth, and augmented fifth and sixth, for example, are not applicable. (See 'Chord Families').

On the harmonic major scale:

The harmonic major scale, despite its practicality, is rarely mentioned in the books of Music Theory. Its natural and particular cadence is often confused with borrowed chords.

On the melodic minor scale:

*We are dealing with scales for harmonic purposes, and, for this reason, we are interested in defining them by their unique and specific qualities. The minor melodic scale, as presented in the classic compendiums of Music Theory ('VI and VII elevated in the upward movement and natural in the downward movement'), will always be seen in this work as two different scales: the melodic minor scale (consider it to be a major scale with the minor third) and the natural minor scale, which is a mode: the **aeolian mode**.*

Still on the melodic minor scale:

The melodic minor scale is a hybrid scale since it has the dominant seventh chord structures (1, 3, 5, and 7), not only on the V but also on the IV. The tetrad with a dominant structure displaced from the V, as we will see in volume III of these Harmony Books (Modal Harmony), loses its dominant function. The fact that the minor melodic scale has two chords with a dominant structure makes it have a double meaning: tonal and modal. Within the tonal aspect, it has the necessary qualities to form the main cadences of the system. In its modal aspect, it presents the tritone in chord structures with a tonic function, for example, Cm6 in C melodic minor.

Exercises - Perception and Analysis

Determine the key and types of scales used in the following melodies. Sing the notes of these melodies, analyze the function and harmonic quality of the chords, and play on your instrument. Note that some exercises contain more than one scale.

Track 03

Track 03 consists of two staves of music in G major. The first staff begins with a whole rest, followed by a sequence of notes: G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), B4 (quarter), A4 (quarter), G4 (quarter), F#4 (quarter), E4 (quarter), D4 (quarter), C4 (half). The second staff continues with: D4 (quarter), E4 (quarter), F#4 (quarter), G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), B4 (quarter), A4 (quarter), G4 (quarter), F#4 (quarter), E4 (quarter), D4 (quarter), C4 (half).

Track 04

Track 04 consists of four staves of music in B-flat major. The first staff begins with a whole rest, followed by: Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter). The second staff continues with: Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter). The third staff continues with: Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter). The fourth staff continues with: Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter).

Track 05

Track 05 consists of three staves of music in B-flat major. The first staff begins with a whole rest, followed by: Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter). The second staff continues with: Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter). The third staff continues with: Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter), Bb4 (quarter), Ab4 (quarter), Gb4 (quarter), Ab4 (quarter).

Track 06

Musical notation for Track 06, consisting of two staves. The key signature is three sharps (F#, C#, G#) and the time signature is 6/8. The melody is written in a treble clef and features a series of eighth and sixteenth notes with some accidentals.

Track 07

Musical notation for Track 07, consisting of three staves. The key signature is two sharps (F#, C#) and the time signature is 3/4. The notation includes various rhythmic values, accidentals, and dynamic markings such as accents (^) and breath marks (v). The piece concludes with a double bar line and first and second endings.

Track 08

Musical notation for Track 08, consisting of four staves. The key signature is two sharps (F#, C#) and the time signature is 3/4. The notation includes various rhythmic values, accidentals, and dynamic markings such as accents (^) and breath marks (v). The piece concludes with a double bar line and first and second endings.

Track 09

Track 09 consists of three staves of musical notation in G major (one sharp) and 10/8 time signature. The first staff contains four measures of music, primarily using eighth and sixteenth notes with slurs and accents. The second staff continues with four measures of similar rhythmic patterns. The third staff concludes with four measures, ending with a double bar line and repeat dots.

Track 10

Track 10 consists of four staves of musical notation in G major (one sharp) and 2/4 time signature. The first three staves feature eighth-note patterns with slurs and accents, interspersed with rests. The fourth staff concludes with a double bar line and repeat dots, featuring a final chordal structure.

Exercises:

1. Practice the Tonal Scales along the neck of the guitar in different keys (see chapter 'Scales Fingerings' in Volume 3).
2. Analyze as many melodies as possible from well-known songs and musical themes. Sing with sol-fa syllables, and then reproduce these melodies on your guitar.

Tetrads

Tetrads are the most important structures for understanding harmonic functions. They always give the exact function of the chords in chord progressions. See below the chart of the tetrads and their structural characteristics formed on the degrees of the four tonal scales:

Major scale

Harmonic minor scale

Melodic minor scale

Harmonic major scale

In general, the tetrads of the tonal scales are freely combined, especially those belonging to the same scale. The diatonic combination of the tetrads is always effective, and all degrees can be used interchangeably. There are some chord progressions considered basic in the practice of tonal harmonization, and it is convenient to know them and take them as the main point of reference. Of these basic chord progressions, the most important is the one that defines the concept of voice leading. It means keeping the notes that are common to chords in sequence and moving the other notes always along the shortest path. The basses follow their natural movement, jumping diatonically according to the scale chosen to be harmonized. In the most classic and most established concept of the practice of Tonal Harmony, the melodic interest that each voice of each chord may have in the different chord progressions is not relevant. Often, certain voices of the

harmony can keep the same note fixed for several measures, and this does not represent monotony and much less a lack of interest in the harmonic process. Harmony is a bond of notes, and always, the movement of just one of them is enough to entirely change the color, character, and function of a chord.

Imagine a small, simple kaleidoscope¹. In it, we look at the result of the reflection of the light that fell on a determined number of small colored glassware, generating images multiplied by three angled mirrors. As we rotate the kaleidoscope, the glass shifts and reveals a new and surprising geometric figure. The toy, even though it has a fixed number of pieces, reveals a wide variety of figures that cause surprising visual stimulation. Similarly, there is the Tonal Harmony, where the chromatic movement of the chord voices offers a series of different visual stimuli. Not because of the intense melodic movement that these voices may have, but because of the structural changes that these small movements reveal. It is understood, then, that the classic concept of harmonic practice is not based on any kind of melodic movement or great jumps but, on the contrary, on the short displacement of notes in the progressions. The basic rules for connecting tetrads are as follows:

1. Define the chord sequence to be used or start from a previously established progression.
2. Write the bass line.
3. Define the distribution of the remaining notes of the first chord.²
4. Keep the common notes between chords in sequence and, if necessary, move the notes from one chord to another always by the shortest path.
5. The natural movement of the seventh on the chords is always descending.
6. The leading note of the scale (in chord progressions such as V-I or VII-I) always tends to go up, but it can also be maintained, resolving a third below or even going down in semitone.
7. The omission of the fifth on the chords and the doubling of the fundamental in the upper octave are common attitudes to facilitate the connections.
8. The position of the chords (the highest note) can be changed if necessary.

¹ The kaleidoscope was created in 1817 by Scottish physicist David Brewster (1781-1868)

² See chapter 'Inversions, presentation, and position of chords'

See some diatonic progressions with tetrads (and triads) in root position:

Track 11

Track 11 shows a diatonic progression of chords in root position: I, VI, II, V, I.

Track 12

Track 12 shows a diatonic progression of chords in root position: I, II, IV, V, I.

Track 13

Track 13 shows a complex diatonic progression of chords in root position: I, VII, III, VI, IV, V, I, VI, II, V, VI, IV, II, VII, III, VI, II, V, I.

In a traditional harmonic concept, the chord connections from immediate degrees (I-II, III-IV, etc.) are treated with caution. This is because parallel fifths and octaves may occur due to a lack of common notes between these chords. These parallel motions are forbidden according to traditional concepts.

This limiting rule must be understood within certain aesthetic standards regarding the tonal harmonic practice of European composers until the beginning of the 20th century and not as something impractical in Harmony. In the classical patterns of chord progressions, the parallel movement of fifths and octaves was not accepted because it referred to the most ancient polyphonic procedure, which was the two voices parallel “organum”.

With the introduction of modal aspects at the beginning of the 20th century, especially with composers such as Claude Debussy, the use of these parallel movements has again become an established practice. This practice influenced the jazz language, in which tetrad progressions with parallel movements were also widely used.

Track 14

Track 14 shows three staves of musical notation in C major. The first staff contains chords I, II, III, IV, III, IV, and V. The second staff contains chords I, VI, IV, V, VI, VII, I, and V. The third staff contains chords VI, II, V, I, VI, II, V, and I. Each chord is represented by a treble clef staff with a bass line and a chord symbol above it.

It is also possible to borrow chords between the different tonal scales. A sequence of chords based on the major scale may have the chords II, IV, or V borrowed from the harmonic minor, the melodic minor, or the harmonic major.

Track 15 – C major

Track 15 shows two staves of musical notation in C major. The first staff contains chords I, III, II, IV (labeled '(harmonic major)'), III, and I. The second staff contains chords VI, II, V, V (labeled '(harmonic minor)'), and I. Each chord is represented by a treble clef staff with a bass line and a chord symbol above it.

These chord interchanges result in a different scale structure. This practice is known as “chord borrowings”¹

¹ They are also generically called **modal borrowings** because they belong to other scales or modes. Borrowed chords can be distinguished by separating them into two categories: those of **tonal borrowings**, formed by chords from **tonal scales**, and **modal borrowings**, consisting of chords extracted from **modal scales**.

Track 16 – C harmonic minor

The image displays two staves of musical notation for the C harmonic minor scale. The first staff contains the following chords: I, VII, I, IV (harmonic minor), IV, V, III, and VI (natural minor). The second staff contains: IV (harmonic major), V, III, VI, VI (harmonic minor), IV, V, and I (harmonic minor). Each chord is represented by a treble clef staff with a C-clef and a key signature of two flats (Bb and Eb). The chords are shown as triads or dyads with their constituent notes and accidentals. Roman numerals are placed above each chord, and some are followed by descriptive text in parentheses.

Due to the similarities in their structures, the tetrads are grouped into five chord families¹:

1. Major Chords Family
2. Minor Chords Family
3. Dominant Chords Family
4. Half-Diminished Chords Family
5. Diminished Chords Family

Exercises:

1. Create chord progressions with tetrads formed from the following tonal scales:
 - a. G minor harmonic
 - b. E major harmonic
 - c. Melodic D minor
 - d. F major
 - e. A flat major
 - f. A minor melodic
 - g. E major
 - h. C minor harmonic

2. Create chord progressions with tetrads, in different keys, borrowing chords from other tonal scales.

¹ Each one of these families has specific characteristics of their chords related to the tonal context. It is fundamental to be able to distinguish these chords in a chord progression or isolated.


Write and sing melodic arpeggios based on tetrads that belong to the following scales: always seek the connection between common or neighbor notes when singing or writing these arpeggios.

C major




The C major scale is shown on a treble clef staff. The notes are C4, D4, E4, F4, G4, A4, B4, C5. Above the staff, four tetrads are labeled: I (C4-E4-G4-B4), IV (F4-A4-C5-B4), II (D4-F4-A4-B4), and V (G4-B4-D5-C5). The notes are written as quarter notes with stems pointing down.

D harmonic minor




An empty treble clef staff with a key signature of one flat (Bb) and a common time signature (C).

F harmonic major



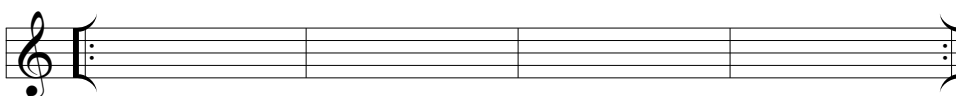
An empty treble clef staff with a key signature of one flat (Bb) and a common time signature (C).

G melodic minor



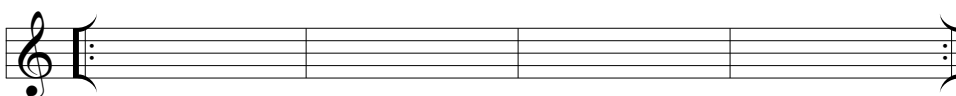
An empty treble clef staff with a key signature of one flat (Bb) and a common time signature (C).

E flat major




An empty treble clef staff with a key signature of two flats (Bb, Eb) and a common time signature (C).

A melodic minor




An empty treble clef staff with a key signature of one flat (Bb) and a common time signature (C).

B harmonic minor



An empty treble clef staff with a key signature of one flat (Bb) and a common time signature (C).

D major



An empty treble clef staff with a key signature of two sharps (F#, C#) and a common time signature (C).

Exercise - Ear training and analysis

Play and analyze the following diatonic piece

Track 17

Andantino

3

2

artificial harmonics

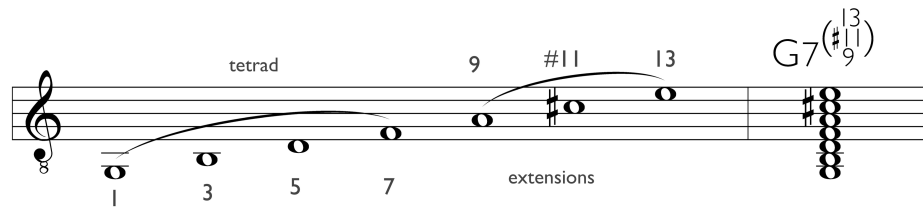
lascia vibrare

poco rall

Detailed description: The image shows a musical score for a diatonic exercise in G major (one sharp). The piece is in 3/8 time and marked 'Andantino'. It consists of seven staves of music. The first staff begins with a treble clef, a key signature of one sharp (F#), and a 3/8 time signature. The melody starts on G4 and moves diatonically. A triplet of eighth notes is marked with a '3' above it. The second staff continues the melody with various rhythmic values. The third staff features a series of eighth notes. The fourth staff has a first ending bracket. The fifth staff includes a triplet of eighth notes and a second ending bracket. The sixth staff is marked 'artificial harmonics' and shows diamond-shaped notes. The seventh staff concludes with 'lascia vibrare' and 'poco rall' markings, accompanied by a deceleration wedge.

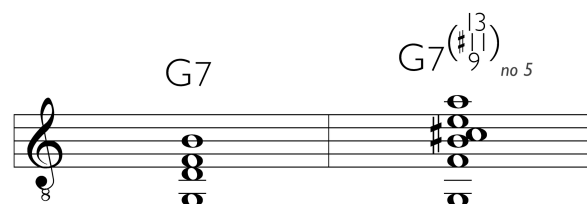
Extensions

Extensions are tetrads, complementary intervals created by the superposition of thirds that goes beyond the octave. The extensions are represented by the ninth, the eleventh, and the thirteenth.



It is not necessary to keep the chord extensions related to the superposition of thirds in their original structure. The basic structure of a tetrad and its extensions is not so common in the practice of chord progressions, and what is more often seen is the “open chord”, not only with the superposition of thirds.

The complementary intervals added to all kinds of tetrads are sometimes situated two or three octaves higher from the bass, and even with all this distance, the interval never lost its quality of ninth, eleventh, and thirteenth. The same happens with the third and the fifth. No matter where these intervals are placed, they will always be understood as thirds and fifths. Other details that frequently occur with the extensions are that they don't appear in a chord structure in a rising order, which means the thirteenth over the eleventh and the eleventh over the ninth. It is common to see the ninth over the thirteenth or the eleventh.



In the usage of the chord symbol, it is unnecessary to try to explain the ‘exact position’ of the extensions used. It is more important to keep in mind that the Harmony practice is always an improvised practice and so must be. It is expected of a musician to make the decision on how to build the required chords on his instrument. Chord symbols are a very useful tool for harmonic communication between musicians, but at the same time, chord symbols are extremely limited. It is crucial to understand these limitations and avoid making use of these chord symbols beyond their more essential goal, which is to give the basic structure of a chord. Every time the musician

wants to ask for details in certain chords, it will be for sure the moment to use the staff and musical notation. The extensions, or chord complementary intervals, are like ornaments applied to the tetrads, giving them complexity and sophistication.

The extensions do not interfere with chord functions.

The complete structures of seven-note chords, built from tonal scales, present some intervals that, for theoretical, acoustic, or aesthetic reasons, are not applied regularly in Tonal Harmony (see chapter “Chord Families”). In the example below, you can clearly see a summary of employed extensions over the tetrads built from the four tonal scales having C as the tonic.¹

Major scale verticalized

7M,9,(11),6 m7,9,11,(6) m7,(b9),11,(b6) 7M,9,#11,6 7,9,11,13 m7,9,11,(6) dominant*

Harmonic minor scale verticalized

m7M,9,11,(b6) ø7,(b9),11,(6) 7M,9,(11),6 m7,9,(#11),(6) 7,b9,11,b13 7M,(#9),#11,6 dim.dom*

Melodic minor scale verticalized

m7M,9,11,6 m7,(b9),11,(6) 7M,9,#11,6 7,9,#11,13 7,9,11,b13 ø7,9,11,b13 aplic.limit*

Harmonic major scale verticalized

7M,9,(11),(b6) ø7,9,11,(13) m7,(b9),(b11),(b6) m7M,9,(#11),(6) 7,b9,11,13 7M,(#9),#11,6 dim.dom*

- * The seventh-degree chords of tonal scales are inverted dominants without the root. For this reason, when analyzing the extensions of these chords, we will always keep the V chord as reference.
- * The first-degree chords of the harmonic minor and melodic minor scales are an exception to the rule of the dominant tritone and are played with their eleventh complements. The third degrees of these scales also admit this same complementary note, in these cases representing the ninth.

¹ There is a kind of ‘convention’ among musicians about treating compound intervals as simple intervals. Occasionally, we can see the thirteenth transformed into the sixth or the ninth transformed into the second. It is important to note that this is not based on a theoretical basis but only on a simple ‘convention’ established between musicians.

Exercise - Perception and Analysis

Analyze the following chord progressions by adding their symbols (*tetrads and extensions*). In situations where you find borrowed chords, tell the scales where those chords come from.

Track 18

B flat major

Diagram 1: B flat major (x02333)
Diagram 2: F major (xx0332)
Diagram 3: E flat major (xx0332)
Diagram 4: C flat major (xx0332)
Diagram 5: B flat major (x02333)

C minor

Diagram 1: C minor (x33233)
Diagram 2: F minor (xx3323)
Diagram 3: E flat minor (xx3323)
Diagram 4: C flat minor (xx3323)
Diagram 5: C minor (x33233)

D major

Diagram 1: D major (x02323)
Diagram 2: G major (x02323)
Diagram 3: A major (x02323)
Diagram 4: B major (x02323)
Diagram 5: D major (x02323)

G major

Diagram 1: G major (x02323)
Diagram 2: C major (x02323)
Diagram 3: D major (x02323)
Diagram 4: F major (xx0332)
Diagram 5: G major (x02323)

A major

Diagram 1: A major (x02323)
Diagram 2: E major (x02323)
Diagram 3: F sharp major (x02323)
Diagram 4: C sharp major (x02323)
Diagram 5: A major (x02323)

Chord Symbols

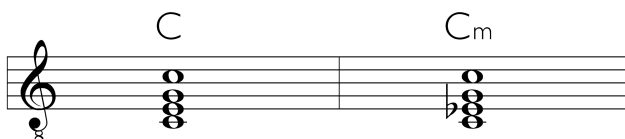
To represent chords in a contemporary form of practical Harmony communication, we use letters from our alphabet that signify the basic note where the chords will be structured. This capital letter will be the key of the chord. Likewise, we use Arabic numerals to designate the intervals to be added to that root.

Due to a heritage dating back to the Middle Ages¹, the A (not the C) was chosen as the first note. The other notes of the scale obey the following order, comparing them with the Italian nomenclature:

A = La
B = Si
C = Do
D = Re
E = Mi
F = Fa
G = Sol

These same letters that mean musical notes are used to represent the structures of the chords, as follows:

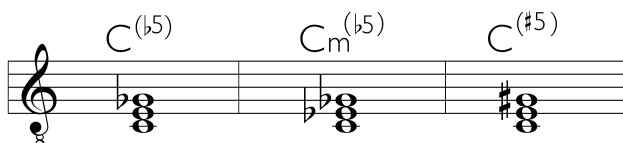
Symbols for triads major and minor



In these triads, there should be only differentiation between the thirds, since the fifths will always be perfect.

Symbols for altered triads

In triads with alterations in the fifth, the symbol shall have the following pattern:



¹ During this period, the hexagonal musical system defined by Guido D'Arezzo had the A as the main note, which is why the reference of our tuning fork is still the note Lá3 = 440 Hz.

Obs.

The altered fifth will always be written in parentheses.

*The **Cm (#5)** chord does not make sense since, in this situation, what will happen will be an inversion of the **Ab = Ab / C** chord (the inversion of the chord is represented by a diagonal bar - see chapter **Inversions**).*

Symbols for tetrads

The function of chords is always given by tetrads (*seventh chords*). It is important, whenever possible, to make this structure clear. In the diminished tetrads (*b3, b5, 7dim*) and in the half-diminished tetrads (*b3, b5, 7*), the following symbols are used:

Note:

The chord symbol is not entirely accurate, and it is almost always better to opt for chord symbols that represent only the intervals of the structure of a chord. This is done with the enharmonic of the chord to arrive at a simpler structure, even if the notes in the symbol have nothing to do with the actual function of the chord. (See 'Enharmonic chord symbols').

Half-diminished and diminished chords can be written in full or in an abbreviated form, as shown in the example above. The half-diminished C chord written in full is Cm7(b5), and the diminished C chord is C diminished (also abbreviated as C^o). Half-diminished chords are so called because the seventh interval in their structure is minor and not diminished, as is the case in diminished chords.

How to write the extensions

The extensions - ninth, eleventh, and thirteenth - since they do not modify the function of the chords, are preferably placed in parentheses. In some specific situations, the ninth, eleventh, and thirteenth intervals are written an octave lower as second, fourth, and sixth (see chapter '*Chord Families*').

