Marco Pereira Series

Harmony Books

for guitar

Marco Pereira

Book III

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BOOK 1

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TONAL HARMONY

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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

Second part

Modal Harmony

Modal Harmony

In general terms, a mode is any scale that does not present in its intervallic structure the constant combination of a perfect fourth, a perfect fifth, and a leading tone, attributes specific to tonal scales. For this reason, when the notes that represent the modes are treated vertically, there is no presence of the dominant chord on the fifth degree in any of them. The dominant chord on the fifth degree is an exclusive characteristic of tonal scales, and, thus, the combination of chords that derive from them is characterized by presenting cadential qualities necessary to the tonal process. When the dominant structure chord is displaced from the fifth degree of any scale *(it can appear on the remaining degrees)*, we are faced with one of the many scales used in modal harmonic practice.

The absence of the dominant chord on the fifth degree of the modes eliminates the possibility of exploring the cadential process, and, with that, the tonic, subdominant, and dominant functions, as we know them, also cease to exist. Without cadence, neither do resolving tendencies arise, whether due to the role of the tritone in the dominant function or any chromatic tension that occurs in chord progressions. The non-occurrence of these resolving tendencies makes modal harmony freer, allowing for certain intervallic combinations that are not accepted in tonal progressions. This freedom in the use and application of modal material makes all kinds of intervallic combinations plausible, as long as basic chord structuring criteria are maintained. It is important to keep discernment and clarity between these two aspects of Harmony.[1]

The main scales used in modal practice are seven-note structures that are directly related to tonal scales and are treated as if they were derived from them. What happens in the arrangement of the notes that make up each mode is only the equidistant displacement of the semitones that are part of their intervallic structures. In addition to the modes associated with tonal scales, there are many other scales that also serve modal practice. These are scales that exhibit symmetry in their intervallic structure, dividing the octave by whole tones *(dominant hexatonic scale)* or by the combination of whole tone-semitone or semitone-whole tone *(octatonic scales)*. We also have

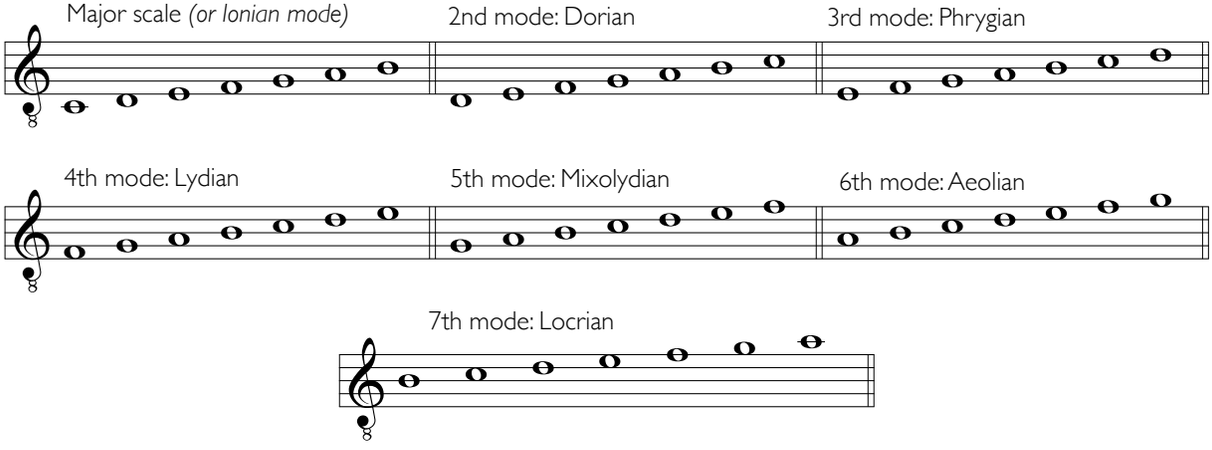
[1] *Even without the tritone rule in tonal structures, the acoustic principles governing chord structures must be maintained.*

different types of pentatonic modes and blues scales, widely used in contemporary styles. Both symmetrical modes and pentatonic or blues modes offer different possibilities in harmonic treatment and will be duly analyzed throughout this volume. The most classic or most frequently applied modes in Modal Harmony are those associated with the major scale. Some of these modes are the basis of spontaneous popular musical expression in various parts of the world, often common to different cultures. Despite having Greek names, these modes have absolutely nothing to do with the musical process of ancient Greece, since there is no graphic or sound record of the music produced in the Hellenistic era.

In the late Middle Ages, these same Greek names also served as a reference in the theorization and organization of the musical system of the Catholic liturgy, carried out during the pontificate of Gregory I.[1] This musical system, known as Gregorian Chant, remains established to this day and is entirely based on monophonic chant, without any instrumental accompaniment, and developed from a series of seven-note scales, the modes.

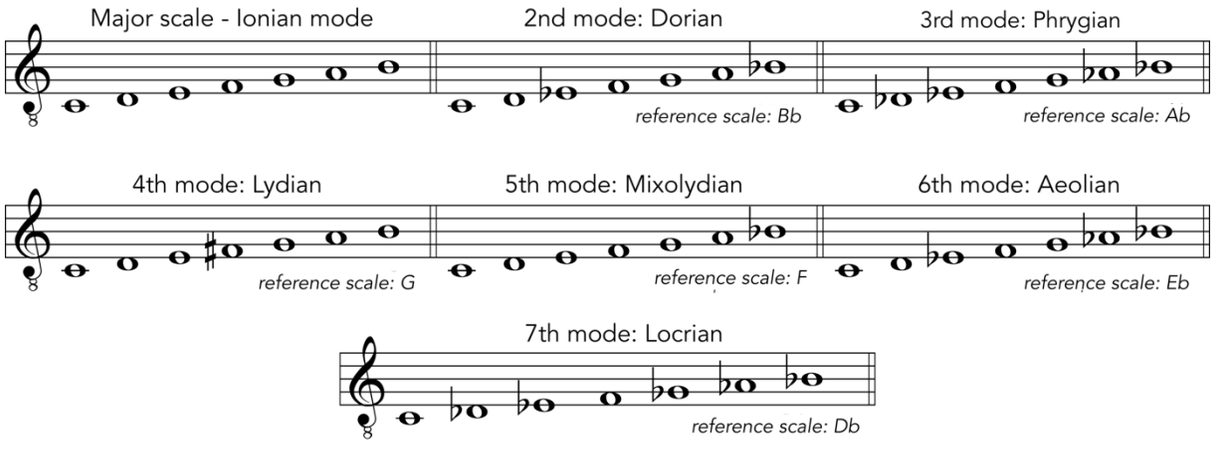
European music of the first half of the 20th century reused these and other modes in a freer, more harmonic and polyphonic way. Jazz, from the second half of that same century, also explored the modes in their harmonic and melodic quality as a basis for improvised practice.

Modes of the major scale



[1] *Pope Gregory was responsible for the reform and systematization of the sacred psalms, the public services of the church, and the liturgical rituals, affecting not only the chants associated with them, but the entire sacramentary, the 14 stations of the Via Sacra, popular prayers, and the Roman Missal.*

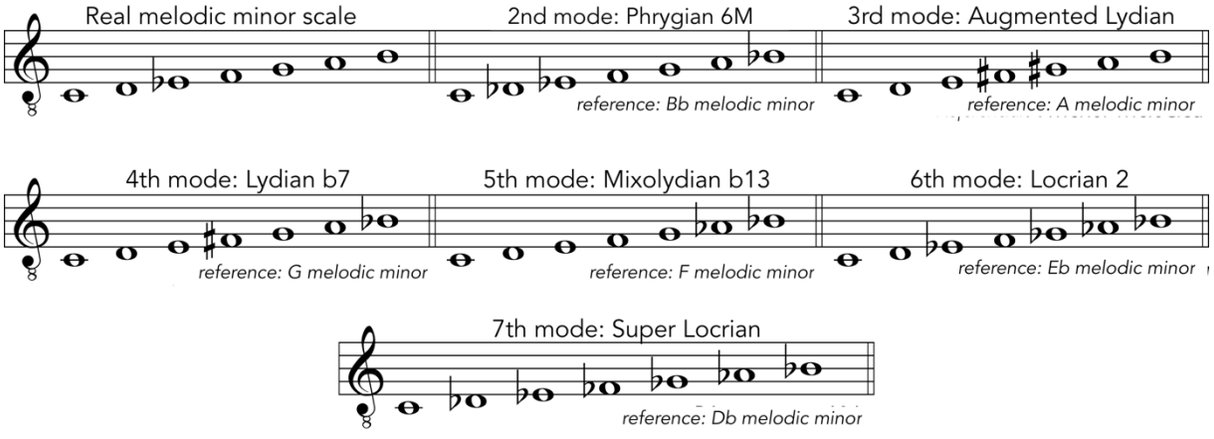
This is the most common way to associate modes with tonal scales and perceive the position of semitones in the spacing between their degrees. It is still common to see some theoretical works on modes based solely on this type of scalar organization. Such a limited approach is not very beneficial for the student during their learning and perception process of modes. Using a single major scale to explain them does not lead to the correct discernment of the sonic characteristics that each mode offers. When we hear the Dorian mode of D, followed by the Phrygian mode of E, the Lydian mode of F, and so on, what remains as an auditory record is simply the C major scale played from different degrees. Therefore, using a single scale to demonstrate the sequence of intervals of the different modes or the positioning of their semitones serves only a theoretical approach and never a practical one. From a practical standpoint, the learning of modal structures initially occurs through the auditory perception of their structures. For this approach to be truly comparative and effective, it is necessary for the student to practice the modes always starting from the same note. Thus, the modes associated with the major scale, for example, should be practiced and compared starting from a common note that represents the first degree of each of them.



In this way, the quality and structure of each mode become more evident. These structures should also be transposed so that the modes can be practiced by being played and perceived from other notes of the chromatic scale.

Modes of the melodic minor scale

Just as there are modes associated with the major scale, there are others with great applicability. A second set of modes includes those associated with melodic minor scales.[1]



These modes may have an enharmonic relationship with chord structures in tonal harmony. They became known within the world of jazz and received names that, in a somewhat random way and without much theoretical basis, relate them to the modes of the major scale: Dorian, Phrygian, Lydian, etc.[2] The Locrian 2M mode is enharmonic to the Half-Diminished Scale, and the Super Locrian mode is enharmonic to the Altered Scale.

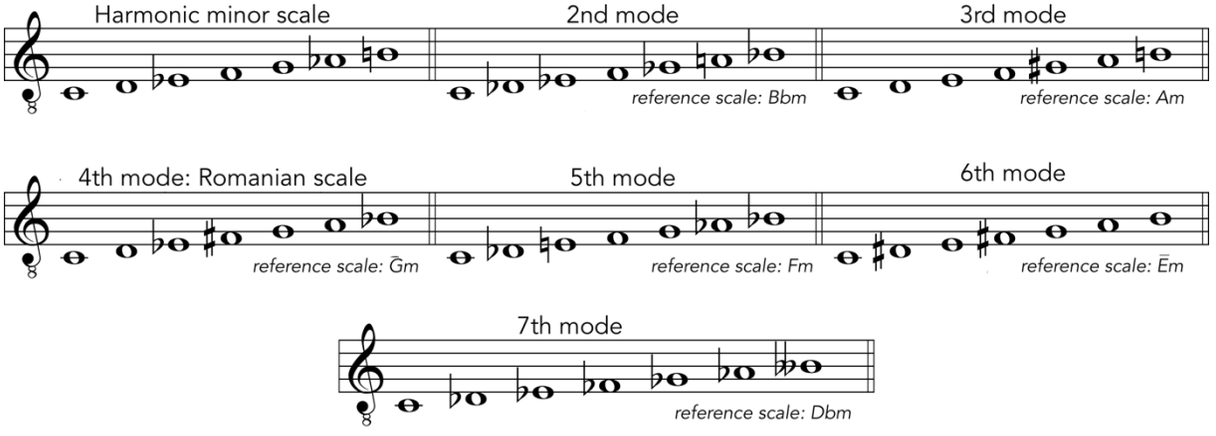
> *Note:*
> *The consecration of the modes of the melodic minor scale occurred, especially, due to the enharmonic relationship between these modes and certain altered chords in tonal structures. For example, an alteration such as* ***G7(#11)****, applied in the key of* ***C major****, which also presents natural extensions of major ninth and major thirteenth, obliges the resulting melodic aspect to adapt to it, maintaining the same alteration. Thus, the melodic configuration made for the* ***G7(#11)*** *chord should always use the note* ***C#****, maintaining coherence with the alteration applied in this dominant chord. Due to this alteration, an enharmonic relationship is established with the 4th mode of the* ***D melodic minor scale****, the* ***G Lydian Dominant mode****. This is not a type of 'modal borrowing' but an enharmonic coincidence that can occur between altered chords and certain modes.*

[1] *It is important to know how to distinguish between modal practice based on modes associated with the melodic minor scale and the enharmonic reference that occurs in the vertical-horizontal relationship with altered dominant chords (see 'Vertical-horizontal relationship in dominant chords' – Dominant Chord Family – Harmony Books - volume I).*
[2] *Note that the other modes associated with tonal scales, as well as the modes associated with harmonic minor scales or harmonic major scales, did not receive the same treatment.*

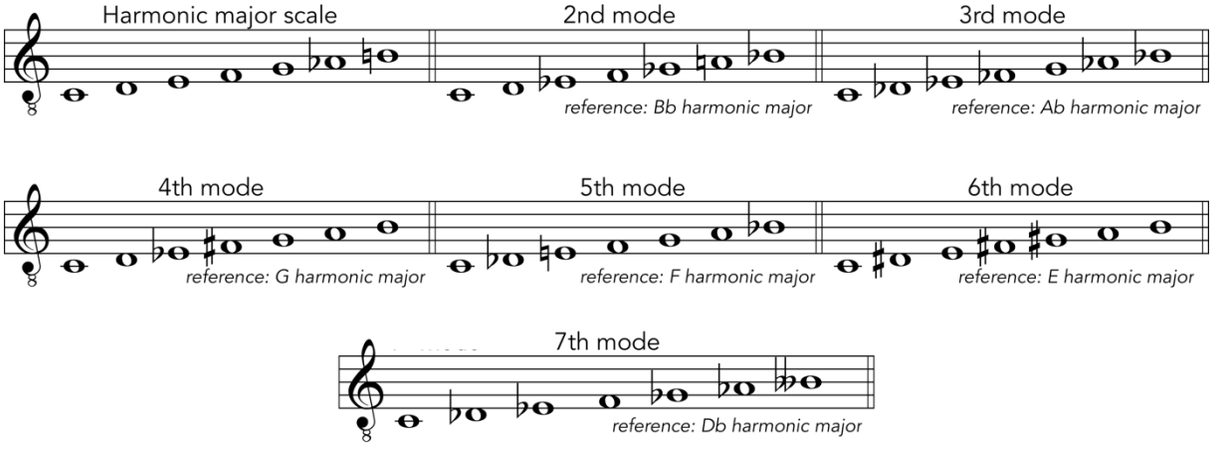
Other modes associated with tonal scales

The modes associated with other tonal scales have established application in pure modal situations, as well as in modal borrowings that frequently occur within tonal structures. These modes, for reasons we do not intend to discuss in this work, do not have a specific nomenclature. Nor do we intend to fill this gap, and therefore, the modes derived from the harmonic minor scale and the harmonic major scale will be treated according to their relationship with the scales to which they are associated.

Modes of the harmonic minor scale



Modes of the harmonic major scale

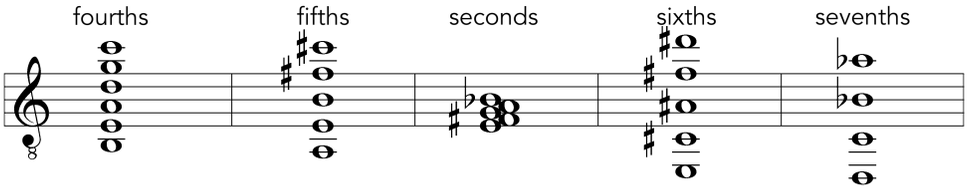


As previously mentioned, it is advisable that the learning and practice of modes always be done using the comparative method, playing or singing each mode always starting from a common note that represents the first degree of each one. Furthermore, as part of this same comparative process,

it is essential to listen to the characteristic chord that represents each mode so that the two main aspects related to harmonic practice are stored in our memory: the direct correspondence between the chords and the scales that represent them. Therefore, it is important to define and understand the process of structuring chords within the modal system.

Modal chords

Initially, these chords will be constructed through the process of superimposing thirds from the notes that make up the modes. Then, we will analyze other forms of harmonic structuring, such as chords by fourths, chords by fifths, and chords by seconds, in addition to chords by sixths and sevenths.



As a starting point, we will look at harmonic situations created from the modes associated with the major scale. It should be kept in mind that in modal practice, all types of resolving tendencies cease to exist, whether through the dominant tritone or chromatic tensions.

The dominant structure chord that is part of the modes loses its cadential force, which makes the harmonic progression freer. However, it is common in harmonic structuring from the modes associated with the major scale to see everything revolve around the chord of the first degree of each mode. Just as the tonic chord is sovereign in Tonal Harmony – from where one starts and to where one always returns – the chord of the first degree of modal scales also represents the starting and ending point. In this case, the difference is that there is no type of cadence or resolving tendency that leads the harmonic progression to it.

> *Note:*
> *It is important to emphasize that the occurrences mentioned above only happen in modal structures. When modal chords represent borrowings within tonal progressions, the characteristics change according to the tonal situation of the passage being analyzed.*

In order to distinguish the nomenclatures that represent tonal and modal practices, the chord of the first degree of the modes will no longer be called the **tonic** but the **principal chord**. This will be the most important reference in the structuring, intervallic combination, and application of the modes.

The structuring of modal chords is done by emphasizing the characteristic intervals of each mode, and there are no restrictions on the combinations of intervals that form them. It is necessary, however, to exercise some caution in this type of treatment, because when a pure modal result is desired, one should not allow tonal cadences embedded in these modes to be evidenced and perceived.[1] Not all modes associated with the major scale have had established applications. The Ionian mode, similar to the major scale *(due to its structure)*, practically loses its modal significance.[2] And the Locrian mode - the seventh mode associated with the major scale - because it has no expression in any popular or folkloric musical expressions, will not be discussed in detail in this work.

> *Note:*
> *Attention should be paid to the treatment that some theoretical works give to the Locrian mode. Often, this mode is associated with the half-diminished chord, the seventh degree of major scales, or the second degree of minor and harmonic major scales. It is worth remembering that all chords situated within the same tonal scale maintain a direct relationship with it. This means that all chords formed from any of the degrees of these scales will have their melodic representation with the notes that compose them. We consider it somewhat absurd to associate half-diminished chords, formed within a major, harmonic minor, or harmonic major scale, with the Locrian mode.*
>
> *Similarly, when the half-diminished chord has the major ninth (subdominant function), the correct interpretation is that there has only been an alteration in the extension of the chord, which also modifies the melodic aspect. This does not constitute any 'modal borrowing,' and the relationship between any of the modes is simply an enharmonic relationship.*

Consequently, the modes with real practical application, the main focus of our study and analysis, are the following: **Dorian**, **Phrygian**, **Lydian**, **Mixolydian**, and **Aeolian**. During the process of learning

[1] *Since these modes are directly associated with tonal scales, the cadences that represent them remain present in their structures. If these cadences are emphasized, the resulting modal effect ceases to exist, giving way to tonal centralism.*
[2] *The Ionian mode, in order to be perceived as a mode and not simply as a major scale, should not demonstrate the perfect V-I cadence, opting instead for plagal IV-I cadences, characteristic of the modao practice of the Middle Ages. See the chapter 'Modes of the major scale – Ionian Mode'.*

and understanding these modes, it is fundamental to always associate their horizontal aspects with their vertical characteristics. To this end, certain rules must be followed.

Modes: principal chord

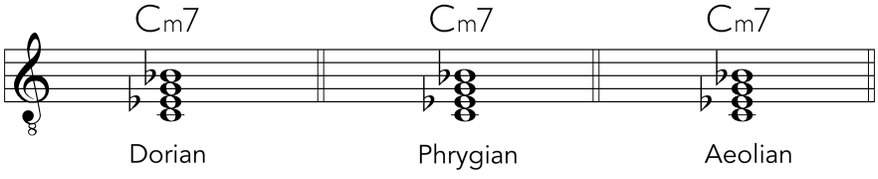
Of the five modes selected for further study, three of them are minor chords of the m7 type as the first-degree tetrad or as a representation of the main chord tetrad (Dorian, Phrygian, and Aeolian).

Of the remaining two, one is represented by a major tetrad of the 7M type (Lydian) and the other by a dominant tetrad of the 7 type (Mixolydian).

As can be seen, these tetrads are the same ones used in Tonal Harmony, and it is precisely here that a certain confusion between tonal and modal aspects occurs. To provide greater clarity regarding the modal character of the chords from a harmonic perspective, it is necessary to add the characteristic intervals of each mode to the tetrads of the first degree. In this way, the modal quality of each of them becomes unequivocal.

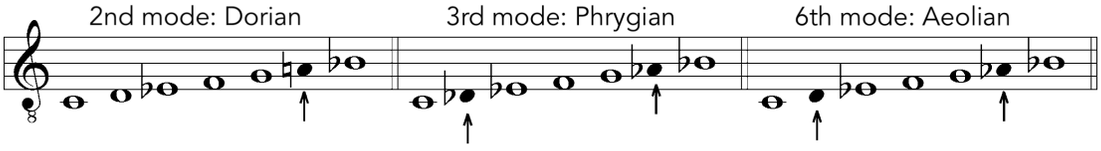
> *Note*
> *It should be noted that the concept established above refers only to modal chords or chord combinations in the modal process. When there is a melodic component added to the chords, the melody notes themselves establish the direct relationship with the mode.*

The comparison of the tetrads structured on the first degree of the Dorian, Phrygian, and Aeolian modes, as mentioned, shows that they all present the same structure, represented by an m7 chord. Therefore, even within the structural limits of a tetrad, these three modes have the same characteristics.

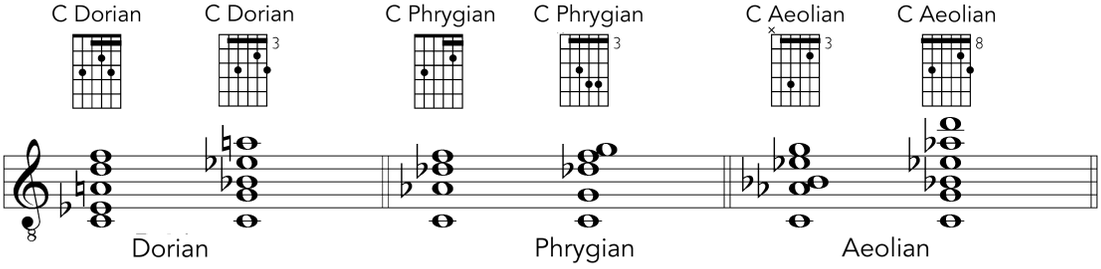


For these chords (which represent the first degree of each of these three modes) to acquire specific characteristics and qualities, they need to be transformed into **principal chords** through the insertion of the differential intervals inherent to each of them. Obviously, this differentiation will

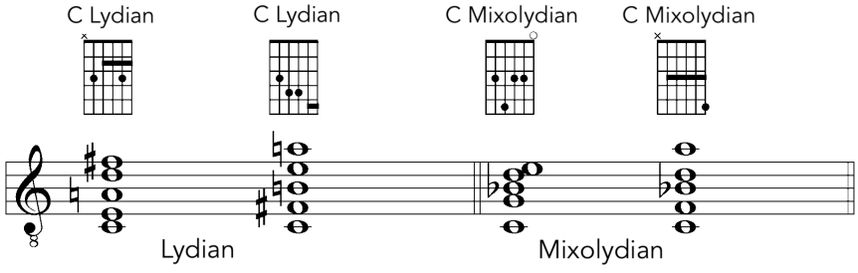
not be made by inserting the fourth degree, which is also common to all three. The Dorian mode is the one that has the major sixth; the Phrygian has the minor second and the minor sixth, and the Aeolian has the major second and the minor sixth.



Therefore, by adding the differential intervals of each of these modes, we obtain the **principal chord** representative of each mode.



Within this framework, we also have the other chords of the modes associated with the major scale. The **Lydian chord** has the **(#11)** as its differentiating interval, while the **Mixolydian chord** has the **dominant 7th** or **sus structure** without this function. See examples of their configurations:



It is recommended that the use of interval notation in the modal environment be avoided. This type of notation (alphanumeric) should be restricted to the tonal process so that there is a separation between the two systems. However, it is very common to find modal chords notated in the same way that chords within tonal structures are notated. Since it is practically impossible to reach a consensus on the regulation of the use of notations, it is up to the musician to interpret the harmonic situation and understand its real meaning.

When disagreements arise, the issues that result from them are not generated by any incongruity in the acoustic relationships that govern the combination of chords, whether in tonal or modal structures. They appear because different musical practices, from different eras and different parts of the world, interpret them and establish diverse rules and nomenclatures. Thus, we consider that there is no absolute or supreme truth regarding the use of notations, and it is hoped that only common sense will help in the creation of a more universal nomenclature. In any case, the most sensible approach when faced with purely modal situations is to write the chords presented there solely for their modal aspect. And it will be up to the musician, as with tonal procedures, to choose the best arrangement: interval structure, higher or lower register in which the chord will be played, as well as its position and presentation.

Note:

In the alphanumeric notation used in Tonal Harmony, the position and presentation of chords are never explained. When the G7(b13) chord is notated as the dominant of C minor, due to limitations of the notation itself, we don't know if this chord will be played with the minor thirteenth at the highest voice or if the root will be at the top of the chord. The alphanumeric notation in the tonal environment also doesn't clarify whether another natural extension will be applied to the chord. But the conscientious musician knows that it is possible, in this example, to apply the (b9) added to the (b13), since these two notes are diatonic notes of the C harmonic minor scale. The notation also says nothing about possible doublings and omissions of notes, leaving the decision of what will be most convenient for the musical passage to the musician. Nor does the chord symbol tell us whether the chord has its notes spaced out – open presentation – or its notes closed – closed presentation – or even whether the chord should be played higher or lower in the harmonic region. On the other hand, it is important that the chord symbol clearly indicate the state of the chord, that is, whether it should be played in its root position or in its possible inversions. This is essential because we know that the bass note of chords must be unique and always distanced from the remaining block of notes that completes it. Therefore, we will maintain this same logic of chord notation for tonal chords in relation to modal chords. The mode and its inversions will be notated, but never the intervals that compose it. It is up to the musician to know the characteristic intervals of each mode and apply them in the appropriate way and at the appropriate time. Once again, we remind you that any attempt to detail intervals, rhythms, and chord constructions through chord symbols only serves to confuse the instrumentalist. When you want these details to be conveyed meticulously, you should resort to musical notation or an audio recording. We must always keep in mind that the chord symbols in the harmonic process, while sufficiently useful and practical, are also, on the other hand, an extremely limited and limiting form of

harmonic communication. It is always good to remember that the glimpse of vast musical possibilities goes far beyond a melody with chord symbols and, sometimes, even beyond written music in traditional notation.

Modal chords – chord symbols

Before we define more clearly the notation that will be adopted here for modal chords, let's delve a little deeper into the concept of the **principal chord** and, consequently, the other chords of the mode that will represent the **secondary chords**. In the unimodal process *(when we explore a single mode)*, there is a central point around which everything revolves. We can say that in modalism we also have a kind of tonic, from where we start and to where we always return. This modal center is usually represented by the characteristic chord of the first degree, the **principal chord**, but it can also be demonstrated in a simpler way, by a triad or tetrad, as long as the differential intervals of the mode in question are present in the melodic content. On the other hand, it is difficult to classify a dominant in a balanced way, since the relationship between tonal functions no longer exists.

In modal harmony, there are no chords that have a dominant function, and in its simplest and most established practice, everything revolves around this point of convergence represented by the chord of the first degree of each mode, the principal chord. Based on this theoretical foundation, we will treat the other chords of the mode as secondary chords, thus defined as follows:

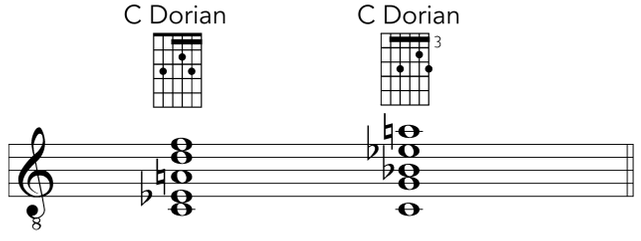
Principal chord

(structures generated on the first degree of the mode in its root position)

Secondary chords

(all other structures situated on the other degrees of the mode, including all types of inversion)

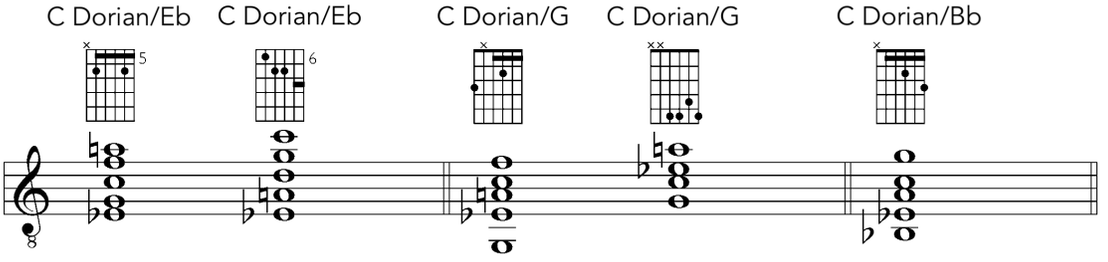
Principal chord
Chord symbol: C Dorian
Examples on the **Dorian mode**, extendable to other modes:[1]



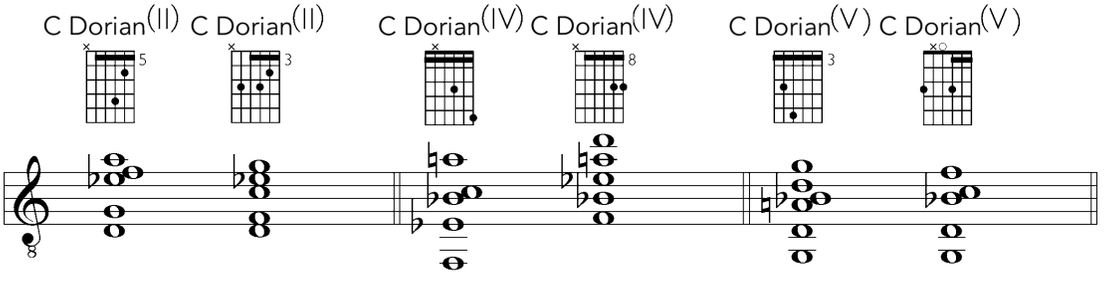
[1] *Also valid for all types of modal borrowing in tonal passages.*

Secondary chords

1. Principal chord: inversions

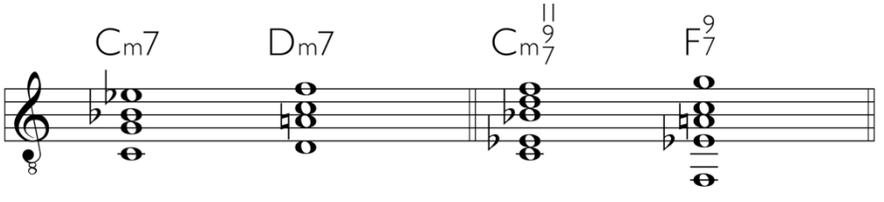


2. Other degrees chords - Dorian mode

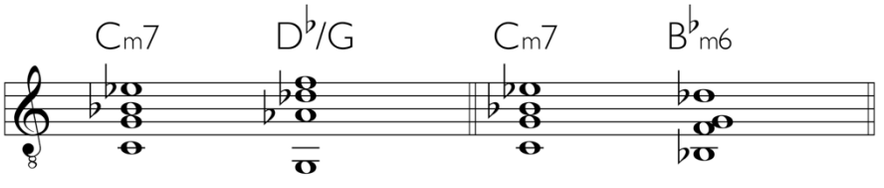


It is still common in modal practice to see two chords that, when combined, form the desired mode. In these cases, what we see most frequently is the alphanumeric tetrad chord symbols.[1]

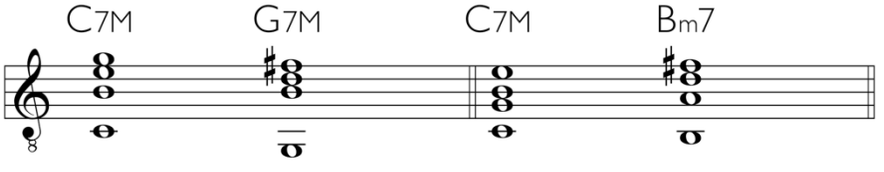
Dorian mode:



Phrygian mode:

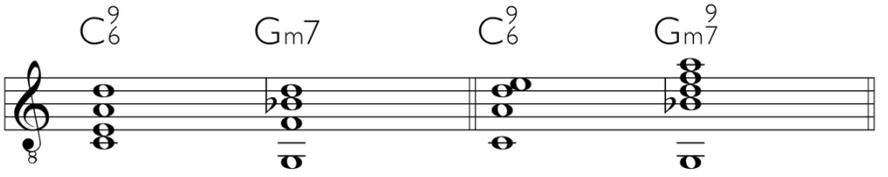


Aeolian mode:

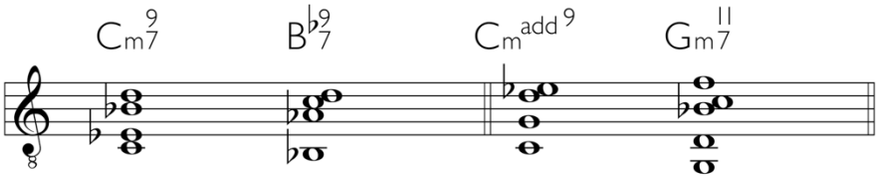


[1] *The line separating the use of chord symbols in modal practice and tonal harmonization is always very thin. We should always be guided by common sense when notating chords, knowing that there will never be a consensus on this matter.*

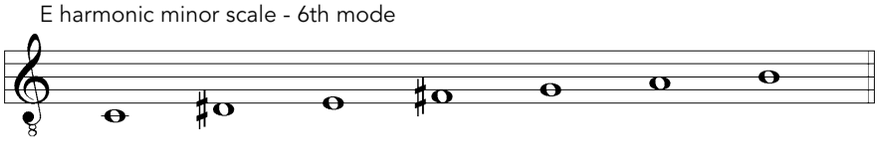
Mixolydian mode:



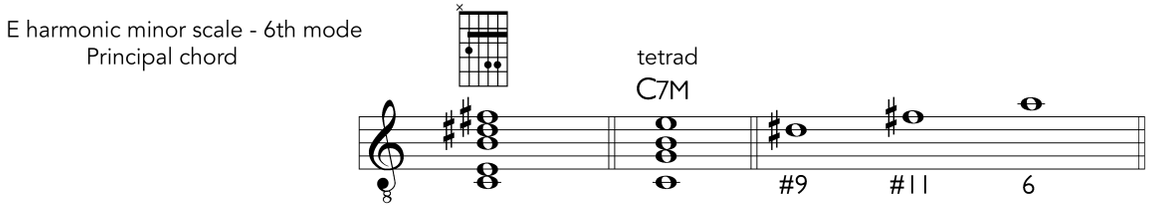
Aeolian mode:



This understanding of modal harmony practice should also be used in chord notation, especially for chords representing the main chord of modes associated with the harmonic minor and major scales. Since the modes associated with these scales do not have specific nomenclature such as Dorian, Aeolian, Lydian augmented, Super Locrian, etc., these chords do not fit the type of notation established here for modal chords. Sometimes, it is necessary to resort to alphanumeric notation, as used in tonal practice, to indicate the structure of a particular chord. This generates a series of discrepancies and inconsistencies between these two aspects of harmony and, in some situations, to minimize this problem, the chord-over-chord notation is chosen, which, as is known, only represents the intervallic structure of the chord without any tonal or modal implication. See, for example, the main chord resulting from the 6th mode of the harmonic minor scales.