Other times, these extensions - 9, 11, and 13 - don't need to be written in parentheses. This happens when these extensions are natural, not altered. See the examples below:

The notoriety of alphanumeric symbology occurred, within the jazz language, due to its open aspect, with several possibilities of assembly, aiming at improvised harmonic practice. Whenever possible, we will keep the main tetrad encryption or the chord encryption in accordance with its harmonic function.

In certain situations, where there is an omission of notes in the chord as well as the inclusion of altered extensions, the symbol of the real intervals of the tetrad and its extensions becomes a difficult task. It would take a long explanation to write the chord in question. This will make reading and interpreting chords much more complex. In such cases, it is possible to adopt certain symbols that prioritize the ease of reading and interpreting the structures of the chords without being faithful to the reality of their notes. Enharmonic equivalence can be used to arrive at a simplified structure. Preferably, triads or tetrad structures can be used, and they can be found in one of the five Chord Families. The result of the symbol will always be a chord whose bass is far from representing an inversion. We call this type of chord **enharmonic symbols**.

Enharmonic equivalences

The enharmonic chord symbol is a way of representing chord structures without worrying about the clarity of its function. This type of chord symbol is directly linked to instrumental practice, and there is no theoretical logic to support it. There is a certain consensus on the use of this type of symbol, and, for this reason, it is important for the student to become familiar with it. There are two basic ways to indicate that a chord is written with its enharmonic equivalence. One of them is when the chord symbol has no relation to the tonal center of the analyzed passage. The other is when the chord symbol seems to represent an inverted chord, but the bass does not correspond to any of the possible inversions of that chord.

The diagram shows six chord symbols with their corresponding guitar fretboard diagrams and piano chord voicings. Above each symbol is a guitar fretboard diagram with dots representing notes. Below each symbol is a piano chord voicing on a grand staff. The symbols and their labels are:

- $G7^{(b13)}/D^{\flat}$ (n.r.) - real chord
- $C7M^9$ - real chord
- $D^{\flat 9}$ - enharmonic
- $E7^{(b13)}/G^{\sharp}$ (s.f. s.5) - real chord
- A_m^4 - real chord
- F_m6/A^{\flat} (n.5) - enharmonic

n.r = no root
n.5 = no fifth

It is important to remember that alphanumeric chords are intended solely to communicate harmonic structures in instrumental practice. Although they are very useful, they have considerable limitations when it comes to explaining the position, presentation, and region where chords will be constructed. They also have inconsistencies in the representation of their structures, since in enharmonic chords, certain notes are false and have nothing to do with the reality of the chord. However, alphanumeric chords continue to be the most practical way of communicating chord structures. Therefore, chords, as a tool for communicating the harmonic content of a musical theme, should be used with discretion. Priority should be given to the chord notation of tetrads, inversions, and altered extensions. The chord is and should remain open so that the harmonizer or instrumentalist has freedom of execution, and it should always be noted in a simple and clear way. It is up to the harmonizer to choose the enharmonic chord or the writing that explains the exact function of the chord. It is the instrumentalist's duty to interpret the chords in the best way possible to avoid mistakes and thus achieve the correct execution of the essence of the chords.

See, in the example below, some applications of enharmonic chord symbol:

If, with the real chord symbol or the enharmonic chord symbol, the chord remains too complex in details, it is a sign that it shall be written on the musical staff.

Superimposed Chords

Certain six and seven-note chord structures (*eleventh and thirteenth*) can be considered two superimposed triads, and for these situations, a very practical procedure can be adopted, known as **Superimposed Chords** or **Chord-over-Chord**. In these cases, when you have six- and seven-note chords in their structure, it is customary to separate the chord into two parts. One part is represented by the triad that is at the lowest part of the chord, and the other by the upper triad or tetrad. This type of tab does not highlight the function or functional quality of the chords, only giving the intervals that make up their structures. The two triads (*or triad plus tetrad*) involved in this superimposition are no longer notated with a diagonal line that separates the bass. In these cases, the chord symbol will be done similarly to chord inversions, but with a horizontal line that separates the two superimposed chords. This type of chord is most used by pianists, who can practice denser chord constructions. See below two examples that cannot be practiced by a single guitarist.

Note:
Both chord notation and musical writing on the staff are excellent communication tools in music. Nowadays, we also have a series of other resources that can be used to complement this communication: audio and MIDI files, videos, and various music software available for personal

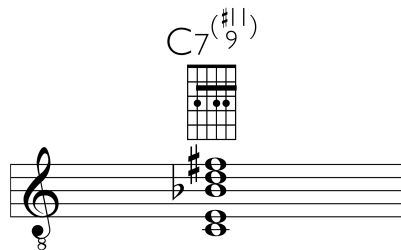
computers. These are useful tools that can help us in the different processes of musical learning. The use of these resources must always be accompanied by a dose of reasonableness. It allows us to distinguish the degree of applicability of these tools so that they are used to the extent of their functionality and their limitations. The alphanumeric notation is directly associated with improvised musical activity and should be maintained as such. It is essential to let the musician decide, according to his knowledge and aesthetic sense, the best way to build the chord, to place it within the measure, to define the groove, and so on. If the composer (or arranger) wants a particular idea to be realized, two options can be applied. The first gives the instrumentalist a score (with all the elements it may contain: notes, dynamics, tempo, ornaments, etc.) or a recording that contains all the information and musical intentions that are intended to be reproduced.

Inversions

The more accurate tonal function of a chord is always given by the tetrad. The extensions applied to this tetrad will not affect its functional quality. In the alphanumeric symbology, inversions are represented by a diagonal slash separating the main structure of the chord from its inversion. Chord inversion deals with the notes of the tetrad that are positioned in the lowest part of the structure, the bass of the chord. Since tetrads are the only chord structures that can be inverted, we then have four different possibilities.

The root on the bass

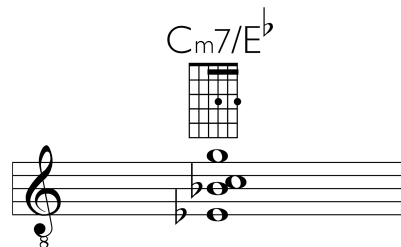
$C_7^{(\sharp 11)}$



The image shows a guitar chord diagram for C7(11) and its corresponding musical notation. The chord diagram shows the root (C) on the 5th fret of the 5th string, with other notes on the 4th, 3rd, 2nd, and 1st strings. The musical notation is in treble clef with a key signature of one flat (Bb) and a common time signature (C). The notes are C4, E4, G4, Bb4, and C5, with the C4 note on the 5th line of the staff.

The third on the bass

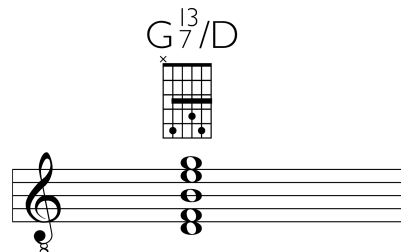
C_{m7}/E^b



The image shows a guitar chord diagram for Cm7/Eb and its corresponding musical notation. The chord diagram shows the third (Eb) on the 5th fret of the 5th string, with other notes on the 4th, 3rd, 2nd, and 1st strings. The musical notation is in treble clef with a key signature of two flats (Bb, Eb) and a common time signature (C). The notes are Eb3, F3, Ab3, and C4, with the Eb3 note on the 5th line of the staff.

The fifth on the bass

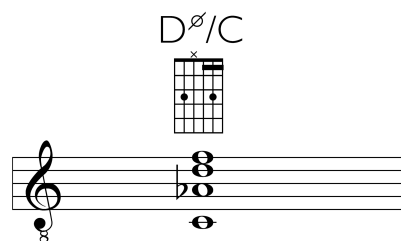
G_7^1/D



The image shows a guitar chord diagram for G7(13)/D and its corresponding musical notation. The chord diagram shows the fifth (D) on the 2nd fret of the 5th string, with other notes on the 4th, 3rd, 2nd, and 1st strings. The musical notation is in treble clef with a key signature of one flat (Bb) and a common time signature (C). The notes are D3, F3, Ab3, and G4, with the D3 note on the 2nd line of the staff.

The seventh on the bass

D^{\flat}/C



The image shows a guitar chord diagram for Dflat/C and its corresponding musical notation. The chord diagram shows the seventh (Cb) on the 5th fret of the 5th string, with other notes on the 4th, 3rd, 2nd, and 1st strings. The musical notation is in treble clef with a key signature of two flats (Bb, Eb) and a common time signature (C). The notes are Cb3, Eb3, F3, and G3, with the Cb3 note on the 5th line of the staff.

Diminished Chord Inversions

Diminished chords are symmetrical structures made up of superimposed minor thirds. Exploring the enharmonic possibilities of the diminished seventh chord, it can represent three different diminished chords, and there is no representation for diminished chord inversions. They will always be represented by the bass note, even if it is an inversion. (see the chapter 'Diminished Chord Family')

We don't write diminished chords inversions.

Note that the **Bdim** chord, in its possible inversions, is not written as **Bdim/D**, **Bdim/F** or **Bdim/Ab**, but simply as **Ddim**, **Fdim**, and **Abdim**. It is up to the musician to analyze the chord within the tonal context to accurately define its meaning.





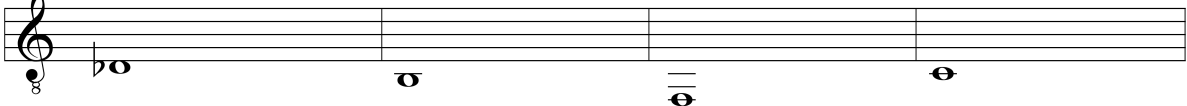




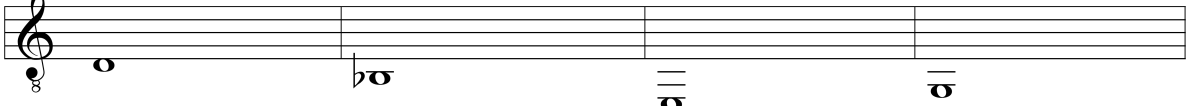




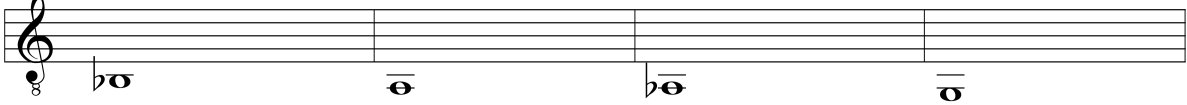









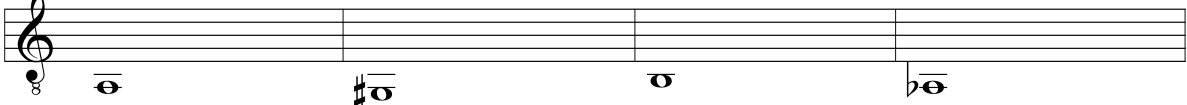




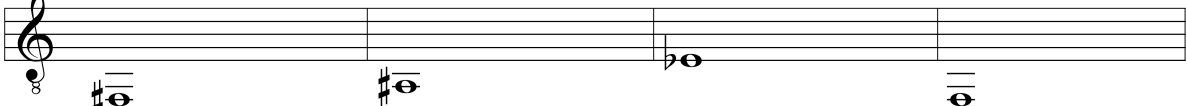
Note:

Special attention should be paid when dealing with music written for orchestral or chamber music because, although the sound of these diminished chords is the same, their functional qualities depend entirely on the notes chosen. The chord Bdim, VII of harmonic minor, will never have the quality of an Abdim since it is a chord with a dominant function in C minor. It does not justify the presence of the note Cb in its structure. Undoubtedly, not encoding the inversions of diminished chords is not the best option. From a theoretical perspective, there is no logical reason that prevents the representation of all inversions of these chords. However, this is yet another inconsistency in the consecrated process of encoding chords, and it is up to the musician to understand them to avoid mistakes.

Exercise

Write and play the following chords:

<p>$G7^{(\#11)}$</p>	<p>$B\flat m_6^9$</p>	<p>$C\#7^{(\#9)}$</p>	<p>$G\flat m_7^{11}$</p>
<p>Cm_7^9</p>	<p>$G\#7^{(\flat 13)}$</p>	<p>$E7^{(\flat 13)}/G\#$</p>	<p>$D\#6^{(\#11)}$</p>
<p>$F\emptyset^9$</p>	<p>$A\flat 7_M^9$</p>	<p>$B7^{(\flat 13)}$</p>	<p>$C7^{(\#5)}$</p>
<p>$B\flat m_{add}^9$</p>	<p>$E\flat m_7^{11}$</p>	<p>Dm_6^{11}</p>	<p>$A\flat 7^{(\#11)}$</p>
<p>$F7^{alt.}$</p>	<p>$B\emptyset^{11}$</p>	<p>$G\flat dim_7^M$</p>	<p>$G7^{(\#5)}/B$</p>

<p>$D^{\flat 9}$</p> 	<p>B^{13}/D^{\sharp}</p> 	<p>$F7^{(\flat 13)}$</p> 	<p>$A^{\flat 9}/C$</p> 
			
<p>$D7^{(\flat 9)}$</p> 	<p>$G^{\flat 7}/B^{\flat}$</p> 	<p>$E7^{(\flat 13)}$</p> 	<p>$G7^{(\flat 9)}$</p> 
			
<p>$B^{\flat 7^{(\flat 13)}}$</p> 	<p>A^9</p> 	<p>$A^{\flat 7^{(\flat 9)}}$</p> 	<p>$G7^{(\flat 13)}$</p> 
			
<p>$C^{\sharp 7^{(\flat 9)}}$</p> 	<p>$C7^{(\flat 13)}$</p> 	<p>$B^{\flat 7^{(\flat 13)}}$</p> 	<p>$A7^{(\flat 13)}$</p> 
			
<p>$F7^9/M/A$</p> 	<p>$G^{\sharp 7^{(\sharp 11)}}$</p> 	<p>$B7^{(\flat 13)}$</p> 	<p>$A^{\flat 6}M$</p> 
			
<p>$F^{\sharp m7^9}$</p> 	<p>$A^{\sharp m6}M$</p> 	<p>$E^{\flat m6^9}$</p> 	<p>$Dm^9/M/F$</p> 
			

Exercise – Ear training and Analysis

Find the tonality, the inversion, and the quality of the tetrads you hear, and write down the extensions that appear in the following chord progressions.

Track 19



Track 20



Track 21



Track 22



Track 23



Track 24



Track 25



Track 26



Track 27



Chords status, presentations, and positions

Chords can be structured and analyzed, considering three aspects:

Status

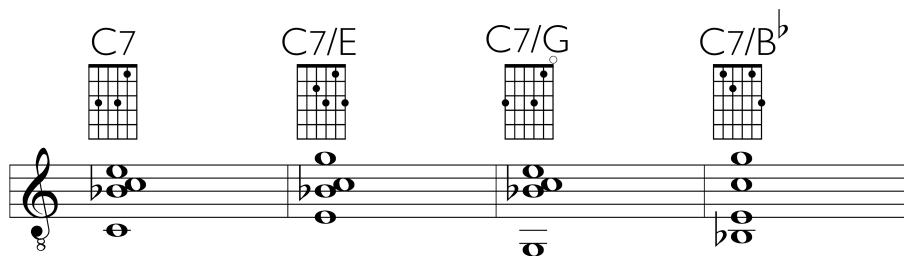
Interpretation of the chord's bass according to its inversions. There are four possibilities that explain the status of a chord:

Root: chord's root is on the bass

1st Inversion: chord's third is on the bass

2nd Inversion: chord's fifth is on the bass

3rd Inversion: chord's seventh is on the bass.

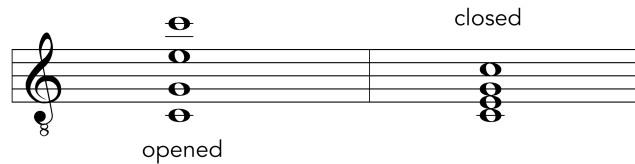


There is no possibility of placing the extensions **9**, **11**, or **13** on the bass of the chords. Nor are there conventional reinterpretations of these intervals: **2**, **4**, and **6**. In addition to the positioning of the bass of the chord on the fundamental status (*root*), there are only three possibilities of chord inversions: **third in the bass**, **fifth in the bass** and **seventh in the bass**¹.

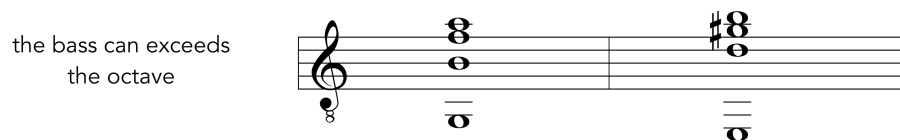
Presentations

Presentation is the way in which the notes (*voices*) of a chord are distributed. A chord can have open and closed presentations. We classify them as **close presentations**; the chord structures whose interval between each voice doesn't exceed a fourth. On the other hand, there are the **open presentations**. In this case, the interval between the nearest voice on the vertical structure exceeds a fourth (*it is advisable to never exceed the limit of an octave between immediate voices*).

¹ The only exception to this case occurs with **'Dominant Chords with Two Tritones'** (see corresponding chapter).



The lowest part of the chords should not be part of these considerations and can be written with an interval that exceeds the octave.



Chord position

It is given by the note that is in the highest voice of the chord. Since this voice can contain all the intervals applied in Harmony, we can have chords in the following positions:

position of third

position of fifth

position of seventh

position of octave

(when the root is at the upper end of the chord)

position of ninth

(or second, in major and minor chords)

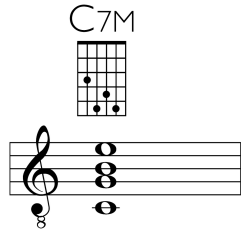
position of eleventh

(or fourth, in minor and suspended chords)

position of thirteenth

(or sixth, in major and minor chords)

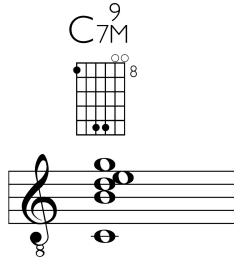
C7M



The diagram shows the guitar chord for C7M (C major 7th flat 9) and its corresponding piano chord diagram on a treble clef staff. The piano chord consists of C4, E4, G4, Bb4, and D5.

position of third

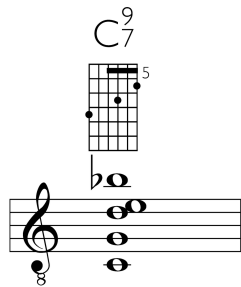
C7M⁹



The diagram shows the guitar chord for C7M⁹ (C major 7th flat 9 with natural 9) and its corresponding piano chord diagram on a treble clef staff. The piano chord consists of C4, E4, G4, Bb4, D5, and F5.

position of fifth

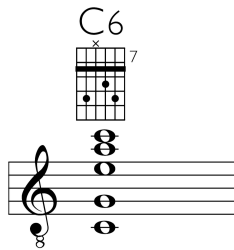
C7⁹



The diagram shows the guitar chord for C7⁹ (C major 7th flat 9 with natural 9) and its corresponding piano chord diagram on a treble clef staff. The piano chord consists of C4, E4, G4, Bb4, D5, and F5.

position of seventh

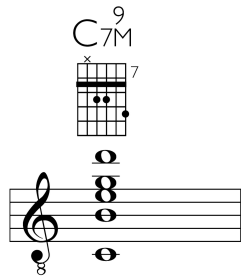
C6



The diagram shows the guitar chord for C6 (C major 6th) and its corresponding piano chord diagram on a treble clef staff. The piano chord consists of C4, E4, G4, Bb4, and C5.

position of octave

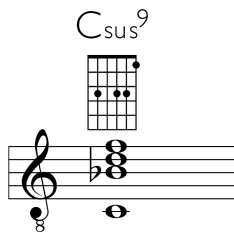
C7M⁹



The diagram shows the guitar chord for C7M⁹ (C major 7th flat 9 with natural 9) and its corresponding piano chord diagram on a treble clef staff. The piano chord consists of C4, E4, G4, Bb4, D5, and F5.

position of nineth

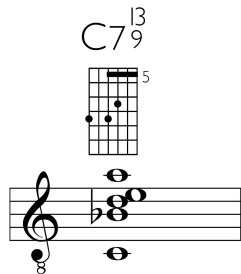
Csus⁹



The diagram shows the guitar chord for Csus⁹ (C suspended 9th) and its corresponding piano chord diagram on a treble clef staff. The piano chord consists of C4, G4, Bb4, and D5.

position of eleventh

C7¹³



The diagram shows the guitar chord for C7¹³ (C major 7th flat 9 with natural 13) and its corresponding piano chord diagram on a treble clef staff. The piano chord consists of C4, E4, G4, Bb4, D5, F5, and Ab5.

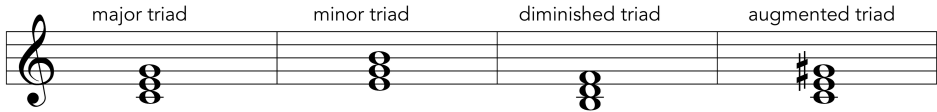
position of thirteenth

Exercise:

Write the symbol for each chord and classify their status, presentations and positions.

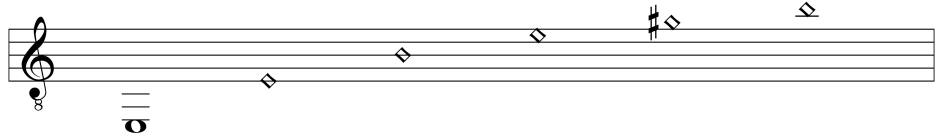
Triads

Triads are the structures of three notes with two thirds superimposed on a root. Triads are considered the simplest structures in Harmony, and, for this reason, many books take them as a starting point.



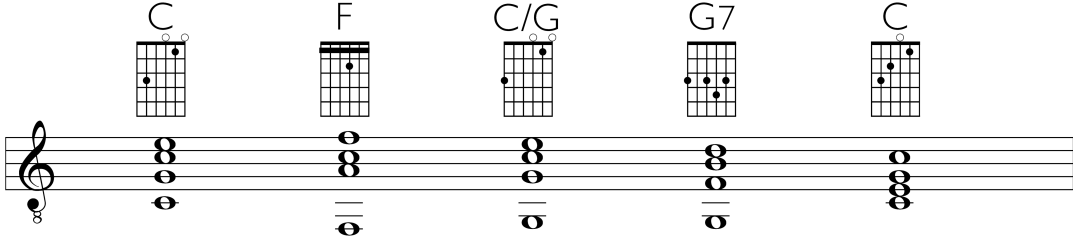
However, the process of linking triad chords can become complex due to the need to double notes. This is due to the well-established practice of the four-voice chord progression. In this four-voice practice, one of the notes of the triad must be doubled¹.

The major triad is the result of the first four sounds that occur in the harmonic series and therefore has the character of a perfect chord.

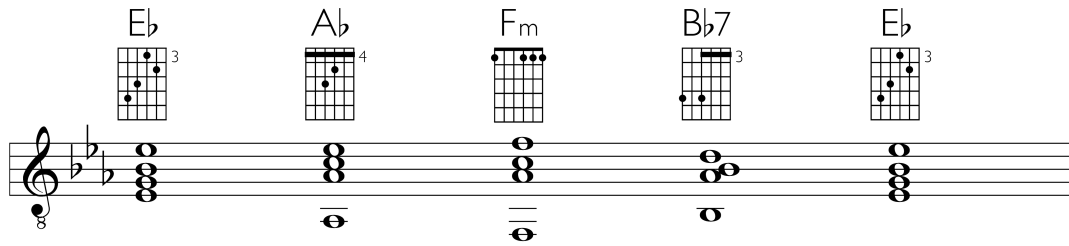


The triad alone does not fully define the function of a chord, which will only happen after the insertion of the fourth note, the seventh.

The practice of linking triads was the basis for the development of Tonal Harmony. See some examples of this type of chord progression:

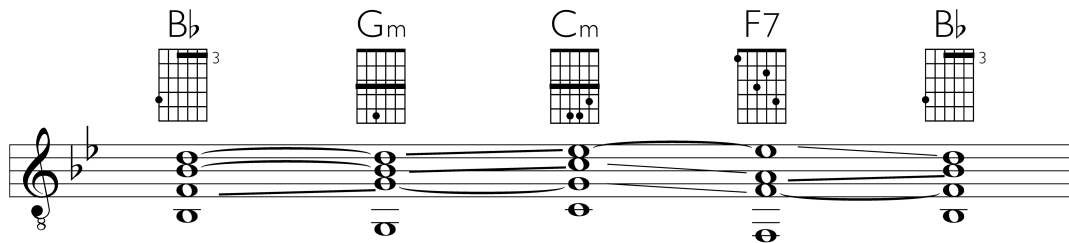


¹ Normally, the root of the triad is doubled, which is the best option. The second note chosen to be doubled will be the fifth, and finally the third.



The correct way to connect triads is based on the following principles:

- 1) Choose the bass note (root or inversions);
- 2) Decide the best position for the first chord;
- 3) Decide the best presentation for the first chord and the note to be doubled;
- 4) Connect the following chords while maintaining the common notes;
- 5) Move the different notes along the shortest path.



The triads presented in this way clearly explain the tonal functions.

Note:

The use of triads in the tonal harmonic process has a relevant aesthetic aspect. It was during European musical classicism that the use of triadic harmonization reached its peak and left an important legacy for music produced in the Western world. The great representatives of this period in the history of Central European music were Haydn, Mozart, and Beethoven. After them (in fact, Beethoven already pointed to a new direction in his last works), the harmonic process was in constant development with Chopin, Schumann, Liszt, Schubert, and R. Strauss until it reached the last frontiers of tonal music. In works by composers such as Wagner, Mahler, and Schoenberg, the application of altered chords and constant modulations is frequently seen, making the analysis of tonal centers and their regions complex.

Below you can see some four-part chord progressions based on triads.

An example of a four-voice triad chain in the key of D major. The excerpt below uses the scales of D major, B minor, A major, and G major, that is, the scale of the main key and scales that represent the chords of VI, V, and IV in the tonic position (see the chapter 'Secondary Dominants').

Track 28

Four-voice triads progression in B minor / D major

Track 29

The first system of musical notation consists of two staves. The upper staff is in treble clef and the lower staff is in bass clef. The key signature has two sharps (F# and C#), and the time signature is common time (C). The music features four-voice triads in B minor / D major. The upper staff contains a sequence of notes: B4, D5, E5, F#5, G5, A5, B5, C6, D6, E6, F#6, G6, A6, B6, C7, D7, E7, F#7, G7, A7, B7, C8, D8, E8, F#8, G8, A8, B8, C9, D9, E9, F#9, G9, A9, B9, C10, D10, E10, F#10, G10, A10, B10, C11, D11, E11, F#11, G11, A11, B11, C12, D12, E12, F#12, G12, A12, B12, C13, D13, E13, F#13, G13, A13, B13, C14, D14, E14, F#14, G14, A14, B14, C15, D15, E15, F#15, G15, A15, B15, C16, D16, E16, F#16, G16, A16, B16, C17, D17, E17, F#17, G17, A17, B17, C18, D18, E18, F#18, G18, A18, B18, C19, D19, E19, F#19, G19, A19, B19, C20, D20, E20, F#20, G20, A20, B20, C21, D21, E21, F#21, G21, A21, B21, C22, D22, E22, F#22, G22, A22, B22, C23, D23, E23, F#23, G23, A23, B23, C24, D24, E24, F#24, G24, A24, B24, C25, D25, E25, F#25, G25, A25, B25, C26, D26, E26, F#26, G26, A26, B26, C27, D27, E27, F#27, G27, A27, B27, C28, D28, E28, F#28, G28, A28, B28, C29, D29, E29, F#29, G29, A29, B29, C30, D30, E30, F#30, G30, A30, B30, C31, D31, E31, F#31, G31, A31, B31, C32, D32, E32, F#32, G32, A32, B32, C33, D33, E33, F#33, G33, A33, B33, C34, D34, E34, F#34, G34, A34, B34, C35, D35, E35, F#35, G35, A35, B35, C36, D36, E36, F#36, G36, A36, B36, C37, D37, E37, F#37, G37, A37, B37, C38, D38, E38, F#38, G38, A38, B38, C39, D39, E39, F#39, G39, A39, B39, C40, D40, E40, F#40, G40, A40, B40, C41, D41, E41, F#41, G41, A41, B41, C42, D42, E42, F#42, G42, A42, B42, C43, D43, E43, F#43, G43, A43, B43, C44, D44, E44, F#44, G44, A44, B44, C45, D45, E45, F#45, G45, A45, B45, C46, D46, E46, F#46, G46, A46, B46, C47, D47, E47, F#47, G47, A47, B47, C48, D48, E48, F#48, G48, A48, B48, C49, D49, E49, F#49, G49, A49, B49, C50, D50, E50, F#50, G50, A50, B50, C51, D51, E51, F#51, G51, A51, B51, C52, D52, E52, F#52, G52, A52, B52, C53, D53, E53, F#53, G53, A53, B53, C54, D54, E54, F#54, G54, A54, B54, C55, D55, E55, F#55, G55, A55, B55, C56, D56, E56, F#56, G56, A56, B56, C57, D57, E57, F#57, G57, A57, B57, C58, D58, E58, F#58, G58, A58, B58, C59, D59, E59, F#59, G59, A59, B59, C60, D60, E60, F#60, G60, A60, B60, C61, D61, E61, F#61, G61, A61, B61, C62, D62, E62, F#62, G62, A62, B62, C63, D63, E63, F#63, G63, A63, B63, C64, D64, E64, F#64, G64, A64, B64, C65, D65, E65, F#65, G65, A65, B65, C66, D66, E66, F#66, G66, A66, B66, C67, D67, E67, F#67, G67, A67, B67, C68, D68, E68, F#68, G68, A68, B68, C69, D69, E69, F#69, G69, A69, B69, C70, D70, E70, F#70, G70, A70, B70, C71, D71, E71, F#71, G71, A71, B71, C72, D72, E72, F#72, G72, A72, B72, C73, D73, E73, F#73, G73, A73, B73, C74, D74, E74, F#74, G74, A74, B74, C75, D75, E75, F#75, G75, A75, B75, C76, D76, E76, F#76, G76, A76, B76, C77, D77, E77, F#77, G77, A77, B77, C78, D78, E78, F#78, G78, A78, B78, C79, D79, E79, F#79, G79, A79, B79, C80, D80, E80, F#80, G80, A80, B80, C81, D81, E81, F#81, G81, A81, B81, C82, D82, E82, F#82, G82, A82, B82, C83, D83, E83, F#83, G83, A83, B83, C84, D84, E84, F#84, G84, A84, B84, C85, D85, E85, F#85, G85, A85, B85, C86, D86, E86, F#86, G86, A86, B86, C87, D87, E87, F#87, G87, A87, B87, C88, D88, E88, F#88, G88, A88, B88, C89, D89, E89, F#89, G89, A89, B89, C90, D90, E90, F#90, G90, A90, B90, C91, D91, E91, F#91, G91, A91, B91, C92, D92, E92, F#92, G92, A92, B92, C93, D93, E93, F#93, G93, A93, B93, C94, D94, E94, F#94, G94, A94, B94, C95, D95, E95, F#95, G95, A95, B95, C96, D96, E96, F#96, G96, A96, B96, C97, D97, E97, F#97, G97, A97, B97, C98, D98, E98, F#98, G98, A98, B98, C99, D99, E99, F#99, G99, A99, B99, C100, D100, E100, F#100, G100, A100, B100, C101, D101, E101, F#101, G101, A101, B101, C102, D102, E102, F#102, G102, A102, B102, C103, D103, E103, F#103, G103, A103, B103, C104, D104, E104, F#104, G104, A104, B104, C105, D105, E105, F#105, G105, A105, B105, C106, D106, E106, F#106, G106, A106, B106, C107, D107, E107, F#107, G107, A107, B107, C108, D108, E108, F#108, G108, A108, B108, C109, D109, E109, F#109, G109, A109, B109, C110, D110, E110, F#110, G110, A110, B110, C111, D111, E111, F#111, G111, A111, B111, C112, D112, E112, F#112, G112, A112, B112, C113, D113, E113, F#113, G113, A113, B113, C114, D114, E114, F#114, G114, A114, B114, C115, D115, E115, F#115, G115, A115, B115, C116, D116, E116, F#116, G116, A116, B116, C117, D117, E117, F#117, G117, A117, B117, C118, D118, E118, F#118, G118, A118, B118, C119, D119, E119, F#119, G119, A119, B119, C120, D120, E120, F#120, G120, A120, B120, C121, D121, E121, F#121, G121, A121, B121, C122, D122, E122, F#122, G122, A122, B122, C123, D123, E123, F#123, G123, A123, B123, C124, D124, E124, F#124, G124, A124, B124, C125, D125, E125, F#125, G125, A125, B125, C126, D126, E126, F#126, G126, A126, B126, C127, D127, E127, F#127, G127, A127, B127, C128, D128, E128, F#128, G128, A128, B128, C129, D129, E129, F#129, G129, A129, B129, C130, D130, E130, F#130, G130, A130, B130, C131, D131, E131, F#131, G131, A131, B131, C132, D132, E132, F#132, G132, A132, B132, C133, D133, E133, F#133, G133, A133, B133, C134, D134, E134, F#134, G134, A134, B134, C135, D135, E135, F#135, G135, A135, B135, C136, D136, E136, F#136, G136, A136, B136, C137, D137, E137, F#137, G137, A137, B137, C138, D138, E138, F#138, G138, A138, B138, C139, D139, E139, F#139, G139, A139, B139, C140, D140, E140, F#140, G140, A140, B140, C141, D141, E141, F#141, G141, A141, B141, C142, D142, E142, F#142, G142, A142, B142, C143, D143, E143, F#143, G143, A143, B143, C144, D144, E144, F#144, G144, A144, B144, C145, D145, E145, F#145, G145, A145, B145, C146, D146, E146, F#146, G146, A146, B146, C147, D147, E147, F#147, G147, A147, B147, C148, D148, E148, F#148, G148, A148, B148, C149, D149, E149, F#149, G149, A149, B149, C150, D150, E150, F#150, G150, A150, B150, C151, D151, E151, F#151, G151, A151, B151, C152, D152, E152, F#152, G152, A152, B152, C153, D153, E153, F#153, G153, A153, B153, C154, D154, E154, F#154, G154, A154, B154, C155, D155, E155, F#155, G155, A155, B155, C156, D156, E156, F#156, G156, A156, B156, C157, D157, E157, F#157, G157, A157, B157, C158, D158, E158, F#158, G158, A158, B158, C159, D159, E159, F#159, G159, A159, B159, C160, D160, E160, F#160, G160, A160, B160, C161, D161, E161, F#161, G161, A161, B161, C162, D162, E162, F#162, G162, A162, B162, C163, D163, E163, F#163, G163, A163, B163, C164, D164, E164, F#164, G164, A164, B164, C165, D165, E165, F#165, G165, A165, B165, C166, D166, E166, F#166, G166, A166, B166, C167, D167, E167, F#167, G167, A167, B167, C168, D168, E168, F#168, G168, A168, B168, C169, D169, E169, F#169, G169, A169, B169, C170, D170, E170, F#170, G170, A170, B170, C171, D171, E171, F#171, G171, A171, B171, C172, D172, E172, F#172, G172, A172, B172, C173, D173, E173, F#173, G173, A173, B173, C174, D174, E174, F#174, G174, A174, B174, C175, D175, E175, F#175, G175, A175, B175, C176, D176, E176, F#176, G176, A176, B176, C177, D177, E177, F#177, G177, A177, B177, C178, D178, E178, F#178, G178, A178, B178, C179, D179, E179, F#179, G179, A179, B179, C180, D180, E180, F#180, G180, A180, B180, C181, D181, E181, F#181, G181, A181, B181, C182, D182, E182, F#182, G182, A182, B182, C183, D183, E183, F#183, G183, A183, B183, C184, D184, E184, F#184, G184, A184, B184, C185, D185, E185, F#185, G185, A185, B185, C186, D186, E186, F#186, G186, A186, B186, C187, D187, E187, F#187, G187, A187, B187, C188, D188, E188, F#188, G188, A188, B188, C189, D189, E189, F#189, G189, A189, B189, C190, D190, E190, F#190, G190, A190, B190, C191, D191, E191, F#191, G191, A191, B191, C192, D192, E192, F#192, G192, A192, B192, C193, D193, E193, F#193, G193, A193, B193, C194, D194, E194, F#194, G194, A194, B194, C195, D195, E195, F#195, G195, A195, B195, C196, D196, E196, F#196, G196, A196, B196, C197, D197, E197, F#197, G197, A197, B197, C198, D198, E198, F#198, G198, A198, B198, C199, D199, E199, F#199, G199, A199, B199, C200, D200, E200, F#200, G200, A200, B200, C201, D201, E201, F#201, G201, A201, B201, C202, D202, E202, F#202, G202, A202, B202, C203, D203, E203, F#203, G203, A203, B203, C204, D204, E204, F#204, G204, A204, B204, C205, D205, E205, F#205, G205, A205, B205, C206, D206, E206, F#206, G206, A206, B206, C207, D207, E207, F#207, G207, A207, B207, C208, D208, E208, F#208, G208, A208, B208, C209, D209, E209, F#209, G209, A209, B209, C210, D210, E210, F#210, G210, A210, B210, C211, D211, E211, F#211, G211, A211, B211, C212, D212, E212, F#212, G212, A212, B212, C213, D213, E213, F#213, G213, A213, B213, C214, D214, E214, F#214, G214, A214, B214, C215, D215, E215, F#215, G215, A215, B215, C216, D216, E216, F#216, G216, A216, B216, C217, D217, E217, F#217, G217, A217, B217, C218, D218, E218, F#218, G218, A218, B218, C219, D219, E219, F#219, G219, A219, B219, C220, D220, E220, F#220, G220, A220, B220, C221, D221, E221, F#221, G221, A221, B221, C222, D222, E222, F#222, G222, A222, B222, C223, D223, E223, F#223, G223, A223, B223, C224, D224, E224, F#224, G224, A224, B224, C225, D225, E225, F#225, G225, A225, B225, C226, D226, E226, F#226, G226, A226, B226, C227, D227, E227, F#227, G227, A227, B227, C228, D228, E228, F#228, G228, A228, B228, C229, D229, E229, F#229, G229, A229, B229, C230, D230, E230, F#230, G230, A230, B230, C231, D231, E231, F#231, G231, A231, B231, C232, D232, E232, F#232, G232, A232, B232, C233, D233, E233, F#233, G233, A233, B233, C234, D234, E234, F#234, G234, A234, B234, C235, D235, E235, F#235, G235, A235, B235, C236, D236, E236, F#236, G236, A236, B236, C237, D237, E237, F#237, G237, A237, B237, C238, D238, E238, F#238, G238, A238, B238, C239, D239, E239, F#239, G239, A239, B239, C240, D240, E240, F#240, G240, A240, B240, C241, D241, E241, F#241, G241, A241, B241, C242, D242, E242, F#242, G242, A242, B242, C243, D243, E243, F#243, G243, A243, B243, C244, D244, E244, F#244, G244, A244, B244, C245, D245, E245, F#245, G245, A245, B245, C246, D246, E246, F#246, G246, A246, B246, C247, D247, E247, F#247, G247, A247, B247, C248, D248, E248, F#248, G248, A248, B248, C249, D249, E249, F#249, G249, A249, B249, C250, D250, E250, F#250, G250, A250, B250, C251, D251, E251, F#251, G251, A251, B251, C252, D252, E252, F#252, G252, A252, B252, C253, D253, E253, F#253, G253, A253, B253, C254, D254, E254, F#254, G254, A254, B254, C255, D255, E255, F#255, G255, A255, B255, C256, D256, E256, F#256, G256, A256, B256, C257, D257, E257, F#257, G257, A257, B257, C258, D258, E258, F#258, G258, A258, B258, C259, D259, E259, F#259, G259, A259, B259, C260, D260, E260, F#260, G260, A260, B260, C261, D261, E261, F#261, G261, A261, B261, C262, D262, E262, F#262, G262, A262, B262, C263, D263, E263, F#263, G263, A263, B263, C264, D264, E264, F#264, G264, A264, B264, C265, D265, E265, F#265, G265, A265, B265, C266, D266, E266, F#266, G266, A266, B266, C267, D267, E267, F#267, G267, A267, B267, C268, D268, E268, F#268, G268, A268, B268, C269, D269, E269, F#269, G269, A269, B269, C270, D270, E270, F#270, G270, A270, B270, C271, D271, E271, F#271, G271, A271, B271, C272, D272, E272, F#272, G272, A272, B272, C273, D273, E273, F#273, G273, A273, B273, C274, D274, E274, F#274, G274, A274, B274, C275, D275, E275, F#275, G275, A275, B275, C276, D276, E276, F#276, G276, A276, B276, C277, D277, E277, F#277, G277, A277, B277, C278, D278, E278, F#278, G278, A278, B278, C279, D279, E279, F#279, G279, A279, B279, C280, D280, E280, F#280, G280, A280, B280, C281, D281, E281, F#281, G281, A281, B281, C282, D282, E282, F#282, G282, A282, B282, C283, D283, E283, F#283, G283, A283, B283, C284, D284, E284, F#284, G284, A284, B284, C285, D285, E285, F#285, G285, A285, B285, C286, D286, E286, F#286, G286, A286, B286, C287, D287, E287, F#287, G287, A287, B287, C288, D288, E288, F#288, G288, A288, B288, C289, D289, E289, F#289, G289, A289, B289, C290, D290, E290, F#290, G290, A290, B290, C291, D291, E291, F#291, G291, A291, B291, C292, D292, E292, F#292, G292, A292, B292, C293, D293, E293, F#293, G293, A293, B293, C294, D294, E294, F#294, G294, A294, B294, C295, D295, E295, F#295, G295, A295, B295, C296, D296, E296, F#296, G296, A296, B296, C297, D297, E297, F#297, G297, A297, B297, C298, D298, E298, F#298, G298, A298, B298, C299, D299, E299, F#299, G299, A299, B299, C300, D300, E300, F#300, G300, A300, B300, C301, D301, E301, F#301, G301, A301, B301, C302, D302, E302, F#302, G302, A302, B302, C303, D303, E303, F#303, G303, A303, B303, C304, D304, E304, F#304, G304, A304, B304, C305, D305, E305, F#305, G305, A305, B305, C306, D306, E306, F#306, G306, A306, B306, C307, D307, E307, F#307, G307, A307, B307, C308, D308, E308, F#308, G308, A308, B308, C309, D309, E309, F#309, G309, A309, B309, C310, D310, E310, F#310, G310, A310, B310, C311, D311, E311, F#311, G311, A311, B311, C312, D312, E312, F#312, G312, A312, B312, C313, D313, E313, F#313, G313, A313, B313, C314, D314, E314, F#314, G314, A314, B314, C315, D315, E315, F#315, G315, A315, B315, C316, D316, E316, F#316, G316, A316, B316, C317, D317, E317, F#317, G317, A317, B317, C318, D318, E318, F#318, G318, A318, B318, C319, D319, E319, F#319, G319, A319, B319, C320, D320, E320, F#320, G320, A320, B320, C321, D321, E321, F#321, G321, A321, B321, C322, D322, E322, F#322, G322, A322, B322, C323, D323, E323, F#323, G323, A323, B323, C324, D324, E324, F#324, G324, A324, B324, C325, D325, E325, F#325, G325, A325, B325, C326, D326, E326, F#326, G326, A326, B326, C327, D327, E327, F#327, G327, A327, B327, C328, D328, E328, F#328, G328, A328, B328, C329, D329, E329, F#329, G329, A329, B329, C330, D330, E330, F#330, G330, A330, B330, C331, D331, E331, F#331, G331, A331, B331, C332, D332, E332, F#332, G332, A332, B332, C333, D333, E333, F#333, G333, A333, B333, C334, D334, E334, F#334, G334, A334, B334, C335, D335, E335, F#335, G335, A335, B335, C336, D336, E336, F#336, G336, A336, B336, C337, D337, E337, F#337, G337, A337, B337, C338, D338, E338, F#338, G338, A338, B338, C339, D339, E339, F#339, G339, A339, B339, C340, D340, E340, F#340, G340, A340, B340, C341, D341, E341, F#341, G341, A341, B341, C342, D342, E342, F#342, G342, A342, B342, C343, D343, E343, F#343, G343, A343, B343, C344, D344, E344, F#344, G344, A344, B344, C345, D345, E345, F#345, G345, A345, B345, C346, D346, E346, F#346, G346, A346, B346, C347, D347, E347, F#347, G347, A347, B347, C348, D348, E348, F#348, G348, A348, B348, C349, D349, E349, F#349, G349, A349, B349, C350, D350, E350, F#350, G350, A350, B350, C351, D351, E351, F#351, G351, A351, B351, C352, D352, E352, F#352, G352, A352, B352, C353, D353, E353, F#353, G353, A353, B353, C354, D354, E354, F#354, G354, A354, B354, C355, D355, E355, F#355, G355, A355, B355, C356, D356, E356, F#356, G356, A356, B356, C357, D357, E357, F#357, G357, A357, B357, C358, D358, E358, F#358, G358, A358, B358, C359, D359, E359, F#359, G359, A359,

Exercises:

Write and play the following chord progressions from this given bass line. Transpose to other keys.