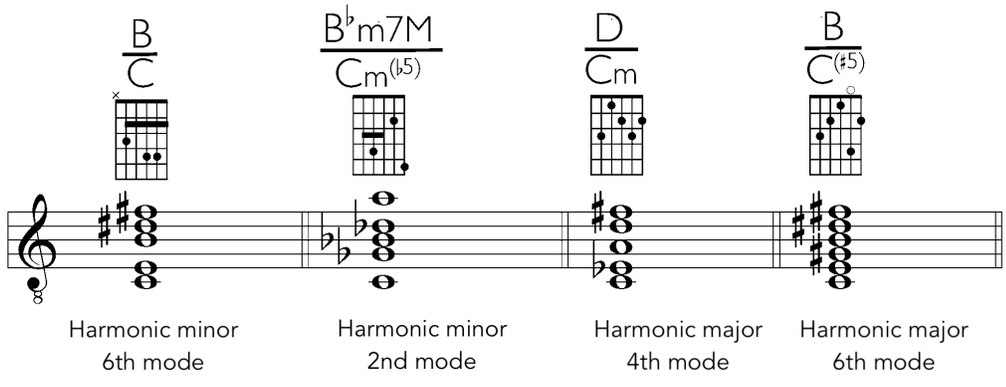


Now see the principal chord that represents this mode:



As can be seen, the result of the intervallic composition of this chord, adding the tetrad to its extensions, gives us an extraordinary situation: a chord from the Major Chord Family with an

augmented ninth. In these cases, we opt for chord-over-chord notation, separating two triads of the mode or even a triad and a tetrad, so that the complete mode can be represented, avoiding bizarre intervals to the chord family in Tonal Harmony to which they belong. See the notated representation of the main chord of the 6th mode of the harmonic minor scale and other principal chords derived from this scale, as well as from the harmonic major scale:



In these types of chords (only as an example, not playable on the guitar), it is up to the musician to perceive the relationship established between the two chords to correctly understand the scalar basis.

Polymodalism

Finally, it is important to define how different modes are used in the same musical excerpt, which we classify as polymodalism.

Polymodalism is the application of different modes, with different intervallic structures, in the same musical passage. These combinations in the use of modes are defined as follows:

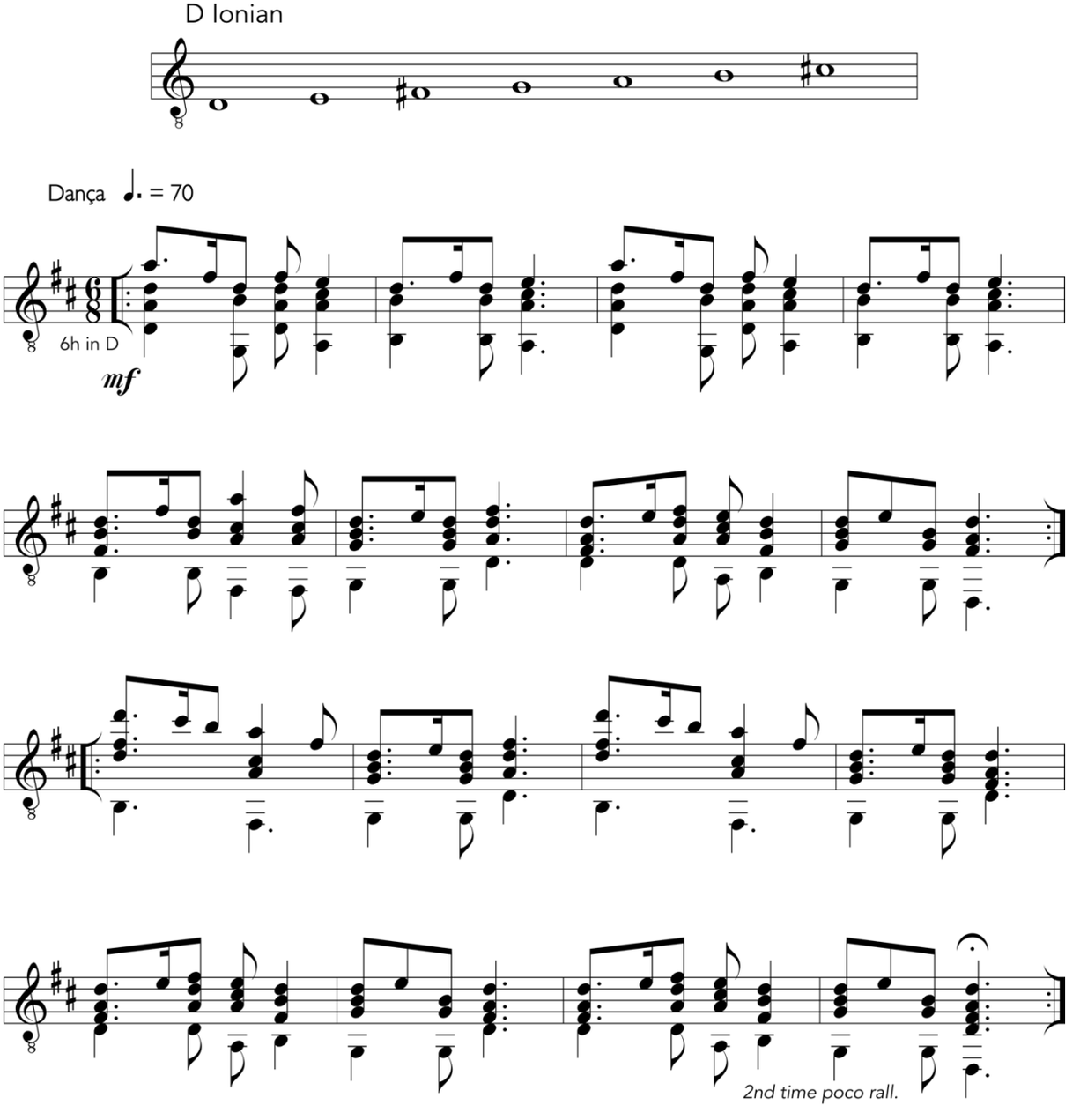
1. Unimodal – when the passage is harmonized with chords of only one mode.
2. Polymodal – when two or more modes are involved in the same musical passage, having in common the first degree of each of them and being able to be treated polyphonically.
3. Polytonal – when the modes involved in a harmonic or polyphonic passage are of the same origin (same mode) but start from different notes. In this case, the passage is polytonal and modal, but not polymodal.
4. Polymodal and Polytonal – when the musical passage in question uses different modes that start from different notes.

Modes associated to the major scales

Ionian mode

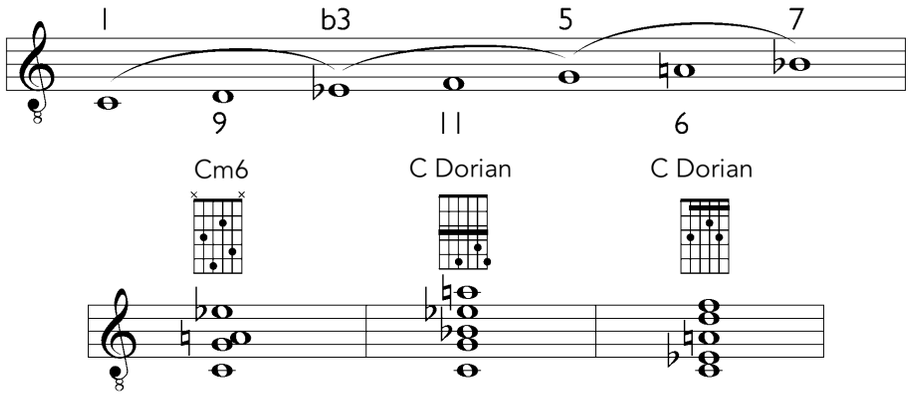
Despite its identical intervallic structure to our traditional major mode, the Ionian mode can also be explored from a modal perspective. The difference, if one can call it that, lies especially in the irregularity of chord changes, as well as the absence of a perfect *(or complete)* cadence, prioritizing the plagal cadence.

Track 01

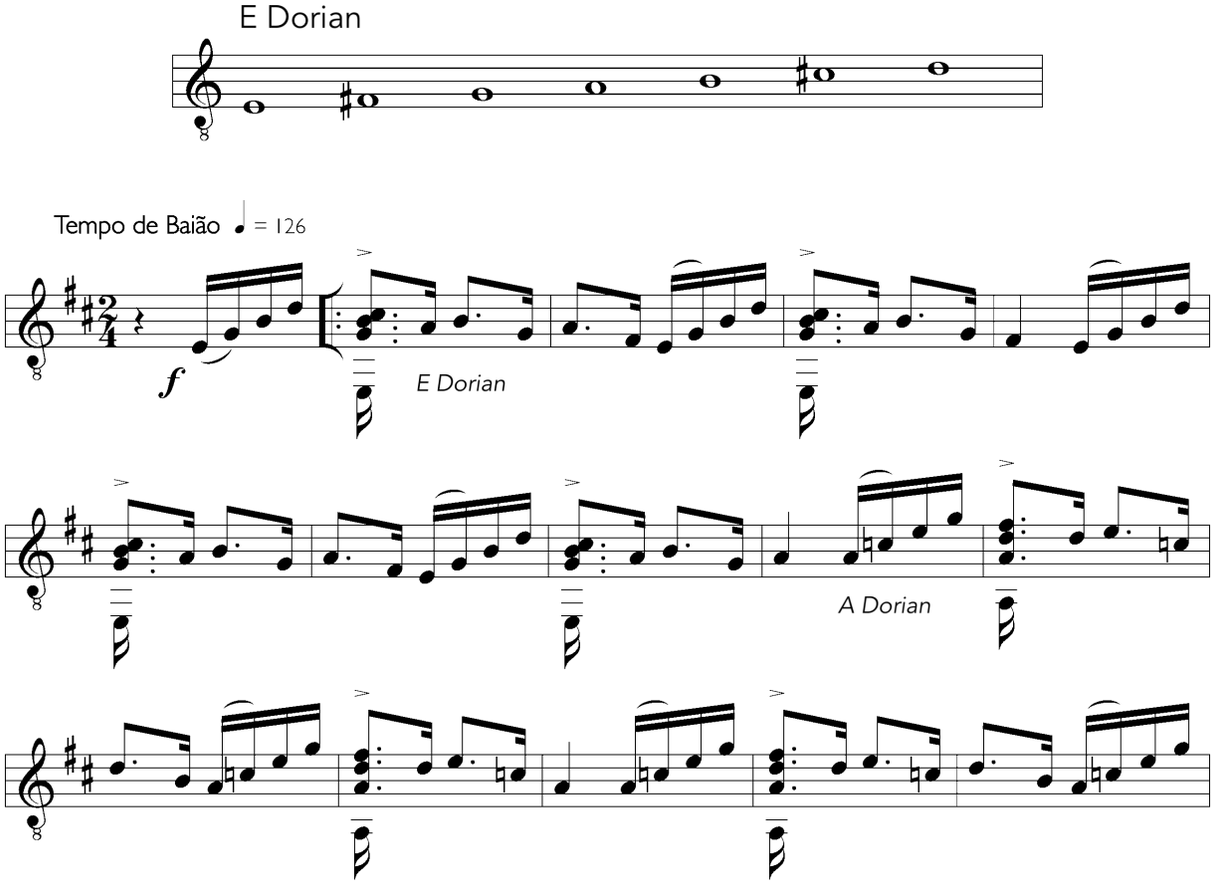


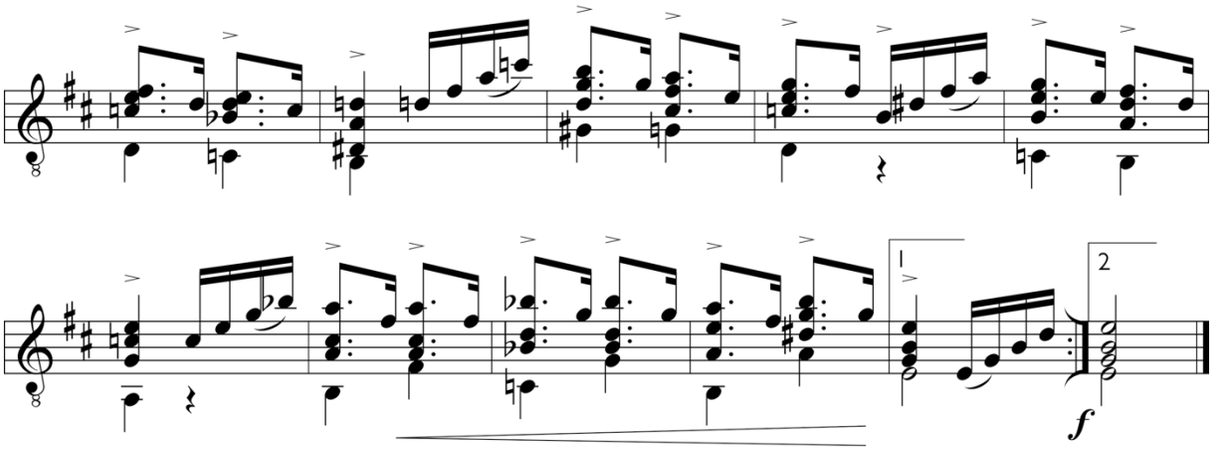
Dorian mode

The Dorian mode is one of the three minor modes, along with the Phrygian and Aeolian, that can be generated from structures associated with the major scale. It represents the second mode, and its main characteristic is the combination of the minor seventh tetrad with the major sixth. The Dorian mode is widely used in the popular and folk music of Northeast Brazil.

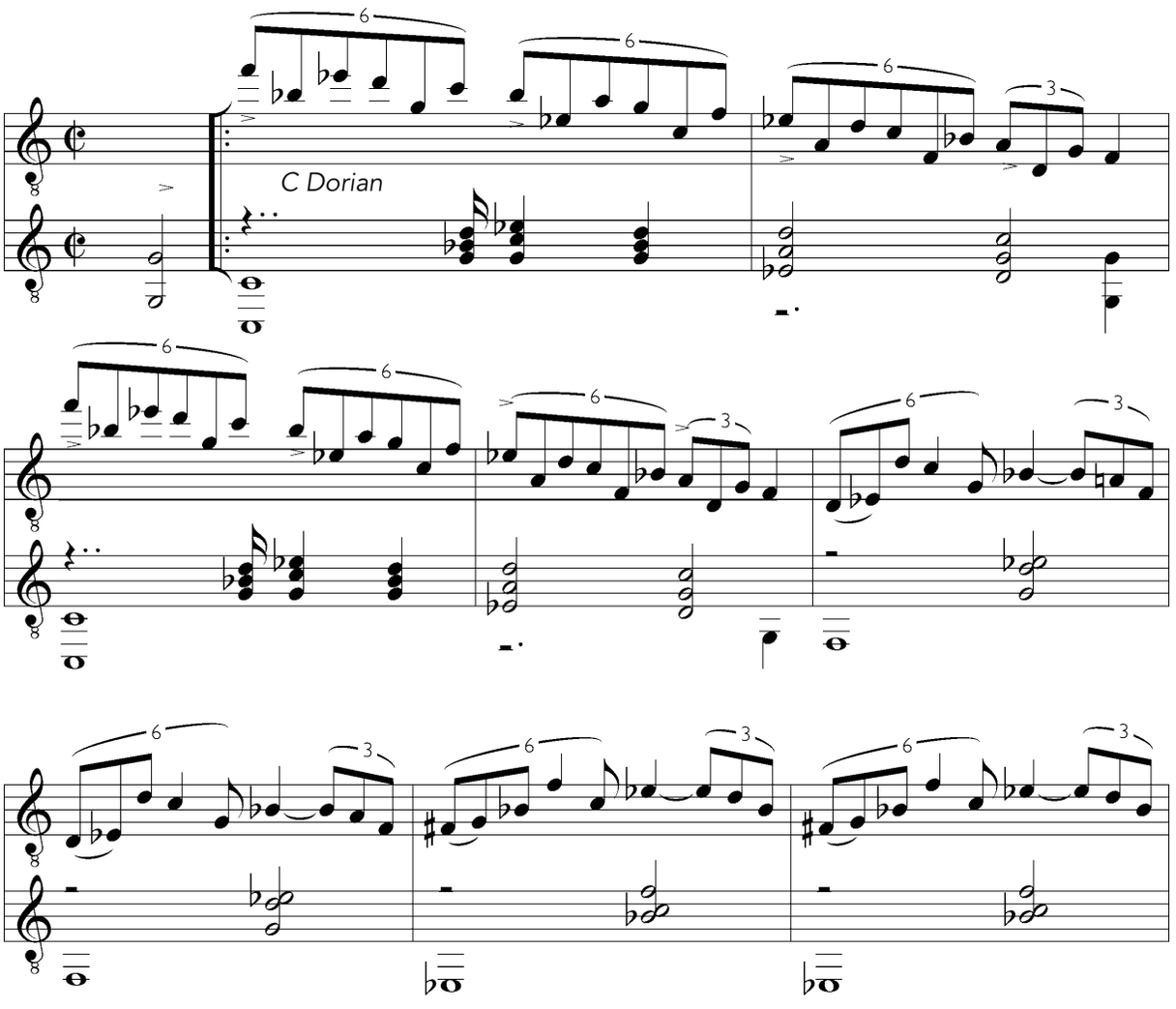


Track 02

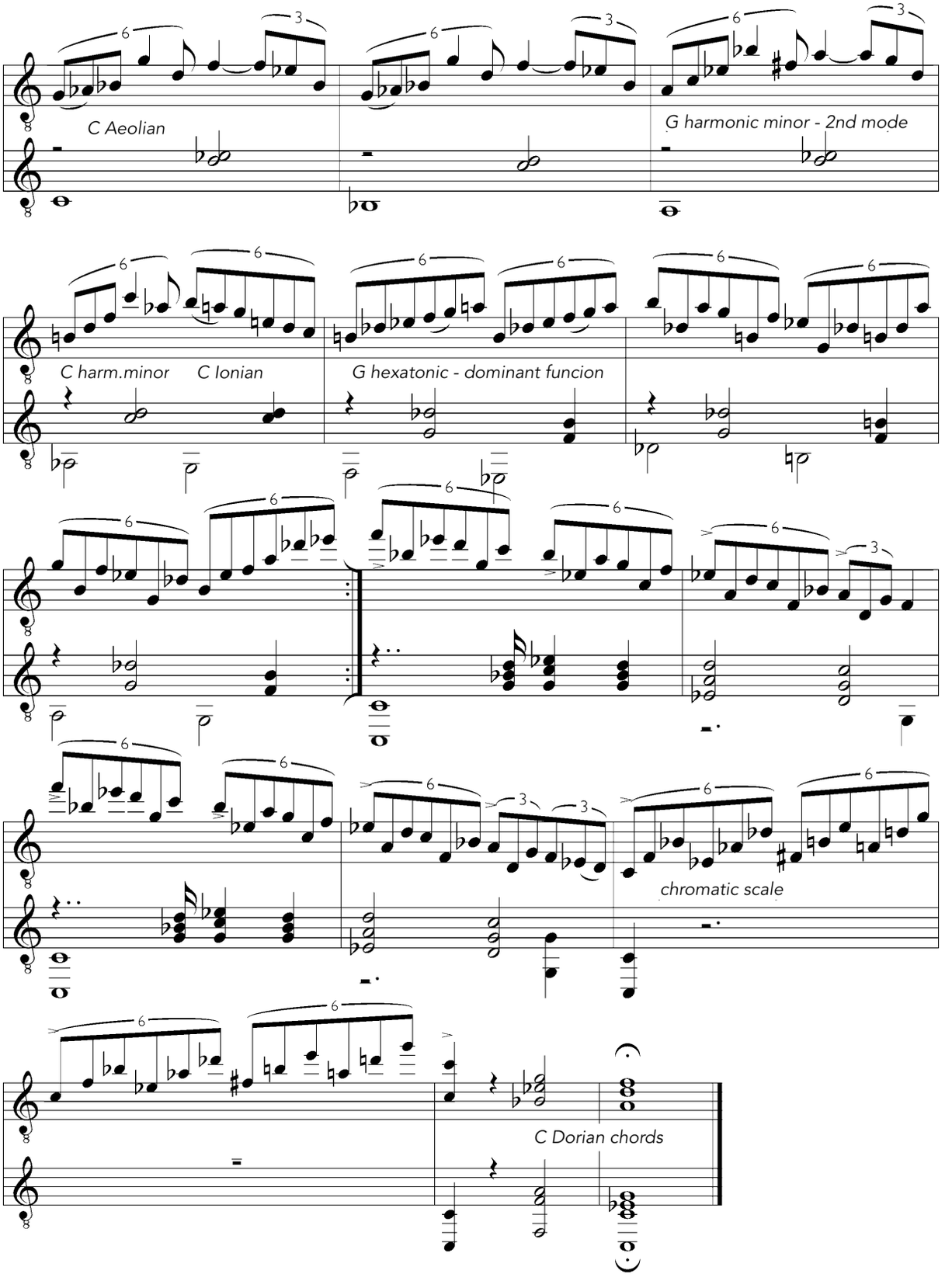




Track 03 – Dorian mode[1]

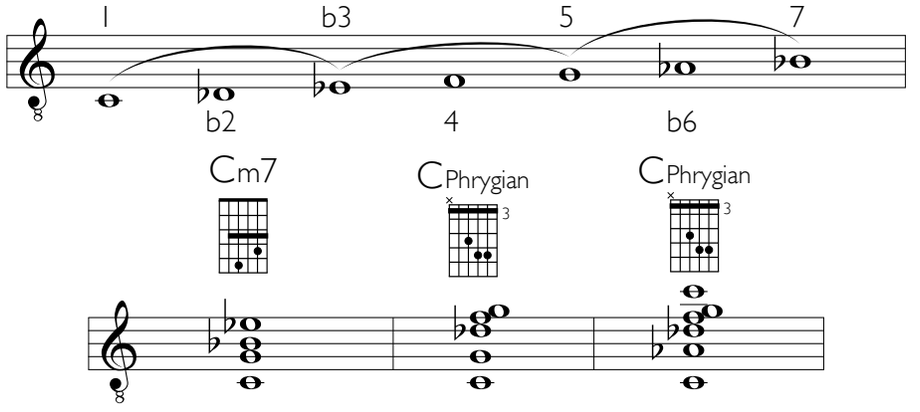


[1] *Example with modulation and association with other modes: dominant hexatonic scale, 2nd mode of the harmonic minor, Aeolian, Ionian, and the chromatic scale, with the construction of three notes in superimposed fourths, moving through minor thirds.*

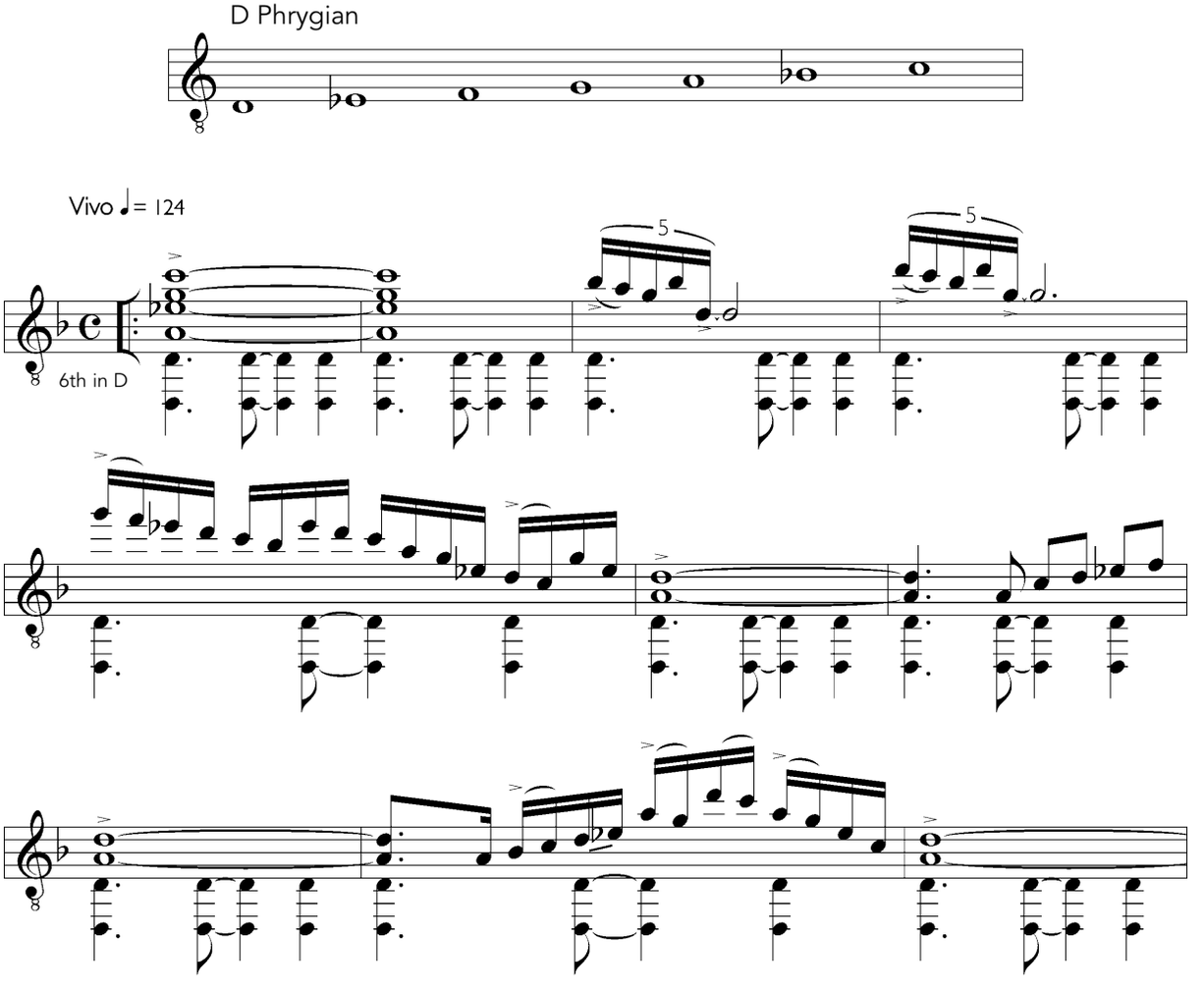


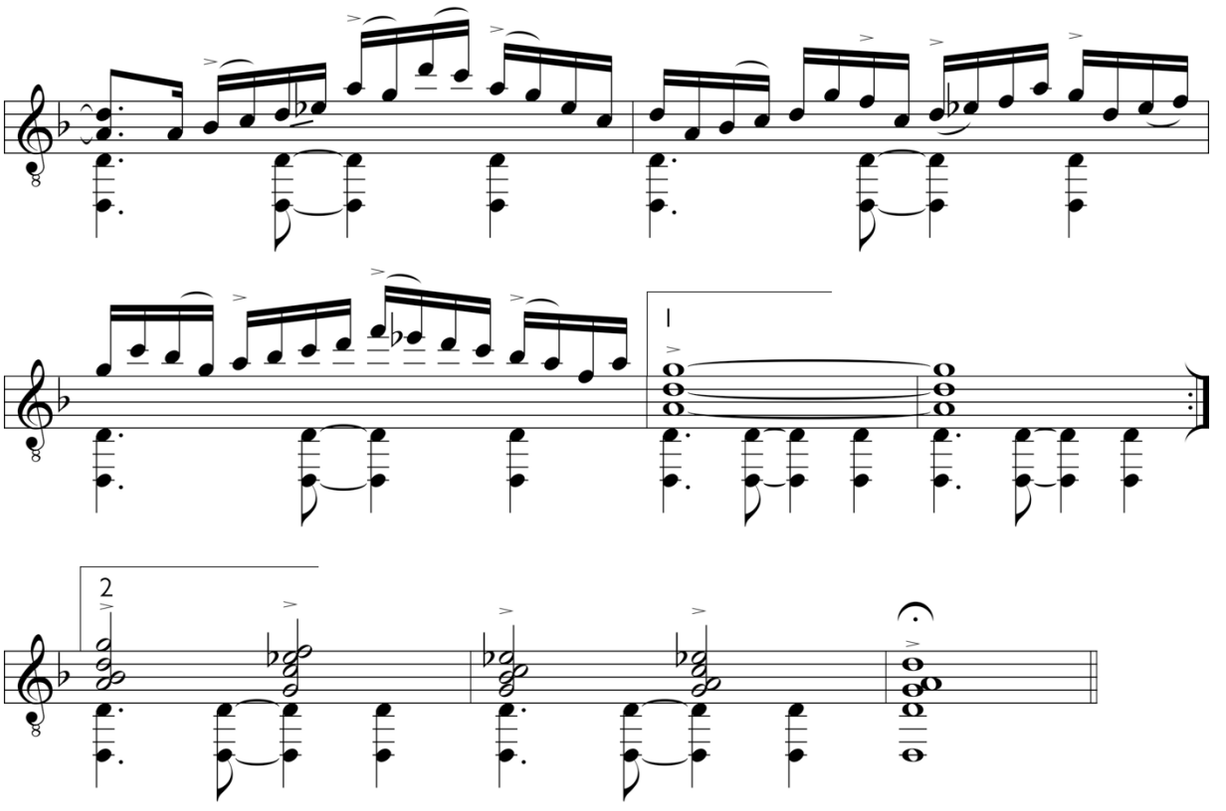
Phrygian mode

The Phrygian mode, with its distinctive Iberian character, also has applications in a broader language, as in the following example.