C E7/B Am Gm7 C7 F E7 Am B^o C G7/F C/E B^o/D
 C[#]dim Dm G7/B C G[#]dim Am F G/F C/E C F/A G7
 C C/B^b F/A C/G Dm7/F D7/F[#] C/G G7 C

Write and play the following chord progression from this melody. Transpose to other keys.

D G D/A A7 D G C/G G D7/F[#] G
 B^b B^b/A^b E^b/G F7 B^b Fm B^bm Fm/C C7 Fm
 F[#]m E[#]dim F[#]m C[#]7 F[#]m E A E/B B⁹ E

Create your own exercises with diatonic chord progression from tonal scales in different keys,

Intervals of Tonal Harmony

All intervals involved in the chord structures are written from the root to the thirteenth, since our theoretical basis for Tonal Harmony practice was developed from the process of verticalization of the tonal heptatonic scales by superimposed thirds (1, 3, 5, 7, 9, 11, 13).

In conventional practice, some compound intervals (9, 11, and 13) are written as simple intervals (2, 4, and 6)¹. The habit of writing compound intervals as simple intervals is a musical convention among musicians for exclusively practical purposes. There is no theoretical basis to support this option. Thus, combining the real and conventional intervals with their different qualities, we have the Tonal Harmony interval chart².

The image displays two musical staves in treble clef, each with a key signature of one flat (B-flat). The first staff contains the following intervals from left to right: 2 (D-F), b3 (D-Fb), 3 (D-F#), 4 (D-G), b5 (D-Ab), 5 (D-G#), #5 (D-A), 6 (D-F#), 7dim (D-Fb), 7 (D-F), 7M (D-F#), and 8 (D-A). The second staff contains: b9 (D-Fb), 9 (D-F#), #9 (D-G#), b3 (D-Fb), 3 (D-F#), 11 (D-G#), #11 (D-A), b5 (D-Ab), 5 (D-G#), #5 (D-A), b13 (D-Ab), and 13 (D-A).

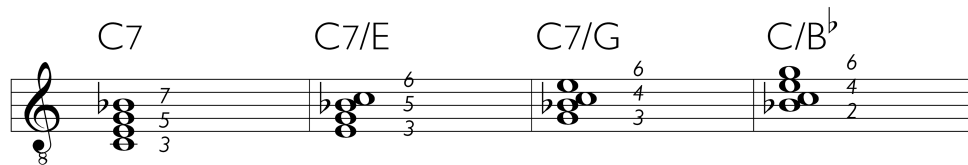
These are the intervals used in Tonal Harmony to build all types of chords. Unlike the traditional harmonic practice, we use the structures of chords as a basis for reasoning, always from their roots.

Chords can always have three inversions, and with each inversion, new interval relationships emerge. All of these intervals resulting from inverted structures will not be considered from an analytical perspective. A dominant tetrad, for example, is the result of stacking a major third, a perfect fifth, and a minor seventh over a root. We know that the chord in question can have these intervals in the bass, representing its inversions, or in the upper part of the chord, representing its position. The analysis of these different structures will always be done from the

¹ In current practice, there is a certain consensus regarding the use of this symbol. The interval 6, for example, will only be applied to chords in the Major and Minor Chord Family. This type of chord notation will never be used for Dominant, Half-diminished and Diminished chords, which will always maintain the interval 13 or b13 in their symbols.

² Modal chords and their progression's notation will be based on other parameters that will be explained in the corresponding chapter (Volume III). It is important to exercise caution to avoid further mistakes when this kind of notation is performed. We recommend that intervallic notation be restricted to the table above to avoid conflict between the chords of the tonal system and the modal practice.

root, and the intervals resulting from the inversions will not be considered. The first inversion of the dominant seventh chord, for example, has the resulting intervals **b3**, **b5**, and **6**. In the second inversion, the intervals are **b3**, **4**, and **6**, and in the third inversion, the intervals are **2**, **#4**, and **6**.



If we also consider, in addition to these inversions, chords with their possible extensions, omissions of notes (fifth and root, very common in dominant chords), and alterations, we will have an impractical number of structures to be learned and analyzed. In the traditional approach to Harmony, which is based on a rich combination of triads and a sparse application of extensions, borrowings, and alterations, this intervallic reasoning can be considered practical. However, with the development of the tonal harmonic process and the use of complete seven-note structures, as well as altered dominants and all types of modal borrowings, this form of intervallic concept became unfeasible.

In short, the intervallic relationship resulting from the different statuses, presentations, and positions of the chords will not be considered. The chords will always be analyzed from their root.

Therefore, the following intervals are unnecessary:

b2 – The **b2** would represent the **b9** repositioned as a simple interval. The **b9** is a characteristic interval of the dominant seventh chord, and, by convention, every dominant chord maintains its complementary intervals in the original position (see '*Dominant Chord Family*').

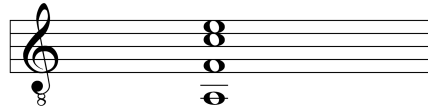
#4 – Not applicable by convention. It represents the repositioned **#11**, and since **#11** is an alteration of the dominant chords, this extension will always be written in its original position.

b5 and **#11** – These are enharmonic intervals that have different meanings. The **#11** is a complementary interval and therefore can, within the same chord, be added to a perfect fifth.

In chords with **b5**, the perfect fifth should not be used, regardless of the position of the note within the chord. This is an important question of interpretation that will influence logical

reasoning throughout the harmonic development. The **b5**, as it is one of the notes of the tetrad, can also appear in the bass (second inversion).

b6 – This interval also has no meaning in Tonal Harmony, since we will always be dealing with **b13** (dominant chords) or **#5** (*major chords and dominant chords*). What often happens with this interval is a misinterpretation: **b6** is the first inversion of a triad.



F7M/A = wrongly written as Am(b6) or Am(#5).

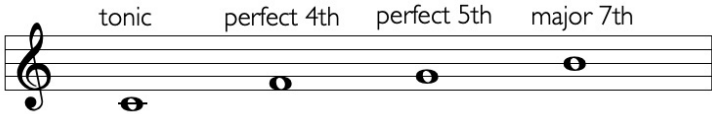
Note:

In Modal Harmony, the rules for building and applying chords are different from those in Tonal Harmony. Basically, the difference is the cadential movement. The harmonic functions of tonality lose their meaning when the practice is purely Modal (see volume III – Modal Harmony).

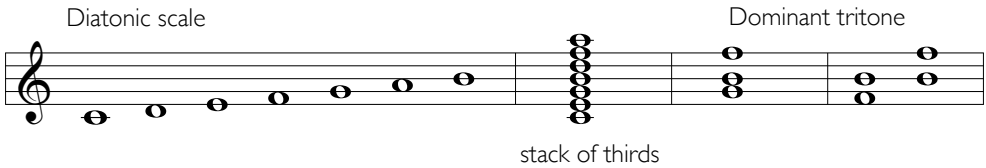
Caution and objectivity are needed when dealing with intervals. We recommend, especially for beginners, that they try to understand as quickly as possible the exact meaning of the Tonal Harmony interval chart, since mistaken interpretations can lead to a chaotic situation.

Tonal System

The Tonal System is a musical system that establishes the relationships of movement and rest generated by the combination of notes from heptatonic scales and the chords derived from them. To be considered a tonal scale, these scales must always adhere to the following structure:



This is a relevant premise in tonal harmonic practice because, in the verticalization of a tonal scale, the interval of a diminished fifth (or augmented fourth, when the position is changed) is formed between the fourth and seventh degrees. This interval is generically called the dominant tritone and is the basic dissonance that guides all the cadential procedures of the system.



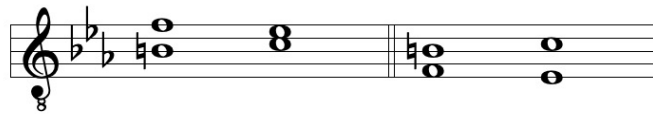
The dominant tritone, in the development of the Tonal System, came to signify movement and instability. The two notes that form this interval tend to settle into the notes that represent rest and stability. The notes of rest and stability are those formed by the I, III, and V of the tonal scales. The notes of movement are, in addition to the tritone that appears in the structures of the IV and VII, those located on the II and VI. See, in the table below, the conduction of the notes of the dominant tritone and the notes of movement of the tonal scales¹.

Resolution of the tritone in the C major scale:



¹ It is always found in the fifth-degree tetrads of tonal scales. The seventh-degree chords of major, harmonic minor, and harmonic major scales also feature this tritone and therefore maintain the dominant function, representing the V chords without the root with a ninth (see 'Family of Half-Diminished Chords' and 'Family of Diminished Chords').

Resolution of the tritone in the C harmonic minor scale:



The Motion-Rest Relationship of Notes

The **motion-rest relationship** is the basis of the Tonal System.

From tonal scales, all triadic structures, as well as tetrads, will represent either motion or rest.

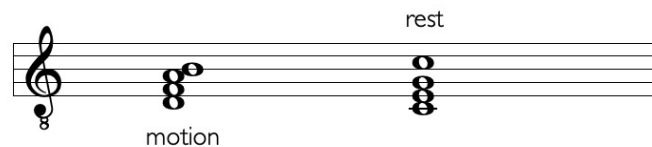
The most authentic rest is always given by the notes of the tonic triad, and the remaining notes of the scale represent motion.

See, in the following examples, the motion-rest relationship of the natural intervals of the chords of tonal scales, taking the tonic C as an example:

1. Major Scale

The main moving notes of this scale are the fourth and seventh degrees. The fourth degree (F) tends to resolve to the third degree (E), and the seventh (B) to the first degree (C).

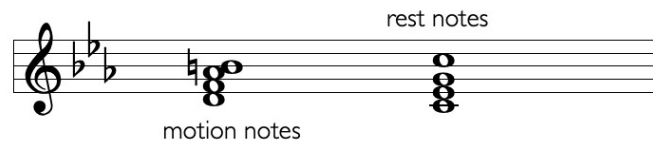
The other degrees are also unstable and therefore move as follows: the sixth degree (A) tends to the fifth (G), and the second (D) settles either to the first (C) or the third (E).¹



2. Harmonic Minor Scale

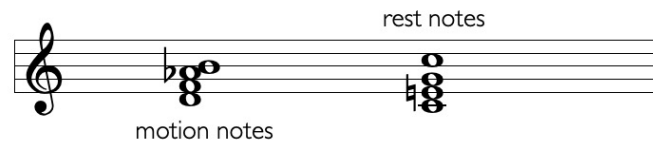
This scale has a minor triad as its tonic chord. The IV (F) and VII (B) are also the main movement notes, and the remaining notes of the scale progress as follows: the VI (Ab) resolves to the V (G), and the II (D) resolves to the I (C) or the III (Eb).

¹ Understand the meaning of motion notes and tensions. Motion notes are natural notes that, in the diatonic tonal process, tend to resolve to the notes of the tonic triad. Tensions are chromatic notes that lie beyond the diatonic scale.



3. Harmonic Major Scale

As with the preceding scales, the main movement notes of the harmonic major scale continue to be those of the fourth and seventh degrees. The other notes that seek resolution are those of the VI (Ab), which resolves to the V (G), and the II (D), which resolves to the I (C) or the III (E). The concept of applying the harmonic major scale is also justified by its difference in the cadential movement II7-V7-I (the II is a half-diminished chord).



4. Melodic Minor Scale

The melodic minor scale is a hybrid scale and is subject to dual interpretation: a tonal scale because of its V chord or a modal scale due to the IV chord.

Note:

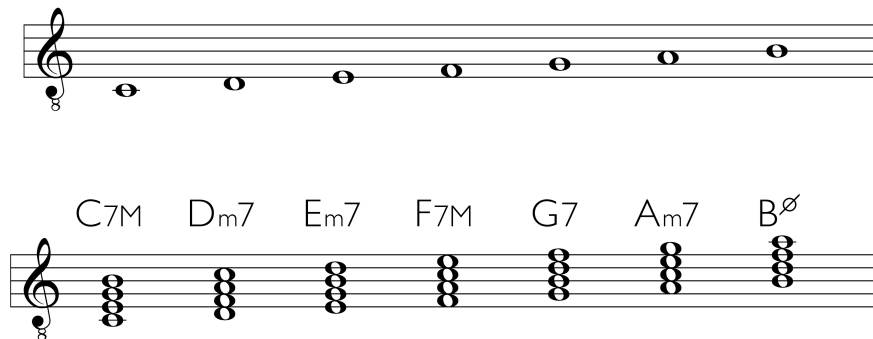
In the melodic minor scale, the dominant chord has a major ninth and flat 13th. Because of the major ninth that is part of its structure, its use is somewhat limited in minor keys. The ninth (A natural to G7) is weak in the progression with the tonic of the minor key. The choice for the dominant seventh chord, in the case of minor keys, is always the chord provided by the harmonic minor scale, which has a minor ninth and minor thirteenth.

In tonal harmonic practice, it is fundamental to keep the characteristics of the tonic, subdominant, and dominant functions clear. The tritone of the dominant chord, which is proper to the V and VII, should not appear in any other chord of the scale. This means that, in the stacking of thirds of the scale notes, the chords formed on the I, II, III, IV, and VI should not present the tritone in their structures, as this will mask its function. Occasionally the dominant tritone is formed only between the extensions, and in that case, the highest extension shall not be applied.

Tensions of Tonal Harmony

Tonal harmony always obeys the principle of movement-rest, generically called **cadential movement**. In a simple tonal process, the major or minor diatonic scale can be the only scalar basis for structuring chords. In this case, the harmonic result will be obtained only by the chords formed on the degrees of the scale, called **diatonic chords**.

Major scale



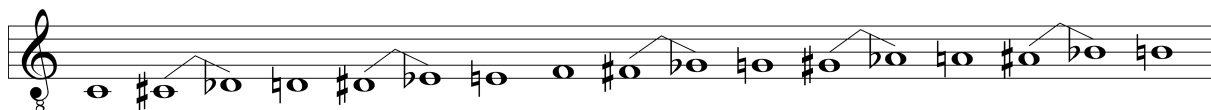
As seen in the previous chapter, in a diatonic scalar structure there are three notes considered **resting notes** and four more that represent the **movement notes**, a basic relationship that defines the tonal system. When one wishes to extrapolate the limits of these diatonic scales, searching for a broader tonal practice, we use the alterations that complete the chromatic scale. These alterations are called **tension intervals** of the tonal process. All these chromatic notes resolve to notes of the main scale, which, in turn, tend to settle definitively on the tonic triad.

Chromatic Notes

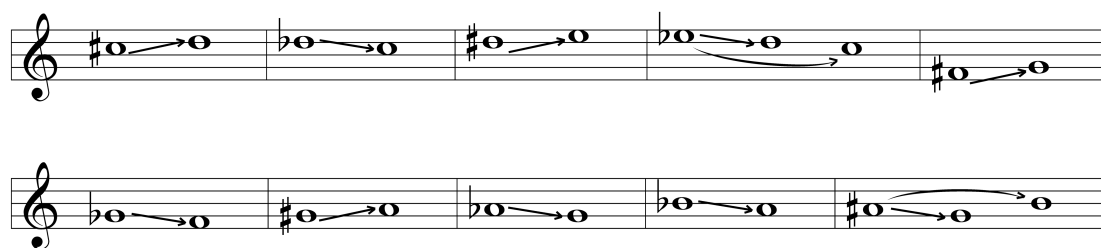
The 17 Notes of Tonal Harmony

In tonal harmonic practice, we use all possible notes of the tempered system to create and enrich chord progressions. We start with the seven notes of the diatonic scales; we expand to the twelve notes of the chromatic scale through alterations of the so-called 'Secondary Dominants' (see corresponding chapter) and conclude with the use of the enharmonic notes of these alterations, which represent the other tensions. This table will represent all the notes that can appear in the structuring of chords on the same tonal plane. This means that we have not twelve but seventeen

real and differentiated notes, with specific functional qualities in the structuring and progression of chords.



Each of these notes will follow its path, a consequence of the alteration applied. For this reason, it is fundamentally important to be aware of the role that each of them plays in harmonic progressions to avoid possible errors with enharmonics. See, in the table below, how all chromatic notes resolve to a C major key:



In the following example, we have some progressions, still in the C major key, where the movement of certain voices within the progressions is clear and unequivocal. Note how perceptible the ascending or descending movement of certain enharmonic notes is, which, despite representing the same pitch (in the tempered scale, there is no difference in pitch between enharmonic notes), have different functional meanings.

Track 30

C E7/B A_m C D^ø/F C D^ø/A^b G7^(b13) C_{m7}⁹ D_{m7}/A G^(#5) C

Notice how G sharp and A flat have different meanings, despite representing the same pitch. G sharp (which is an ascending alteration) tends to go up, and A flat (a descending alteration) tends to go down. In the other examples, we can see the same type of resolving tendency regarding sharps and flats. This gives us a clear notion that in the tonal harmonic process we do not work

with twelve but with seventeen notes, all with specific functional qualities: seven notes of the diatonic scale, five notes representing the alterations of secondary dominants, and five more notes representing the alterations coming from altered chords and modal borrowings. See some more examples of enharmonic notes with different meanings:

Track 31

C C7/G^b F₆ C/G D7/F[#] G C/G A/G D_m/F C_{7M}/G G7^(b5) C

Following this concept, the first step in expanding the chord chart, starting from the diatonic scale, consists of applying the five alterations used in structuring Secondary Dominants. Secondary dominants are seventh chords of the dominant that cadence with the degrees of the diatonic scale: II, III, IV, V, and VI (see corresponding chapter). This series of chords that defines this new cadential group is structured from the following alterations in the key of C major.

Secondary Dominants Alterations
 In C major

The next step in expanding the chromatic scale within the same tonal plane involves using the enharmonic alterations applied to secondary dominants. Still in C major, we have the following notes:

Other alterations
 in the C major tonal region

This differentiation must be observed carefully, as all these notes that complete the chromatic scale (the sharps and their enharmonic flats) have specific meanings. Their resolving tendencies and consequent directions must be respected: every alteration with ascending tension should be represented by a sharp (or double sharp or natural, depending on the case), and every alteration with descending tension should be represented by a flat (or double flat or natural, also depending on the case). The use of all the notes of the chromatic scale (naturals, sharps, and flats) as chord

builders, always in the pattern of superimposed thirds, will allow the use of seventeen different notes, all with their own harmonic meaning. For this purpose, the following topics should be taken as an analytical reference:

Diatonic Scales
Altered Notes in Secondary Dominants
Other Alterations

This set of seventeen notes represents the basis for interpreting the entire system. A more profound understanding of this concept comes with the study of '**Tonal Regions**' (see the corresponding chapter).

Note:

In the sequence C7M | E \emptyset | A7 | Dm7, we have two diatonic chords (C7M and Dm7) and a secondary cadence. Since this is a cadence for D minor (the second degree of C major), the alterations that will lead to the chord of this degree will be C sharp and B flat. They should not be exchanged or confused with D flat and A sharp, which are enharmonic notes.

In the C7M | E7 | Am7 sequence, with two diatonic chords and a secondary cadential dominant, the altered note is clearly G sharp, not its enharmonic A flat. In the sequence C \flat /G | Fm \flat | C7M/E, a cadence on the harmonic major scale, the note of the Fm \flat chord will be A flat and not G#.

Applying extensions to a dominant chord, the following mistake can happen: a G7(b13) chord, which is the dominant of the harmonic minor mode, the minor thirteenth E flat is its natural extension. This note does not represent any tension in the harmonic progression, since its traditional resolution is on the tonic. On the other hand, the G7(#5) chord should be analyzed as a dominant chord of the key of C major with an altered fifth. In this case, the resolution of the D# will be ascending: the D# (augmented fifth in the G7 chord) will resolve by a semitone to the third of the tonic, E.

The examples are numerous, and, for this reason, we will let common-sense and musical intuition guide us at the appropriate time. Just one small example to be analyzed, concluding these observations: G7(b5) and G7(#11). Think about the difference that will occur in the resolution of these two intervals.

Tonal Functions

There are three functions that form the basis of the Tonal System:

Tonic (T)
Dominant (D)
Subdominant (S)

The **tonic** represents rest and is the chord towards which all others are directed.

The **dominant** represents movement and is the chord that most polarizes with the tonic.

The **subdominant** balances the system, mediating the other two functions.

The main chord with a tonic function is the one located on the first degree – I – of the tonal scales. The main chord representing the dominant function is on the V. The IV chord is one of the chords that represent the subdominant function.

The other degrees of the scale are unfoldings of the main functions and have the following meanings:

II – subdominant¹
III – tonic²
VI – subdominant³
VII – dominant⁴

The image shows a musical staff with seven chords. Above each chord is its name: Cm^{7M}, D^ø, Eb^{7M}(^{#5}), Fm⁷, G⁷, Ab^{7M}, and Bdim. Below each chord is a functional label: D, S, T, S, D, S, and D. Brackets connect the chords to their functional labels: Cm^{7M} and D^ø are grouped under 'D'; D^ø, Eb^{7M}(^{#5}), and Fm⁷ are grouped under 'S'; Eb^{7M}(^{#5}) is under 'T'; Fm⁷ and G⁷ are grouped under 'S'; G⁷ and Ab^{7M} are grouped under 'D'; and Ab^{7M} and Bdim are grouped under 'D'.

This functional analysis of chords structured over tonal scales can be equally applied to all four scales: major, harmonic minor, melodic minor⁵, and harmonic major.

¹ It is called a relative subdominant (a concept developed by Hugo Riemann).

² It is called the antirelative tonic, and its most common application is as a substitute for the first degree of the scale.

³ When it follows the tonic chord, it acts as a relative tonic and does not alter the preceding function. If it is preceded by a chord with a subdominant function (IV or II), it acquires the character of an antirelative subdominant and has a subdominant function.

⁴ This chord, because it contains the dominant tritone, always represents the dominant ninth chord without the root.

⁵ The melodic minor scale is a hybrid scale, as it contains two 7th chords (1, 3, 5, 7) on the IV and V degrees. The IV chord, however, will continue to play the role of subdominant.

Main Cadences

Authentic Cadence: V – I movement

(dominant / tonic - major and minor – both chords in root position)

Imperfect Cadence: V – I movement

(dominant / tonic - major and minor – one or both chords inverted)

Complete Cadence: II – V – I, IV – V – I or VI – V – I movements

(subdominant / dominant / tonic – perfect in root position and imperfect in inversions)

(Note: Use the little finger of the right hand for five-note chords.)

Plagal Cadence: IV – I or II – I movements

(subdominant / tonic - major and minor - root position and inversions)

The image displays two systems of musical notation for plagal cadences. Each system consists of a guitar fretboard diagram and a piano-style chord symbol on a staff. The first system shows the progression: F7M⁹, C7M, Fm7, and Cm7. The second system shows: Dm7, C⁶, Dø^(b13)⁹, and Cm7.

Deceptive Cadences: V – VI (major or minor modes)

The deceptive cadence is represented by the V–VI movement, but it can also be made with the application of any borrowed chord that maintains the logic of resolution of tensions of the V chord. It is also known as an avoided cadence or interrupted cadence. The intention, in applying deceptive cadences, is to delay the resolution in the tonic chord, as well as to shift the tonal center to other fields (see chapter 'Exceptional Resolutions of the Dominant Chord' – Harmony Books volume II).

The image displays two systems of musical notation for deceptive cadences. Each system consists of a guitar fretboard diagram and a piano-style chord symbol on a staff. The first system shows the progression: G^{L3}₇, A_{m7}, G^{L3}₇, A^b_{add9}, G₇, and A^b/_{G^b}. The second system shows: G₇, F_{m7}, G₇, and G^b_{7M}(#11).

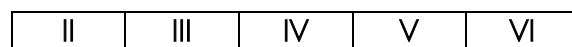
Exercise:

- I. Practice the cadences described above in various keys. Perform the progressions with tetrads and their extensions. Combine chords from different tonal scales.

Secondary Dominants

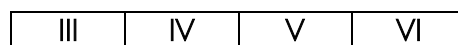
Secondary dominants are chords with a dominant structure and function whose main characteristic is to expand the tonal harmony from a diatonic process to a chromatic process, where the twelve notes of the chromatic scale are used. Secondary dominants occur in the same key, polarizing with the chords of the main scale in the form of a perfect or complete cadence.

There are five degrees of the major scale that can be reached through cadences with secondary dominants:



The chords formed on these degrees are the only ones that accept cadences with secondary dominants, as they are represented by perfect major or minor triads. Remember that the first degree of the scale already has its primary dominant, and the seventh degree, represented by a diminished triad, does not receive cadential support from a secondary dominant.

In minor keys based on the harmonic minor scale, the degrees on which cadences are formed using secondary dominants are:



Using the C major scale as a reference, we will have five alterations in the formation of secondary dominants.



Secondary dominants can be preceded by their respective cadential pair and, like any cadence, accept various possibilities of alteration. The way to notate the chords involved in cadences with secondary dominants is as follows:

- Perfect cadence for the II of the main scale:
V/II - II (read as: *fifth from the second to the second degree*)

- Perfect cadence for the **IV** of the main scale:
V/IV - IV (read as: *fifth of the fourth, fourth degree*)

- Complete cadence for the **III**
II/III - V/III - III (read as: *second of the third, fifth of the third, third degree*)

See some examples of cadential movements with Secondary Dominants in the key of C major:

The image displays two rows of musical notation for chords in the key of C major. Each chord is represented by a guitar fretboard diagram, a staff with a chord symbol, and a functional label below it.

Row 1:

- A7^(b9)**: Fretboard diagram (A7 with b9), staff with A7(b9), label **V/II**
- Dm**: Fretboard diagram (D minor), staff with Dm, label **II**
- B7^(b9)**: Fretboard diagram (B7 with b9), staff with B7(b9), label **V/III**
- Em**: Fretboard diagram (E minor), staff with Em, label **III**
- C7⁹**: Fretboard diagram (C7 with 9), staff with C7(9), label **V/IV**
- F7M**: Fretboard diagram (F7 major), staff with F7M, label **IV**

Row 2:

- D7**: Fretboard diagram (D7), staff with D7, label **V/V**
- G7¹³**: Fretboard diagram (G7 with 13), staff with G7(13), label **V**
- E7^(b9)**: Fretboard diagram (E7 with b9), staff with E7(b9), label **V/VI**
- Am7**: Fretboard diagram (A minor 7), staff with Am7, label **VI**

Cadential Pair

The complete cadential movement in tonal harmonic progressions is always formed by the three functions: subdominant, dominant, and tonic. The subdominant function can be equally represented by the chords of the **IV**, **II**, and **VI** of a major or minor scale. This combined application of the subdominant and dominant functions (**II/IV**, **IV/V**, and **VI/V**), which gives impetus to harmonic progressions, is called a **cadential pair**.

In popular musical language, the most frequent use of the cadential pair involves the chords of the **II–V** progression, and less frequently the **IV–V** and **VI–V** pairs. This is merely an aesthetic choice that characterizes this language. From a functional perspective, either option is effective in formulating the cadence.

In cadences with secondary dominants, the chords of the cadential pair polarize, with one of the chords representing the **II**, **III**, **IV**, **V**, or **VI** of the main scale. At this point of harmonic transition,

the alterations added to the musical discourse are directed towards the chord of the desired degree, in a temporary rest. These alterations affect the main scale and generate a new scalar structure that modifies the relationship of the primary dominant tritone. This new tritone will be the main element of the secondary cadence. In C major, for example, the progression to the II (D minor) is made by altering the notes **C** to **C sharp** and **B** to **B flat**, thus creating the structure of the harmonic **D minor scale**.

The image shows two musical staves. The top staff is labeled 'C major scale' and shows the notes C, D, E, F, G, A, B, C. A bracket underlines the F and C notes, labeled 'primary dominant tritone'. To the right, a chord progression is shown: G7/D (G, B, D, F) resolving to C (C, E, G). The bottom staff is labeled 'D harmonic minor scale' and shows the notes D, E, F, G, A, B-flat, C-sharp, D. A bracket underlines the B-flat and C-sharp notes, labeled 'secondary dominant tritone (V-II)'. To the right, a chord progression is shown: C#dim (C-sharp, E, G) resolving to Dm (D, F, A).

In the example above, you can see that the **F-B tritone**, representing the resolving force of the dominant function in **C major**, is broken by the transformation of the notes **B** and **C**, respectively, into **B flat** and **C sharp**. The emergence of the new tritone – **C sharp - G** – creates instability for a temporary rest in **D minor**. Furthermore, the note **B flat**, which is also involved in this transition, seeks resolution in the note **A**. In this transition, the new chords involved originate from the **D harmonic minor scale**.

The image shows a single musical staff with a treble clef and a key signature of one sharp (F#). The notes are: C-sharp, D, E, F, G, A, B-flat. Above each note is a chord symbol: C#dim, Dm7M, Eø, F7M(#5), Gm7, A7(b13, 9), Bb7M.

Note:

There are two foundations for the successful development of harmonic improvisation technique: the musician's intrinsic musicality (rhythmic, harmonic, and melodic intuition) and the intellectual and mechanical memorization (repertoire) of the widest possible range of musical material: scales, chords, arpeggios, melodic passages, phrases, and styles.

When we begin learning a new language, we learn small vocabulary words, then phrases, to finally express our ideas coherently and completely. For these ideas to be clear, it is necessary to have a vast repertoire of vocabulary so that they gain precision in content. When we converse or speak in public, we are improvising within a language. There are people who speak clearly and fluently,

pleasant to listen to, making the discourse easy to understand. Others are imprecise in their use of vocabulary, making the discourse hermetic and confusing.

The development of the art of improvisation and practical harmony always follows the same principle: we learn scales, and from them we form chords and musical phrases. Therefore, persistent work is necessary in selecting this material, using thought and a good mechanical memory to achieve clarity and fluency when needed.

See, in the examples below, the application of the cadential pair in the secondary dominants of the key of C major:

Secondary Dominants
2nd degree cadential pair

Secondary Dominants
3rd degree cadential pair

Secondary Dominants
4th degree cadential pair

Secondary Dominants
5th degree cadential pair

Am⁹ D7^(#11) G⁷ Am⁹ D7^(b13) G7⁽¹³⁾ Am7 D7^(b9)/C G7M/B

Secondary Dominants
6th degree cadential pair

B^ø11 E7^(b13) Am⁹ Dm¹¹ E7^(#9) Am^{add9} F7M Fdim Am7/E

Here are some examples of cadences with secondary dominants in C minor:

Secondary Dominants - Harmonic Minor Scale
3rd degree cadential pair

Fm⁹ B^b7^(b9) E^b7M^(#5) A^b7M^(#11) B^b(#5)/A^b E^b7M^(#5)/G Cm¹¹ B^b7^(#5) E^b7M^(#5)

II/III V/III III IV/III V/III III VI/III V/III III

Secondary Dominants - Harmonic Minor Scale
4th degree cadential pair

G^ø C7^(#11) Fm^{add9} B^bm7 C7^(#9) Fm7 D^b7M C7^(b9) Fm7

II/IV V/IV IV IV/IV V/IV IV VI/IV V/IV IV

Secondary dominants - Harmonic minor scale
 5th degree cadential pair

A^{\emptyset}	$D7$	$G7^{(b9)}$	$Cm7/G$	$D7/F^{\#}$	$G7/F$	E^b7M/G	$F^{\#dim7M}$	G/F
II/V	V/V	V	IV/V	V/V	V	VI/V	V/V	V

Secondary dominants - Harmonic minor scale
 6th degree cadential pair

$B^b m7^{11}$	E^b7/B^b	A^b6	D^b7M	E^b/D^b	$A^b add^9/C$	$B^b m7^9$	$E^b7^{(b13)}$	A^b7M^9
II/VI	V/VI	VI	IV/VI	V/VI	VI	II/VI	V/VI	VI

Exercise – Perception and Analysis

Write the chord symbols for the following excerpts:

Track 32



Track 33



Track 34



Track 35



Track 36



Track 37



Track 38



Track 39



Track 40



Track 41



Track 42



Exercise – Analysis

1. Classify the secondary dominants in the following melody.

Track 43

♩ = 124

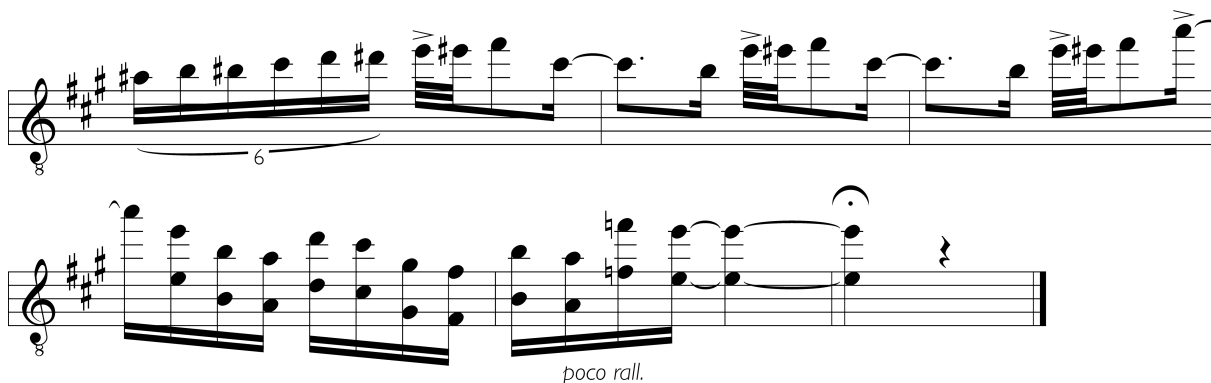
The musical score for Track 43 consists of four staves. The first three staves are a single melodic line in G major, and the fourth staff shows the harmonic accompaniment. The melody contains several secondary dominants: V7/IV (D7), V7/III (C7), V7/II (B7), and V7/V (F#7).

2. Classify the secondary dominants in the following melody.

Track 44

$\text{♩} = 78$

The musical score consists of eight staves of music in 2/4 time, with a tempo of quarter note = 78. The key signature has two sharps (F# and C#). The melody is written in treble clef and includes various rhythmic patterns such as eighth notes, sixteenth notes, and triplets. There are several slurs and accents throughout the piece. The score is divided into measures by vertical bar lines, and some measures contain rests or specific articulations like accents (^) and slurs.



3. Write and play cadences with secondary dominants in the following keys:

Example: In F major, create complete cadences for all degrees of the F major scale that accept the cadence with a secondary dominant.

II - Gm	III - Am	IV - Bb	V - C	VI - Dm
---------	----------	---------	-------	---------

- | | |
|---------|---------------|
| F major | E minor |
| G major | G minor |
| D major | F minor |
| A major | B flat major |
| E major | E flat major |
| D minor | F sharp minor |
| A minor | C sharp minor |

4. Write the alterations used in cadences with secondary dominants in the following keys:

- | | |
|---------|---------------|
| F major | G minor |
| G major | F minor |
| D major | E minor |
| A major | B flat major |
| E major | E flat major |
| A minor | F sharp minor |
| D minor | C sharp minor |

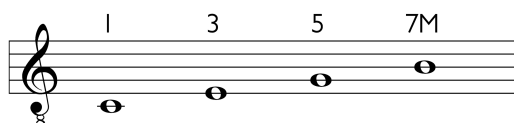
5. **Perception and Analysis** – Analyze the harmonic and melodic content of various standard melodies from popular songs.

Major Chord Family

The Major Chord Family is the family of chords that groups major triads (*major third and perfect fifth*) and augmented triads (*major third and augmented fifth*) plus major sevenths.

Main tetrad: major 7

Structure: 1, 3, 5, 7M



variant tetrad: 7M(#5)



Function: tonic or subdominant

Extensions: 9 and 6

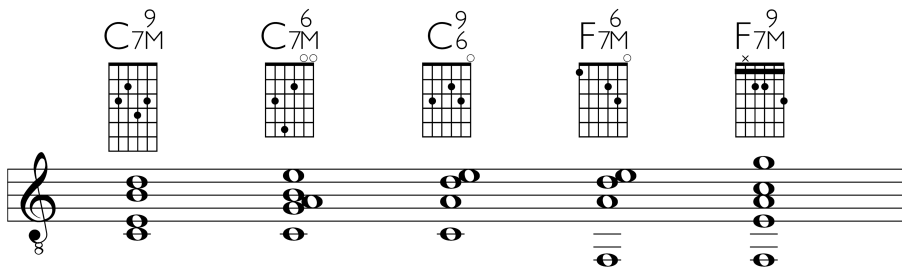
Positioning in tonal scales:

Main Tetrad (1, 3, 5, 7M):

I and IV of the major scale
VI of the harmonic minor scale
I of the harmonic major scale

Variant Tetrad (1, 3, #5, 7M):

III of the harmonic minor scale
III of the melodic minor scale
VI of the harmonic major scale



Note:

The ninth and sixth extensions are applied individually or combined with the major seventh. The limiting factor for the use of this combination will be given by the melodic content, and this combination of extensions is subject to the need for greater or lesser harmonic density.

Regarding the variant tetrad **7M(#5)**, the extensions are applied more sparingly. The complementary interval of a sixth is not applied because it forms a semitone with the augmented fifth, and thus, the application of extensions in this chord is restricted to the ninth.

In this family, as in the family of minor chords, the interval 13 will always be treated as 6. This treatment is due to a practical convention adopted by musicians and does not reflect the theoretical reality of chord structuring.

Other extensions:

(#11)

4th degree major scale

Altered extensions:

(b5 or #11)

The b5 or #11, when applied in the tonic function, will be treated as alterations.

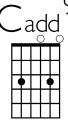
These intervals do not have corresponding intervals in tonal scales and represent harmonic structures used in modal practice (See volume III – Modal Harmony).

Added intervals:

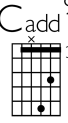
add⁹

triad + 9th without the 7th

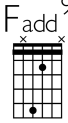
C^{add9}

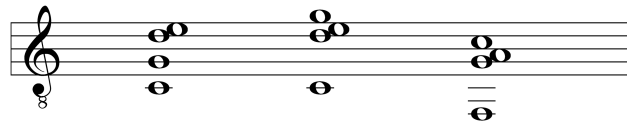


C^{add9}



F^{add9}



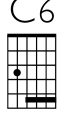


Add⁶

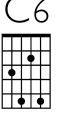
triad + 6th without the 7th

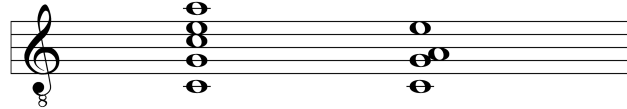
In practice, the symbol used for 6th chords (triad + 6th) is represented only by the number 6.

C⁶



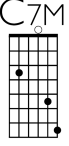
C⁶



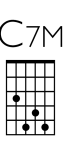


Examples of chords from the major family:


C^{7M}



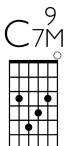
C^{7M}



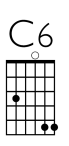
C^{add9}



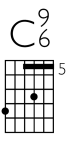
C^{7M9}

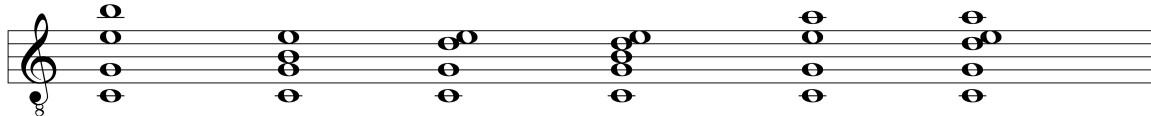


C⁶

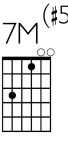


C⁶⁹

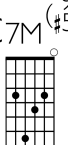





C^{7M(#5)}



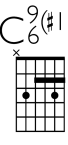
C^{7M(#5)}




C^{7M(b5)}

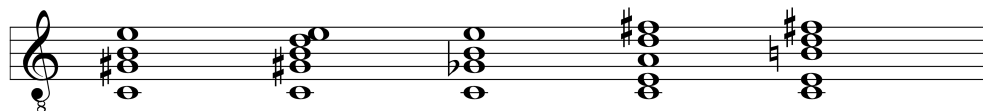


C^{6(#11)}



C^{lídio}





Basic rules:

1. The extensions **6** and **9** can be freely combined with the **major 7** tetrad.
2. When the melody rests on the tonic, the major chord with **6** and **9** is preferred. In these cases, the use of the **major 7** tetrad is not advisable.
3. Always avoid extensions that form the dominant tritone with notes of the tetrad. In this family, this happens with the **11** over the tonic chord, which should not be applied.
4. The **C7M(#11)** chord, applied over the tonic function, will represent a borrowing from the **Lydian mode** and will be discussed in volume III – Modal Harmony.
5. One should not combine extensions that form a semitone between them.

Exceptions:

1. In the subdominant function (IV of major scales), the natural extension augmented eleventh (**#11**) forms with the root the tritone of the dominant tetrad, which, as previously mentioned, should be applied exclusively to chords with a dominant function. In this exceptional case, the function of the degree is not altered.
2. In this family, we can have all combinations of extensions with the main tetrad, as long as there is no semitone clash between them and as long as the dominant tritone is not formed with one of the notes of the tetrad.