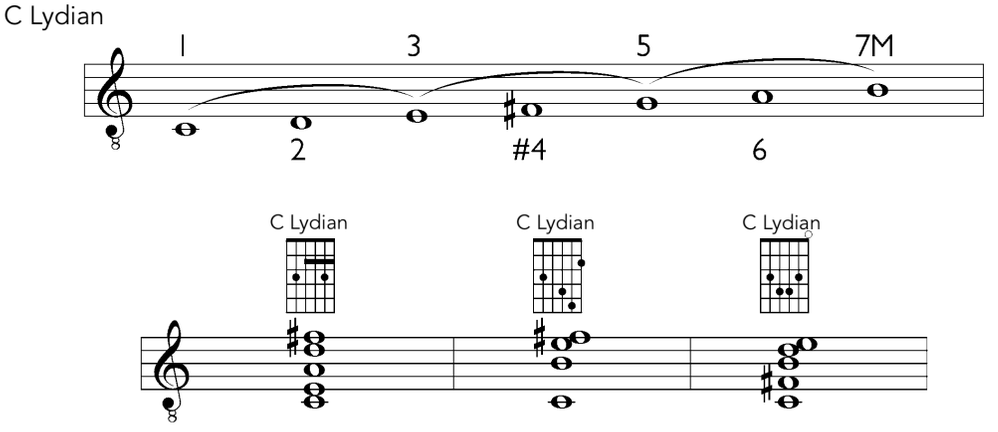
Track 04



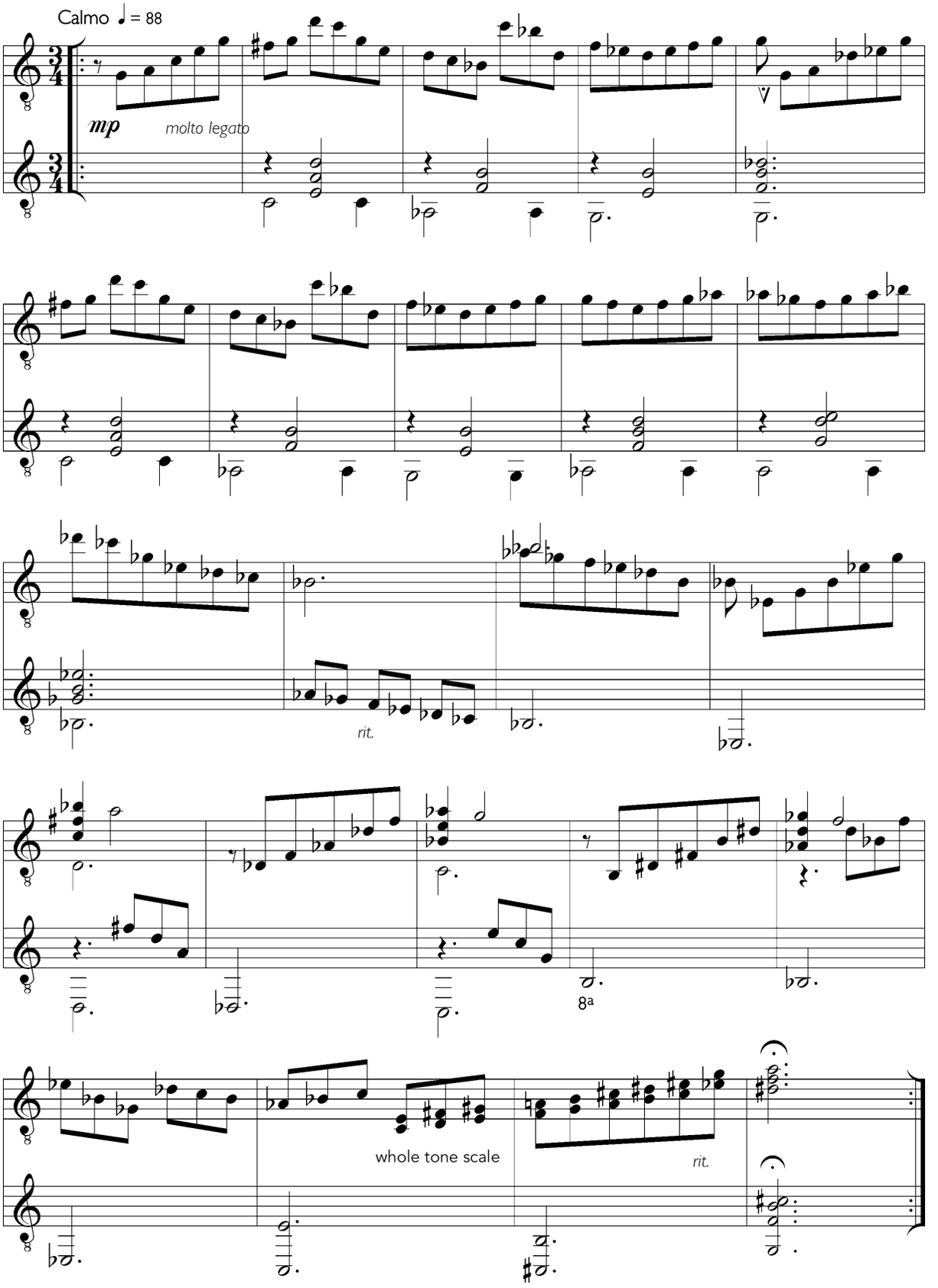


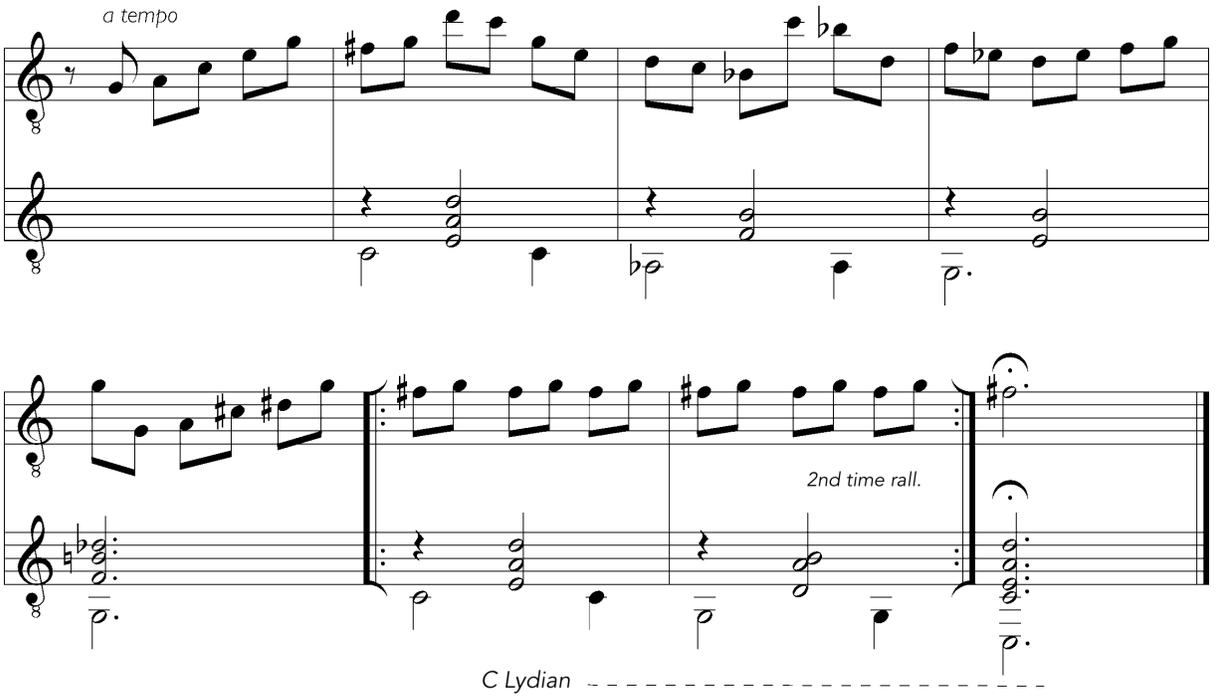
Lydian mode

The Lydian mode is unique because of the augmented eleventh interval added over a tetrad with a major seventh. The following example mixes modal and tonal aspects and, in addition to C Lydian, shows some other modes.



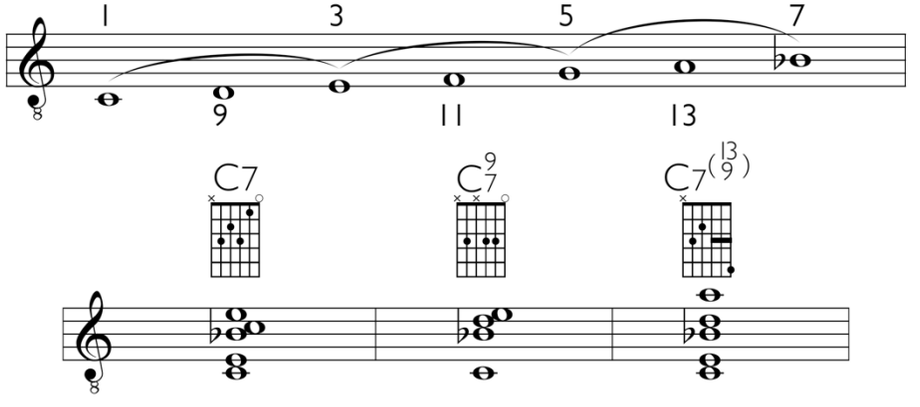
Track 05

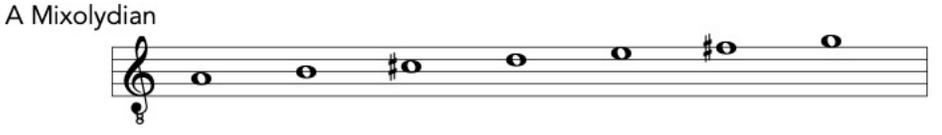




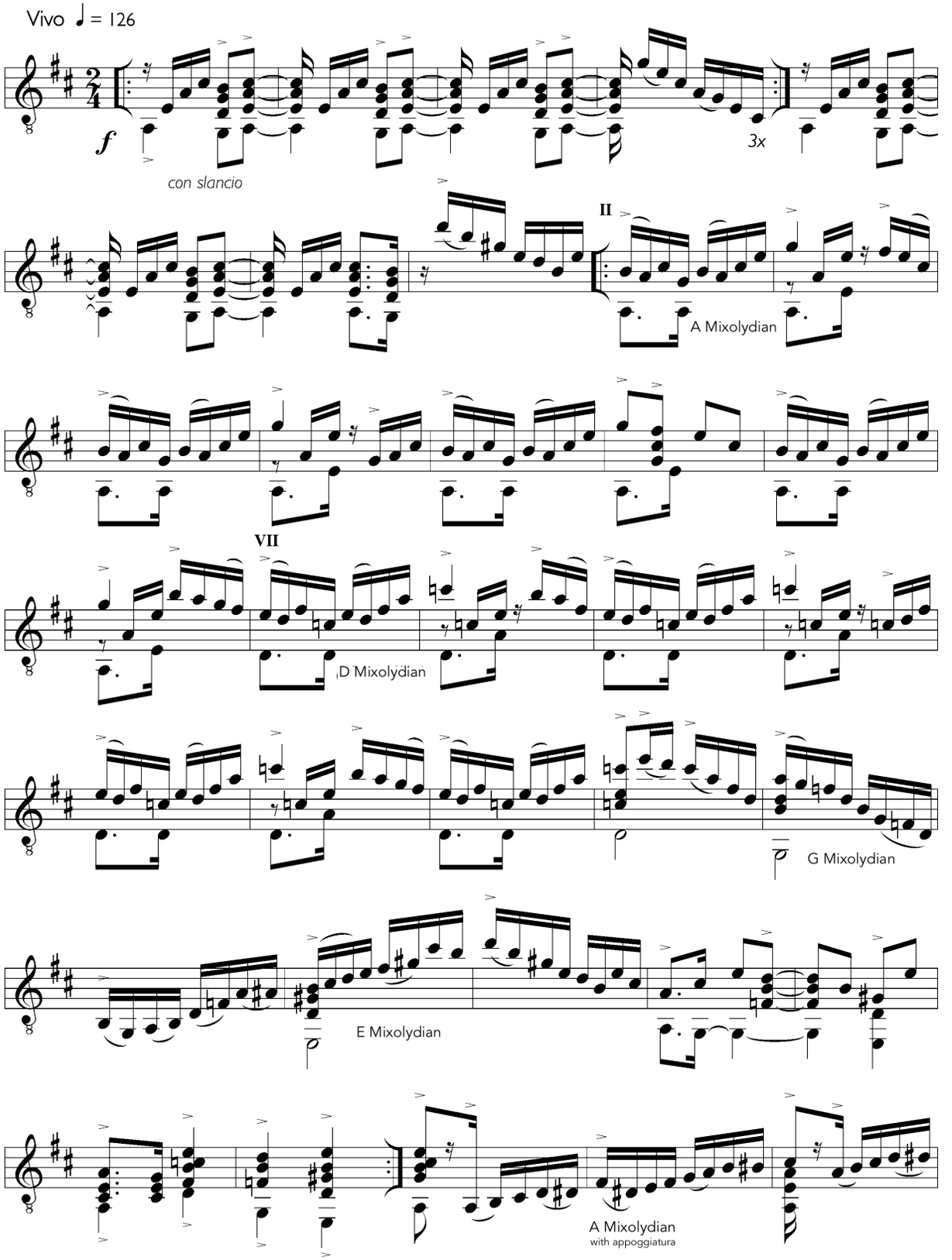
Mixolydian mode

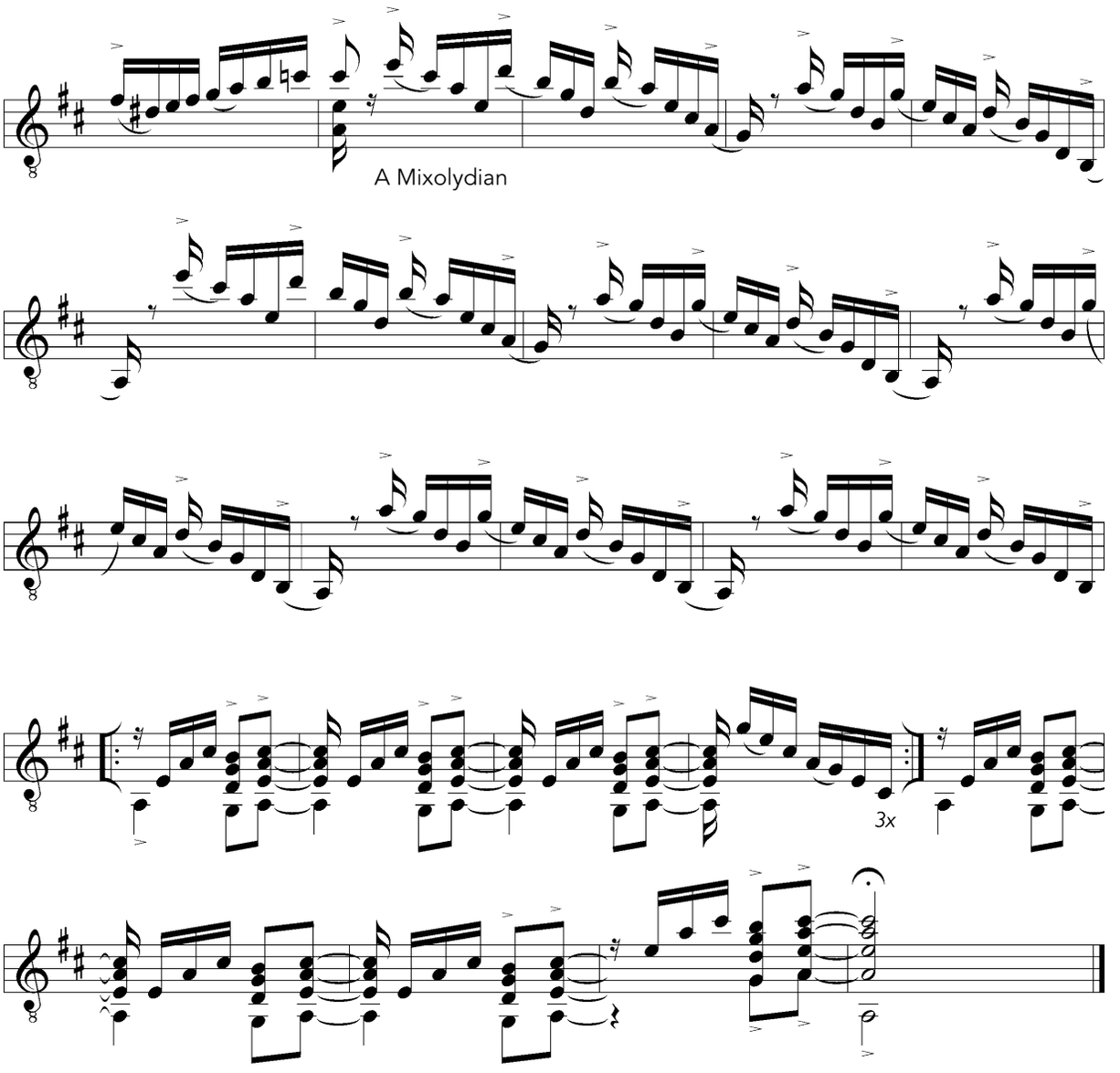
The Mixolydian mode is one of the most widely used modes in various styles. With extensive application in different musical expressions around the world, it is quite common in the folklore of the Northeast region of Brazil, especially in the baião culture.



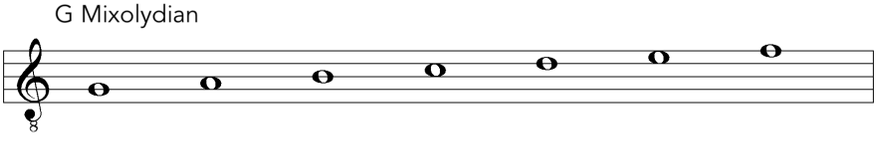


Track 06

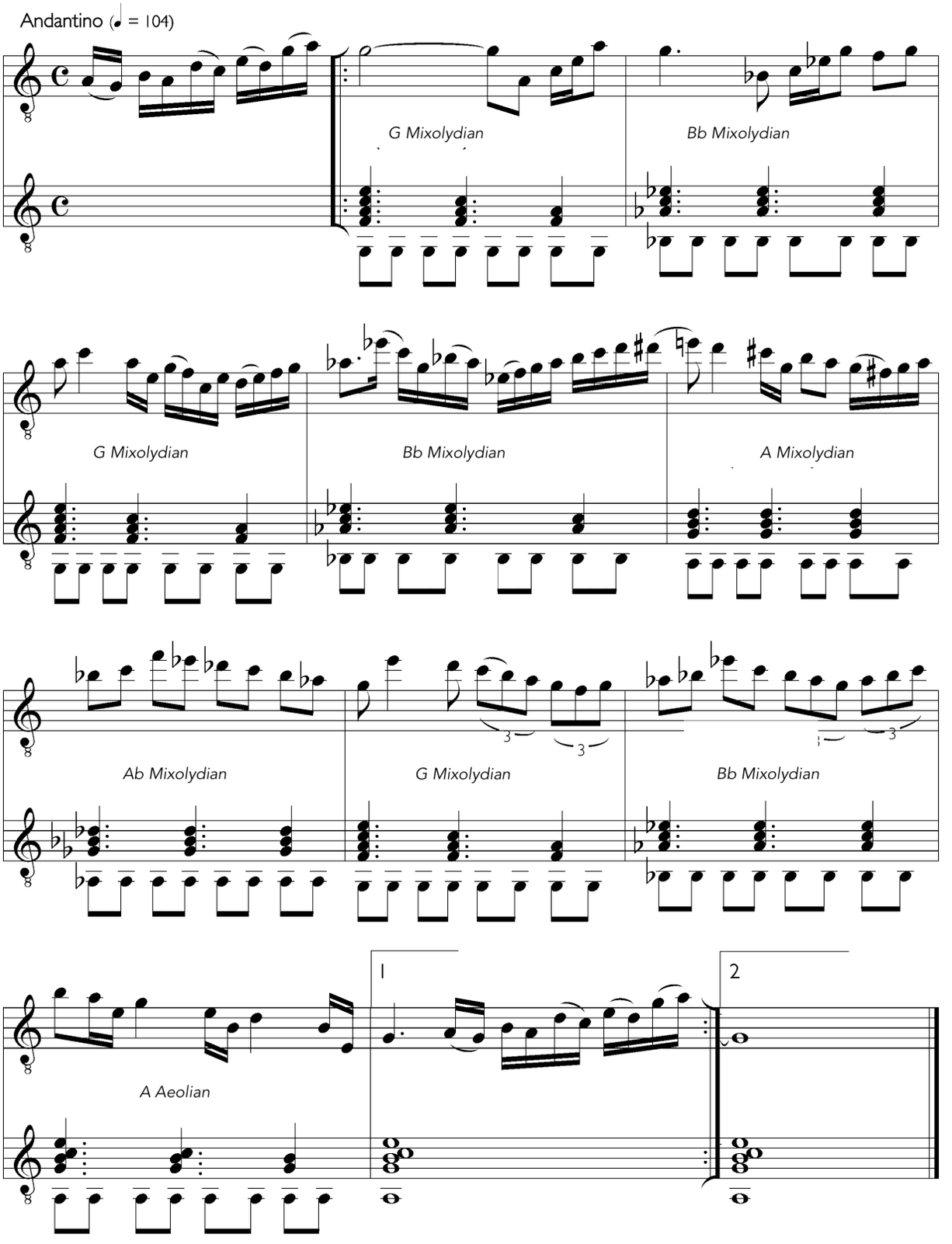




The Mixolydian mode is also frequently seen in popular songs with jazz influences. It's common to see this mode used over the SUS chord structure, and in the following example, we have the Mixolydian mode applied in a polytonal way. This is a type of resource frequently used in modal practice.

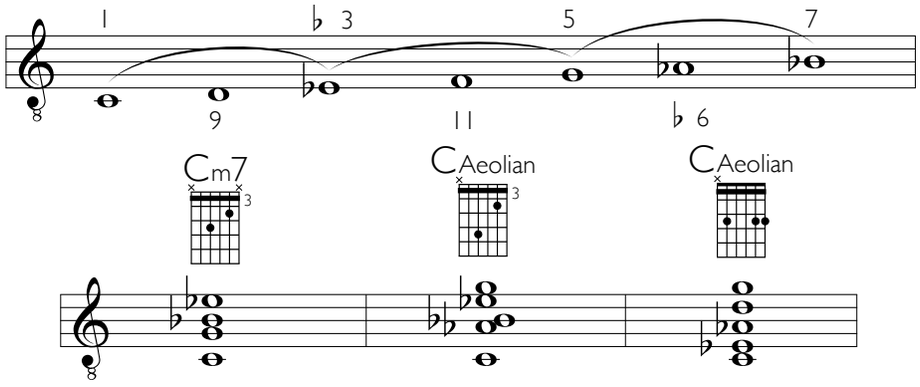


Track 07

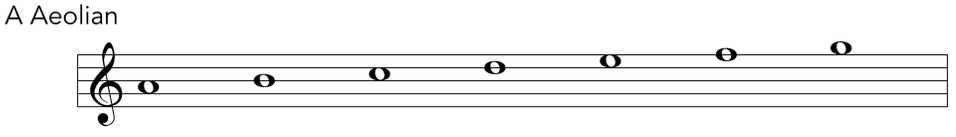


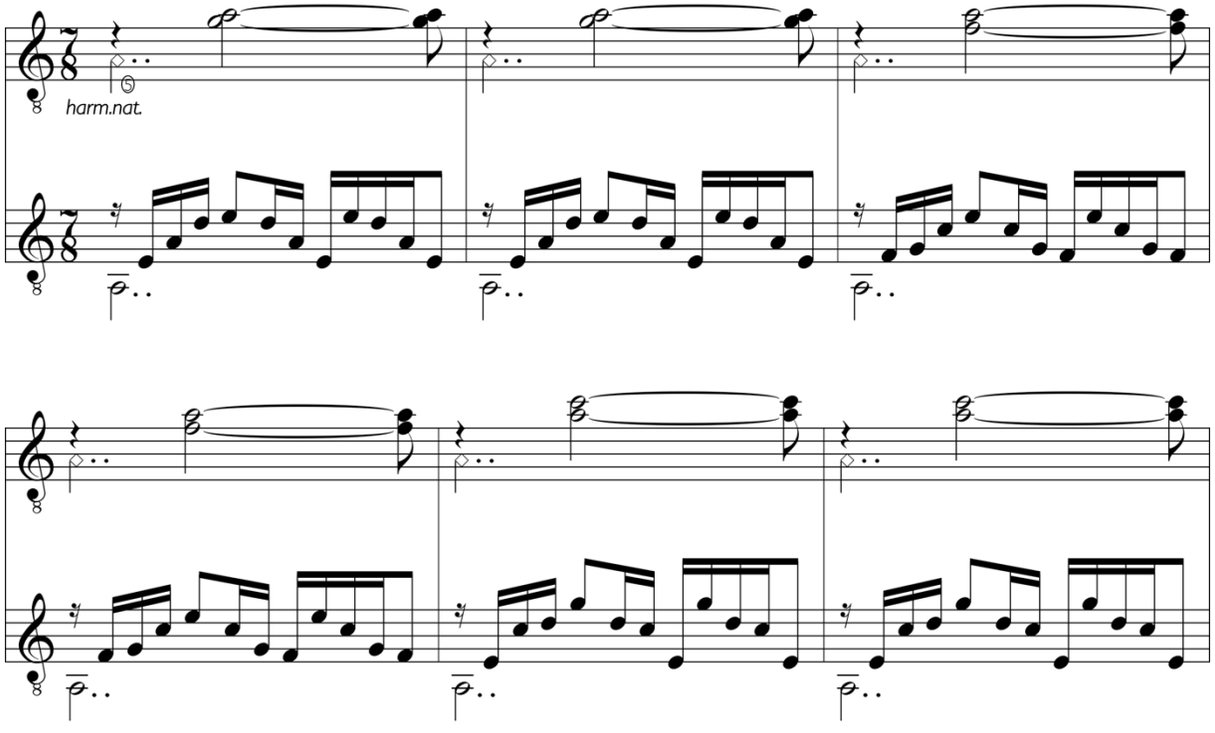
Aeolian mode

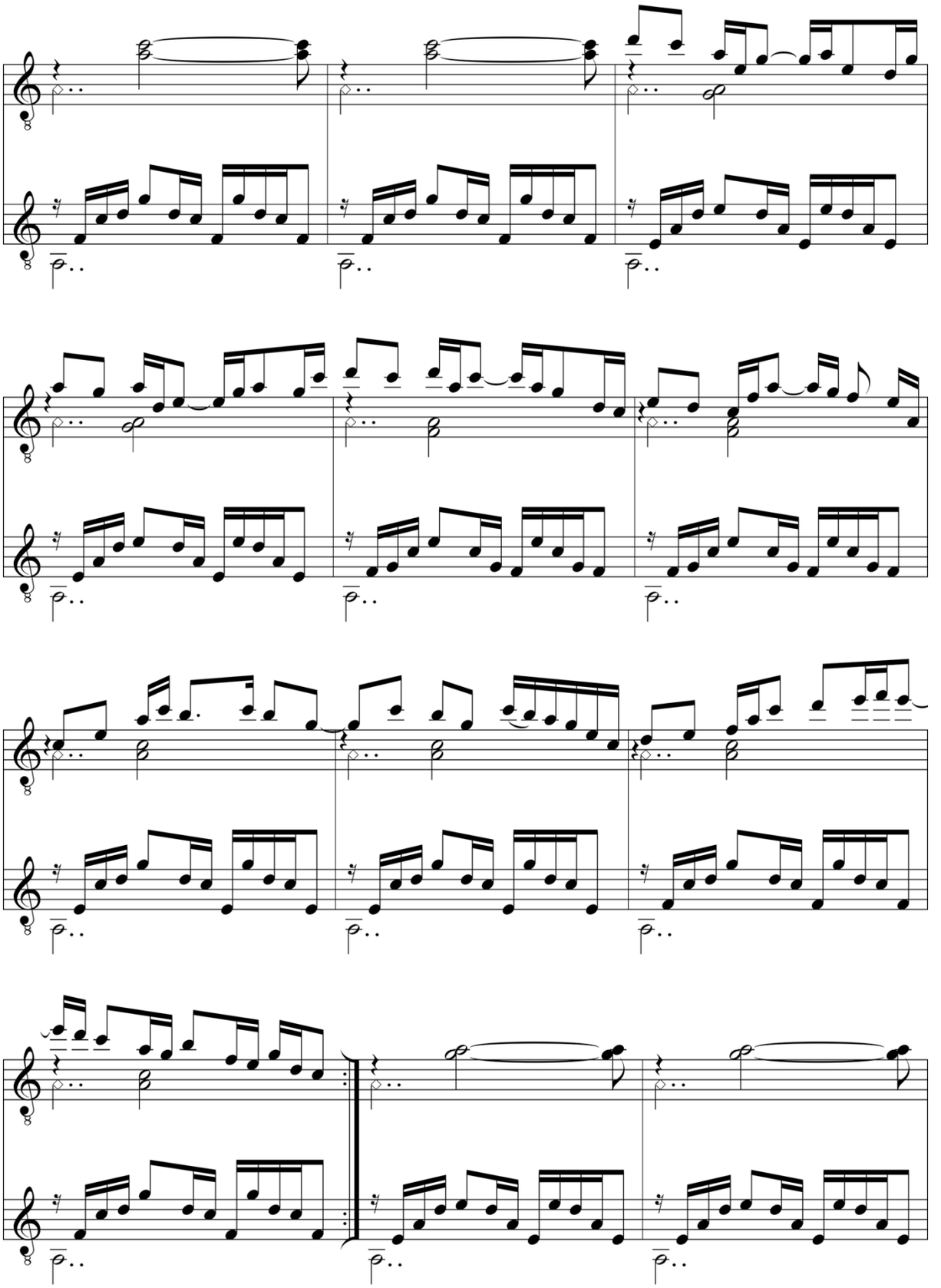
The Aeolian mode is, among the minor modes, the most widely used and well-known. It is very effective in creating passages of a lyrical and nostalgic nature. See, in the two examples below, two forms of modal structuring based on this mode.