Other peculiarities of the major chord family:

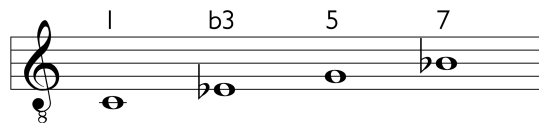
1. When the eleventh is applied in the position of a 4th, without the third, forming a three-note chord (C, F, G), we will have the formation of the suspended triad: **C4**
2. Remember that the chord of this family, formed by the combination of the major triad with the major ninth, is notated as **add9**. Often the number 2 is also used to represent this chord.

$$C2 = Cadd9$$

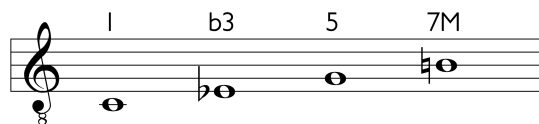
Minor Chord Family

The Minor Chord Family is the one that groups all minor triads (*minor third and perfect fifth*). The tetrads in this family are structured with the minor seventh and the major seventh.

Main tetrad: m7



variant: m7M



Function: Tonic or Subdominant

Positioning in tonal scales:

Main tetrad (1, b3, 5, 7)

II, III, and VI of the major scale

IV of the harmonic minor scale

II of the melodic minor scale

III of the harmonic major scale

Variant tetrad (1, b3, 5, 7M)

I of the harmonic minor scale

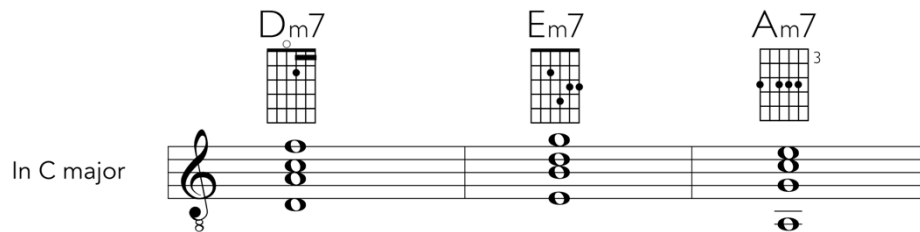
I of the melodic minor scale

IV of the harmonic major scale

Extensions

The extensions (6, 9, 11) in the minor chord family should be addressed in more detail due to the diversity of characteristics that these chords present. Different harmonic meanings are represented by each of the minor chords found in the major, harmonic minor, and melodic minor scales.

Minor chords of the major scale (II, III, and VI):



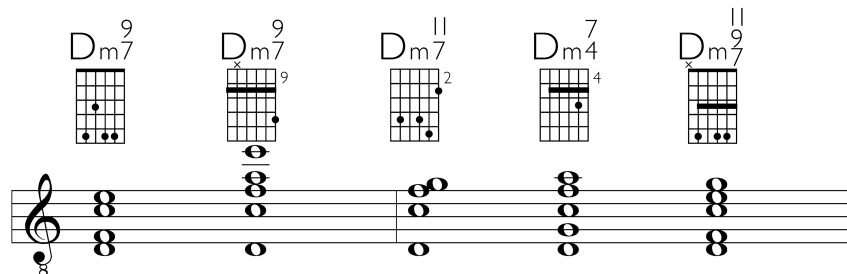
Basic rule for applying extensions to these minor tetrads:

Avoid the dominant tritone in the superposition of thirds.

See examples of how extensions are applied to minor chords derived from the C major scale. The same options apply to all other major scales:

II – Dm7

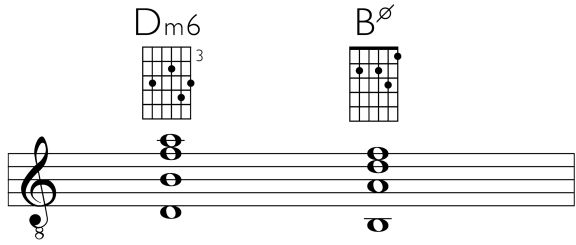
Second degree chord – major scale – subdominant function



Extensions **9** and **11**, in addition to their combination with the tetrad, can be combined with the triad. In this case, the chord should be written as **add9** and **add11**.

In these chords, the **6** will not be applied. The **B**, in this case, forms with the third **F** the characteristic tritone of the dominant seventh chord in C major. The mixture of this interval with the tetrad transforms this chord, which should have a clear subdominant function, into a hybrid chord. This procedure should be avoided to maintain the coherence of the progressions and tonal functions.

The **Dm6** chord, because it contains the notes **F** and **B** in its structure, has a dominant function (*this chord is the **B^o** in the first inversion, **VII** of the major scale, which represents the **G7⁹** chord without the root with the third in the bass*).

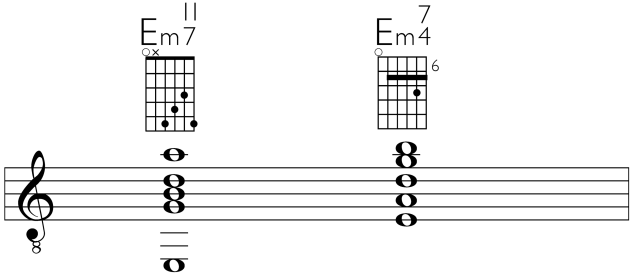


Note:

Remember that, in Tonal Harmony, the main functions, tonic-subdominant-dominant, should never be mixed. The wide freedom in applying the intervals of a scale in the structuring of chords is a characteristic of modal harmonic procedures, where the functions, as we know them in the tonal system, cease to exist, and where the tritone ceases to be an interval exclusive to the V or VII. Modal practice is based on other principles that make it much freer, especially when compared to the rigidity of the rules of tonality (see Volume III).

III – Em7

Third degree chord – major scale – tonic function



The natural extensions of the third degree are limited. The only natural interval that applies to this chord is the eleventh. In major scales, the function of the third degree is tonic and can always replace the chord of the first degree, unless the main melody rests over the first degree of the scale.

Note:

The ninth (F) is not applied because it forms the dominant tritone with the fifth (B). Since the chord has a tonic function, this mixture will not be accepted.

The sixth (6 – the real interval is the thirteenth) is not applied because it transforms the chord of the third degree into an inversion of the chord of the first degree. This inversion, which has the note C at the top of the chord and the B in the middle, generates the uncomfortable minor ninth interval in its structure. It is also based on this same principle that the third inversion of major seventh chords must be applied according to specific rules. (see chapter ‘Chord Inversion’).

VI – Am7

Sixth degree chord – major scale – subdominant function

For sixth-degree chords in major scales, the extensions that can be used will be the ninth and eleventh. These extensions can also be applied to triads, in which case the chord symbol will also be **add⁹** or **add¹¹**.

It is also possible, in denser chord structures, to use the major scale's 6th degree chords with all the extensions combined (impractical on a single guitar).

The **6th** should not be part of the structure of the **6** chords in major scales because this extension creates the tritone of the dominant tetrad (*F-B, in C major*), thus masking its function. Note that, in this case, the tritone is between the 9th and 6th (*remember that the sixth appears in the thirteenth position in the structuring of the chords*). The limiting interval in the application of extensions will be the one that appears first in the process of verticalizing the notes of the scale. Therefore, the ninth (B) will limit the use of the sixth (F).

Note:

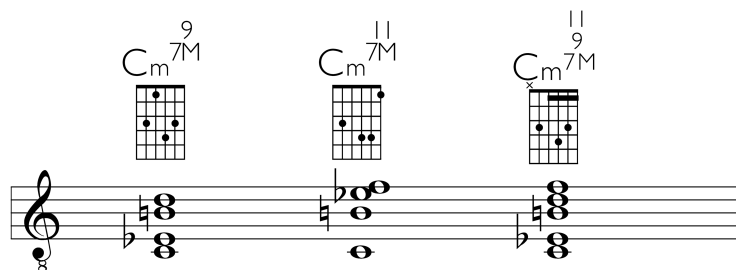
The rule limiting the use of extensions that form the dominant tritone with one of the notes of the tetrad remains valid even if that note of the tetrad is omitted. The same happens when the dominant tritone is formed between the notes that represent the extensions. In this case, the first complementary note of the vertical structure is valid, and the restriction applies only to the second.

Minor chords of the harmonic minor scale

I – Cm7M

First-degree chord – harmonic minor scale – tonic function

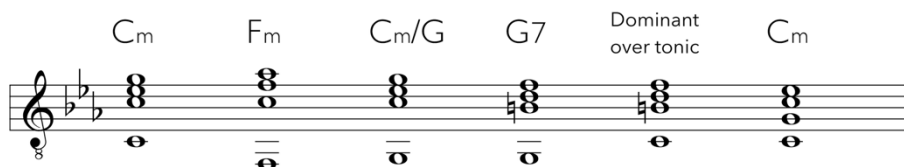
The extensions used in this type of chord are the ninth and the eleventh.



The thirteenth interval in the structuring of this chord (in this case, a minor sixth) will not be applied, as it represents an inversion of the subdominant and therefore is confused with the role of the tonic that this chord represents.

Note:

In 18th- and 19th-century European music, this chord was used as an intermediate chord in the dominant-tonic cadence, and its specific function was to delay the resolution of the movement notes of the dominant chord. It was traditionally treated as a '**dominant-over-tonic chord**' and regularly applied in cadence movements. See how it is used in the example below.



In jazz, it's common to leave this type of chord unresolved; that is, the moving notes and tensions that are part of the dominant structure don't lead to the tonic's resting point. In the harmonic practice of European classicism and romanticism, this chord was always combined with the complete

resolution on the tonic triad. It's important to always have a precise understanding of these stylistic aspects so that their application is coherent with the musical material being addressed.

IV – Fm7

Fourth degree chord – harmonic minor scale –subdominant function

The fourth degree (IV) in harmonic minor scales will always function as subdominant and will be structured with the natural 9th extension.

The 6th will not be applied in this case because the **minor 6** chord is also an inversion of half-diminished chords. The **6th**, when applied to the minor IV, creates a disarray with the II chord (Fm6 = Dø). It is recommended that the half-diminished chord always be notated by its original structure and by its inversions: **Dø/F**, **Dø/Ab**, and **Dø/C**. The eleventh, based on this scale, is also not applied because it forms the dominant tritone in a chord with a subdominant function.

Minor chords of the melodic minor scale

I – Cm7M

First degree chord – melodic minor scale – tonic function

The extensions used in this type of chord are the ninth, the eleventh, and the sixth.

The melodic minor scale demands special attention due to its hybrid aspect. This scale has tonal and modal qualities because it features two chords with a 7th structure. One of them is situated

on the **IV** and the other on the **V** (in C melodic minor we have IV = F7 and V = G7). For this reason, when dealing with the melodic minor scale within a tonal framework, we notice the occurrence of exceptional situations, such as augmented fourth or diminished fifth intervals in chords with tonic function.

Cm_6^9 A_m6 Gm_6^{11}
 Tonic in C Tonic in A Tonic in G
 melodic minor melodic minor melodic minor

II – Dm7

Second degree chord – melodic minor scale – subdominant function

This chord is rarely used because it doesn't yield satisfactory results in the extensions process. Due to its natural extension **b9**, the formation of a tritone when applying the **6**, its application shall be avoided. When we notice the use of an **m7** chord in a minor key cadence, we find that this chord is always borrowed from the homonymous major key.

Dm_7^9 $G7^{(b13)}$ Cm_6^9
 borrowed from harmonic minor melodic minor
 major scale

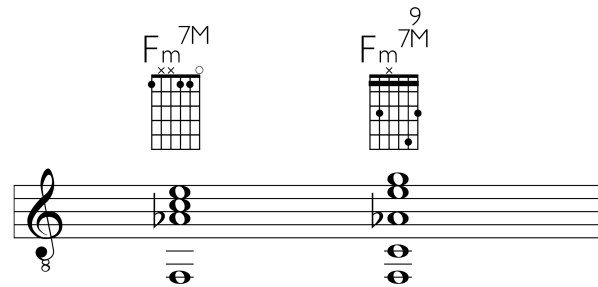
Minor chords of the harmonic major scale¹

IV – Fm^{7M}

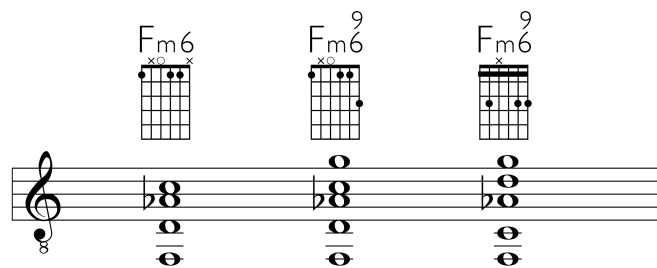
Fourth degree chord – harmonic major scale –subdominant function

This chord demonstrates the characteristics of a minor subdominant in a natural progression of the harmonic major scale. The 9th is always applied to this chord with excellent results.

¹ The third-degree chord of the harmonic major scale is not applied due to the limitations of its extensions.



The 6th can be added to the major seventh and the ninth in any combination. When applied to the triad, it results in the inverted second-degree chord: **Dø**



The 11th is not applied in this case because it forms the tritone of the dominant chord, thus altering its original function.

Minor chords from natural minor scale

I – Cm7

First degree chord – natural minor scale – tonic function

It is common to apply the **m7** chord in the tonic position. In fact, what happens in the tonal processes of minor keys is the application of chords originating from three scales: harmonic minor, melodic minor, and natural minor. At the origin of the tonal process, only two of the so-called **Gregorian modes** continued to serve as the basis for the polyphonic music of the time: our major scale and the natural minor scale. The search for a leading tone in the natural minor scale gave rise to the harmonic minor scale, and the need for more balanced melodic structures gave birth to the melodic minor scale (*European aesthetics did not assimilate the 'exoticism' of the augmented second interval between the VI and VII that arose with the creation of the harmonic minor scale*). As a result, three different solutions for minor scales came to be used, and this option remains to this day.

This is why many treatises on theory define the melodic minor scale as a scale that presents differences between the ascending and descending aspects.

In diatonic tonal procedures, while the major mode uses six chords (*since the VII repeats the function of the V*)

Major scale

C7M Dm7 Em7 F7M G7 Am7 B \emptyset

The minor mode utilizes different chords that emerge from the verticalization process of the three minor scales: harmonic minor, melodic minor, and natural minor. With this, the number of chords in the diatonic process of the minor mode rises to fifteen.

All three minor scales chords

Am7 Am^{7M} B \emptyset Bm7 C7M C7M^(#5) Dm7 D7

Em7 E7 F7M F \emptyset G7 G^{#dim} G \emptyset

* limited application

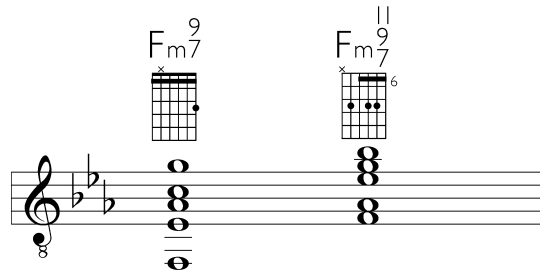
In the minor key cadences of standard melodies and well-known popular songs, the use of the natural minor chord in the tonic position is common and frequent. This chord does not belong to any of the four tonal scales, and, in this case, it is a modal borrowing from the natural minor scale or Aeolian mode.

D \emptyset G7^(b13) Cm⁹

IV – Fm7

Fourth degree chord – natural minor scale –subdominant function

The fourth chord of the natural minor scale is also frequently used in tonal progressions, especially when the melodic line features the subtonic instead of the leading tone or when employing the eleventh in these chords.

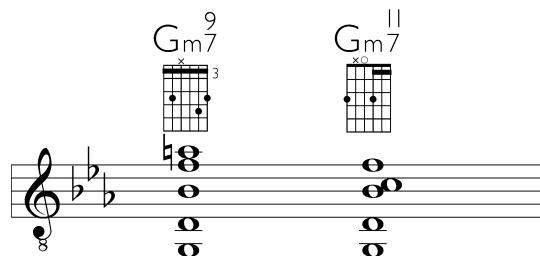


Other minor chords of modal borrowing

V – Gm7

A borrowed chord from the Aeolian mode (natural minor scale) or the Dorian mode.

This is a special case of applying a modal chord to tonal structures. The minor dominant completely loses its cadential force and serves only to give a modal coloring to the progression.



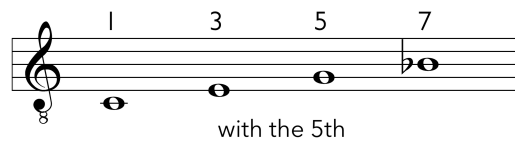
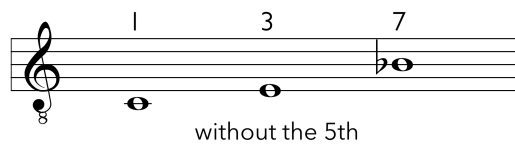
Note:

Chord progressions in minor keys: it is more common to apply the tonic chord originating from the natural minor scale (Aeolian mode). The natural minor scale is the one that very frequently borrows its first-degree chord to represent the tonic in different tonal structures. This is a regular practice in jazz, and the student must be attentive to ensure that the coherence between the melodic and harmonic aspects generated in cases of chord borrowing is maintained.

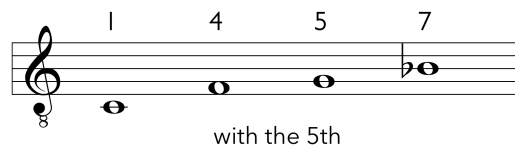
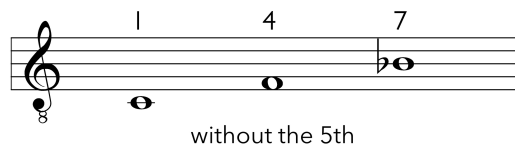
Dominant Chord Family

The Dominant Family is the most complex chord family in tonal harmony, due to the numerous possibilities for combining and altering its extensions. This family is divided into two branches: branch **7** and branch **sus** (*suspended dominants*). The difference between them lies in the application of the third and the eleventh (*fourth*) in the basic chord structures. In regular tonal practice, the intervals of a third and a fourth, over the dominant chord, do not mix, and therefore the division into two branches is made.

Branch 7



Branch sus



The branches 7 and sus structures are normally used without the fifth. This procedure is usually applied because dominant seventh chords, played in four or five voices, always have one or two extensions (ninth and thirteenth) added to the basic chord 1, 3, 7, or 1, 4, 7.

Position in tonal scales:

with dominant function:
always on the V

with subdominant function:
IV of the melodic minor scale

Note:

For the dominant function to be characterized, the chord with this structure must be on the V of the scales. When this type of chord is positioned in any other degree than the V, the chord loses its characteristic function. These cases occur in modal harmonic practice, and it is for this reason that the melodic minor scale is a hybrid scale, playing a dual role (see volume III – Modal Harmony).

Branch 7

Branch 7 of the Dominant Chord Family has the most widely applied set of chords and the greatest variety of structures. Its basic structure is formed by the intervals of a major third and a minor seventh (with or without the inclusion of a perfect fifth), and it represents the main element in the dynamics of the tonal system, which is the cadence.

Branch 7 extensions:

First, we find all the combinations of ninths and thirteenths derived from the four **tonal scales**:

9	b9	13	b13
---	----	----	-----

Major scale: 9, 13
Harmonic minor scale: b9, b13
Melodic minor scale: 9, b13
Harmonic major scale: b9, 13

Examples:

Next, we will look at the **altered intervals** that can be added to the original structures of dominant tetrads:

Alteration:

b5

*It can appear on the bass as the 2nd inversion of the chord.
(not to be confused with #11).*

#5

*It is an ascending alteration applied to dominant chords.
It has a different meaning from the b13 because, with ascending tension, it resolves by going up a semitone.
Furthermore, it is always used in cadences of the major mode.*

#9

*Exclusive alteration of the dominant function.
It occurs more frequently in the minor mode.*

The best structure for this chord is: 1, 3, 7, #9.

#11

The #11 is an alteration always applied to the top of the chord.
It can be in the chord structure along with the perfect fifth.

Note:

- Chords that are part of **branch 7** of the dominant family will always be generically called dominant seventh chords, regardless of whether they are associated with that function.
- The fifth of a dominant seventh chord will always be omitted, since the use of at least one of the extensions is a common practice. The inclusion of the fifth of the chord is done when the harmonic progression develops in five parts or when, by choice of the harmonizer, no extensions are used. The presence or omission of the perfect fifth interval does not affect the function of the chord in any way.
- The dominant tetrad structure can also acquire the quality of a subdominant. This happens when the chord originates from the IV of the melodic minor scale.
- Do not confuse extensions with tensions. The ninth and thirteenth should be considered natural extensions when they are in accordance with the scalar structure used. For example, a cadence in the key of D minor, which is normally based on the harmonic minor scale, has its natural extensions **b9** and **b13** (minor ninth and minor thirteenth) in the dominant. On the other hand, in a cadence in D major, based on the D major scale, the natural extensions will be formed by **9** and **13** (major ninth and major thirteenth). When natural extensions are altered, they become tensions because the notes that represent them cease to be notes of the diatonic scale. In other words, only when the extensions are represented by non-diatonic notes do they come to represent tensions in the harmonic process. In the 1, 3, 7 structures, the main characteristic of the chords is the tritone that appears between the third and the seventh. This interval, generically called the dominant tritone, expresses the functional

quality of the chord. For this reason, the dominant seventh chord can also be played without the root and keep its function.