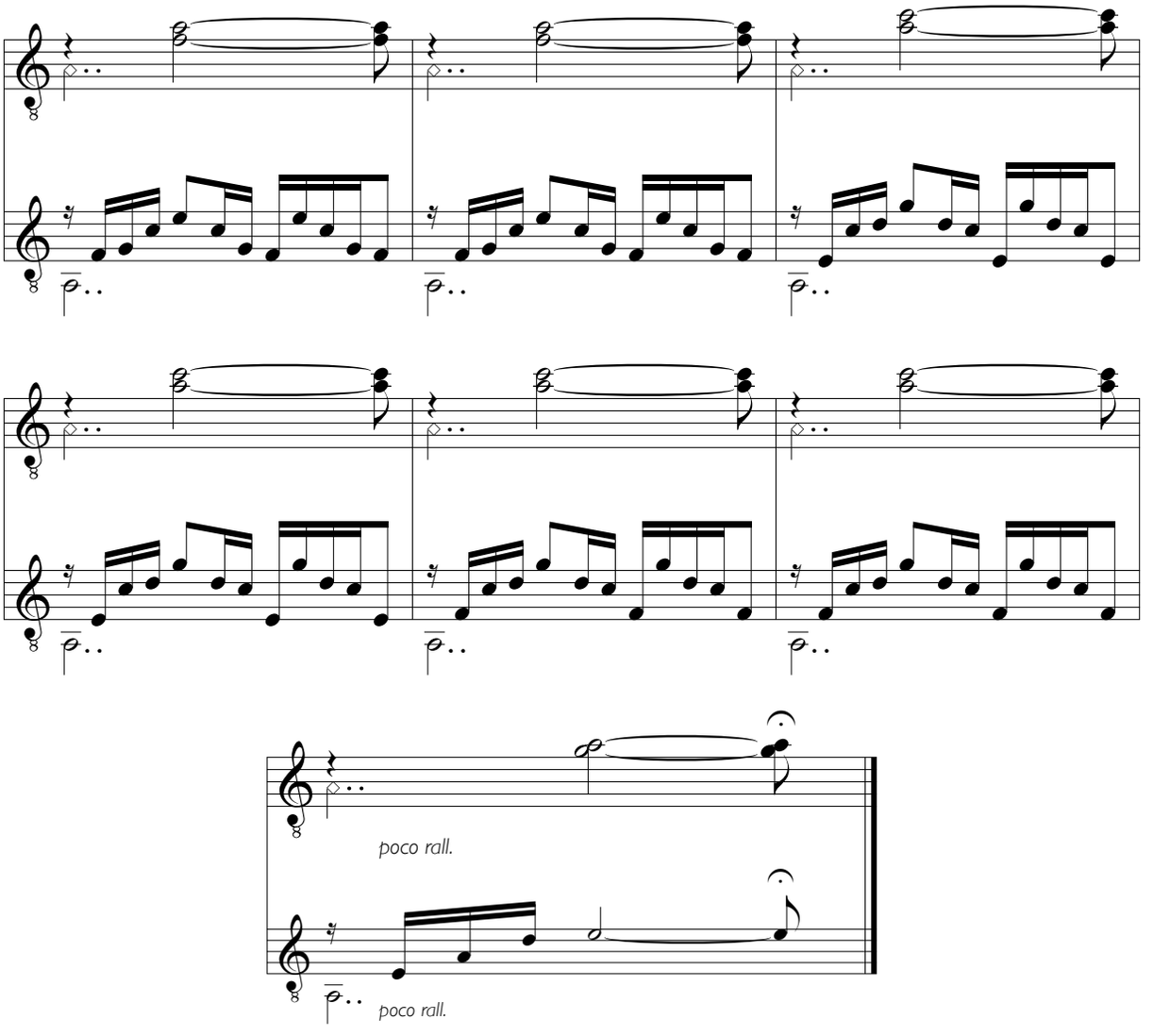


Track 08

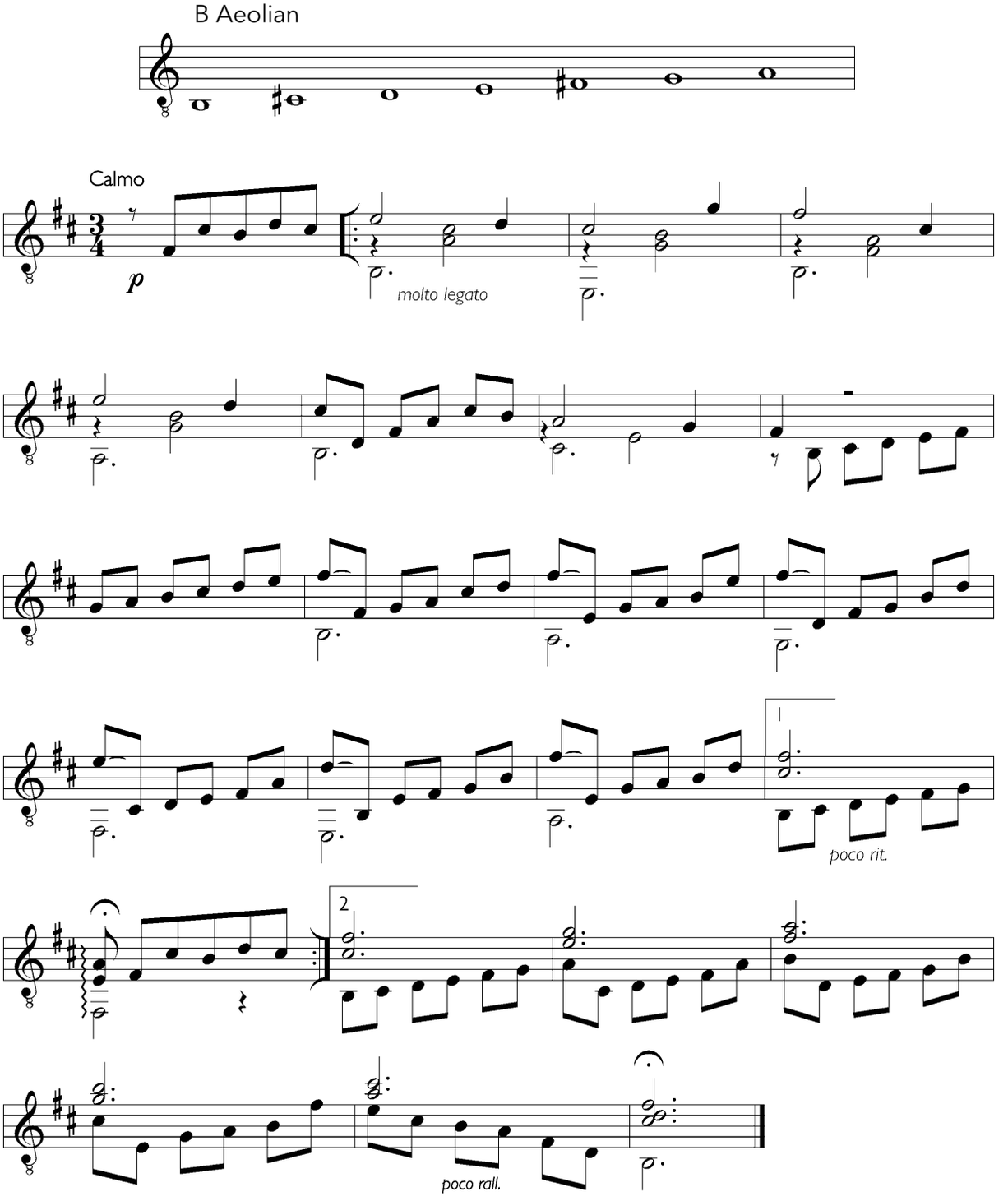








Track 09



Exercises

1. Create sixteen-measure musical excerpts using the following modes:

   a) A Dorian

   b) G Mixolydian

   c) E Phrygian

   d) C# Aeolian

   e) D Lydian

   f) A Aeolian

   g) G Phrygian

   h) F Lydian

   i) D Mixolydian

   j) B Aeolian

   k) E Dorian

2. Create unimodal examples combining modes associated with the major scale.

3. Create polymodal examples combining modes associated with the major scale.

4. Create polytonal examples combining modes associated with the major scale.

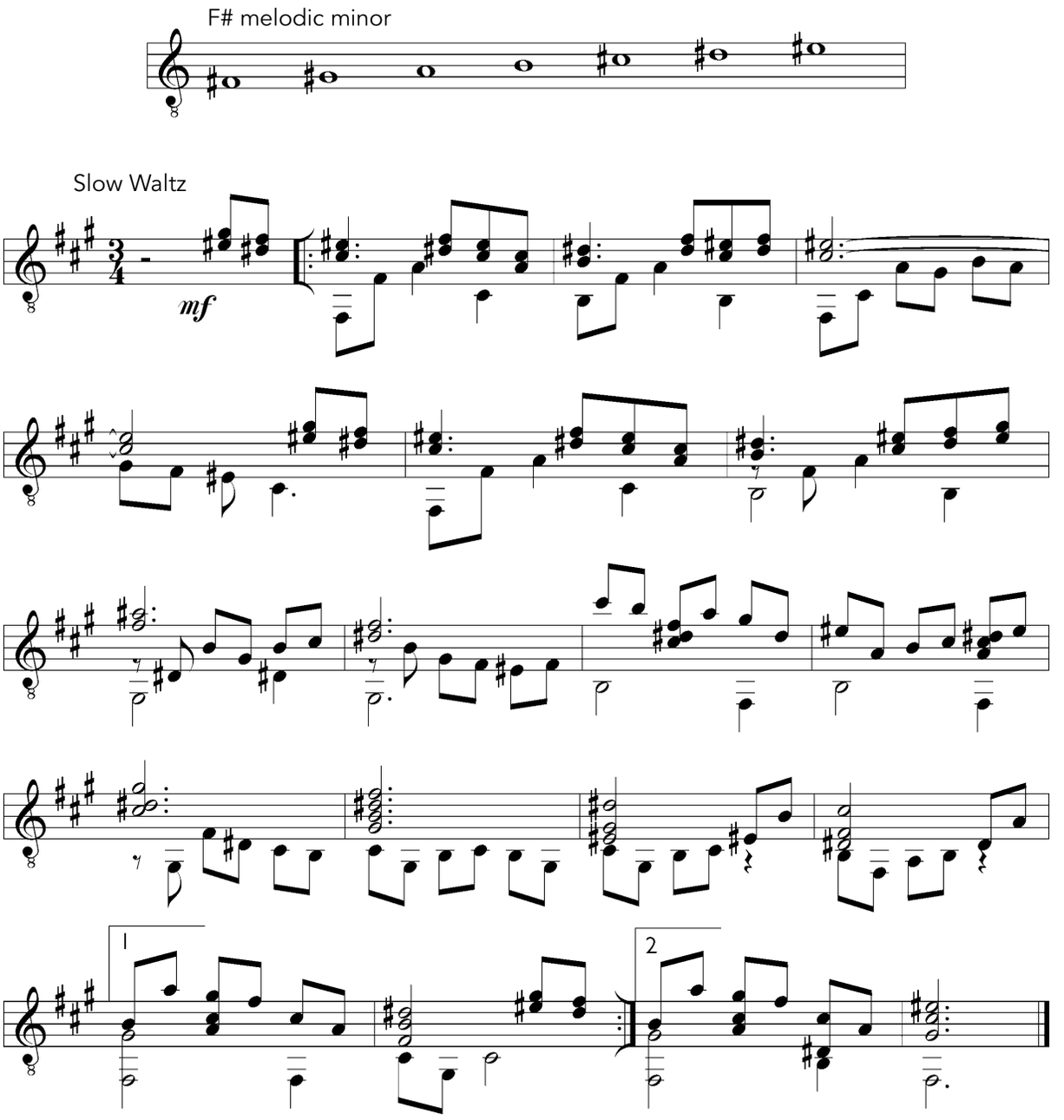
5. Create polymodal and polytonal examples using the modes associated with the major scale.

Modes of the melodic minor scale

Real melodic minor scale

The Real Melodic Minor scale is the melodic minor scale subjected to a purely modal treatment. In this case, the chords involved do not follow the resolution principles applied to tonal structures, and the intervallic combination becomes freer and more comprehensive.

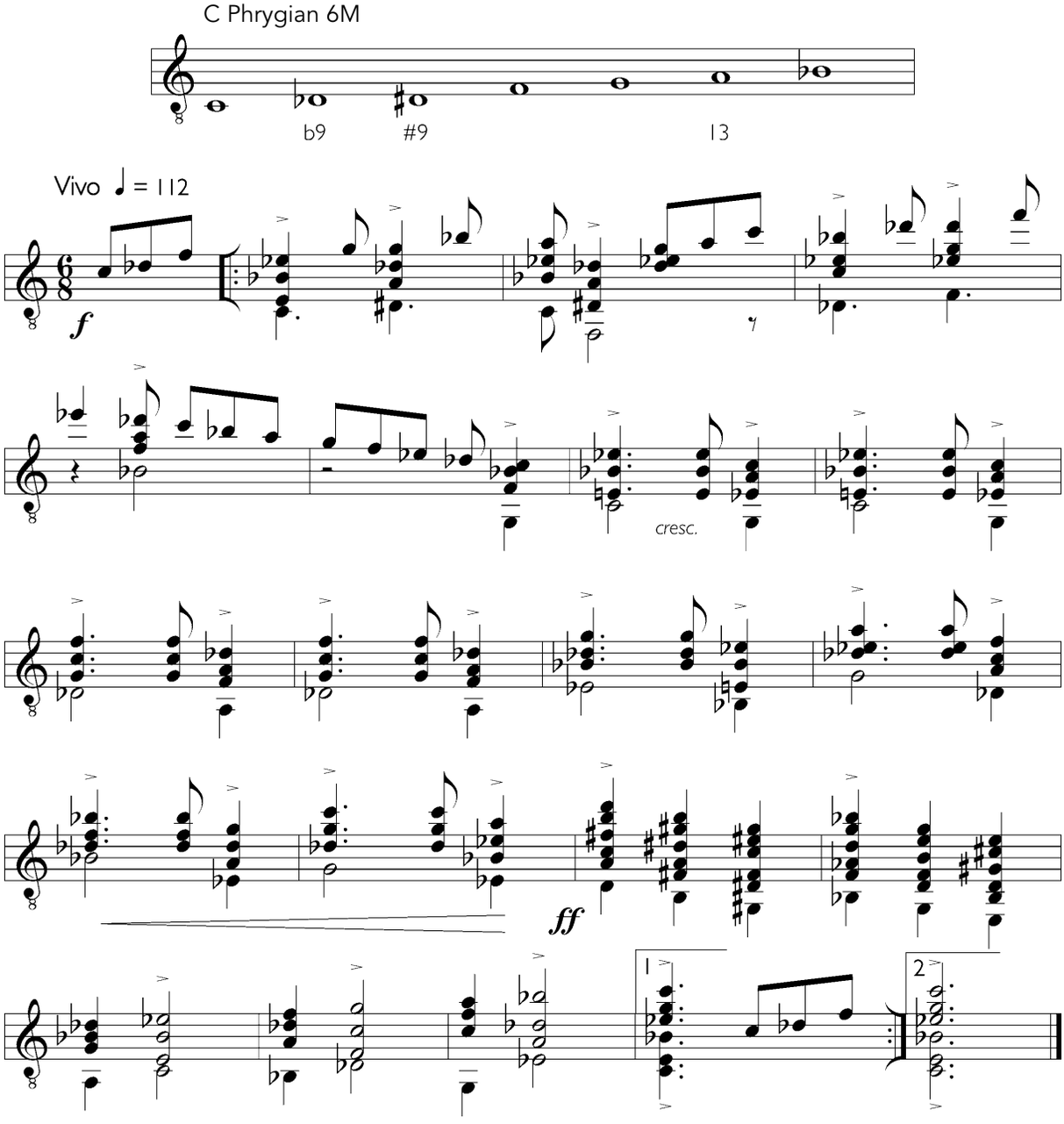
Track 10



Phrygian 6M mode

The Phrygian 6M mode, the second mode of the melodic minor scale, is applied to chords with a dominant structure and extensions of minor ninth, augmented ninth, and major thirteenth. Note that the major third that forms the dominant structure in the harmonic part is not present in the mode in its melodic application. The example below, written for solo guitar, mixes these elements.

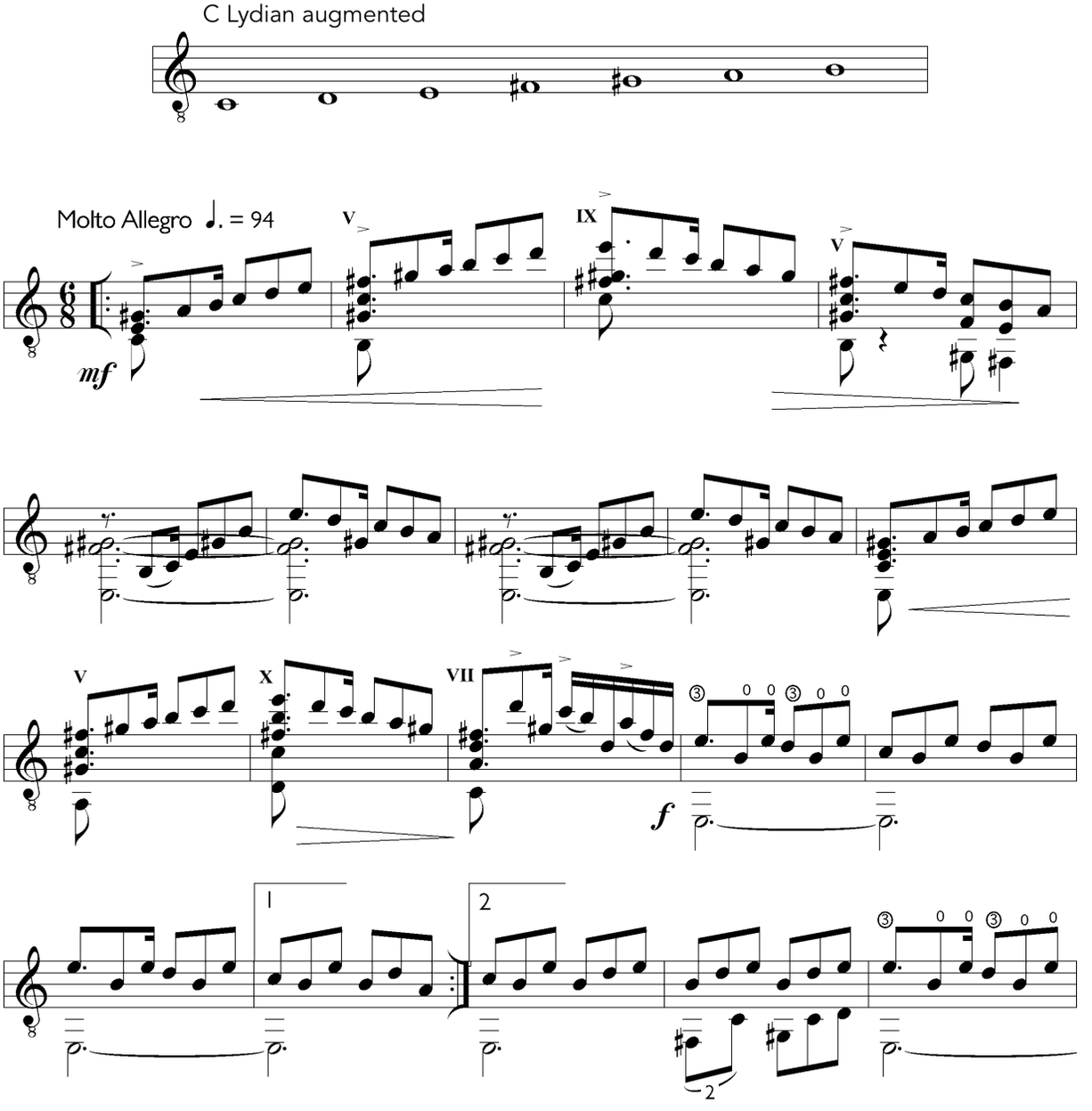
Track 11

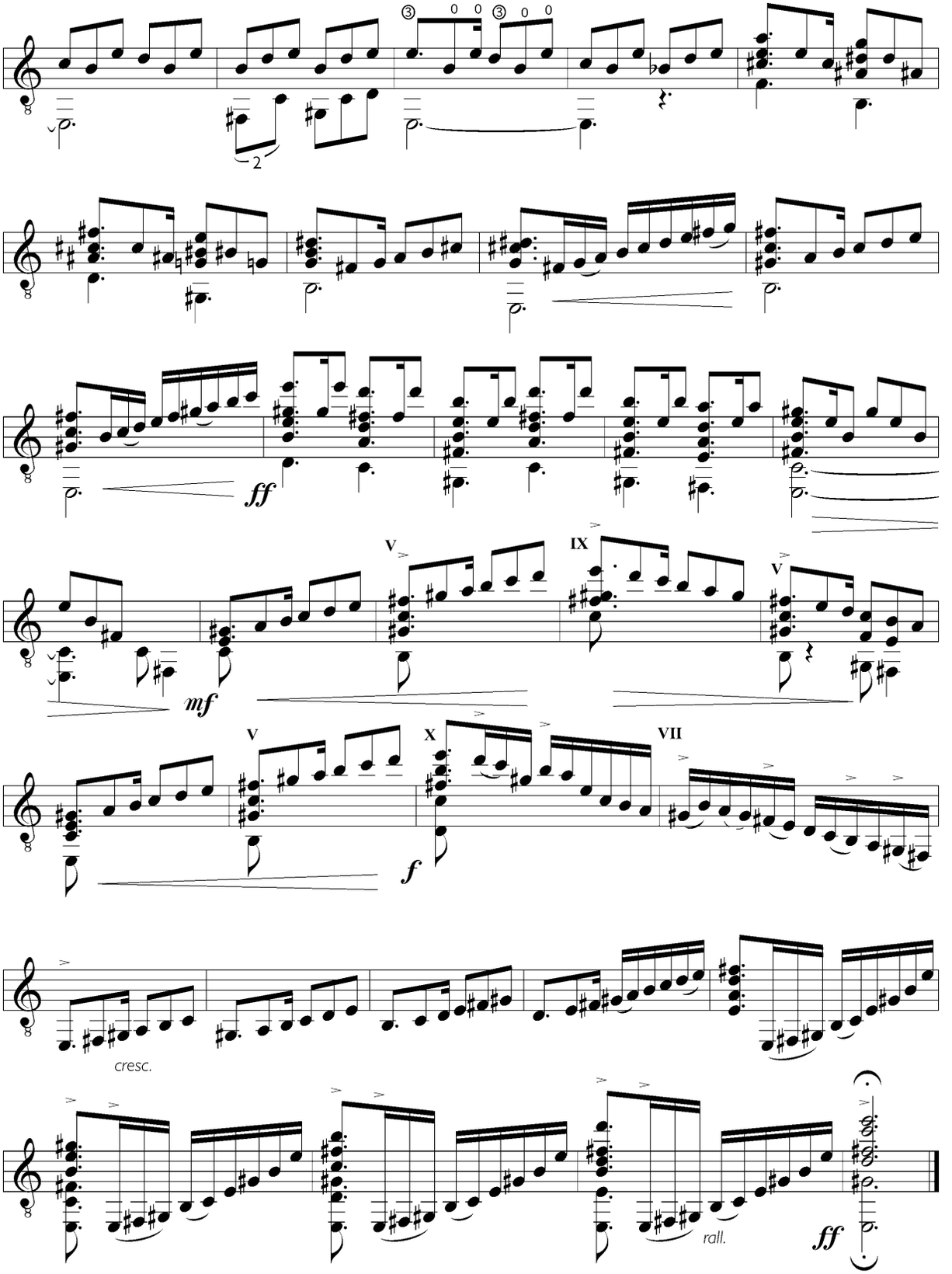


Lydian augmented mode

The Lydian augmented mode is the third mode associated with the melodic minor scale. Its intervallic structure results in the 7M(#5) tetrad, representing the tetrad of its main chord. It is a mode with great musical effect, and care must be taken not to confuse it with the same type of tetrad, frequently used in tonal harmonizations, which originates from the harmonic minor scale.

Track 12

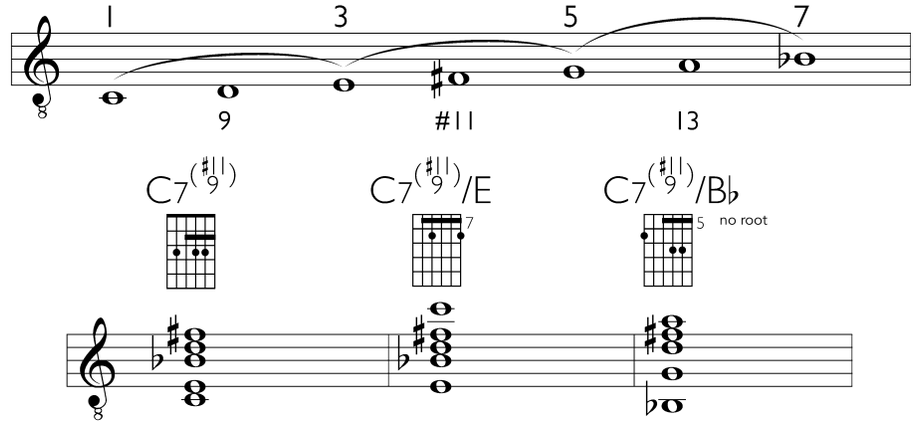




Lydian dominant mode

The Lydian dominant mode, or Lydian b7 as it is known and treated in jazz terminology, is a mode whose vertical intervallic arrangement reveals a dominant chord with extensions of major ninth, augmented eleventh, and major thirteenth. For this reason, this mode establishes a direct relationship with its frequently used counterpart within tonal structures, the 7(#11) chord. In a purely modal approach, its use is free and independent. This chord ceases to represent the dominant function and becomes disconnected from any resolving tendency. This mode can be found both in certain folkloric manifestations of Northeast Brazil and also in works by early 20th-century European classical composers such as Alexander Scriabin, Claude Debussy, Béla Bartók, and Igor Stravinsky.

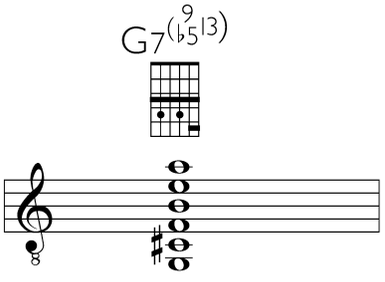
Lydian dominant mode



The Lydian dominant mode served as the basis for several works by the Russian composer Alexander Scriabin (1872-1915) and was widely used by him. Scriabin was the author of a vast body of work and left behind, in the chronology of his compositions, disparate and highly contrasting works. Beginning his compositional work with a tonal approach inspired by late Romanticism, with a strong influence from Chopin, he ended his career exploring a vast range of non-tonal material. He wrote for large orchestral ensembles, but it was with his piano works that he achieved the greatest prominence: 10 sonatas and countless preludes, mazurkas, poems, impromptus, polonaises, waltzes, and études. At the turn of the 19th to the 20th century, with the world captivated by new ideas, Scriabin also sought elements that he could use in his compositions. The chromatic style initiated by Franz Liszt (1811-1886) and Richard Wagner (1813-1883), as well

as the modal technique of Claude Debussy and other composers of French Impressionism, became frequent in the works of the composer's later period. Demonstrating great interest in Nietzsche's theory of the Übermensch *(superior man or superman)* and later also in Theosophy, Scriabin allowed himself to be influenced by these currents of thought, bringing them into his music. The material he considered suitable for transforming these ideas into melodic and harmonic elements consisted basically of the **octatonic scale** *(a symmetrical dominant semitone-tone scale)*, the **hexatonic scale** *(a symmetrical scale by tones)*, and the **Lydian dominant mode**. The Lydian dominant mode, in particular, served Scriabin as a reference for the use of a chord structure that became known as the **Mystic Chord** or **Prometheus Chord**.[1] This chord features an altered dominant structure with its intervals arranged in fourths from the mode notes. The perfect fifth is, in this case, replaced by (#11) as the enharmonic equivalent of (b5), which can also happen melodically.

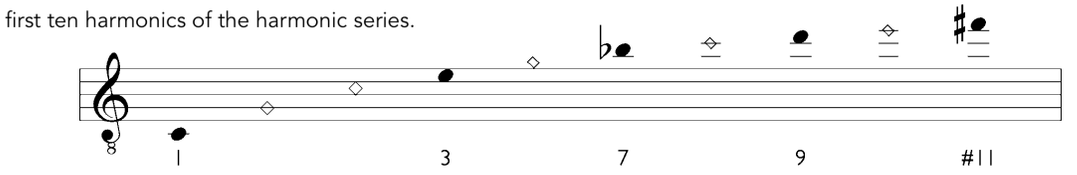
Mystic Chord
(or Prometheus Chord)



In the writings of Bartók and Debussy, this same type of harmonic and melodic material is also frequently found. Specifically, regarding the Lydian dominant mode, its use had already been observed in the work of some European composers of the late 19th century, notably Franz Liszt, who may have been the first composer in the history of music to use this mode with erudition. Several who followed him also did so. Béla Bartók, for example, used this mode in some pieces of his remarkable Mikrokosmos, and Claude Debussy used it both in some of his Preludes for piano and in his orchestral works. Within this European musical tradition, the Lydian dominant mode, or

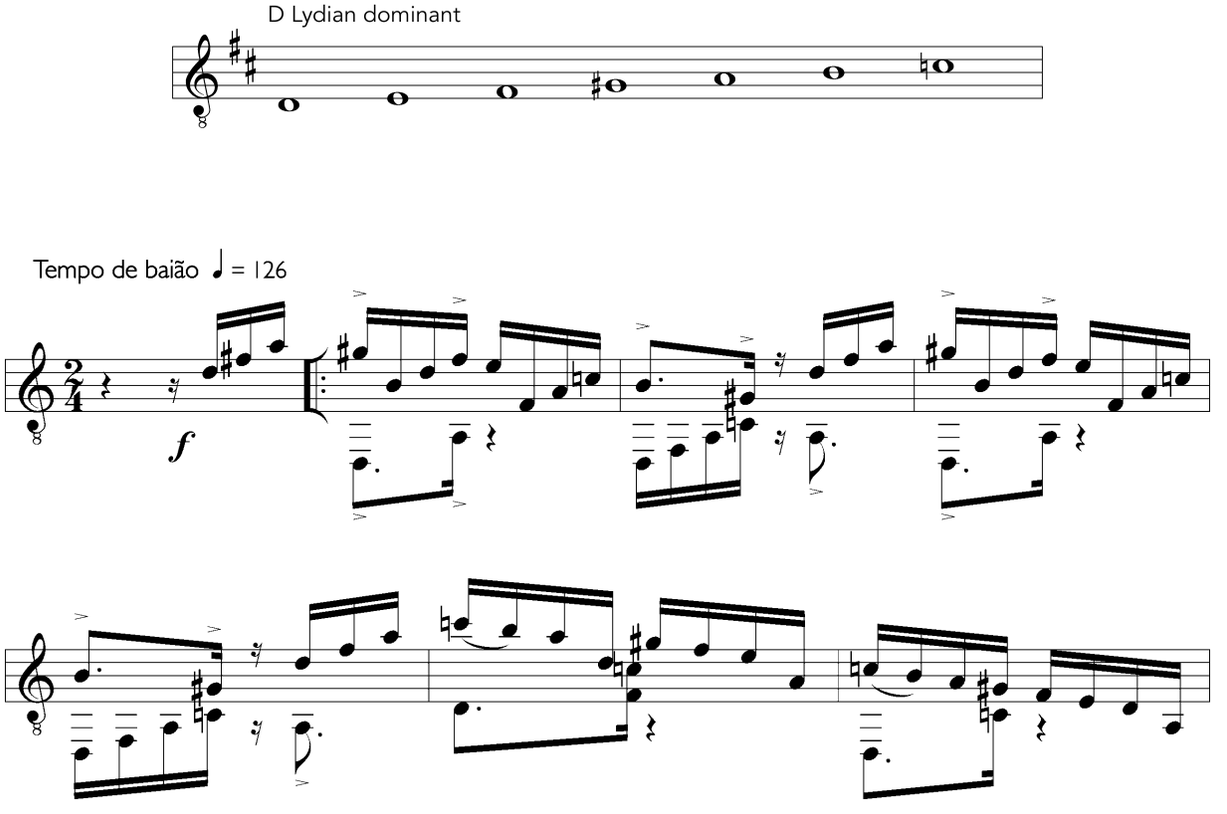
[1] *The term "mystic chord" was coined by the writer and music critic Arthur Eaglefield Hull, who associated the constant use of this chord with Scriabin's intense interest in theosophy. The term "Prometheus chord" refers to Symphony No. 5, Op. 60, which Scriabin named "Prometheus, The Poem of Fire".*

Lydian b7 is treated as "**Acoustic Scale**", due to its parity with the first ten sounds of the harmonic series.[1]



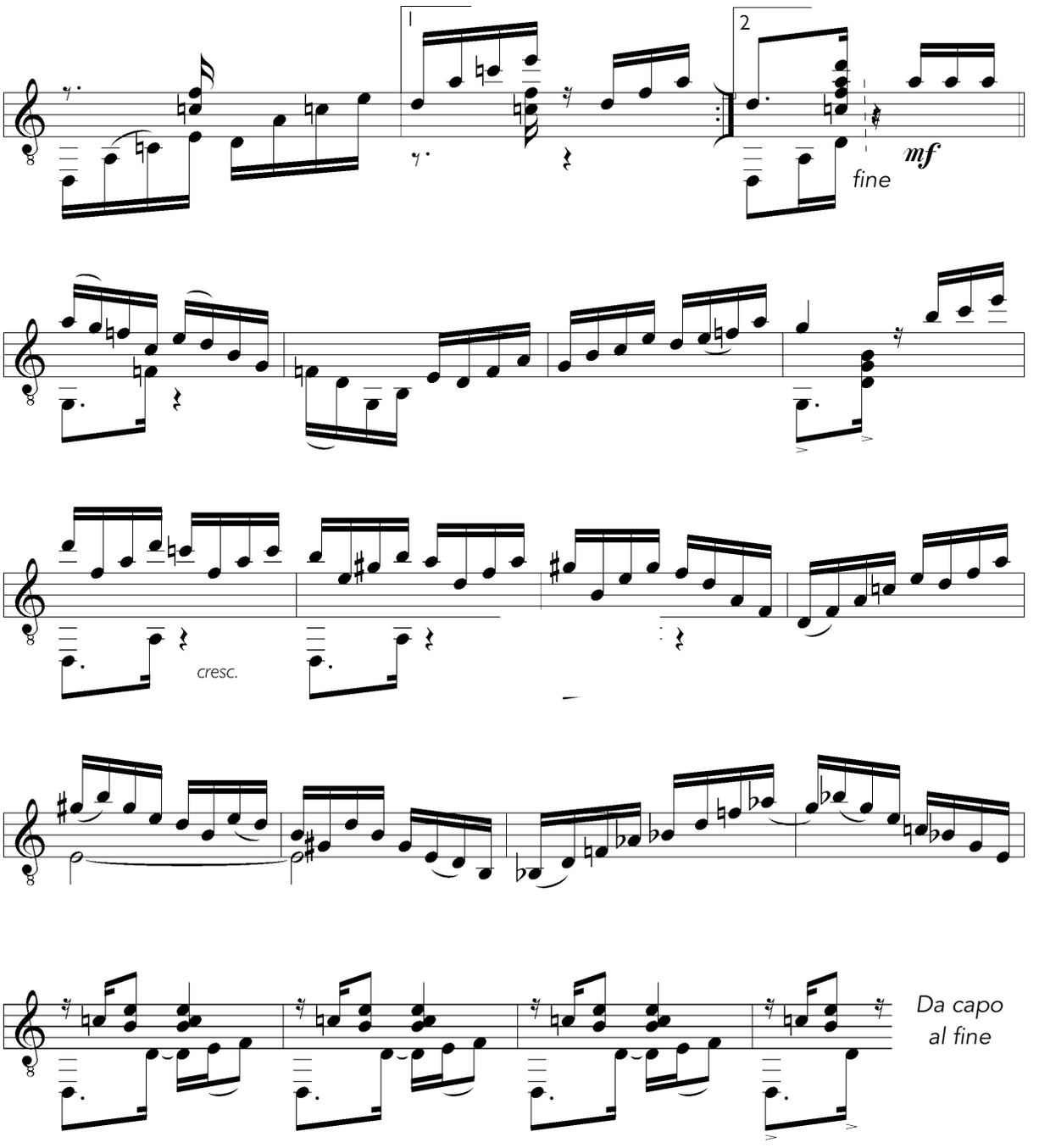
In Brazil, the Lydian b7 mode is also known as the Northeastern scale, and it serves as a modal structure for the improvised melodies of **cantadores repentistas** *(repentista singers)*[2] from the backlands of Pernambuco, Paraíba, Alagoas, and Sergipe. Feel, in the example below, a bit of that Northeastern flavor.

Track 13



[1] *The term was coined by Ernö Lendvai (1925-1993), a theorist who deeply studied the music of Béla Bartók, formulating the Axis System (based on minor third and augmented fourth intervals), the Alpha Chord (dominant chord from the octatonic scale), and the Acoustic Scale (associating it with the harmonic series).*

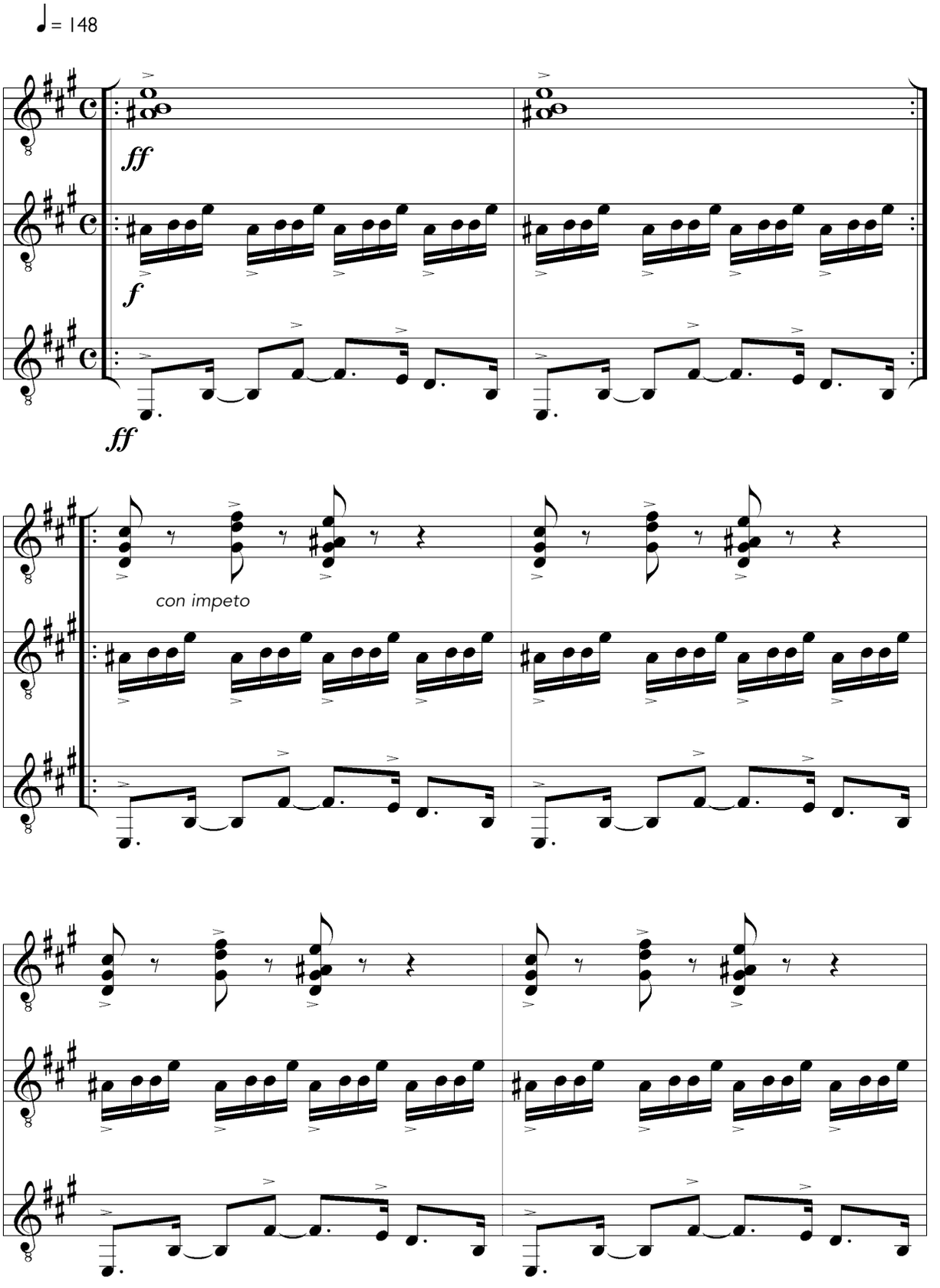
[2] *In the rural dialect of northeastern Brazil, "cantadores repentistas" (repentista singers) refers to a duo of singers who improvise verses about everyday life, accompanied by "violas caipiras" (a type of Brazilian guitar) or simply a tambourine.*

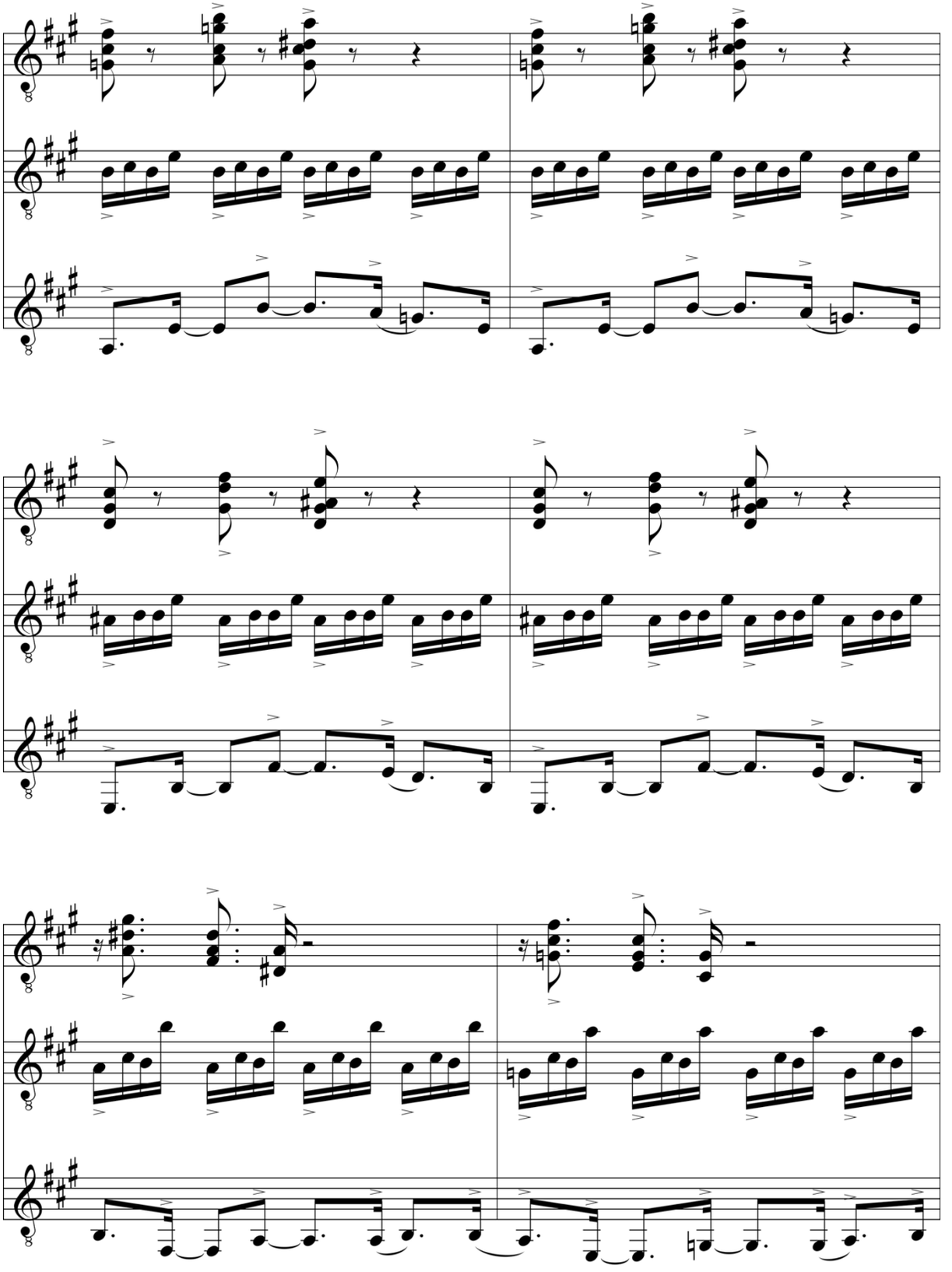


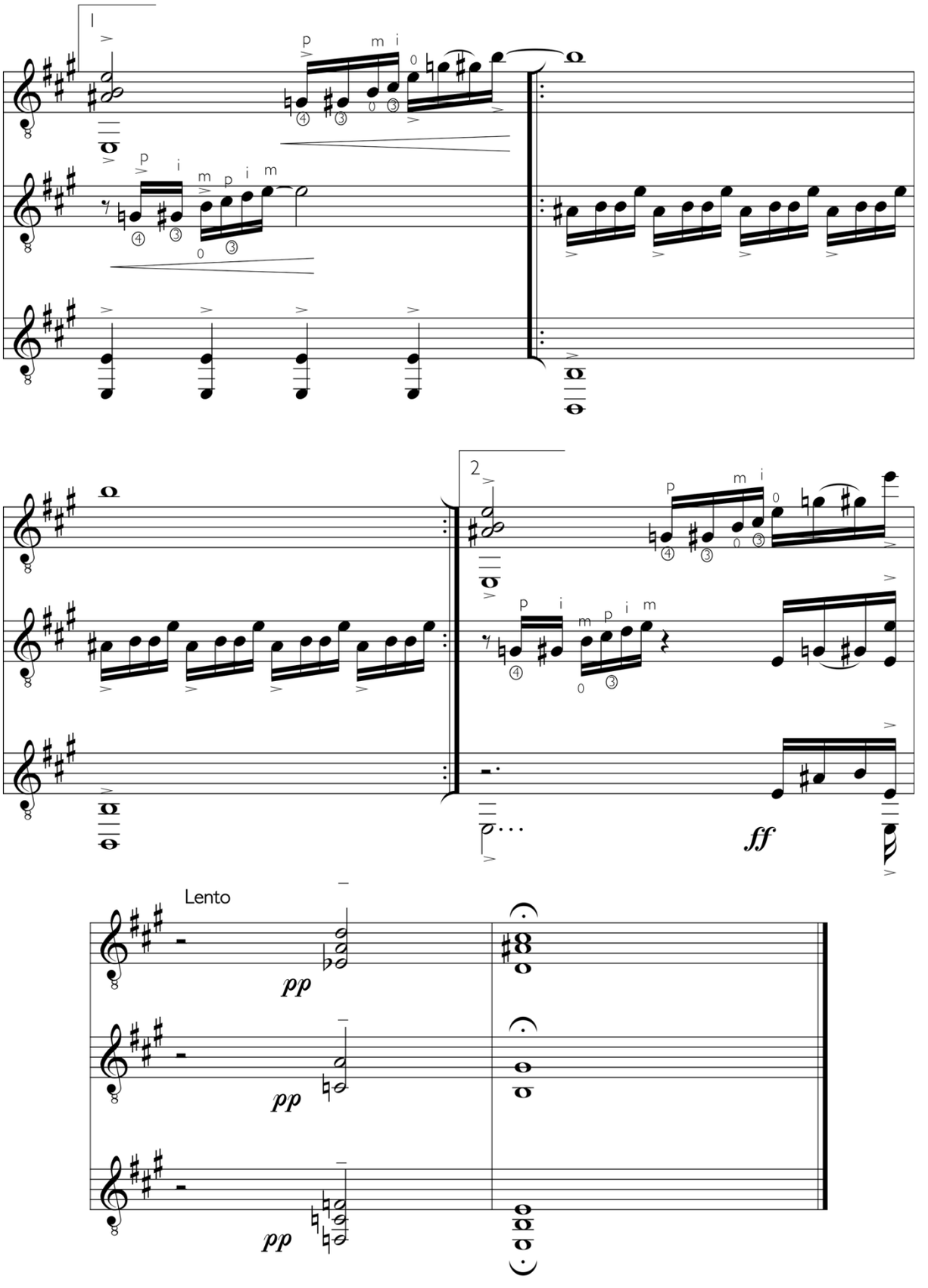
In the following example, the Lydian mode b7, Lydian dominant mode, or also, Brazilian Northeastern mode, is presented in a musical excerpt written for three guitars. The basic elements for the development of the musical idea adopted in this example were elaborated from rhythmic fragments extracted from the frevo of the State of Pernambuco.

This example is polytonal, as it uses the same mode starting from different notes.

Track 14



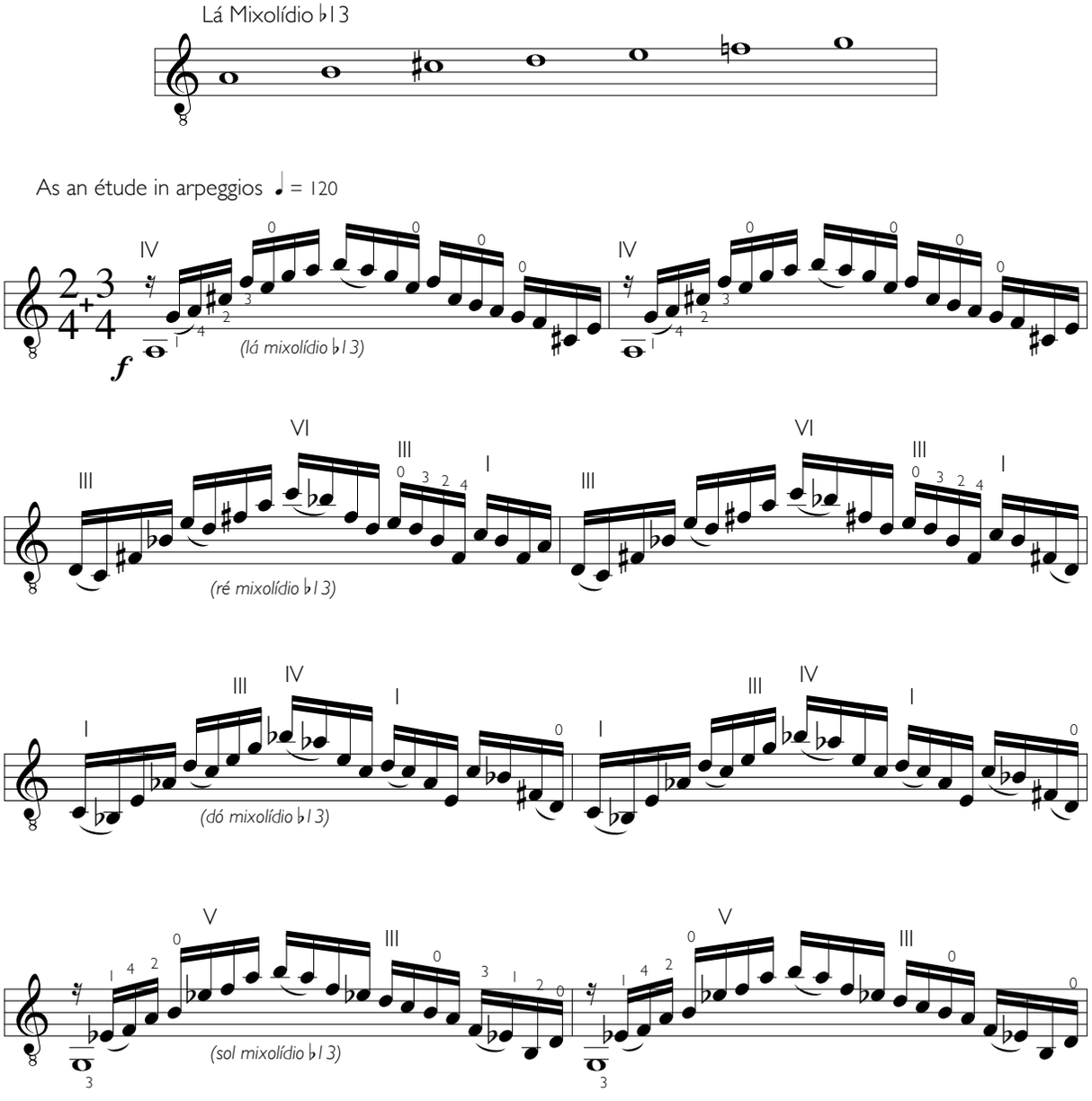


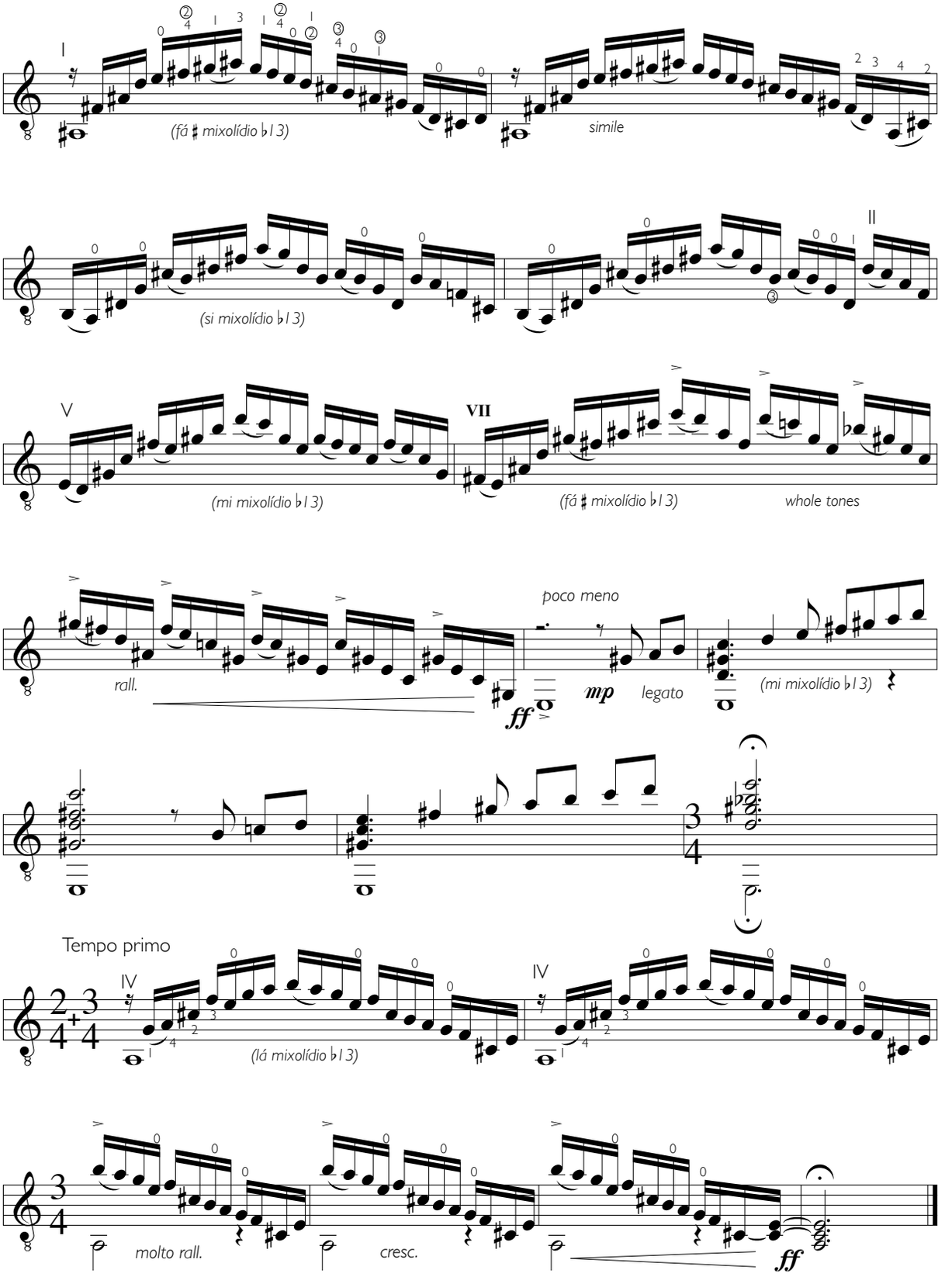


Mixolydian b13 mode

The Mixolydian mode b13, the fifth mode of the melodic minor scales, is a dominant mode and also has application within tonal structures associated with dominant seventh chords with the extensions of 9 and b13. The b13, having the #5 as its enharmonic equivalent, allows this mode to also be applied in these situations, provided the major ninth. In the following example, we see the Mixolydian mode b13 receiving a modal treatment where its quality as a dominant chord is not revealed.

Track 15

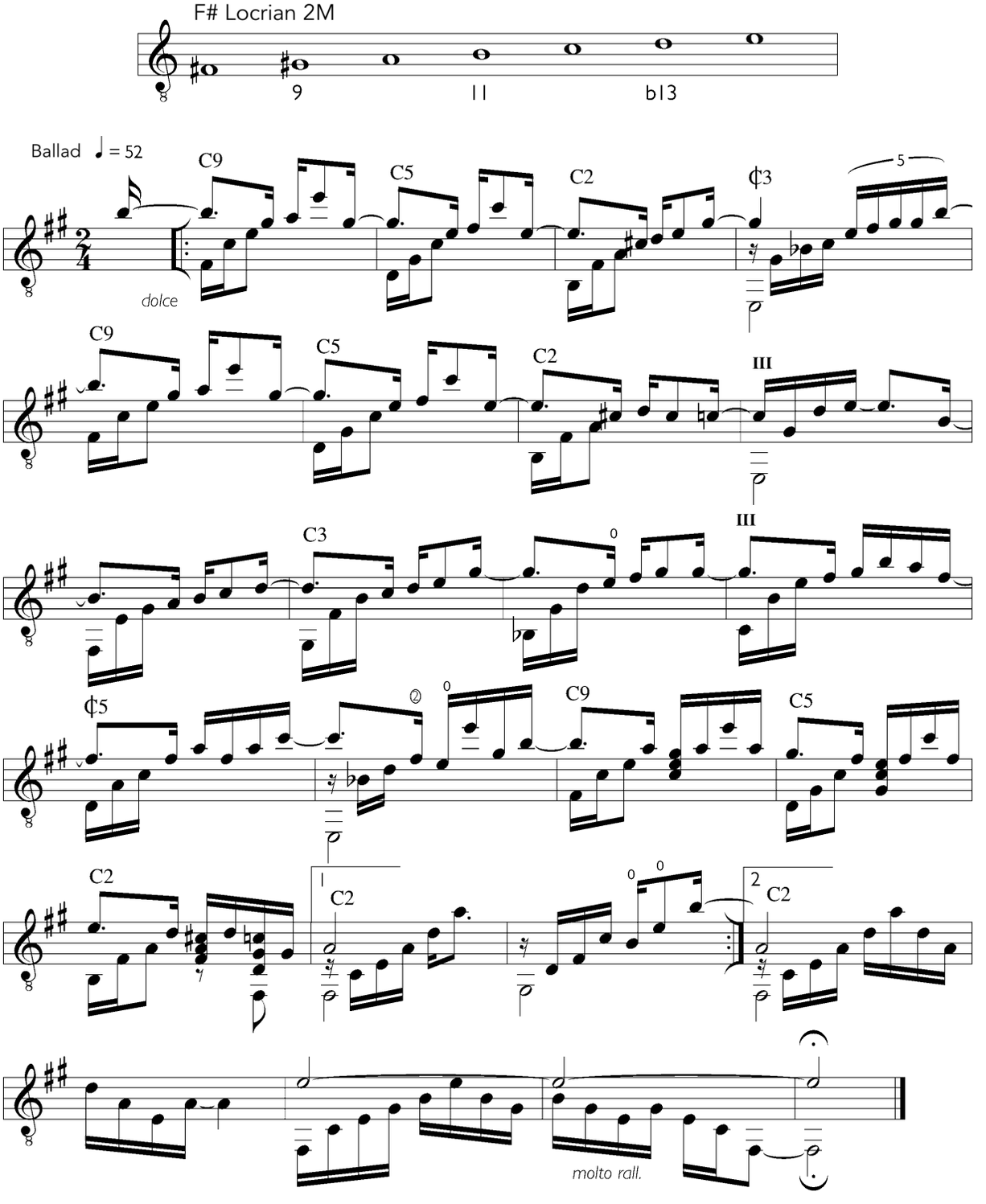




Locrian 2M mode

The Locrian 2M mode, or **half-diminished scale**, has a well-established application in mixed structures, blending its modal aspect within tonal structures.

Track 16

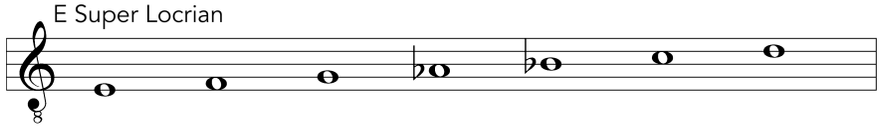


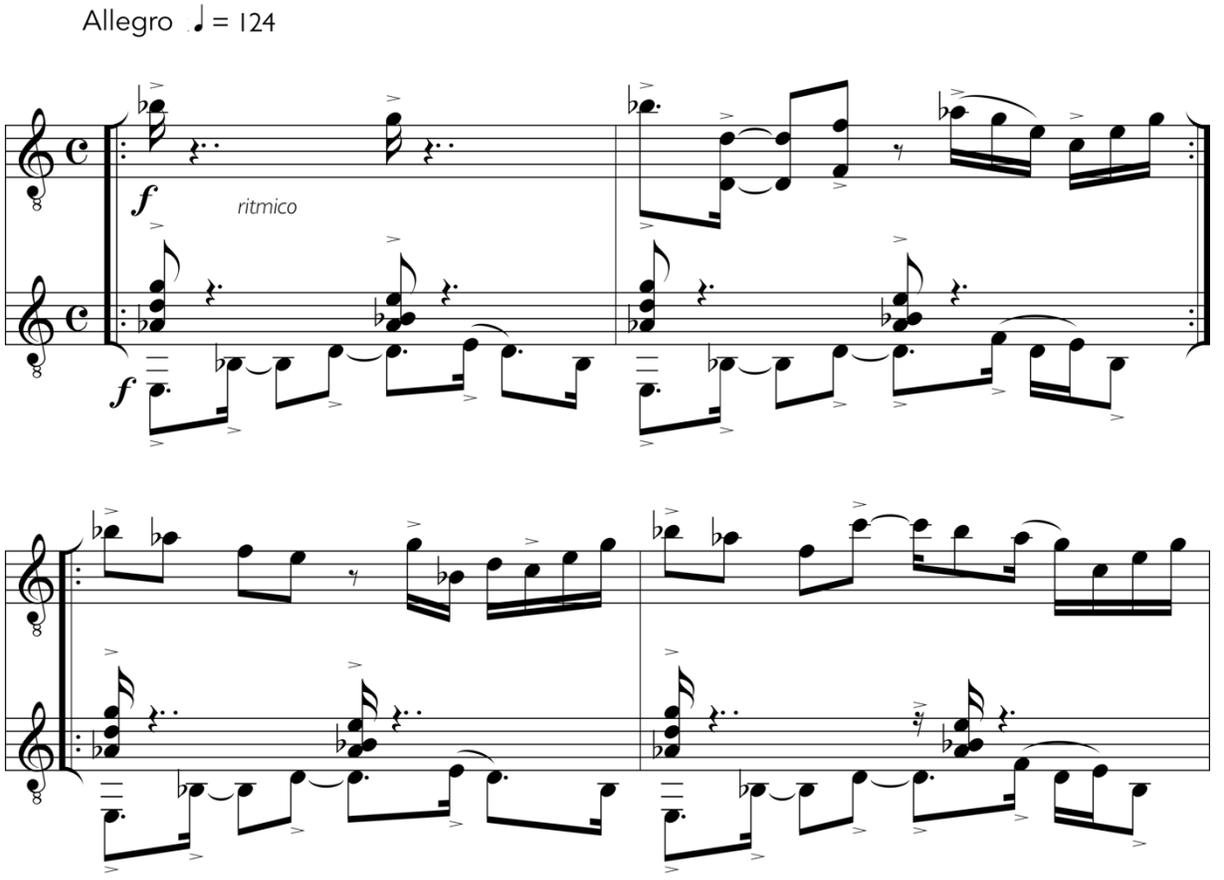
Super Locrian Mode

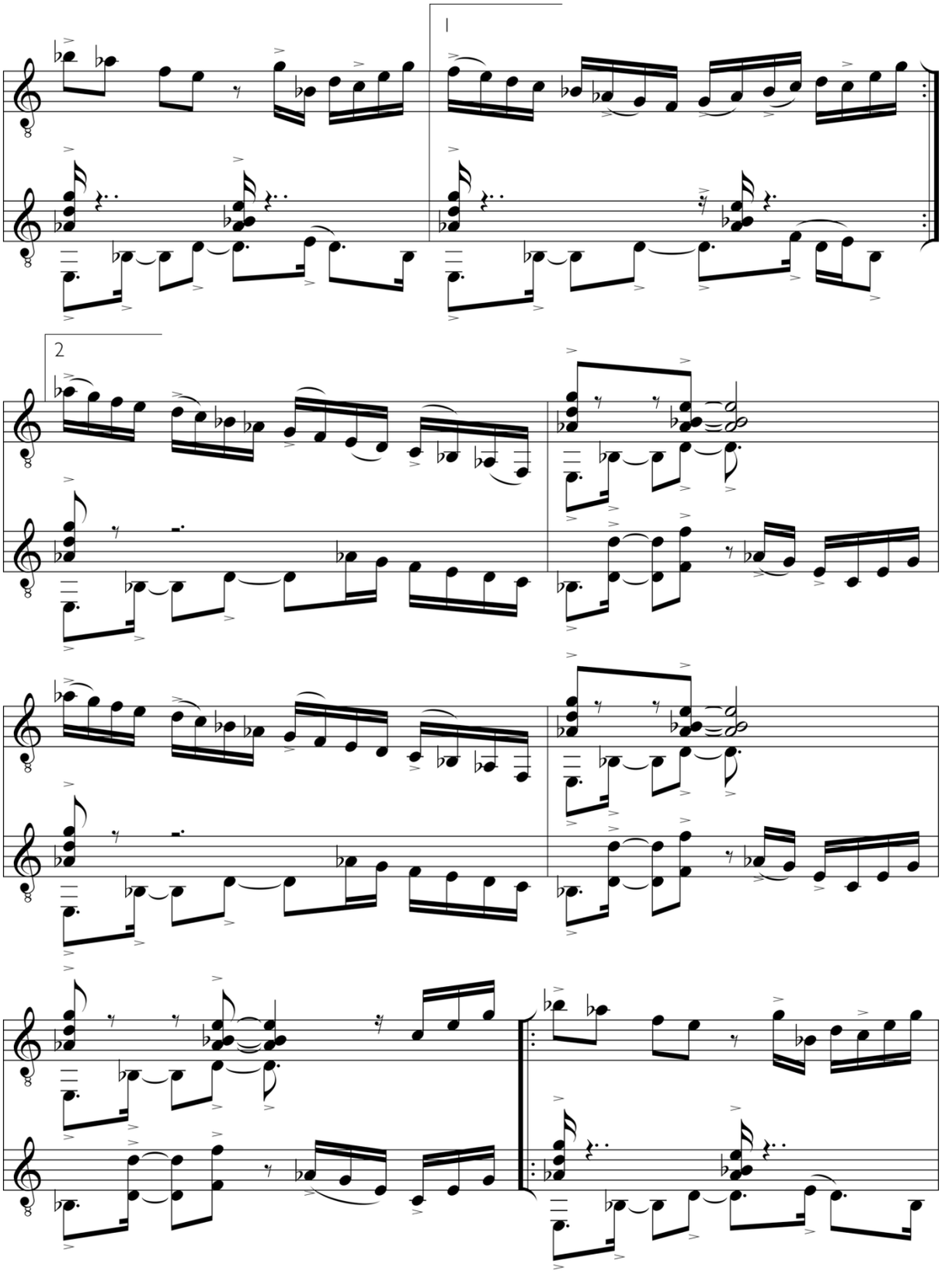
The Super Locrian mode is the mode corresponding to the altered scale applied to tonal structures over the dominant chord of the V7alt type. As we have seen previously, the V7alt chord is one that presents the combination of altered fifths and ninths (b5 – #5 – b9 – #9) over a dominant structure 1–3–7.