- Tonal scales are characterized by having the dominant seventh chord as a common element. It is usual to interchange dominant chords from different tonal scales. In a chord sequence based on the C major scale, the dominant tetrad extracted from other tonal scales with the same tonic can be used: the harmonic minor, the harmonic major, or the melodic minor. This practice is generically called tonal borrowing of chords.
- The dominant chord of the melodic minor scale, $7(9, b13)$, is rarely used in the minor mode due to its major ninth. There is a clear preference for applying the dominant minor ninth when the mode is minor.

Sus branch

The chords of the **sus branch** are the **suspended chords of the dominant** ($V7_{sus}$). They always appear without the third (the leading tone, an important interval of movement in harmony), which is replaced by the fourth (*eleventh*), forming the basic structure **1, 4, 7**. These chords have specific qualities within the tonal system and always represent the dominant function¹.

It is quite common to see the suspended fourth of this chord transform into a third to emphasize the cadence. When this occurs, the chord automatically moves to branch **7** and is subject to the analysis and procedures characteristic of that branch. It is not necessary for the sus chord to transform into a **7** for the cadence to occur. It is quite common for the suspended dominant to resolve directly to the tonic chord.

The suspended chords of the dominant can also be practiced with the complete structure **1, 4, 5, 7**, or with a simplified structure **1, 4, 7** and adding the extensions. The **sus branch** is much simpler and more limited than **branch 7**, and the process of applying the extensions follows this scheme:

Sus branch extensions:

In the **sus branch**, not all extensions derived from tonal scales have satisfactory application. Only some of them have become established, as shown in the table below:

9, 13, b9
 Major scale: 9, 13
 Harmonic minor scale: b9

The diagram shows four Gsus chords with extensions: G_{sus}^{b9} , G_{sus}^9 , G_{sus}^{13} , and $G_{sus}^9 13$. Each chord is represented by a guitar fretboard diagram above a piano-style chord symbol on a staff. The fretboard diagrams show the positions of the notes on the strings. The piano-style symbols show the notes on a staff with a treble clef and a key signature of one flat (Bb).

We do not apply the alterations on the sus branch.

¹ They also frequently appear in modal structures and modal chord progressions. Caution is advised to avoid misunderstanding between these two qualities, tonal and modal (see Mixolydian Mode – Volume III).

Note:

The *b13* is rarely used in this type of chord. In this harmonic situation, the second inversion of the tonic chord is usually chosen to structure the cadence: Cm7 | Fm7 | Cm/G | G7 | Cm.

The suspended dominant chord is most often used in two ways. In the first, the dominant sus chord is used to precede the dominant 7 chord, thus delaying the resolving force that the tritone creates. In the other, the subdominant chord (II or IV) is replaced by the dominant sus, anticipating the dominant function but keeping it suspended.

The sus chord should also be applied when the melodies to be harmonized are drawn from the major pentatonic scale. See the example:



The sus chord is widely used in chord progressions in parallel motion in Modal Harmony (see 'Mixolydian Mode' – volume III).

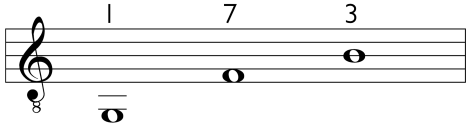
Altered dominant chord: V7alt.

The altered dominant chord is a chord from **branch 7** that has the structure 1, 3, 7 – with the addition of alterations of fifths and ninths:

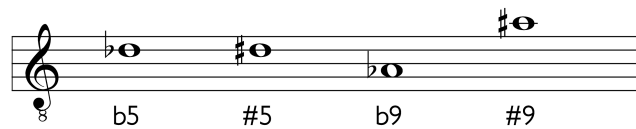
b5	#5	b9	#9
----	----	----	----

The altered dominant chord is a chord of great tension, as it groups six notes that demand resolution. It is regularly practiced with two alterations, combining an altered fifth and an altered ninth.

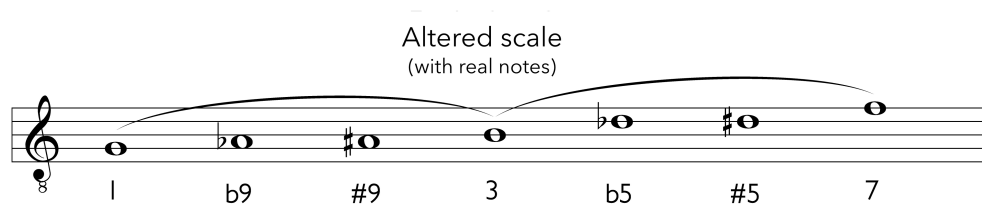
The seven notes of the altered dominant chord, when positioned horizontally, form a scalar structure called the **Altered Dominant Scale**. This scale, in both major and minor keys, is formed starting from the basic structure:



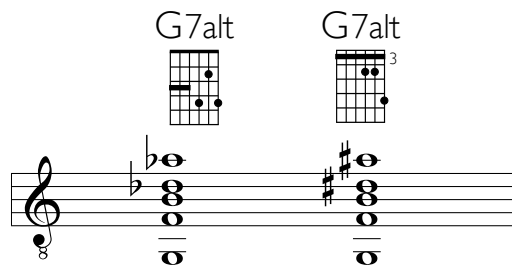
having the notes of this structure added to the altered intervals of fifths and ninths,



resulting in the altered scale:



V7alt.



Special shapes for altered dominant chords

As the name itself explains, a dominant chord has singular importance in tonal progressions. When we use the altered dominant, the intention to create great tension in the progression becomes clear. This is because, in addition to the tritone, which is the main interval in cadential movements, altered chords are tensions that generate a lot of instability in the chord. For this reason, it is perfectly acceptable, in tonal harmonic practice, that the altered dominant chord does not present itself with its complete structure. Often, only the alterations combined with one of the notes of the tritone (the third or seventh of the dominant chord) are sufficient for its functional quality to be given unequivocally.

Therefore, there are several ways to construct this type of chord on the guitar, and some fingering tricks are used to obtain the desired result. See below some curious examples of these shapes:

$G7^{(13)}_{\#9}/F$ <small>no root no 5th</small>	$G7alt/B$	$G7^{(13)}_{\flat 9 \flat 5}$	
$G7^{13}/D^{\flat}$ <small>2</small>	$G7^{(13)}_{\flat 9}/F$ <small>no root no 5th</small>	$G7alt/B$	$G7^{13}/D^{\sharp}$

Cadences with V7alt shapes

$Dm7/F$	$G7^{(13)}_{\#9}/F$	$C7M/E$
$Dm7^{11}_9$ <small>2</small>	$G7^{(\flat 13)}/D^{\flat}$	C^9_6
$F7^9_M/A$ <small>2</small>	$G7^{(\flat 13)}_{\#9}/B$	$C7^9_M$

Other shapes

$E7^{(\sharp 9)}/B^{\flat}$ <small>2</small> <i>this note is obtained with the thumb of the left hand</i>	$G7alt/B$ <small>no root no 5th</small> <i>this note is obtained with the index of the right hand</i>

Dominant substitute chord – subV7

The dominant substitute chord, or **subV7**, is a dominant chord with the root omitted and the altered fifth (b5) in the bass. It is, therefore, an altered dominant chord in second inversion.

The image shows three musical examples on a single staff in treble clef:

- V-I cadence:** A G7 chord (G, B, D, F) followed by a C major chord (C, E, G).
- Dominant 2nd inversion:** A G7/D^b chord (Bb, G, D, F) followed by a C major chord (C, E, G). A label below indicates "b5 in the bass".
- SubV basic structure:** A G7/D^b chord with a fortissimo (*sf*) dynamic (Bb, G, D, F) followed by a C major chord (C, E, G).

As we know, the tritone is the main interval in the movement-rest relationship that represents the essence of the Tonal System. Even if the root and fifth of a dominant chord are omitted, the effective presence of the tritone guarantees its function.

Viewed only as an interval, the tritone is also the central point that divides the chromatic scale into two equal parts. For this reason, while the inversion of other intervals results in new intervals with distinct qualities, the tritone always remains a tritone, whether it is an augmented fourth or a diminished fifth.

The image shows two tritone intervals on a single staff in treble clef:

- tritone = augmented fourth:** An interval between F and C.
- tritone = diminished fifth:** An interval between C and F.

The tritone's quality of always maintaining an interval of three whole tones, regardless of its inversion, means that a single tritone can represent two dominant keys of different tonalities, such as C major and G-flat major. This happens when the tritone interval is enharmonically modified.

The image shows two enharmonized tritones on a single staff in treble clef:

- enharmonized tritone:** An interval between G and Db.
- enharmonized tritone:** An interval between Db and G.

A label below the first interval reads: "G7 tritone = Db tritone".

It is important to be aware of the actual notes that make up the tritone of the dominant chord in each tonal structure. However, every **subV7** chord will be written by interpreting the actual

meaning of the dominant it represents, but by the simplification that enharmonic notation generates. The dominant **G7**, for example, with the root omitted and the diminished fifth in the bass - **subV7** - will be notated in a simplified way as **Db7**. The way of notating this type of altered dominant in second inversion is a practical convention adopted by musicians to notate more complex chords in a simplified way. This is a frequent practice that shows how alphanumeric notation can be imprecise regarding the functionality of chords and the distribution of voices in more complex structures. For this reason, chord notation should be adopted and understood as an effective means of harmonic communication but also as an extremely limited resource.

This type of enharmonic notation can lead to misunderstandings. It is important to be cautious to avoid errors regarding the exact notes in the tetrad and its extensions. In **C major**, the subV chord noted as **Db7**, attention is needed to avoid being led to a mistake. With a minimum of attention and awareness, this will never happen because, after all, a chord that represents the dominant in C major cannot have the note “**C flat**” in its structure! See how the subV chord looks in a **C major cadence**:

G7/D \flat C
(D \flat 7)

G7 with b5 in the bass, without the root.
Usual chord symbol used for subV

Resolution in the tonic chord without the fifth.
What should be a B is represented here by a C \flat

To this basic structure of the **subV7** - the dominant chord without the root and with the diminished fifth in the bass - we can add all possible extensions that can be applied to the dominant chord.

All extensions applicable to the dominant seventh chord will have enharmonic representation in the **subV7** notation. Since the **subV7** is represented by the corresponding enharmonics, all dominant extensions will also be notated within this tritonal relationship between the regular dominant chords and its **subV**. See, in the examples below, how the relationship of these intervals appears:

$G7^{(\#5)}/D^{\flat}$ $D^{\flat 9}_7$
 no root no root
 will be written as

$G7^{(\#9)}/D^{\flat}$ $D^{\flat 13}_7$
 no root no root
 will be written as

$G7^{(\flat 9)}/D^{\flat}$ $D^{\flat 7}$
 no root no root
 will be written as

$G7^{13}/D^{\flat}$ $D^{\flat 7^{(\#9)}}$
 no root no root
 will be written as

$G7^{(13)}/D^{\flat}$ $D^{\flat 7^{(\flat 13)}}$
 no root no root
 will be written as

Or even

$G7$ b5 in the bass $D^{\flat 7}$ $G7 \rightarrow 13$ b13 #9 9 b9 8 b5
 no root enharmonic $D^{\flat 7} \rightarrow \#9$ 9 13 b13 5 #11 8

Dominant		SubV7
9		b13
13		#9
b9		5
b13 or #5		9
#11 (or b5)		1
#9		13

Vertical-horizontal relationship in dominant chords:

When the dominant chord has its fifth or extensions altered, the resulting melody must also present this alteration so that the coherence between the vertical and horizontal aspects is maintained. In these cases, new scalar structures occur without the function of the dominant being modified. The student who delves into the theoretical principles governing Tonal Harmony must always be aware and clear about this aspect.

In volume III, concerning Modal Harmony, we will see a series of scales that can be used or applied for this purpose. Certain modal scales present the same intervals resulting from the alterations made to the dominant seventh chord. It is important to understand that these modal scales, to which we will refer, are only enharmonic representations of the resulting melody that arises from the alterations in the dominant chord in tonal procedures. The fact that we associate these horizontal structures that come from the alterations of the dominant chord with certain modes does not, in any way, characterize any type of modal borrowing.

We can easily understand this theoretical basis if we start, for example, with a simple dominant seventh chord, taking the C major scale as a reference. Note that this chord, in addition to having the perfect fifth (*represented by the second degree of the scale, D*), also has the extensions 9th (*A*) and 13th (*E*). Thus, its resolution will follow the natural movement of the notes that seek rest in the triad of the tonic. When borrowing dominants from other tonal scales is done, we will have the first situations of alterations in the tonal plane of C major. See the dominants, with their respective extensions from the tonal scales, and compare these alterations of the ninth and thirteenth with the differential notes of the four scales.

$G7(\flat 9)$ $G7(\flat 9 \flat 13)$ $G7(\flat 9 \flat 13)$

harmonic minor melodic minor harmonic major

Next, consider the dominant chord with an alteration in the eleventh (**#11**) and assume that the extensions 9th and 13th remain unchanged. See how the resulting scale for this chord looks starting from its first degree:

$G7(\#11)$

Now consider the chord with **b9**, **#11** and **13** and see the resulting scale:

$G7(\flat 9 \#11 \flat 13)$ no 3

It is also possible, in the case above, to avoid the augmented second between the **b9** and the third of the chord by inserting the **#9** into the scale. It is important to emphasize that, in jazz style, scales containing an augmented second interval between their degrees are subject to restrictions in their regular use for aesthetic reasons.

$G7(\flat 9 \#9 \flat 13)$ no 3

The scale above is a **symmetrical octatonic dominant half-step/whole-step scale**. This type of scale will be seen and analyzed more comprehensively in Volume III, concerning Modal Harmony. It is essential that, in tonal procedures, there is great clarity in the choice and application of certain scalar structures. Understanding the quality of the constituent intervals of each chord ensures their correct path choice when resolving tensions. This is a comprehensive and useful theoretical principle for those who wish to venture into both the field of arrangement and composition.

To conclude this chapter, let's look at one last interesting example that deals with a dominant chord that has its fifths altered, **b5** and **#5**, while maintaining the major ninth¹. In this case, the resulting melody can be constructed based on the **whole-tone scale**.

G7(⁹#5)/D^b
no root

The image shows a guitar chord diagram for G7(#5)/D(b) with a 'no root' label and a '2' indicating the second fret. Below the diagram is a musical staff with a treble clef and a bass clef. The treble clef staff shows a whole-tone scale starting on D4: D4, E4, F#4, G4, A4, B4, C5, D5. The bass clef staff shows a whole-tone scale starting on D3: D3, E3, F#3, G3, A3, B3, C4, D4. The chord diagram shows a G7 chord with a #5 and a D(b) chord with a 9th, which is a whole-tone scale.

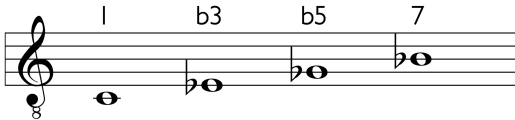
¹ See the complete scale-chord relationship chart in volume III of the Harmony Books.

Half-Diminished Chord Family

The Half-Diminished Chord Family is the family of chords that groups diminished triads (minor third and diminished fifth) with minor sevenths.

Main tetrad : m7(b5) or ø

Structure : 1, b3, b5, 7

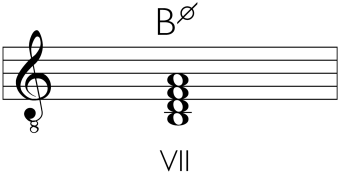


Functions: dominant and subdominant

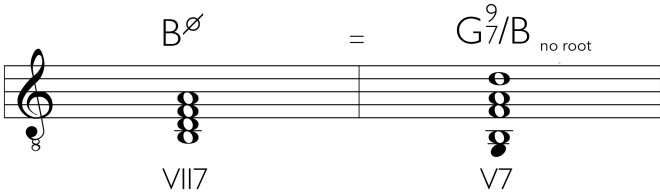
Dominant branch

Position in tonal scales:

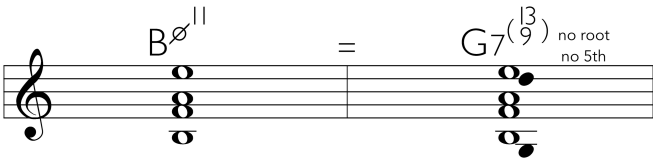
VII of the major scales



In this case, the half-diminished chord represents the dominant ninth chord with the root omitted.



Even without the root, this chord does not lose its function. Since the chord is positioned in the major scale, the extensions that appear in the dominant structure will also be major intervals: 9 and 13. It is possible to omit the note that represents the fifth of the dominant and add, in a four-part harmonization, the complementary interval of a thirteenth so that the function is still maintained. Thus, the half-diminished chord with dominant function will have the following structure:



It is worth noting that, since the half-diminished chord with a dominant function belongs to the chords of the major scale, all melodic lines associated with this chord will come from that scale.

Note:

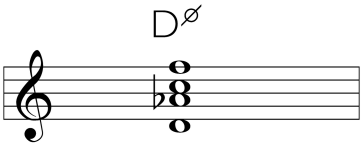
The half-diminished chord, positioned on the seventh degree of melodic minor scales, also has a dominant function, but its specific use is not nearly as established as that of the leading tone tetrad in major and harmonic minor scales.

When applying the half-diminished chord with a dominant function, scalar reasoning based on modal principles (Locrian mode) is not advisable. Because it is a chord of the major scale and has a clear dominant function. All melodic composition will be based on this scale without resorting to any type of modal process.

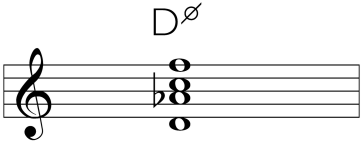
Subdominant branch

Position in tonal scales:

II harmonic minor scale

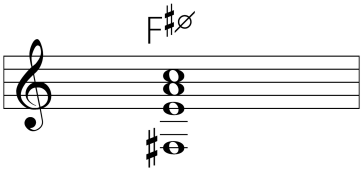


II harmonic major scale



In the cases above, the chord will be used as an element of the II-V-I tonal cadence.

VI melodic minor scale



It is also common to use the VI of the relative melodic minors applied as a borrowing chord on the fourth degree of the major scales. Example: **F#^o** instead of **F7M** in **C major**.

F7M
F#^o

half-diminished chord
subdominant function

The extensions of the half-diminished chord with subdominant function will be applied as follows:

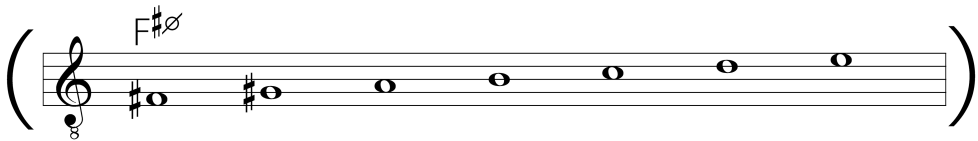
9, 11, b13

The ninth, when applied, will always be major. The eleventh will be natural, and the thirteenth minor. The application of the major ninth and the minor thirteenth in the subdominant half-diminished chord is a common practice, and these new structures of the subdominant half-diminished chord are not represented in tonal scales. These new intervals represent alterations that appear in tonal harmonic discourse to preserve the subdominant function of the half-diminished chord. With the extensions of ninth, eleventh, and minor thirteenth, this chord can be played in its complete structure. This does not happen when using harmonic scales, because in these scales, the thirteenth will form the tritone of the dominant tetrad, and thus the original function of the chord will be corrupted. Obviously, when not all extensions are applied, the subdominant half-diminished chord may have its original scales for melodic purposes, that is, the harmonic minor scale, the melodic minor scale, and the natural minor scale. In the case of applying the extension of major ninth, perfect eleventh, and minor thirteenth, we will have a specific scale to be applied to half-diminished chords with subdominant function:

Half-diminished scale

B^o
b3
b5
7

#9
11
b13



Subdominant half-diminished chord

Extensions

Examples:

Half-diminished structures:

B^ø extensions

Diminished Chord Family

The Family of Diminished Chords groups the diminished tetrads (*minor third, diminished fifth, and diminished seventh*) and has special characteristics compared to the structures of other families. First, these tetrads are the only symmetrical structures found in Tonal Harmony, and their intervals follow a structure with superimposed minor thirds. This symmetry by minor thirds results in a chord with two tritones, which can be enharmonically reinterpreted, generating four different chords.

$Bdim = Ddim = Fdim = G\sharp dim$

This means that the same diminished chord is equivalent to four different diminished chords, provided that the enharmonic reinterpretation of its tritones is performed. Therefore, the diminished chord with dominant function can resolve to four different minor keys and four homonymous major keys.

Finally, diminished seventh chords in the dominant function, due to their symmetrical structure by minor thirds, also allow for a third inversion, which represents a dominant chord with its minor ninth in the bass.

Tetrad symbol: dim or \circ

Structure: 1, b3, b5, 7dim

The diminished chord family is divided into two branches:

Dominant and non-dominant.

Dominant Branch

Position in tonal scales:

VII of the harmonic minor scale

VII of the harmonic major scale

The diminished seventh chord has a dominant function when it occurs on the seventh degree of a harmonic minor scale or a harmonic major scale. Having a dominant function, this chord forms a regular progression with the tonic.

in C harmonic minor

The image shows the C harmonic minor scale on a treble clef staff. The notes are C, D, E, F, G, A, Bb. Below the scale, two chords are shown: Bdim (B, Ab, Gb, F) and Cm (C, Eb, D, F). Above each chord is a guitar fretboard diagram showing the chord voicing on the strings.

The structure of the diminished seventh chord in the dominant function shall always be interpreted as the 5th degree dominant without the root. The same we did for half-diminished chords that appear on the VII of a major scale. It means a 9th chord without its root.

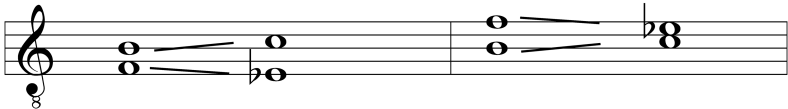
See, in the example below, the correspondence between a diminished chord (seventh degree) and the dominant (fifth degree) in the key of C minor.