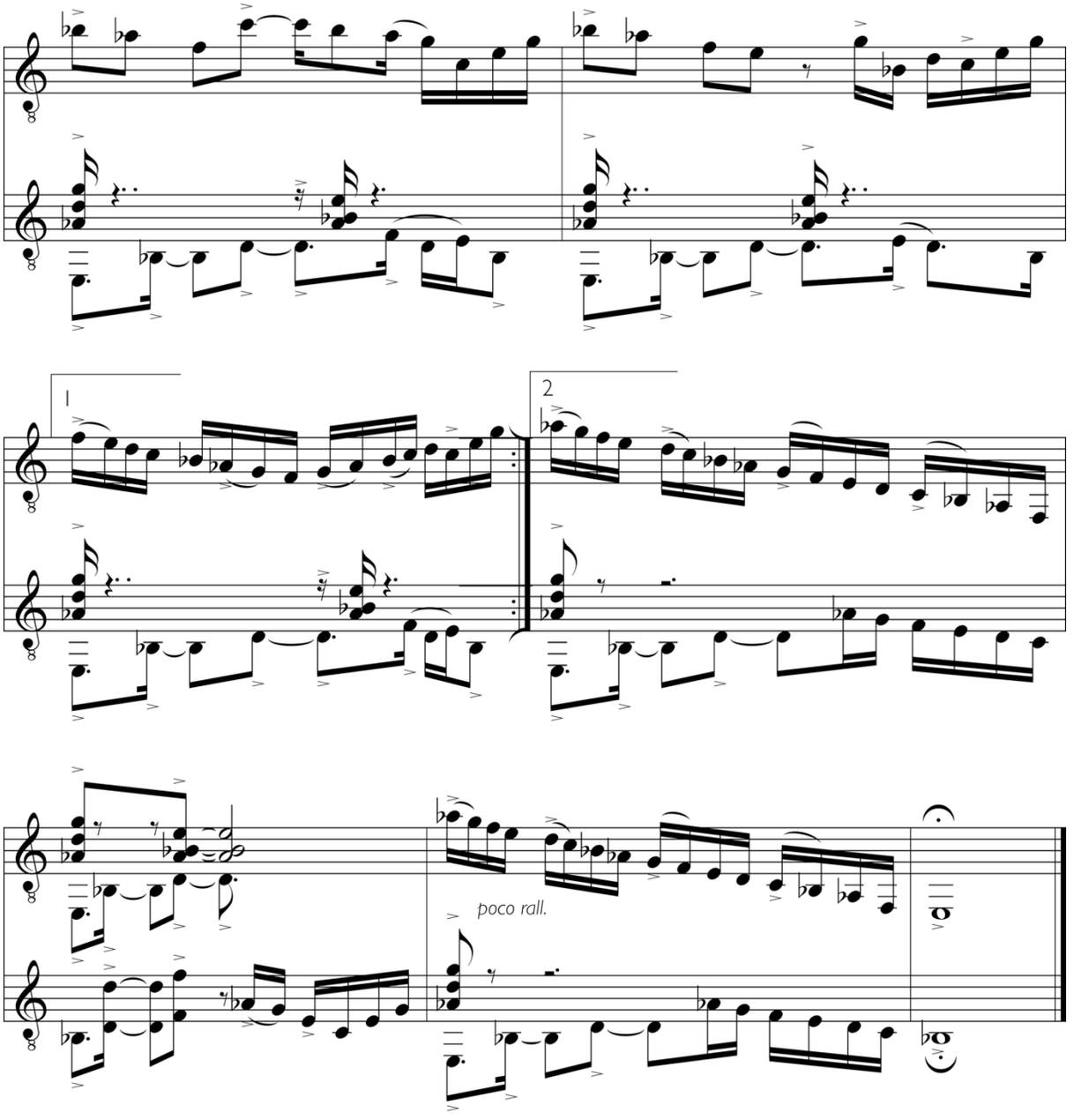
This mode can also be explored solely in its modal character where the dominant function it represents in tonal passages no longer exists.

Track 17







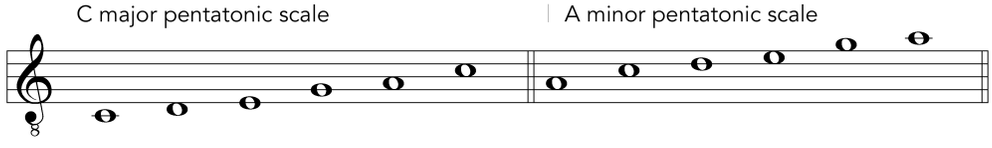


Exercise:

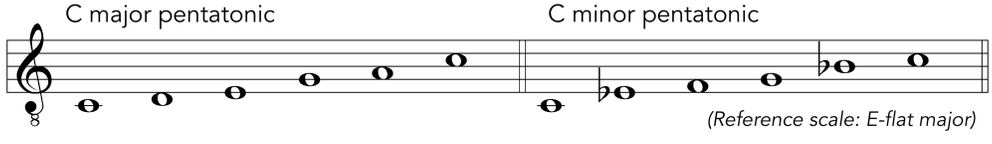
1. Create musical excerpts using the following modes:
   - *a)* A melodic minor
   - *b)* E Phrygian 6M
   - *c)* D Lydian augmented
   - *d)* C Lydian b7
   - *e)* G Mixolydian b13
   - *f)* C# Locrian 2M
   - *g)* D Super Locrian

Pentatonic scales

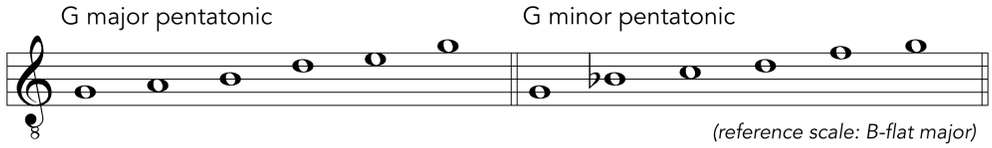
Pentatonic modes are five-note scales that can be associated with tonal scales. These modes are the result of diatonic scales that have had two of their degrees excluded, the IV and VII, notes that form the tritone in the dominant seventh chord. The association of pentatonic modes with tonal scales is merely a practical way to understand and practice them, since these modes have always been exercised independently within a millennial musical practice of different cultures around the world. The most widespread and consistently applied pentatonic scales are the major and minor pentatonic scales. These two pentatonic scales can be associated with a single scale – the major scale – and the relationship between them is the same as that which occurs between the relative major and minor scales within the tonal system. For each major scale, there is a minor scale that is related to it by the same number of accidentals in the key signature. This relationship is established at an interval distance of a minor third, and thus, A minor is the relative of C major, E minor the relative of G major, etc. The C major pentatonic scale – C, D, E, G, A – is the result of the C major scale without the degrees that form the tritone and presents exactly the same notes as the A minor pentatonic scale, in this case organized from A to A.



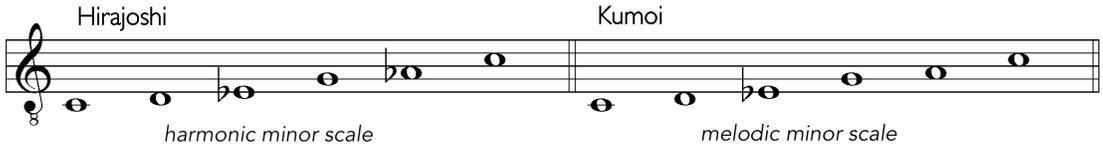
If both the major and minor pentatonic scales start from the same note, the minor pentatonic scale will be the result of a major scale situated a minor third above; that is, the C minor pentatonic scale is the E flat major scale, without the IV and VII notes, arranged from C to C.

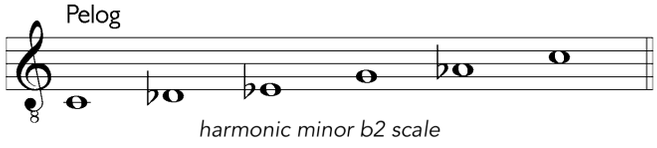


If a major pentatonic scale starts with the note G, the G minor pentatonic scale will be based on the B-flat major scale. The reverse reasoning can and should also be applied.

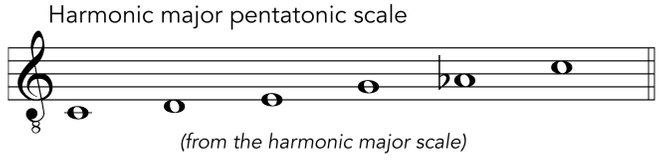


The remaining pentatonic scales are those associated with the other tonal scales. The most widely used and well-known are the following:

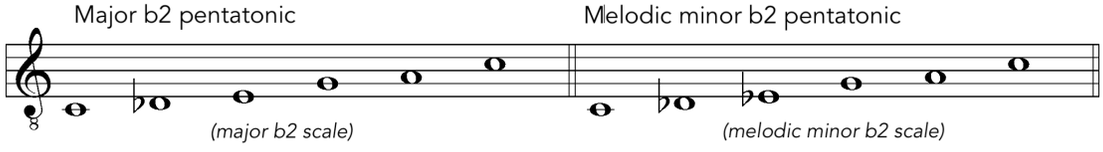


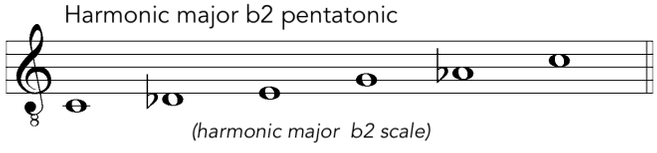


It is also possible to derive pentatonic scales from harmonic major scales,



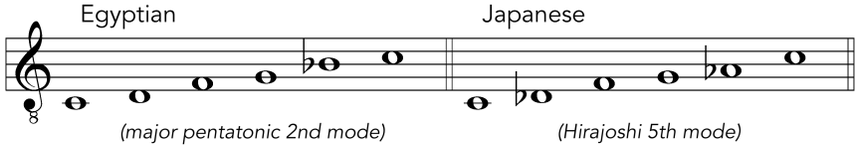
as well as other tonal scales with a descending alteration on the second degree.



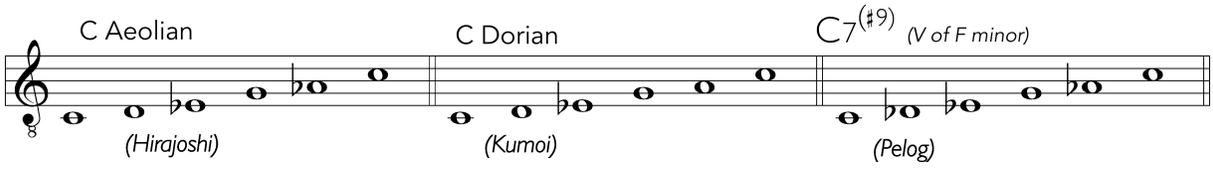


Pentatonic scales are found in a wide variety of musical expressions, from folkloric music from various parts of the world, through commercial popular music, to large orchestral works by European classical composers. In folkloric music, pentatonic melodies are found in Northeast Brazil, in traditional Celtic and Hungarian music, in West African music, in Negro Spirituals, and in the

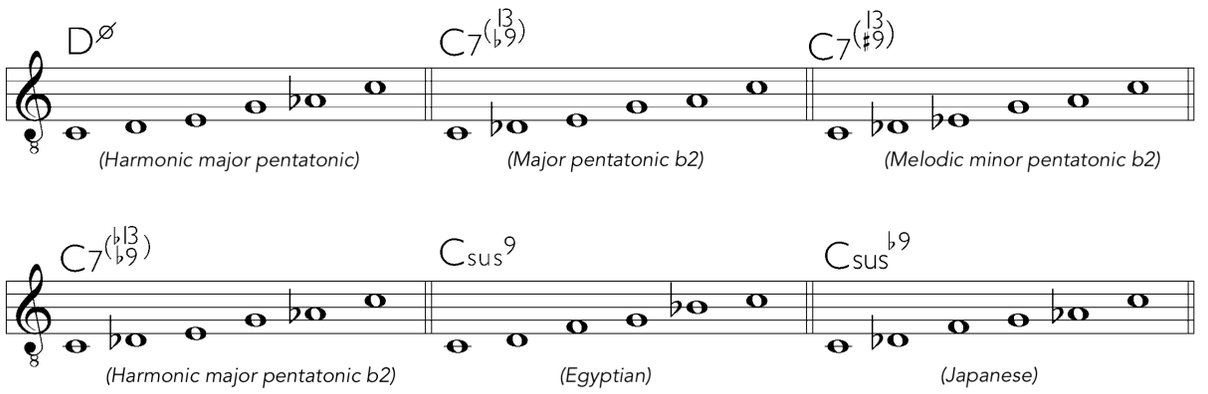
traditional music of Greece, Albania, Korea, Malaysia, Japan, China, Indonesia, India, and Vietnam. Furthermore, some folk instruments, such as the Ethiopian krar[1] and the Indonesian gamelan metallophones,[2] are tuned using pentatonic scales. American blues and traditional Brazilian samba also utilize pentatonic scales in their melodies. Some early 20th-century European composers, especially Claude Debussy, Maurice Ravel, and Béla Bartók, used pentatonic scales in their compositions. Pentatonic modes also generate other modes through the restructuring of their intervals. Of these scales derived from pentatonic modes, we highlight two of the most commonly used:



20th-century musicians and composers, whether from the realm of classical music or jazz, used pentatonic scales applied to a harmonic concept, subjecting them to a vertical treatment. However, the combination of chords derived from a pentatonic scale has a rather limited range due to the lack of semitones. Therefore, the resulting harmonic pattern is, in a way, static and monotonous. This aspect can be useful and positive for certain short harmonic passages. When dealing with longer passages, the most effective way to avoid monotony is to work with several pentatonic scales, thus achieving a wider range of combinations. Specifically, within the modal jazz language, pentatonic scales are considerably useful tools in improvisational practice. It is always possible to associate pentatonic scales with different chords, even within a tonal process, and from there obtain interesting melodic results.

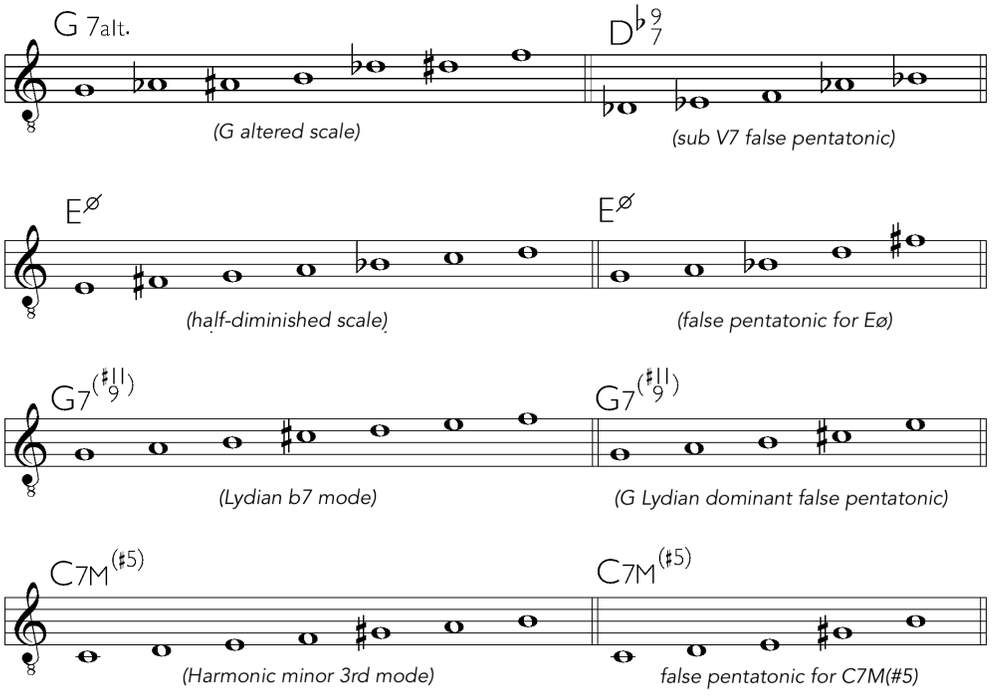


[1] *A type of primitive lyre with five strings.*
[2] *A musical ensemble typical of the islands of Java and Bali, consisting of metallophones, xylophones, gongs, drums, bamboo flutes, as well as bowed string instruments. Occasionally, the human voice is also used.*



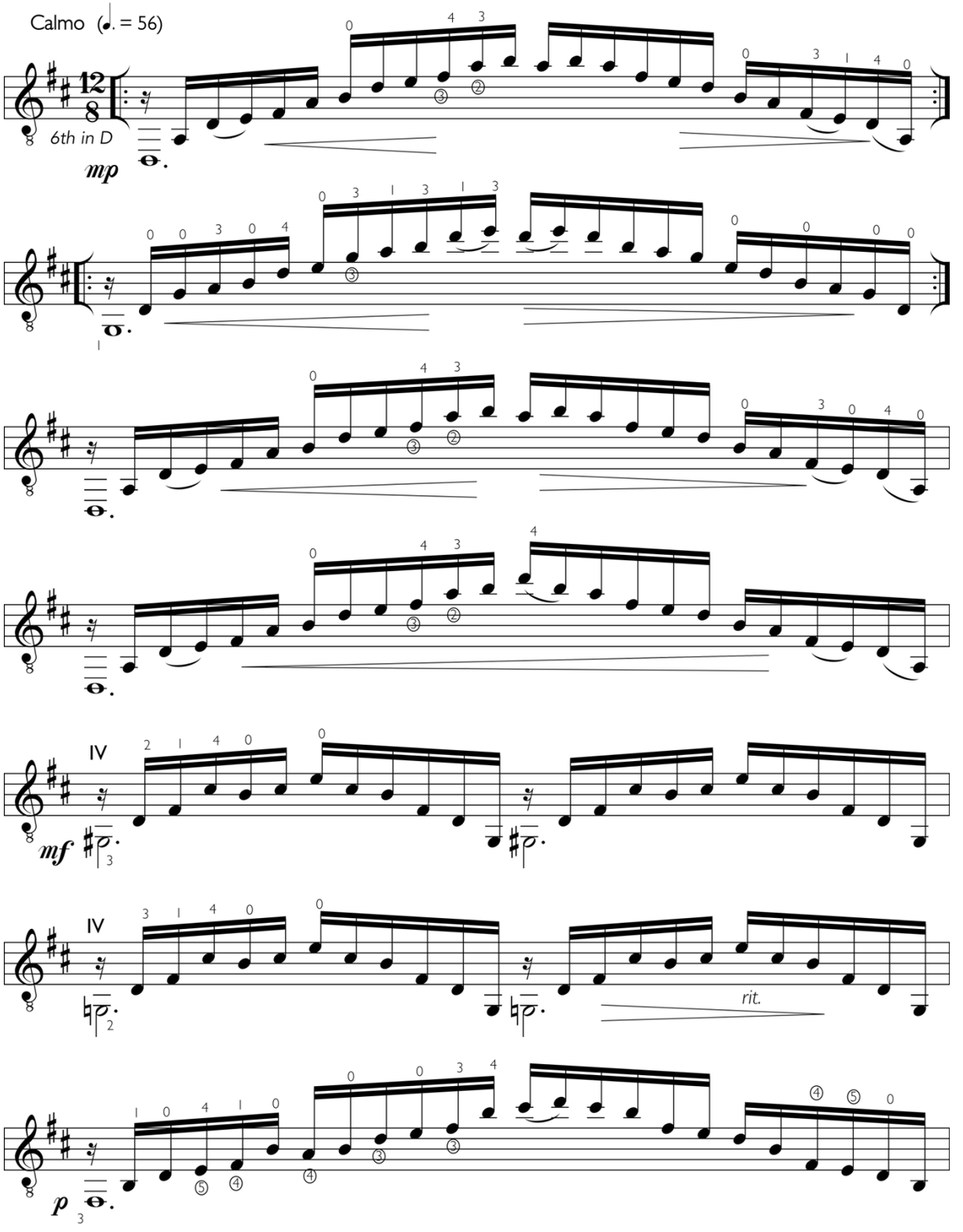
False pentatonic scales

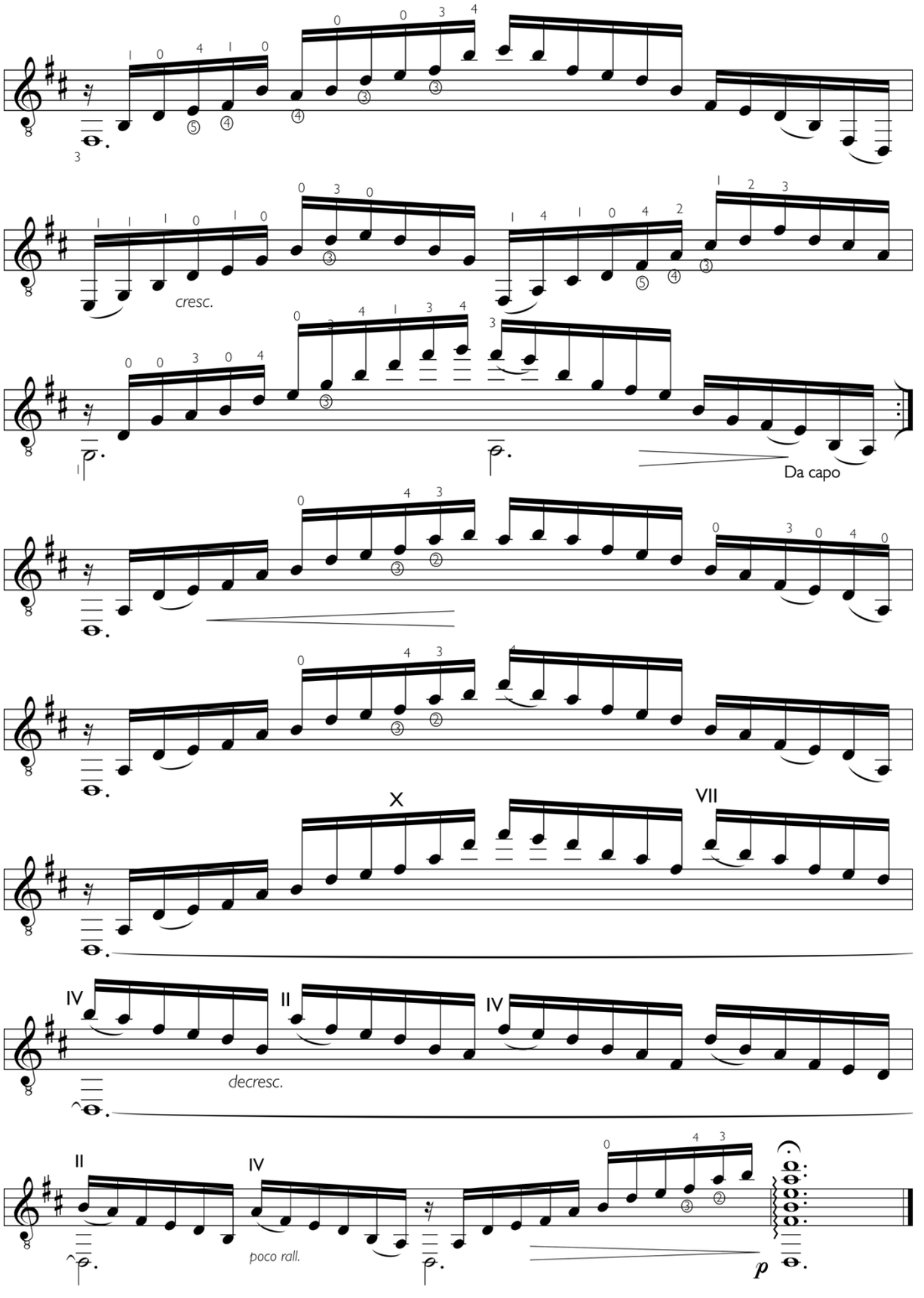
Still within a theoretical concept based on jazz language, there are some five-note scalar structures that are erroneously treated as independent pentatonic modes. They originate from harmonic situations that have undergone or may undergo alterations within a given tonal structure. From the selection of five significant notes from this specific harmonic situation, a scalar structure is elaborated that results in a pentatonic formulation. However, this selection of five notes does not represent an independent pentatonic mode but rather a reduced exposition of the notes of a known scale or mode. For this reason, they are treated as false pentatonics.



Major pentatonic scales

Track 18

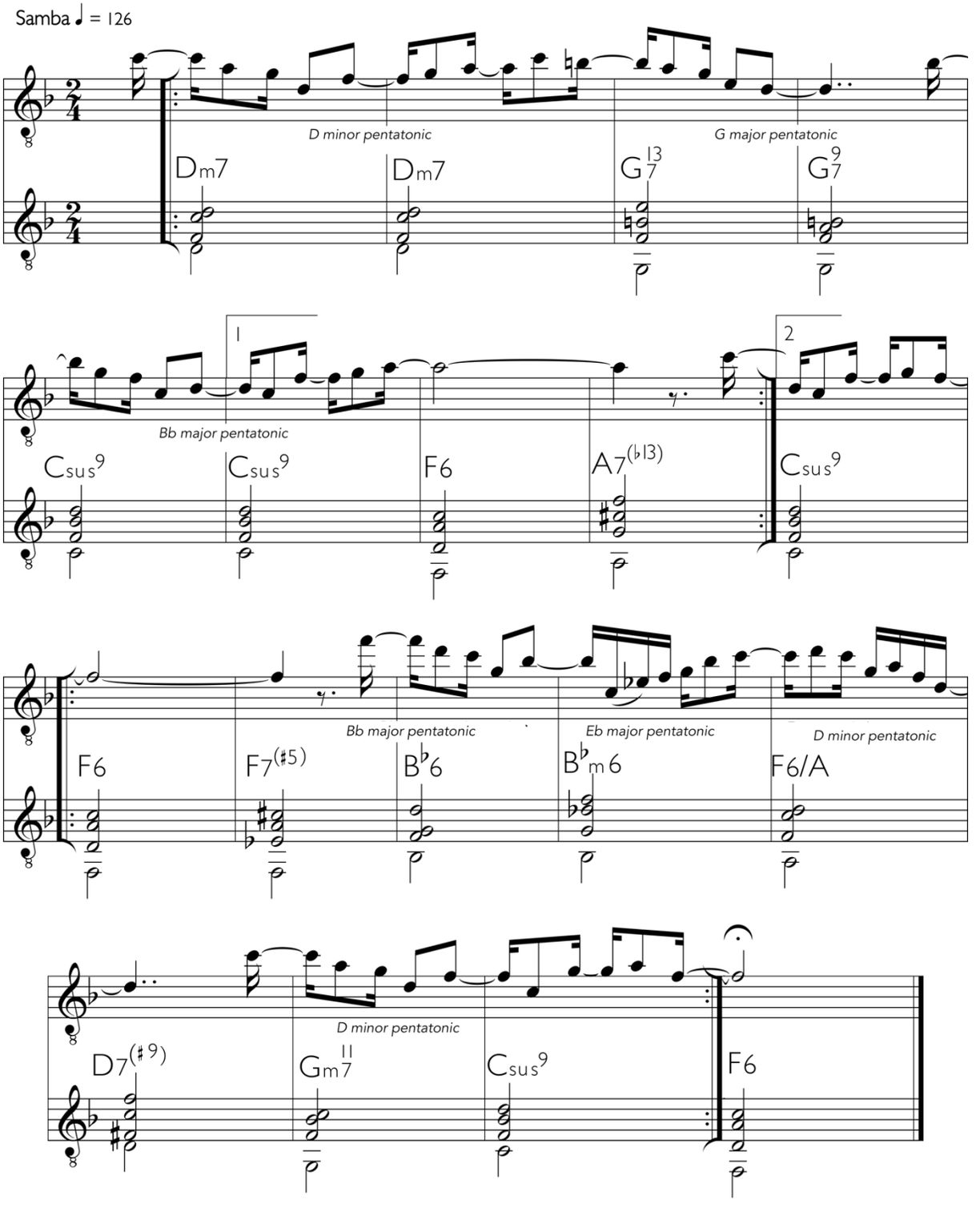




Minor pentatonic scales

This example shows how pentatonic scales can be found in certain structures of Brazilian popular music, especially traditional samba.

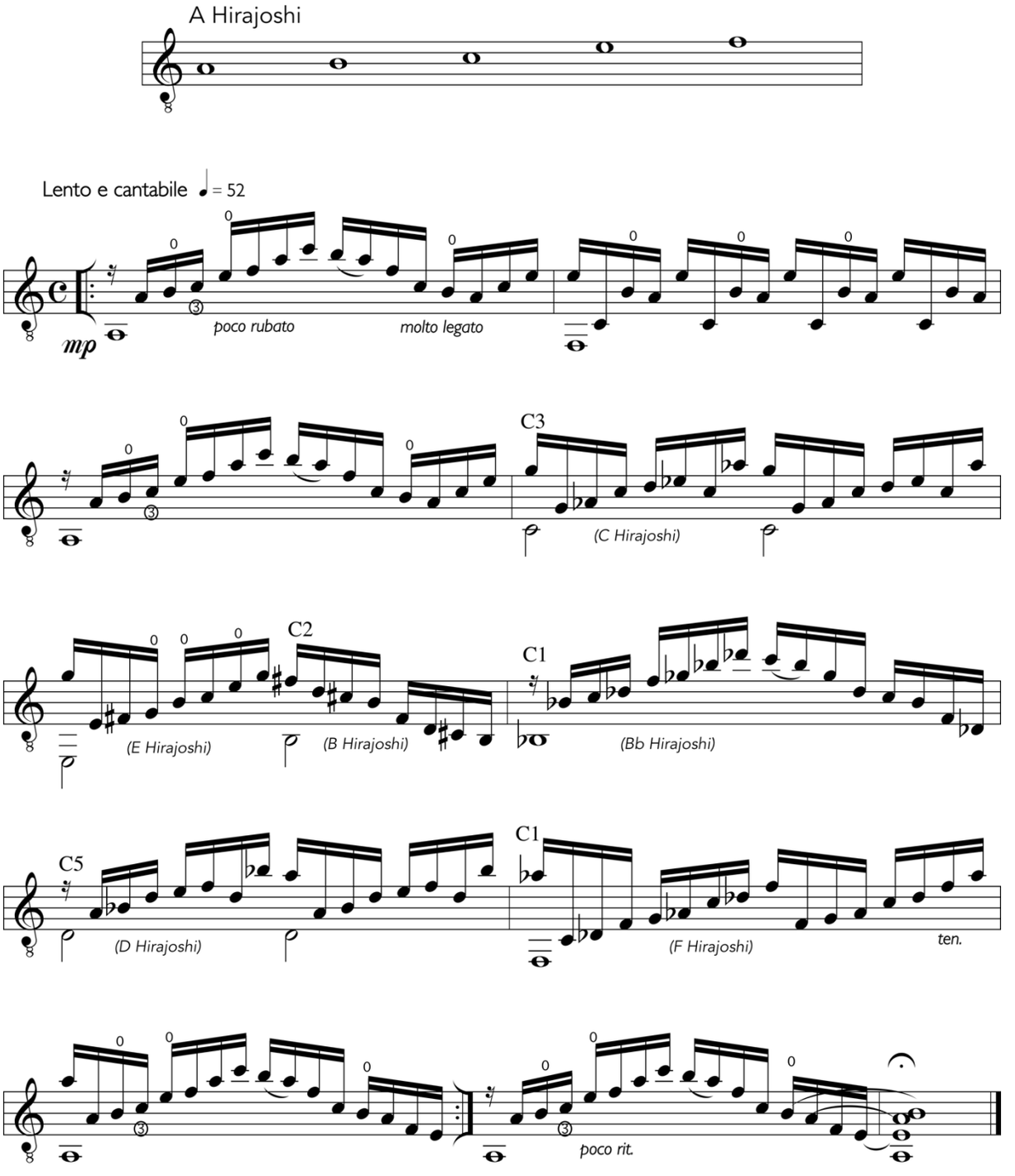
Track 19



Other pentatonic scales

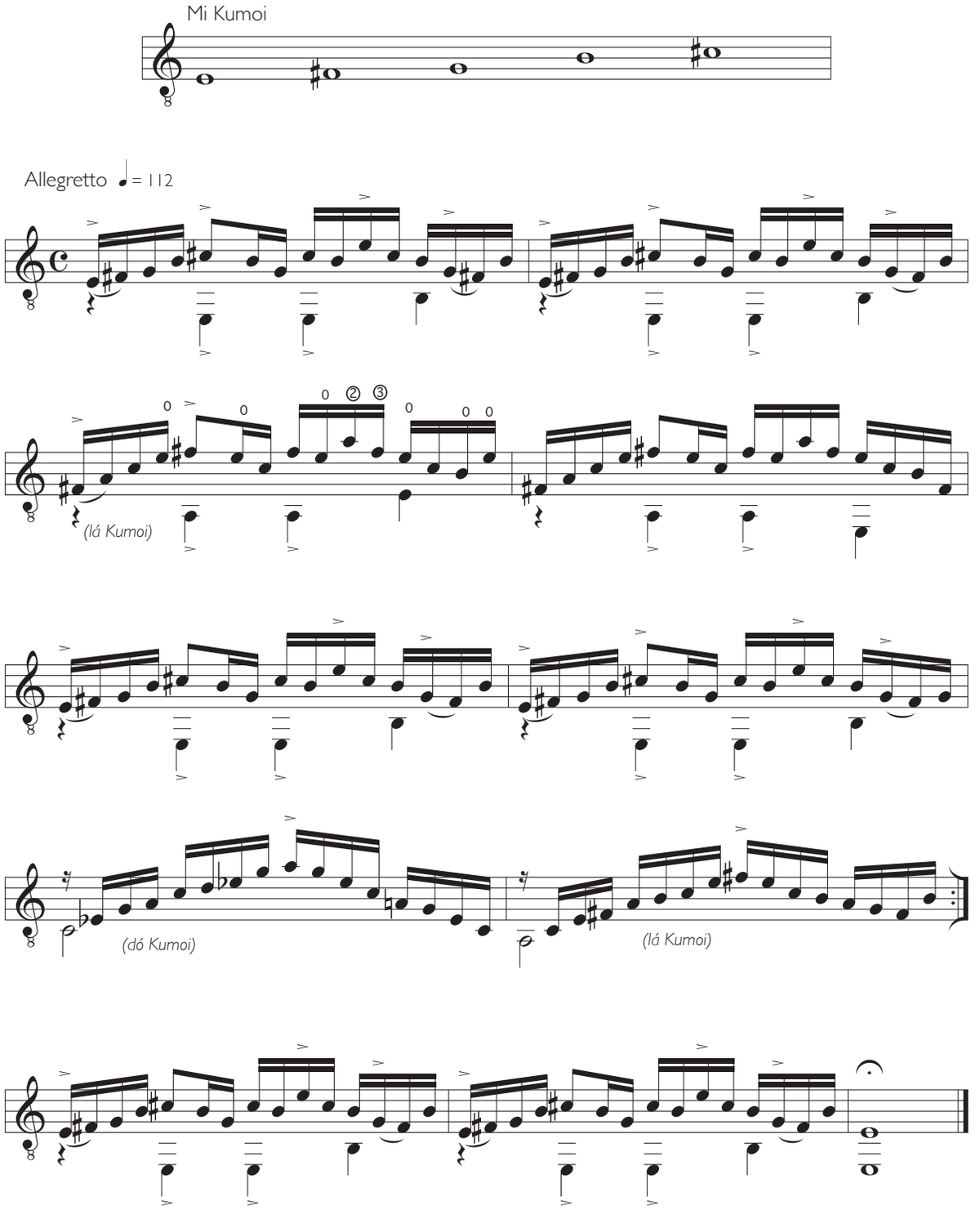
Hirajoshi Pentatonic

Track 20



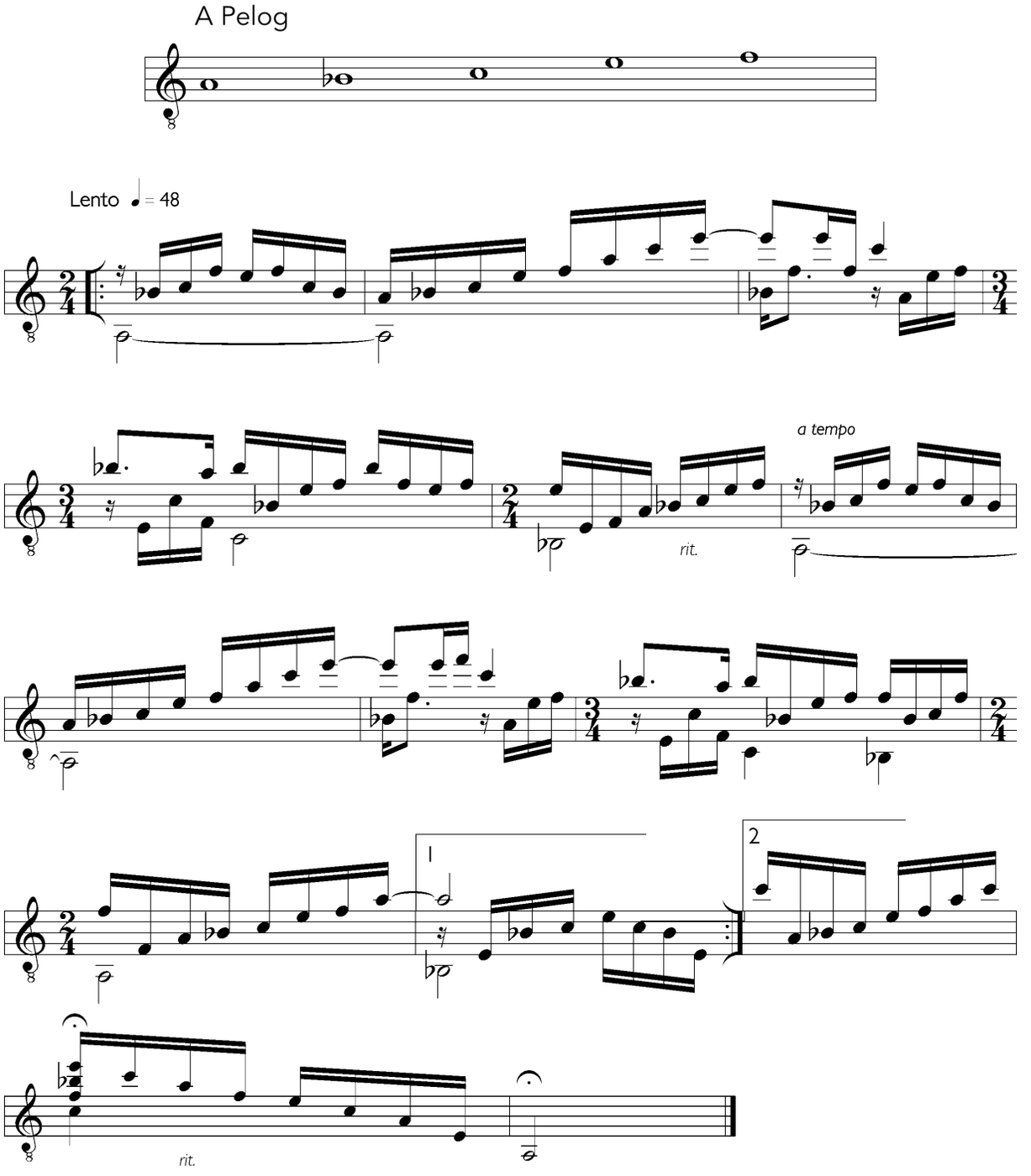
Kumoi Pentatonic

Track 21



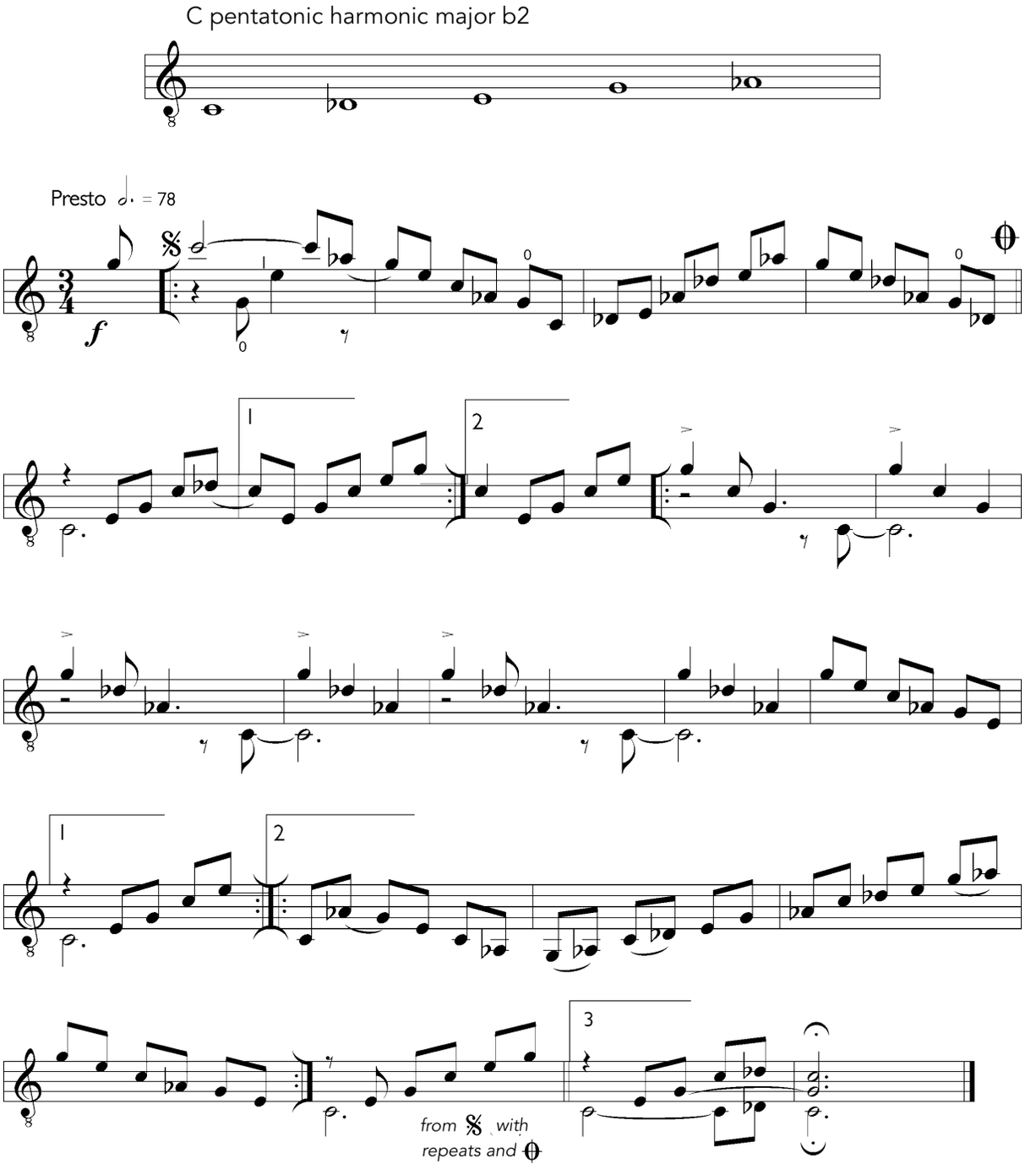
Pentatonic Pelog

Track 22



Pentatonic harmonic major b2

Track 23



Exercises:

1. Compose musical excerpts using the following pentatonic modes:

a) A major pentatonic
b) D major pentatonic
c) C major pentatonic
d) G major pentatonic
e) E minor pentatonic
f) B minor pentatonic
g) C sharp minor pentatonic
h) G minor pentatonic
i) A minor pentatonic

2. Create musical excerpts using the following pentatonic modes:

a) G Hirajoshi
b) E Pelog
c) A Kumoi
d) D Kumoi
e) C Pelog
f) E major harmonic pentatonic b2
g) A harmonic pentatonic b2

3. Explore melodic passages created using the following pentatonic modes:

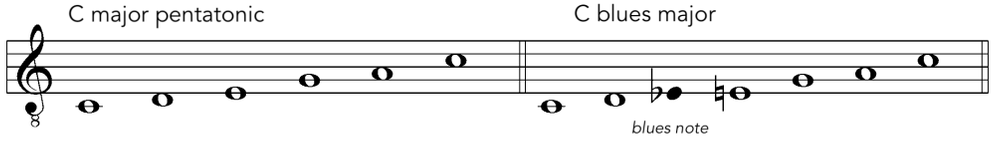
a) A major pentatonic b2
b) D minor melodic b2
c) E major harmonic pentatonic b2
d) B minor melodic b2
e) A pentatonic major harmonic b2
f) G pentatonic major b2
g) D Egyptian
h) A Japanese (5th mode of the Hirajoshi)

Blues scales

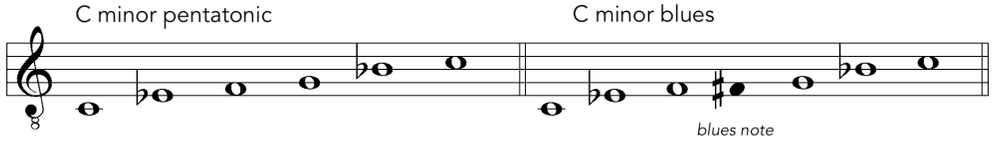
Blues scales are hexatonic scales associated with major and minor pentatonic scales.

In the same way that major and minor pentatonic scales are related to each other, a major blues scale always has a relative minor, with the first degree of a minor blues scale located a minor third below the first degree of the major blues scale. The notes that make up both scales are the same.[1]

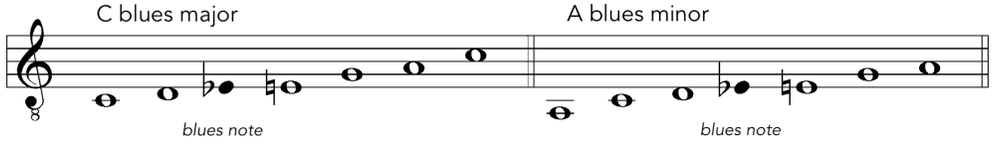
The major blues scale has a structure similar to that of the major pentatonic scale, with the difference being the inclusion of a chromatic interval between the second and third notes, transforming it into a six-note scale. This chromatic interval that appears in major blues scales is called a blues note.[2]



As previously mentioned, the blues minor scale retains the same notes as the blues major scale due to the principle of relativization between scales. The C minor blues scale is structured from the C minor pentatonic scale, which in turn is the result of the E flat major scale without the fourth and seventh degrees.



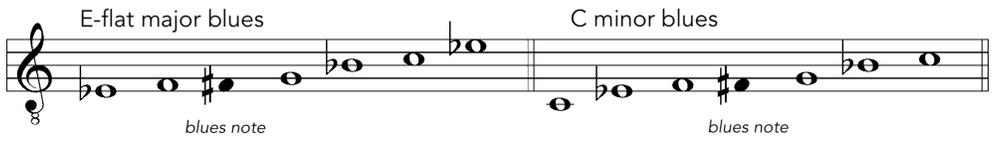
We can also associate the C major blues scale with the A minor blues scale by keeping the same notes.



[1] *The theoretical principle of relative scales establishes that an A minor scale, for example, is the relative of C major, and the E minor scale is the relative of G major, etc. We have already seen how pentatonic scales relate in the same way: a D major pentatonic scale has the same notes as a B minor pentatonic scale, and an A major pentatonic scale has the same notes as an F sharp minor pentatonic scale.*

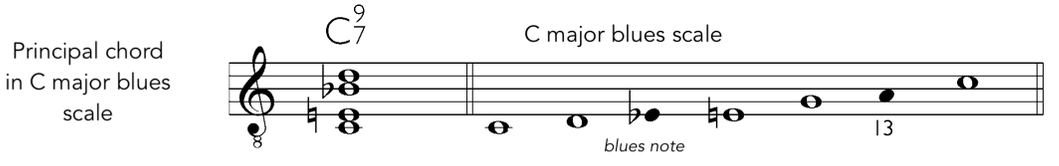
[2] *The 'blues note' has no defined pitch within the tempered scale. For this reason, it is often obtained on the acoustic and electric guitar through bending, the act of stretching the guitar string by moving it perpendicular to the neck of the instrument.*

Compare the E-flat major blues scale with the C minor blues scale.



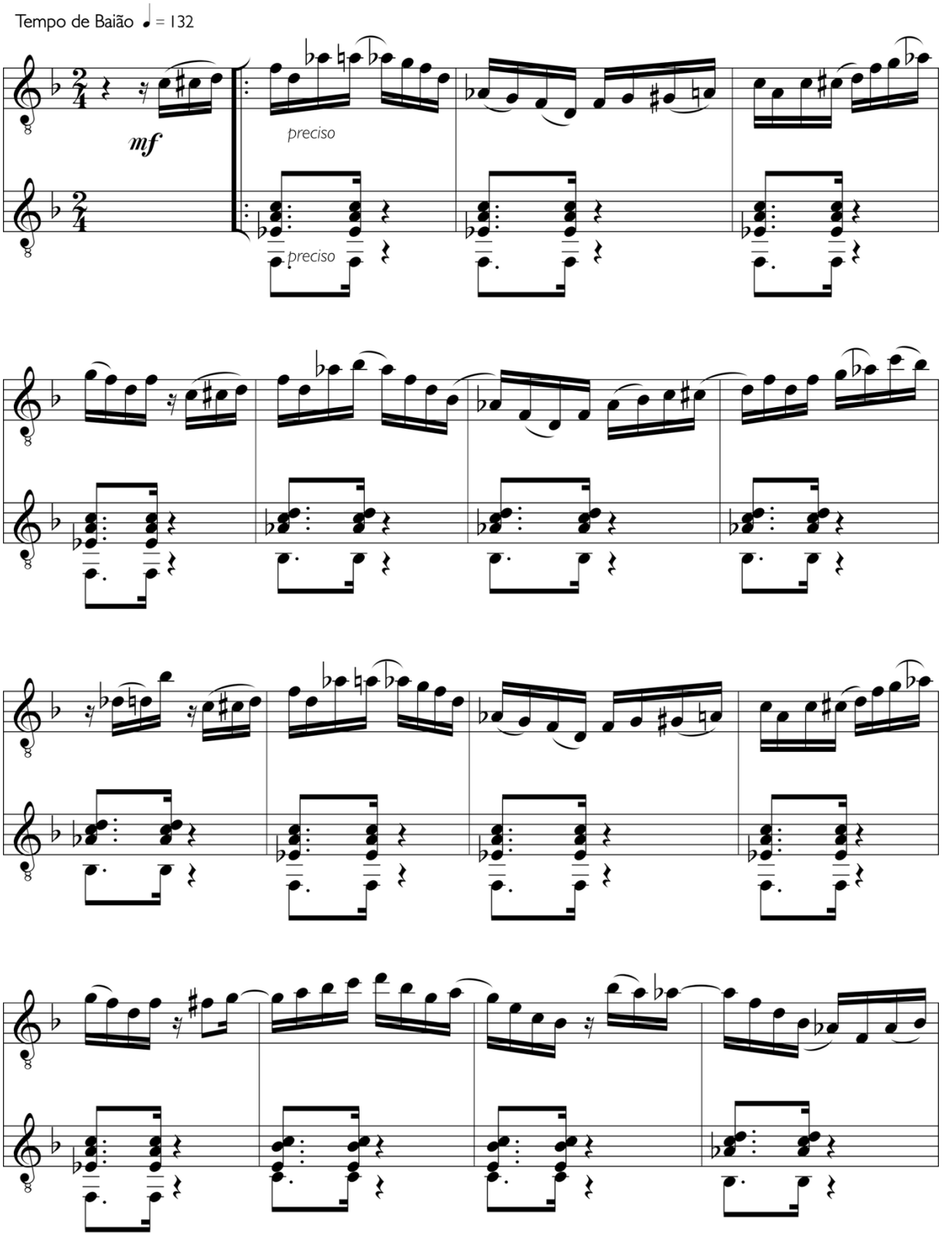
The best reference one can have for a blues scale is, evidently, within the blues itself, which, besides being a state of mind, is also a very well-established formal structure: the **blues form**. This form is considered the main basis of improvisational practice within the jazz language. The classic blues form has twelve measures, harmonically filled by three chords and melodically by a scale, the blues scale. The chords maintain a relationship close to the I-IV-V-I of Tonal Harmony; however, all chords have a dominant structure, which gives the sequence its modal aspect. The blues form can be associated with either the major or minor blues mode, with the major structure being the most widespread. See the example below of the classic structure of the major blues form:

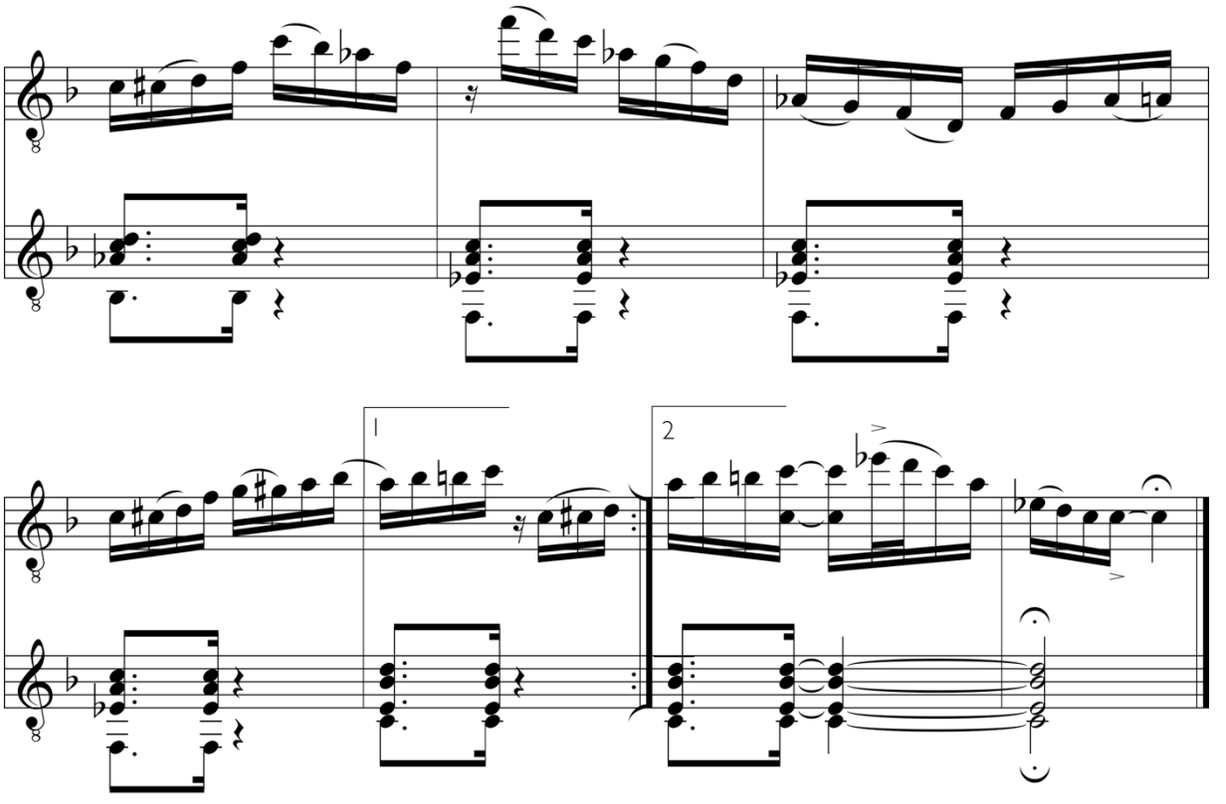
Note that in the structure of the major blues scale, we do not see the presence of the minor seventh interval, which appears in the chord composition. Therefore, the melodic aspect of the blues never presents this interval as a melodic note. In the absence of this seventh, it is common to see the melodic composition of the blues frequently relying on the sixth note of the scale *(the A note in the C major blues scale)*. This fact, added to the presence in the scale of the minor third, the blues note, gives this style and all those derived from it a unique aesthetic quality. These two notes, which form minor second intervals with the chord notes, give the blues its particular and specific character, the main reference point of the jazz language.



Major blues scale

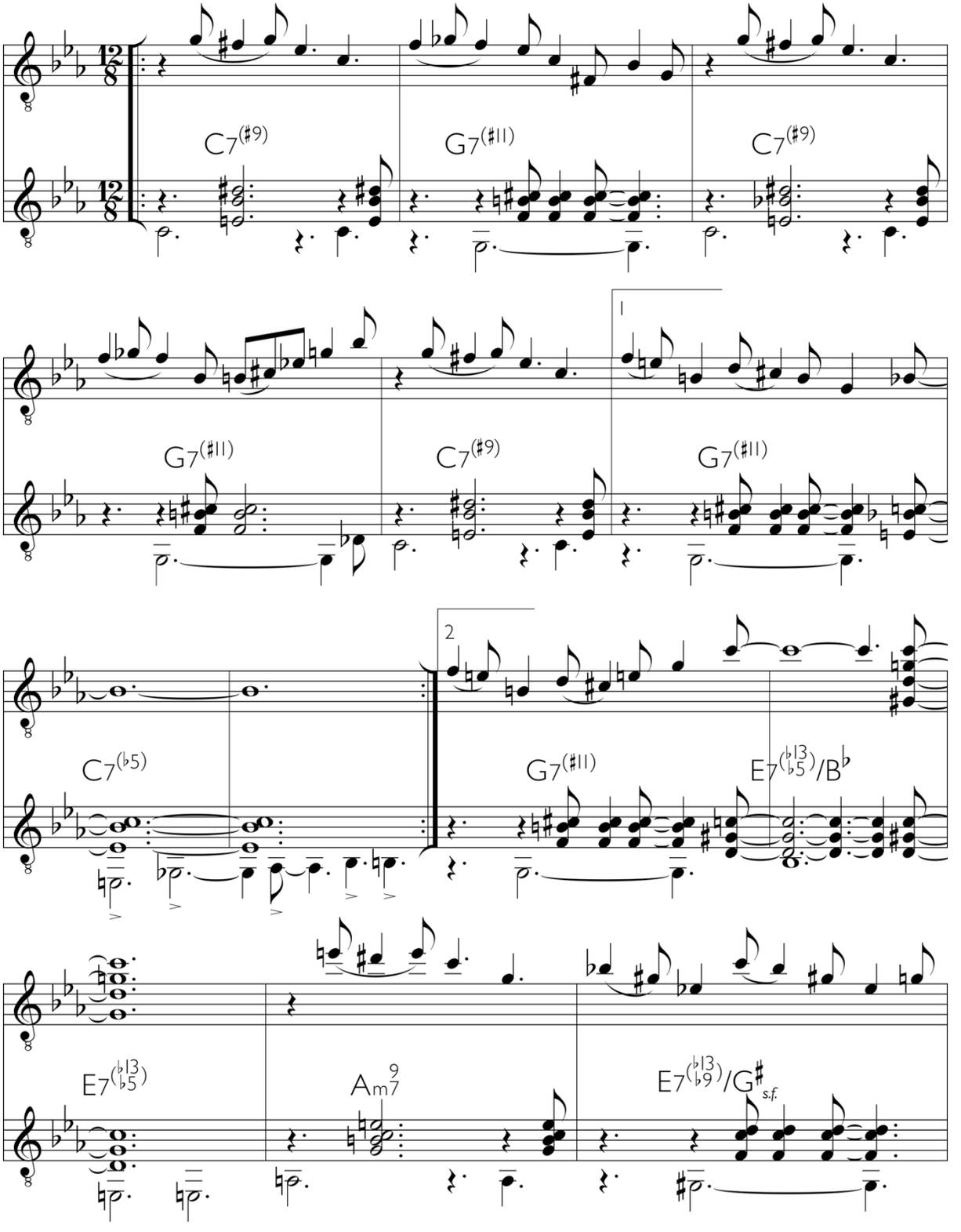
Track 24

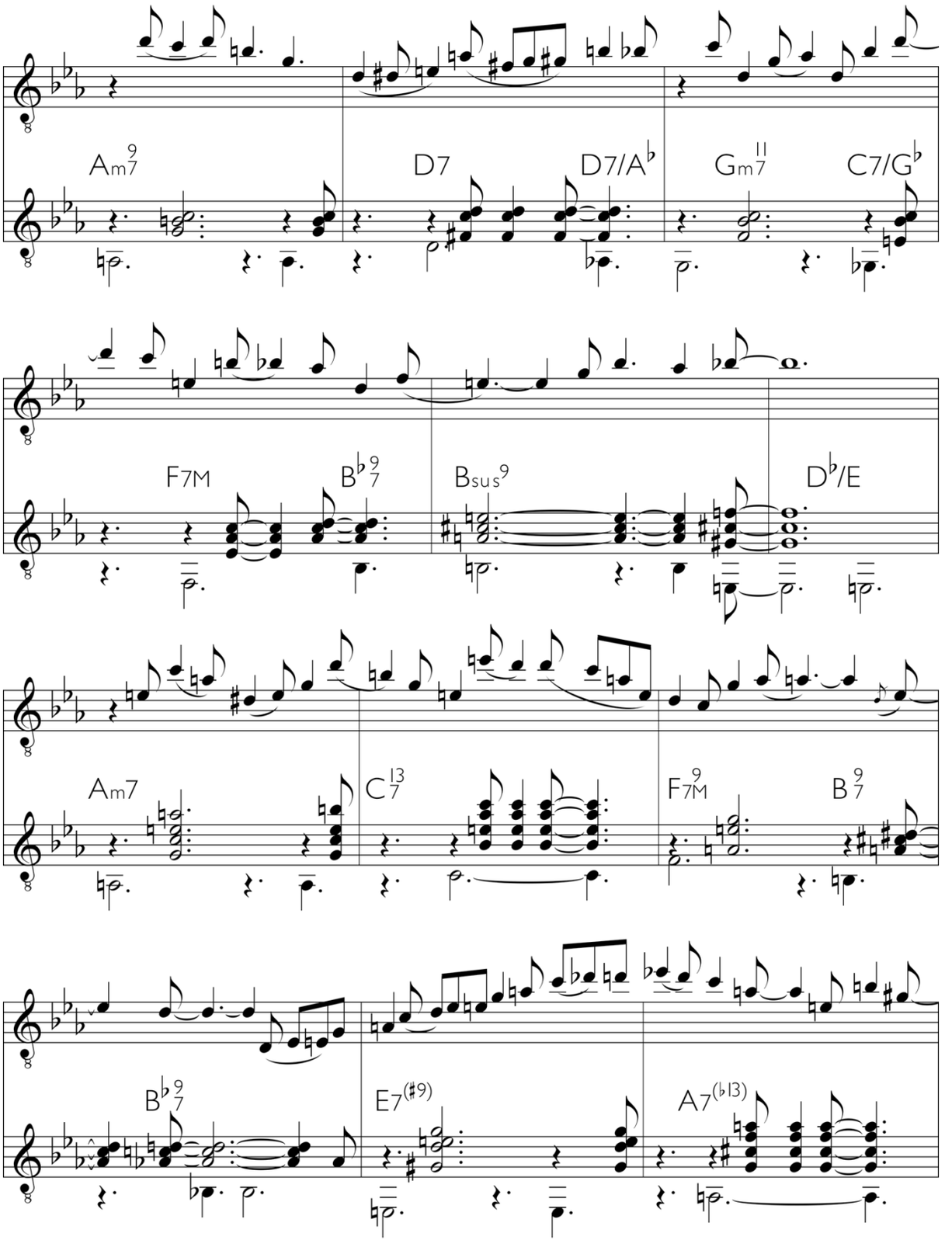


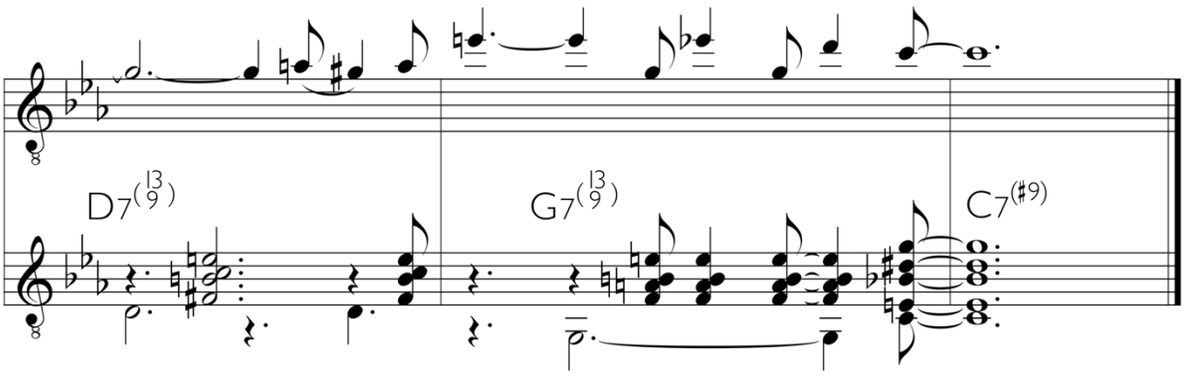


Minor blues scale

Track 25







Exercises:

1. Compose musical excerpts using the major and minor blues modes.

2. Create melodic lines using the major and minor blues modes and establish a harmonic notation to accompany these melodies.

Symmetrical Modes

Symmetrical modes are those that maintain a fixed intervallic pattern in their structure within an octave, remaining the same in higher or lower octaves. This intervallic pattern can be defined by the spacing of notes in whole tones, semitones, or by a combination of whole tones and semitones. Symmetrical scales are divided into four distinct groups with different applications:

1) Chromatic scale: symmetry by semitones

2) Dominant Hexatonic Scale

   a) Dominant Symmetrical Hexatonic Scale: symmetry by whole tones

3) Other Hexatonic Scales

   a) Hexatonic Scale #2-b2: symmetry by augmented and minor seconds

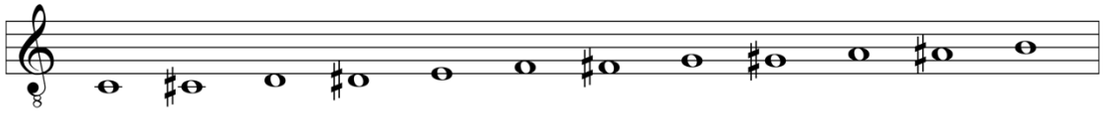
   b) Hexatonic Scale b2-#2: symmetry by minor and augmented seconds.

4) Octatonic Scales

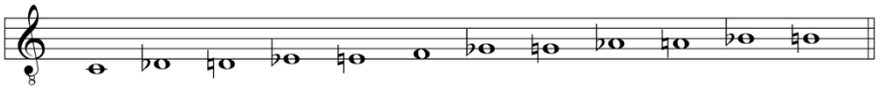
   a) Symmetrical Dominant Octatonic Scale: symmetry by semitone-tone
   b) Symmetrical Diminished Octatonic Scale: symmetry by tone-semitone

Chromatic Scale

It is the scale that contains all the notes of the tempered system, structured symmetrically in semitones. Within tonal structures, the notes of the chromatic scale form the framework of tensions that drive the harmonic progressions until their definitive rest in the tonic chord.