The image shows two chords on a treble clef staff. On the left is Bdim (B, Ab, Gb, F) labeled VII7. On the right is G7(b9)/B no root (B, Ab, Gb, F) labeled V7. An equals sign is placed between them.

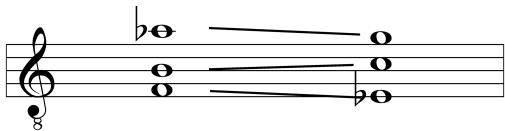
Bdim = G7(b9) with no root

What makes these chords similar is the fact that both possess the tritone, which is the essence of the dominant chord, as well as the entire movement-rest relationship of tonal harmony. The diminished chord resolves, therefore, in the following way:

The **main tritone** resolves to the root and third of the tonic triad.



The **minor ninth** resolves by descending a semitone.



The **fifth**, related to the fifth-degree dominant chord, has no defined movement and can resolve ascending or descending.



The diminished-dominant intervals should be interpreted as follows:

$$1, \mathbf{b3}, \mathbf{b5}, 7\mathbf{dim} \text{ (of the diminished chord)} = 3, 5, 7, \mathbf{b9} \text{ (of the dominant chord)}$$

The **b3** of a diminished chord will be the **5** of the dominant chords, the **b5** of the diminished chord will represent the **7** of the dominant chords, etc., as shown in the table below:

Diminished	→	Dominant
root	=	3
b3	=	5
b5	=	7
7dim	=	b9
b11	=	b13 (<i>harmonic minor</i>)
11	=	13 (<i>harmonic major</i>)

As already mentioned, the diminished chord has two tritones. For this reason, in its dominant function, it can have four different resolutions: each tritone can be enharmonically reinterpreted,

becoming worth two (see 'Resolution of dominant chords with two tritones' – volume II). The tritone is precisely the interval that represents the middle of the chromatic scale, and, for this reason, when inverted, it remains a tritone. We can then say that a Bdim chord, for example, can represent not only the dominant of C minor (or major) but, with its enharmonically reinterpreted notes, three other dominants, which are:

Bdim = G7	C minor or C major
Ddim = B ^b 7	E flat minor or E flat major
Fdim = D ^b 7 = C [#] 7	G flat minor, G flat major (or F [#])
A ^b dim = G [#] dim = E7	A minor or A major

Examples:

The examples illustrate the functional relationships between diminished chords and their corresponding dominant chords. The first row shows Bdim resolving to Cm and being equivalent to Ddim, which resolves to Ebm/Bb. The second row shows Bdim being equivalent to Fdim, which resolves to Gbm/Bbb, and also being equivalent to G#dim, which resolves to Am.

Based on the principle of similar functions between the V and VII chords of harmonic scales, one can consider the inclusion of another extension in the diminished dominant chord. This will be the one that corresponds to the **b13** of the fifth-degree chord. The chord shown below is a Bdim that has the fifth of the dominant **G7(b9)**, D, omitted and the thirteenth, E flat, added. This chord, with its particular and amazing sound, represents the essence of the dominant chord. It has in its structure only the tritone and the two natural extensions.

G7^(b13)/B

no root
no 5th

Here's an example of how this could be resolved:

This chord can also be inverted. Due to the exceptional nature of the diminished chord, which can feature the minor ninth of the dominant in the bass due to its symmetrical structure, we can have two inversions for this incomplete dominant chord. Besides the dominant third (B) and the dominant seventh (F), we can also have this chord with the **Ab** in the bass, a note that represents the **b9** of the dominant. These exceptions to the rule of chord inversions do not apply to the thirteenth, which should never be in the bass of the chord. See the resolutions of the possible inversions of this chord:

Chord symbols for diminished chords

In practice, the notation of this chord is always done using **enharmonic notation**, a technique for simplifying the notation of the chord structure without the rigor of the real notes. This notation is useful but also dangerous because it can lead to misunderstandings. In the following example, the tritone is enharmonically represented, generating a new chord structure. This new chord will be a real structure but completely out of context: the **B** note of the dominant **G7** can never be understood as **C flat**. However, contemporary musicians have consecrated this simplified notation, and for this reason we consider it significant to be mentioned.

$G7^{(b13)}/B$ $F\emptyset/C^b$ A^b_{m6}/C^b

no root
no 5th

written as... or as...

Note:

Symmetrical chords or chords with two tritones accept the ninth in the bass. These are exceptions that apply exclusively to these cases.

The same does not happen with the $b13$ of the dominant chord, which can never be in the bass due to its exclusively complementary character. Applying the $b13$ to the bass of a chord can completely distort it, altering its function.

The VII of the harmonic major scale is also a diminished chord with a dominant function. Adopting the same treatment given to the VII of the harmonic minors, we will have the following resulting chord:

$G7^{(b13)}/B$

no root
no 5th

Non-dominant branch

Does not belong to the tonal scales

The diminished chord of the non-dominant branch is generated in the chromatic connections between the chords of a diatonic scale. This chord does not occur in tonal scales and, for this reason, does not have a gradual classification. Due to the chromatic tension it determines, it is also called a chromatic diminished chord, auxiliary diminished chord, or even a passing diminished chord¹.

The non-dominant diminished chord does not establish any cadential relationship and is not subject to any functional classification. It frequently occurs in the major mode and creates a chain between the tonic and subdominant functions. The resolution of the tension notes that this chord presents

¹ This terminology is inadvisable because it leads to errors with the diminished dominant chord, which also makes chromatic 'passing' connections. Example: C – C#dim – Dm.

must always occur in the same way. In ascending connections, the tension intervals of the non-dominant diminished chord will always be ascending, and in descending connections, the opposite. See some examples in C major:

I7M – dim – IIIm7

C7M Cdim Dm/C

IIIIm7 – dim – IIIm7

Em7 E^bdim Dm7

I – dim – I

C Cdim C

IV7M – dim – I

F7M F[#]dim C/G

It also appears in dominant-tonic cadences, delaying the resolution of the first degree.

V7 – dim – I

Remember that, by convention, inversions of diminished chords are not notated in either of their two branches. Diminished chords are notated starting from the bass note in its root position, regardless of the actual notes contained in their structures. It is up to the musician to reinterpret the diminished chords and thus conclude their exact nature. A chord that is notated as **Bdim** may represent, in addition to an obvious **Bdim**, also a **Ddim**, **Fdim**, **E#dim**, **Abdim**, or **G#dim** chord. What will guide the choice of its true character will be the arrangement of its notes and the key in which it is situated.

Diminished Scale

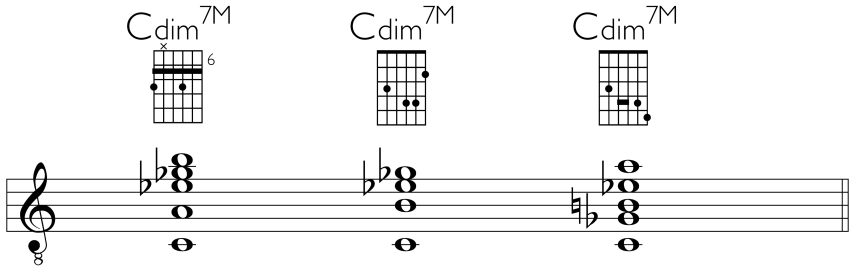
The need for a melodic treatment for the structures of the non-dominant diminished chord led to the creation of a corresponding scale. This scale, also symmetrical, was built from ascending chromatic appoggiaturas applied to the notes of the chord. The horizontal result of this chord ornamentation was a symmetrical eight-note scale with a whole-semitone structure. We call this scale the **Symmetrical whole-semitone diminished scale**.

Symmetrical whole-semitone diminished scale.

Once we have a scale structured in degrees, we can apply the principle of verticalization and obtain from there the extensions in the structuring of these chords. In the case of the whole-step/half-step diminished symmetrical scale, we will obtain the following harmonic complementary intervals:

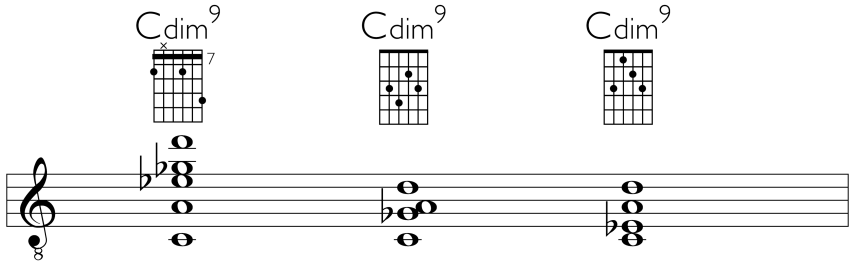
dim 7M

Cdim^{7M} Cdim^{7M} Cdim^{7M}



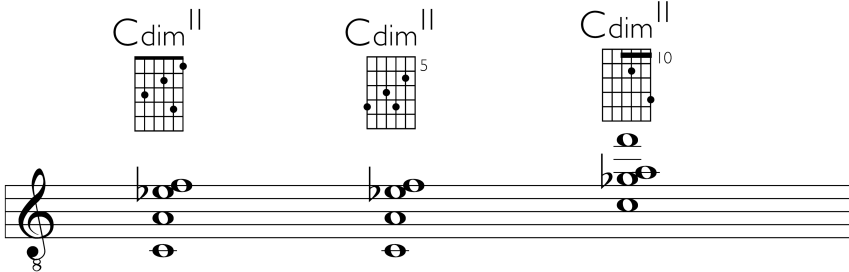
dim 9

Cdim⁹ Cdim⁹ Cdim⁹



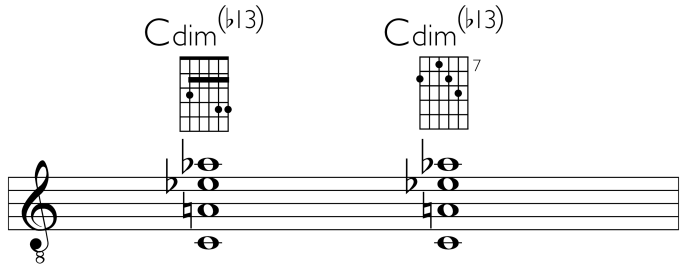
dim 11

Cdim¹¹ Cdim¹¹ Cdim¹¹



dim (b13)

Cdim^(b13) Cdim^(b13)



Appendix

Questions and exercises

1) Analyze and write the following chords, determining the family and branch to which they belong:

The image shows four staves of musical notation, each containing five chords. The chords are written in treble and bass clefs with various accidentals and voicings. The first staff contains chords in B-flat major, E-flat major, and B-flat major. The second staff contains chords in B-flat major, B-flat major, and B-flat major. The third staff contains chords in B-flat major, B-flat major, and B-flat major. The fourth staff contains chords in B-flat major, B-flat major, and B-flat major.

2) Explain the principle of the harmonic series and write the first 12 harmonic sounds starting from the following generating sounds:

- a) D 1
- b) A 1
- c) E 1
- d) B 1
- e) F# 1
- f) C# 1
- g) G# 1

2) Write the names and structures of the tonal scales and explain why they are classified in this way.

Write the following scales:

- a) E-flat harmonic minor
- b) D major
- c) B-flat melodic minor
- d) F harmonic major
- e) G melodic minor
- f) A-flat major
- g) A melodic minor
- h) F-sharp harmonic minor
- i) D-flat harmonic major

5) Explain the concept of interval; describe consonances and dissonances; state the smallest interval used in the practice of Harmony.

6) Show the difference between interval and chord, and explain the relationship resulting from the inversion of intervals.

7) Determine which intervals are considered altered in the structuring of chords from tonal scales.

8) Write and classify the series of intervals with meaning for Tonal Harmony from the following notes:

- a) F
- b) A
- c) Eb
- d) D
- e) G

9) Explain the main structure and extensions of the Major Chord Family. Give examples in:

- a) D major
- b) A-flat major
- c) E major
- d) B major
- e) G major

10) Explain the main structure and extensions of the Minor Chord Family. Give examples in:

- a) D minor
- b) A-flat minor
- c) E minor
- d) B minor
- e) G minor

11) Explain the main structure, branches, and extensions that apply to the Dominant Chord Family. Give examples in:

- a) D major
- b) A-flat major
- c) E major
- d) B major
- e) G major
- f) D minor
- g) A-flat minor
- h) E minor
- i) B minor
- j) G minor

12) Write and play the resolution of dominant seventh chords formed only from the tritone and its natural extensions **9** and **13**. The root and fifth will always be omitted, and the chords may also be shown with the minor third, seventh, or ninth in the bass (*for dominant diminished chords*). Note that the chords are notated using enharmonic notation.

Note: To perform this exercise, you must reinterpret the chord intervals presented in the chord symbol enharmonically and apply the principle of voice leading.

- a) $E\emptyset/Bb = F\#7$ (b9, b13) no root, no 5, 3 in the bass.
- b) $Bbm6 = A7$ (b9, b13) no root, no 5, b9 in the bass.
- c) $Ab\emptyset = Bb7$ (b9, b13) no root, no 5, 7 in the bass.
- d) $Gm6 = F\#7$ (b9, b13) no root, no 5, b9 in the bass.
- e) $E\emptyset = F\#7$ (b9, b13) no root, no 5, 7 in the bass.
- f) $Bbm6/Db = A7(b9, b13)$ no root, no 5, 3 in the bass.

13) Explain the main structure, branches, and extensions that apply to the Half-diminished Chord Family. Give examples in F major (*dominant function*) and in F minor (*subdominant function*).

14) Explain the main structure, branches, and extensions that can be applied to the Diminished Chord Family. Give examples in B-flat harmonic major and G harmonic minor (*for the dominant function*) and in A-flat major (*non-dominant diminished chord – main resolutions*).

15) Write and play the following chord progressions using non-dominant diminished chords:

- a) C7M – Cdim – Dm/C
- b) Cadd9 / E – Ebdim – Dm7
- c) F7M – F#dim – C / G
- d) E7M / G# – Gdim^(b13) – F#m7

16) Write and play the resolution of the following diminished chords with a dominant function:

- a) F# dim (to E minor)
- b) C# dim (to D minor)
- c) D# dim (to G minor)
- d) A# dim (to B minor)
- e) E# dim (to C sharp major)
- f) Cdim (to D flat major)

17) What is the difference between tension and extension in chord formation, according to the principle of tonal harmony?

18) Explain the resolutions of the diminished chord with a dominant function.

19) How is the diminished seventh chord with a dominant function treated in relation to its extensions, and what is the result of this in the chord notation?

20) Explain the harmonic quality of the following intervals and determine the chord family in which they are found:

- a) #11 –
- b) 7dim –
- c) 6 –
- d) add9 –
- e) b5 –
- f) #5 –
- g) 7M –
- h) #9 –

21) What is the meaning of the non-dominant diminished chord in tonal harmonic structuring, what is its role within chord progressions, and from which scale does it originate?

22) Write and play Complete Cadences in the following keys (*use the following cadential movements for each key: II-V-I; IV-V-I; VI-V-I*)

- a) D minor
- b) E minor
- c) F minor
- d) G major
- e) B-flat major
- f) E-flat major
- g) A major

23) Write and play Imperfect Cadences in the following keys:

- a) C minor
- b) D major
- c) E minor
- d) F major
- e) G minor
- f) A flat major
- g) G-flat major

24) Explain the process of chord inversion and give examples with chord symbols.

25) Write the altered G scale with its real notes (*not enharmonic*), its corresponding chord (*with five notes*), and write its chord symbol.

26) Explain the 'motion-rest' principle of the tonal system using the B-flat harmonic minor scale as a reference.

27) Write the diminished scale corresponding to the non-dominant diminished chords starting from the note F#. Write the actual (*non-enharmonic*) notes corresponding to the extensions generated by this scale and write the chord symbols for these extensions.

28) Write the chord symbols, determine the main key, perform the stepwise analysis, and explain the function of the chords in the following excerpt.

29) Write the chord symbols, analyze the degrees, families, and branches of origin of the chords in the following excerpt:

30) Write the chord symbols, analyze the degrees, and determine the family and branch of the chords in the following excerpt:

31) Create a table of Secondary Dominants in the following keys

- a) E major
- b) D major
- c) A major
- d) G major
- e) F major
- f) E flat major
- g) B-flat major
- h) A flat major
- i) D minor
- j) F minor
- k) B minor
- l) E minor
- m) F sharp minor
- n) C sharp minor

32) Write the diminished scale corresponding to the non-dominant diminished chords starting from the note G. Write the actual (*non-enharmonic*) notes corresponding to the extensions generated by this scale and write these intervals.

33) Harmonize the following melody using cadences with secondary dominants of E-flat major:

34) Create and play harmonic progressions of the following types:

- a) Diatonic progressions:
 - Progressions with only tetrads*
 - Progressions with extensions*
 - Progressions with inversions*
 - Progressions with extensions and borrowed chords*

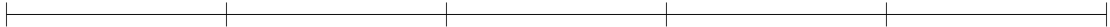
- b) Progressions with Secondary Dominants
 - Progressions with tetrads*
 - Progressions with extensions*
 - Progressions with inversions*
 - Progressions with omitted notes in the dominant chords*
 - Progressions with subverbs and altered dominants*
 - Progressions with extensions and borrowed chords*

- c) Harmonic structures with melodic content
 - Diatonic melodies in simple keys (up to 3 sharps or 2 flats)*
 - Diatonic melodies in more complex keys*
 - Simple chromatic melodies based on secondary dominants*
 - Complex chromatic melodies based on secondary dominants*

Perception and Analysis:

Transcribe and analyze the following chord progressions:

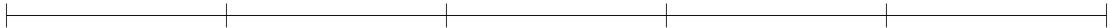
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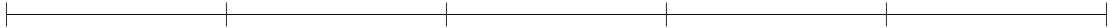
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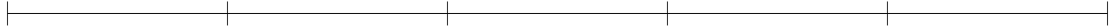
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Track 48



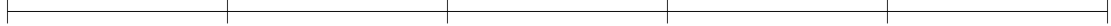
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Track 50



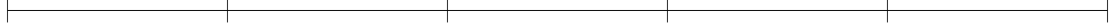
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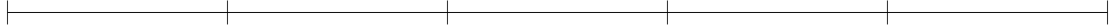
Track 52



Track 53



Track 54



Track 55



Bibliography

- Theory of Harmony - Arnold Schoenberg - University of California Press
- Structural Functions of Harmony - Arnold Schoenberg - W.W. Norton & Co.
- Twentieth Century Harmony: Creative Aspects and Practice - Vincent Persichetti - W. W. Norton
- Armonia y Modulaci3n - Hugo Riemann - Editorial Labor, Barcelona
- Harmony - Walter Piston and Mark DeVoto - W.W. Norton & Co.
- Advanced Harmony, Theory & Practice - Robert W Ottman - Prentice Hall
- Harmonic Function in Chromatic Music - Daniel Harrison - University Of Chicago Press
- Tonal Harmony - Stefan Kostka e Dorothy Payne - McGraw-Hill Humanities / Social Sciences / Languages
- Guide to the Practical Study of Harmony - Peter Ilyitch Tchaikovsky - Dover Publications
- A chromatic approach to Jazz Harmony and Melody - David Liebman - Advance Music
- Modern Jazz Piano: A Study of Harmony - Brian Waite - Hal Leonard Corporation
- The New Real Book - Charles Sher - Sher Music Co.
- The Jazz Theory Book - Mark Levine - Sher Music Co.
- Jazz Rhythm and the Improvised Line Jazz Improvisation - John Mehegan - Concept Publishing
- The Penguin Guide to Jazz on CD - Richard Cook/Brian Morton - Penguin Editions
- Jazz Improvisation and Harmony - Alan Phillips - Warner Bros Publications
- Songbooks (V3rios) - Editora Lumiar/Irm3os Vitale
- Modern Harmonic Technique - Gordon Delamont - Kendor Music, NY
- Melos e Harmonia Ac3stica - Princ3pios de Composi33o Musical - Cesar Guerra-Peixe - Irm3os Vitale Editora, S3o Paulo
- Harmonia Funcional - Introdu33o 3 teoria das fun33es harm3nicas - Hans-Joachim Koellreutter – Ricordi Brasileira, S3o Paulo
- Jazz Harmonia - Hans-Joachim Koellreutter - Ricordi Brasileira, S3o Paulo
- Tratado Completo de Armonia - Athos Palma - Ricordi Americana, Buenos Aires
- Harmony - Walter Piston - W.W. Norton & Company Inc., New York
- Treatise on Harmony - Jean Philippe Rameau - Dover Publications, Inc., New York
- Tratado Pr3ctico de Armonia - Nicolas Rimsky-Korsakov - Ricordi Americana, Buenos Aires
- Fun33es estruturais da Harmonia - Arnold Schoenberg - Via Lettera Editora e Livraria Ltda., S3o Paulo
- Harmonia - Arnold Schoenberg - Editora UNESP, S3o Paulo, 2001
- Tratado de Armonia - Heinrich Schenker - (*Trad. Ramon Barce*) - Real Musical, Madrid
- Tratado de Harmonia - Joaqu3n Zamacois - Editorial Labor, Barcelona

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<p>Two guitars: <i>Círculo das cordas,</i> <i>Pererê, Repentes, Sambadalu,</i> <i>Dona Lu, Paranoá, Balada para Tony,</i> <i>Um café, compadre?</i> <i>Ekatê</i> <i>Paz</i> <i>L i s</i> <i>Bate-coxa</i></p>	<p>Guitar and Mandolin: <i>Luz das Cordas</i> <i>Seu Tonico na Ladeira</i> <i>Paranoá</i></p>
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