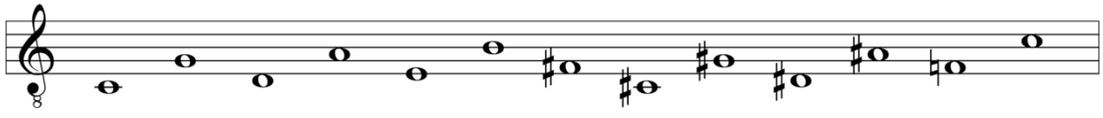


Note:
Depending on the situation in which the chromatic scale is being used, its degrees can be represented by the enharmonic representation of its notes, regardless of whether the scale's movement is ascending or descending. What determines this treatment is the quality of each note in relation to the harmonic situation in which it is inserted, whether tonal or modal.

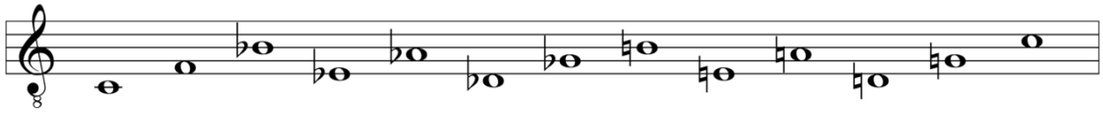


The chromatic scale is the result of progression by fifths *(circle of fifths)* starting from the first two notes of the harmonic series, which establish the relationship between the tonic and dominant notes of a diatonic scale. When we follow the circle of fifths, up to the repetition of the first note, we obtain all the notes of the chromatic scale. The progression by fifths can also be done in reverse, resulting in a progression by fourths.

Circles of fifths

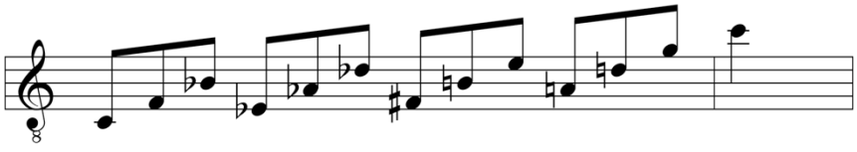


Circles of fourths

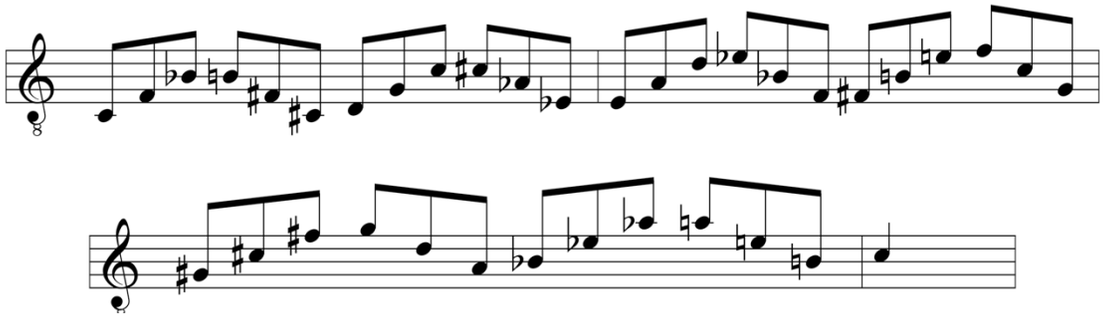


Some harmonic structures, built from the chromatic scale through specific interval patterns, can result in rich melodic elements that can be assimilated and used. See the following examples:

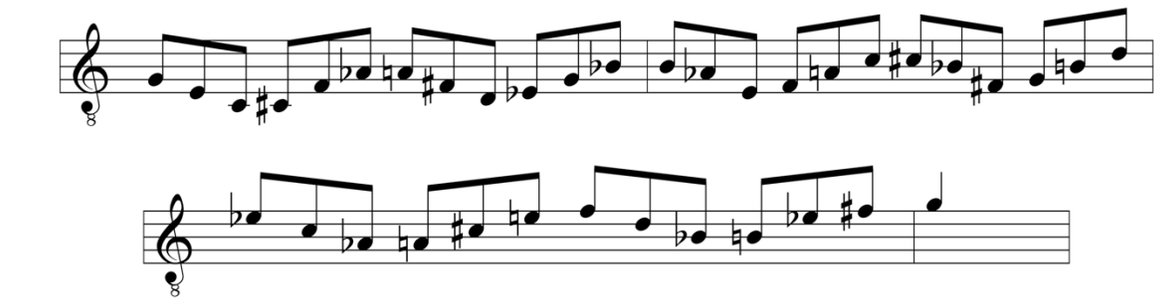
Movement by fourths – 1



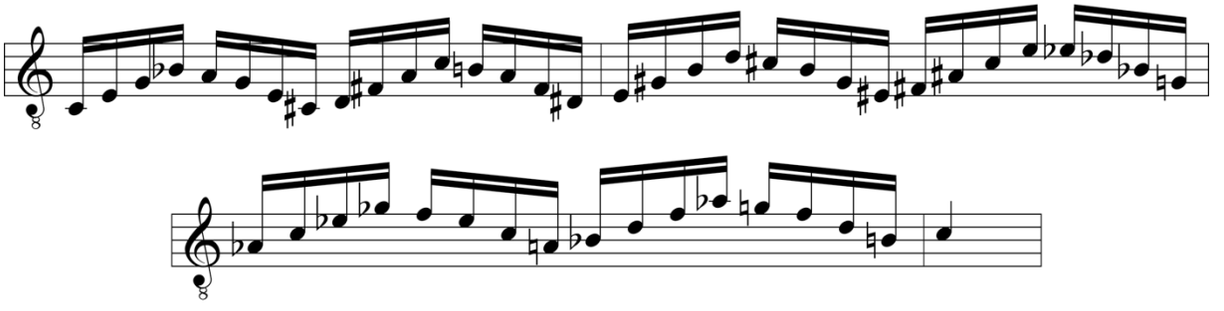
Movement by fourths – 2



Movement by major triads

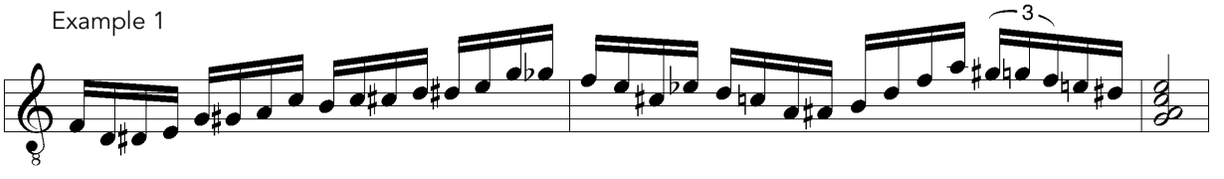


Movement by dominant tetrads

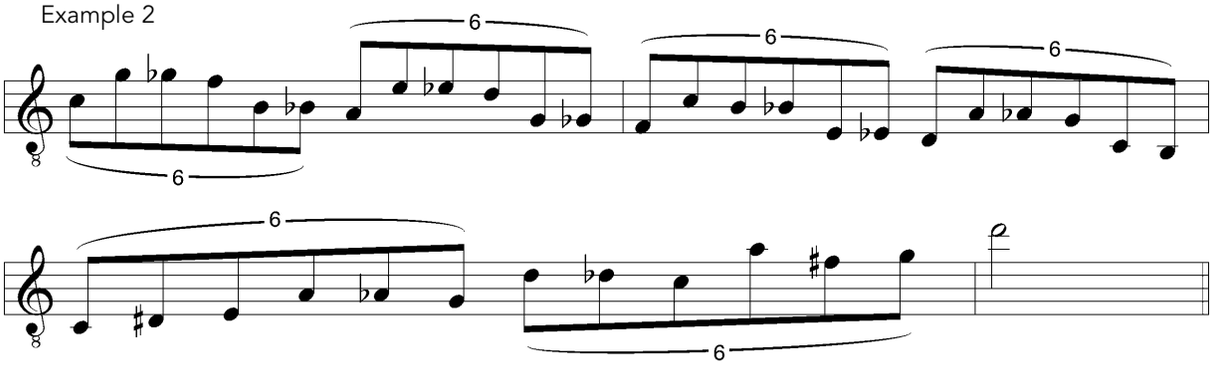


Chromatic movements in diatonic phrases

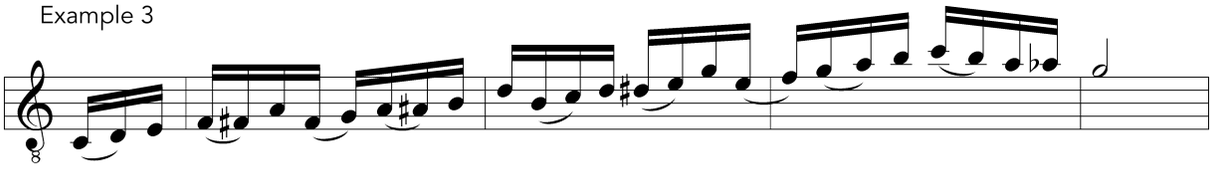
Example 1



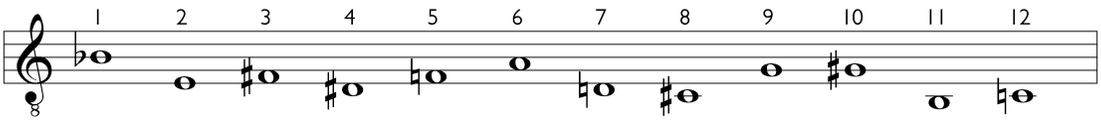
Example 2



Example 3

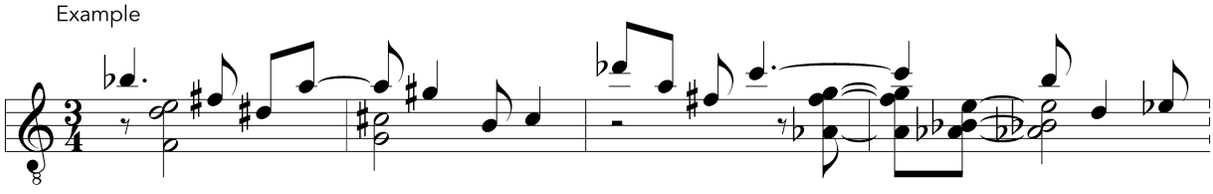


The chromatic scale is also the basis for structuring the serial system created by the Austrian composer Arnold Schoenberg *(see chapter 'Harmonic structures in the twelve-tone process')*, in which the notes are not subject to any hierarchical relationship, all always present and without any differentiation as to the importance they represent in the musical discourse.



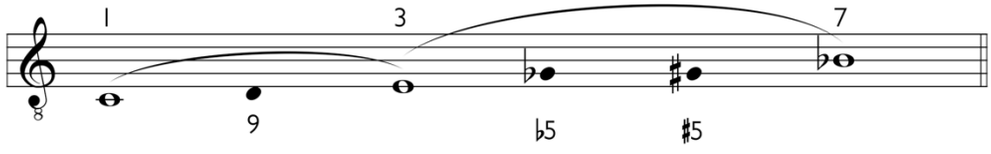
A. Schoenberg - Variations op. 31

Example

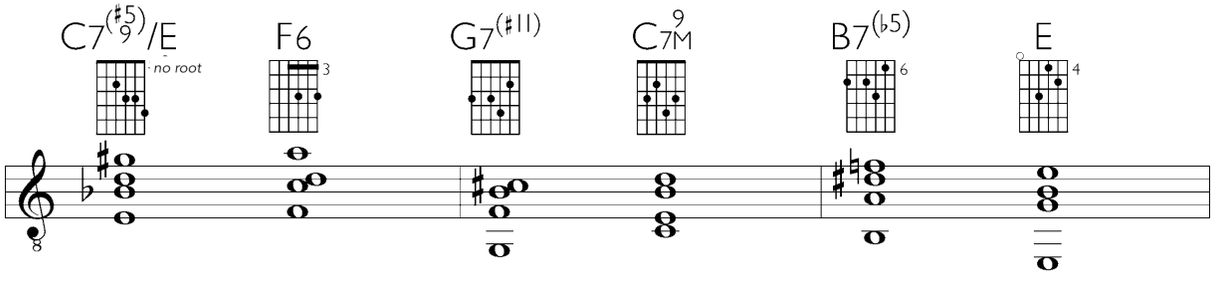


Dominant symmetrical hexatonic scale (whole tones)

Of controversial origin, the dominant hexatonic symmetrical scale, or whole-tone scale, was first used as a basic element of a musical composition by the French composer Claude Debussy (1862-1918), becoming popular from then on. Its effective use, mixed with other elements, can be seen in several of Debussy's works, but it is in "Voiles", from his first book of preludes, that the composer used it as the main element. The parallel movement of ninth chords from this whole-tone scale is also a characteristic of Debussy's writing. Due to its symmetry, the dominant hexatonic symmetrical scale repeats itself at each tone interval, resulting in only two possible scales within the chromatic total. In addition to its use in modal works, the whole-tone scale can also result from tonal situations where the dominant chord has fifth alterations – b5 and #5 – with the ninth always major. See the analysis of its intervallic structure:

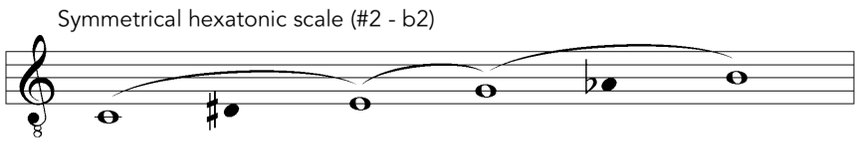


Because it features a major ninth, the whole-tone scale lends itself, even within tonal situations, to serving as a melodic representation of dominant chords in major keys, especially regarding the ascending alteration of the fifth of that chord, for example, C7(#5). The diminished fifth interval can also be reinterpreted as #11, which gives greater scope to the application of this mode.

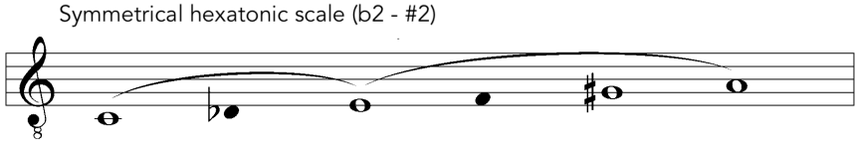


Regarding hexatonic scales, we still have two more types of symmetry that can be applied: the (#2 – b2) symmetry and its inversion (b2 – #2).

The first one, which has (#2 – b2) symmetry, presents a major chord structure with a major seventh and two chromatic appoggiaturas: one ascending to the major third and the other descending to the fifth.

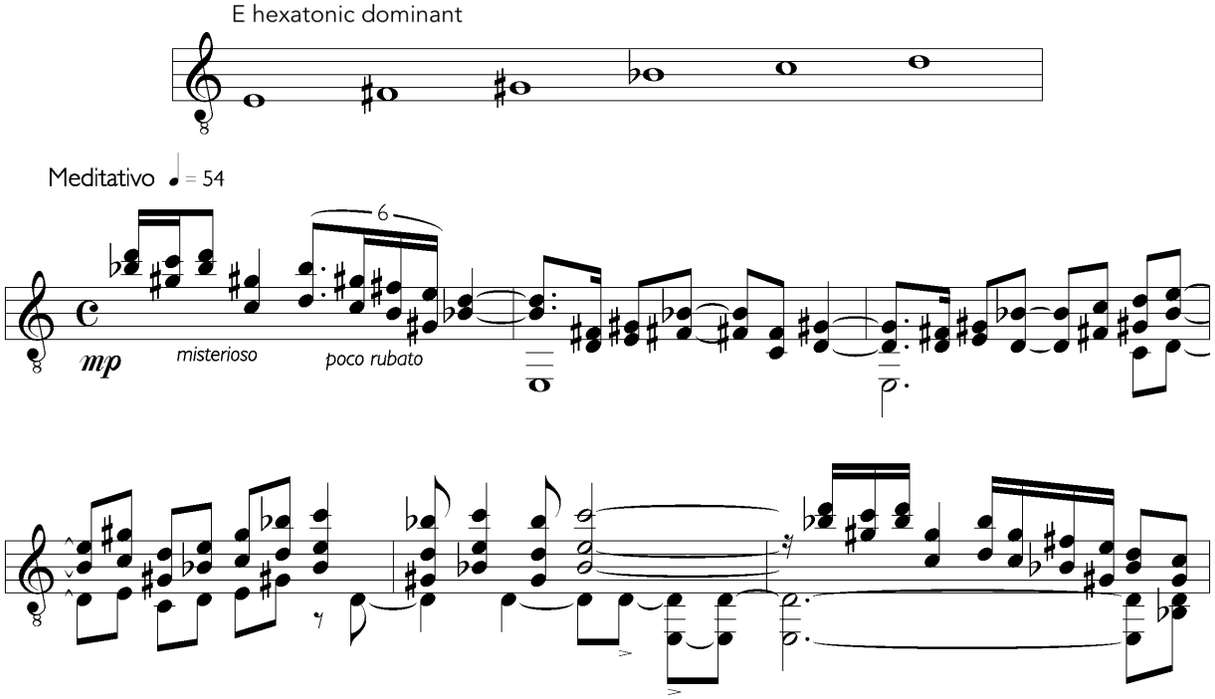


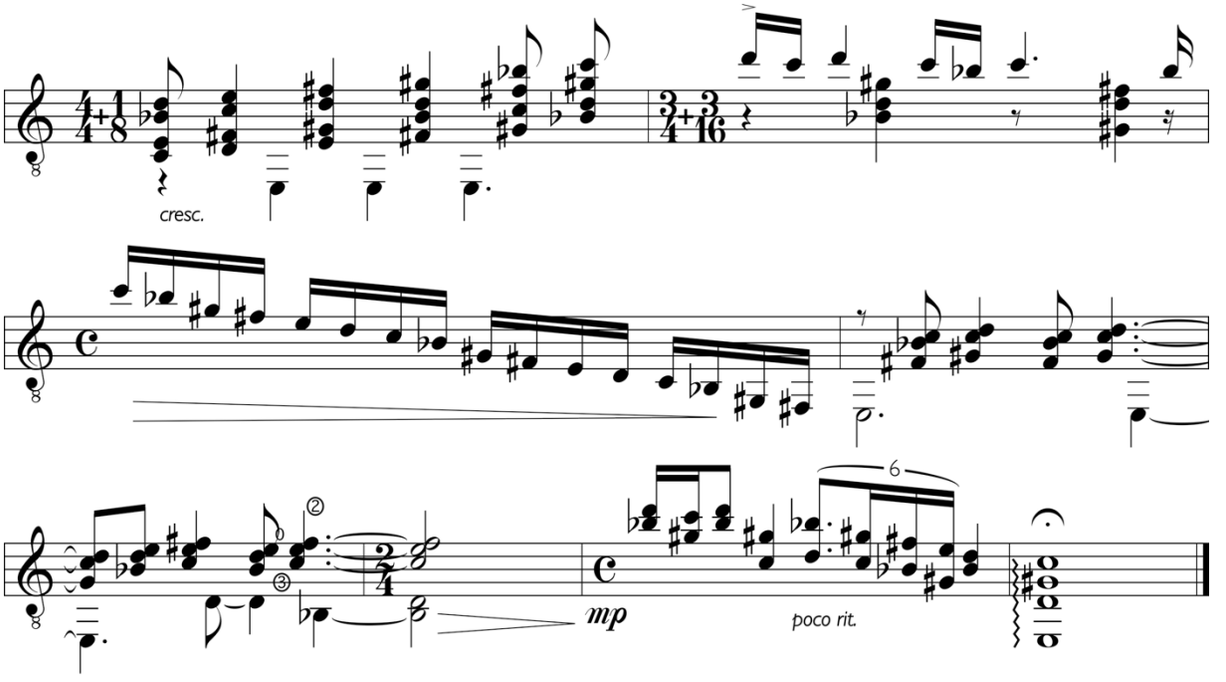
The other, with symmetry (b2 – #2), shows a major chord with a sixth and two more appoggiaturas: one descending to the first degree of the scale, the other descending to the third degree. The augmented fifth, which can also lead to the sixth, can also form the augmented triad. Note that the intermediate modes of this scale *(from the notes Db, F, and A)* repeat the same pattern as the hexatonic scale with inverse symmetry.



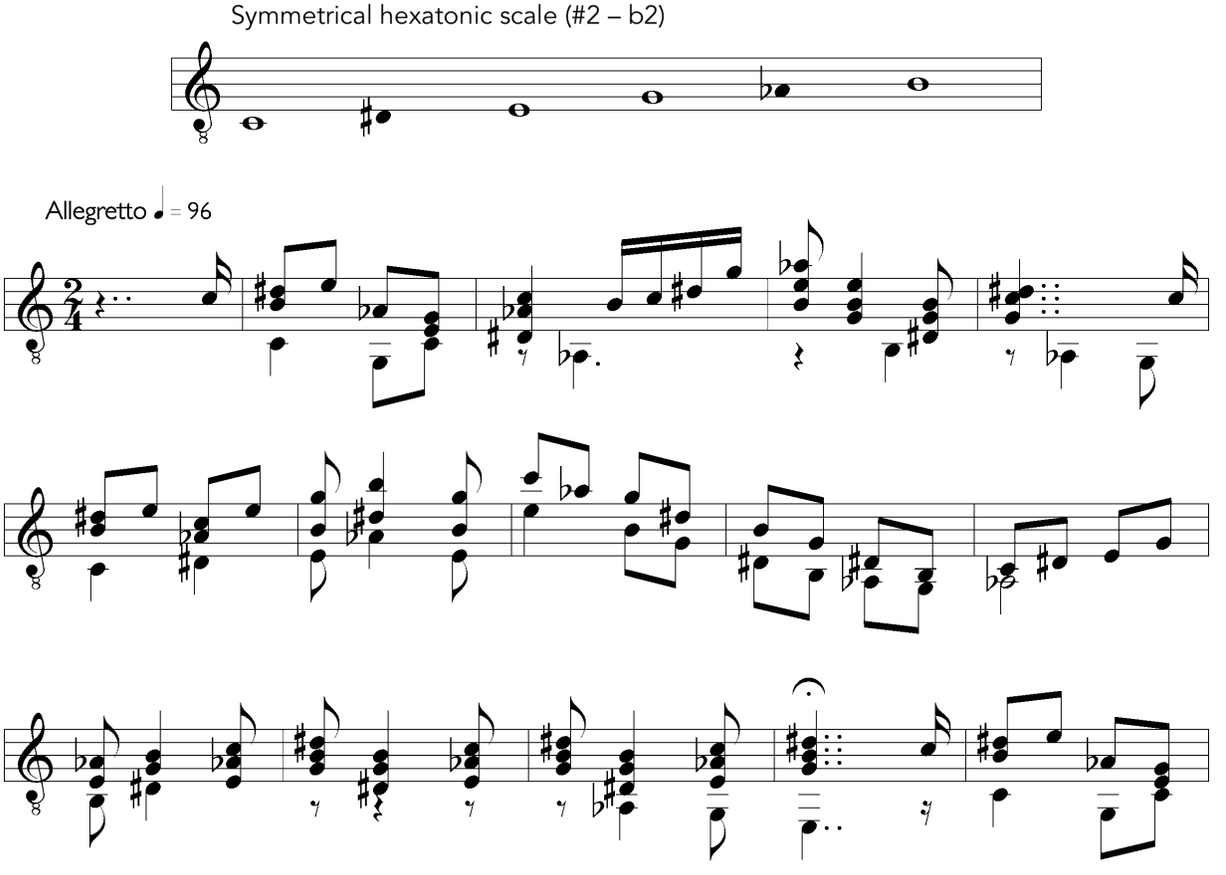
Examples:

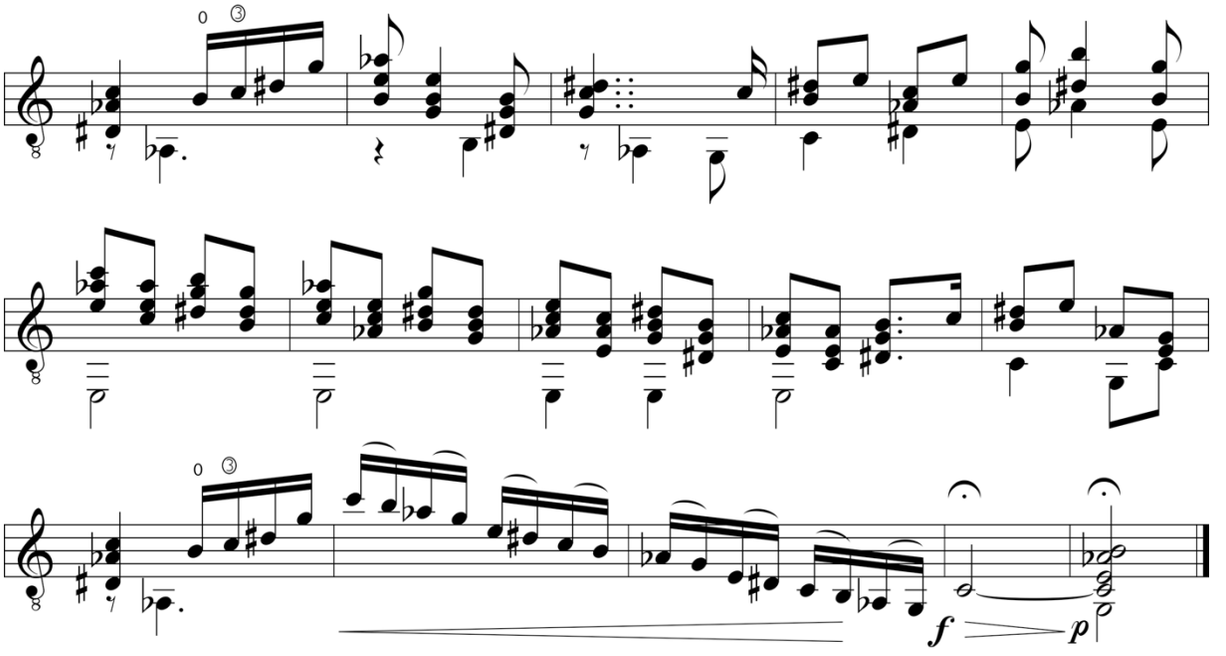
Track 26 – Symmetrical dominant hexatonic scale (whole tones) and its modal treatment.





Track 27 – Symmetrical hexatonic scale (#2 – b2)





Octatonic scales

These are scales that exhibit symmetry through the combination of tones and semitones. They have been the subject of much disagreement regarding their actual and effective application. With very particular qualities, octatonic scales offer rich possibilities for intervallic combinations. Each of them has its specificities, and it is important to distinguish between the different ways of applying them. The fact that octatonic scales have numerous applications makes them a kind of chameleon of scales, which can eventually lead to misunderstandings regarding their full scope, as well as errors of interpretation in 'multi-scalar' situations. From where it is possible to observe the use and application of their structure, we see that they have never been used as a single, unmistakable element of a musical composition. Their presence can already be noted at the end of the 19th century, in the first group of Transcendental Etudes by Franz Liszt.

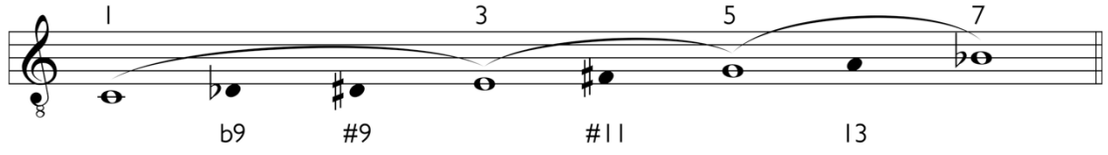
First published in 1826, Liszt's Transcendental Etudes already revealed the presence of the whole-semitone octatonic scale, especially in number 5 – Feux Follets *(Will-o'-the-Wisps)*. At the end of that century, Liszt exerted a great musical influence on numerous younger composers, especially the Russians Mikhail Glinka and Rimsky-Korsakov, in whose works the presence of this same scale is also noticeable. Rimsky-Korsakov even proclaimed himself, at one point, as the pioneer in its use and application, but the attribution of this merit was far from being accepted and becoming a consensus. What seems more likely is that octatonic scales first appeared in Western music as a byproduct of the transposition of triads and tetrads by minor thirds, even before it was defined and cataloged as such.

We can find elements of the octatonic scale with semitone-tone symmetry in the works of several early 20th-century European composers, such as Claude Debussy, Alexander Scriabin, Maurice Ravel, and Béla Bartók. However, it is with Igor Stravinsky, especially in relation to his ballet The Rite of Spring, that these divergences have occurred most frequently. The central point of this controversy is the following: is the octatonic scale one of the main bases upon which this work by Stravinsky was elaborated? Or is this a baseless and mistaken approach? Is the profusion of chromatic elements in the harmonic structure of the work, in contrast to diatonic elements that define its melodic quality, defined by an octatonic relationship? Or is what occurs in its harmonic

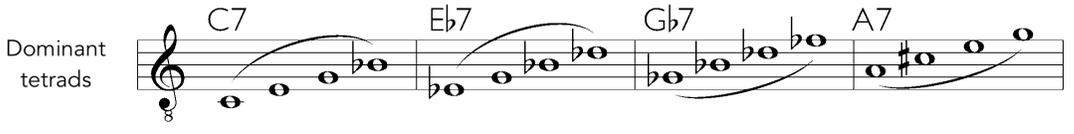
and melodic structure a complex multi-scalar combination that does not lend itself to any simplified systematic analysis? Although it seems to us that the latter assertion is the most correct, it is not our interest or the focus of this work to detail this issue. Our goal is simply to define the degree of applicability of the different octatonic scales, whether within a tonal, non-tonal, or modal context. Therefore, we can analyze their possible configurations and symmetries separately.

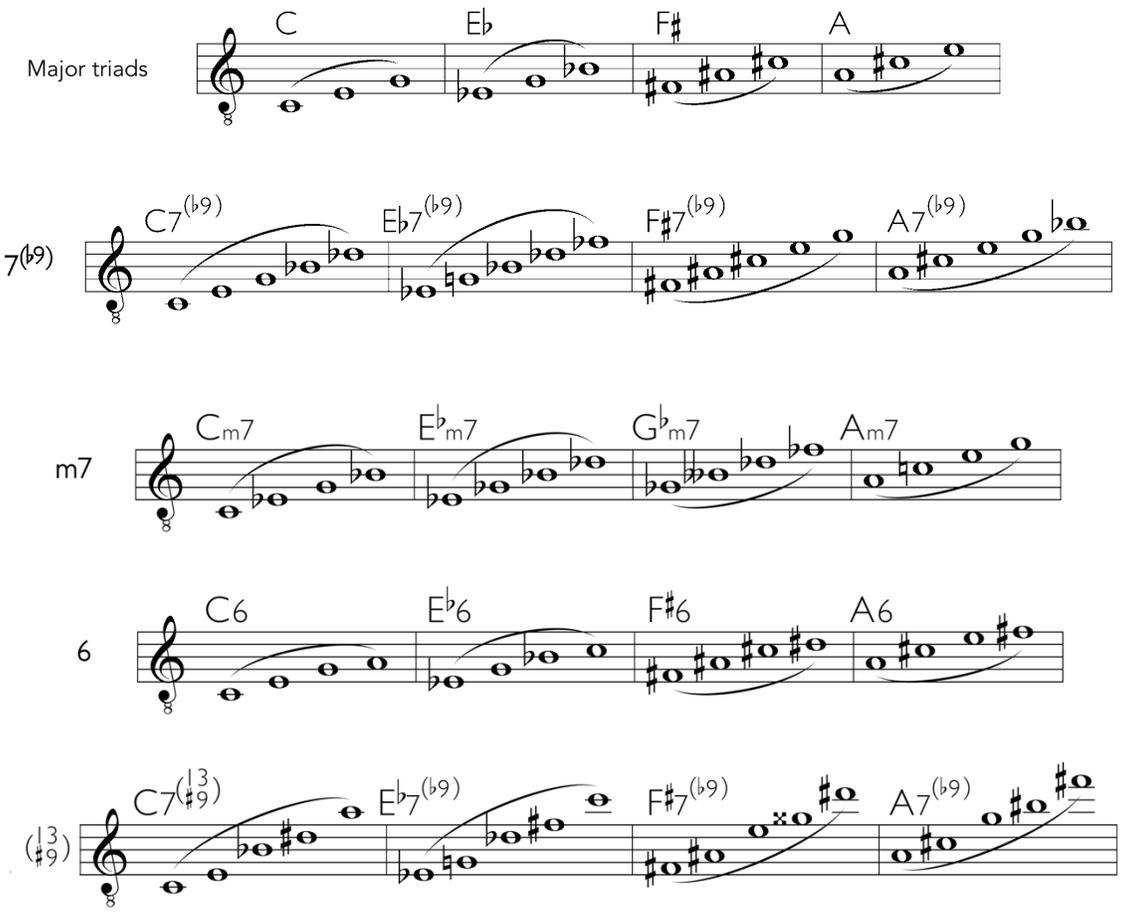
Symmetrical dominant octatonic scale

The dominant symmetrical octatonic scale is one that combines, within the octave, the half-step / whole-step sequence. This combination results in a scale that presents the following structural intervals when verticalized.

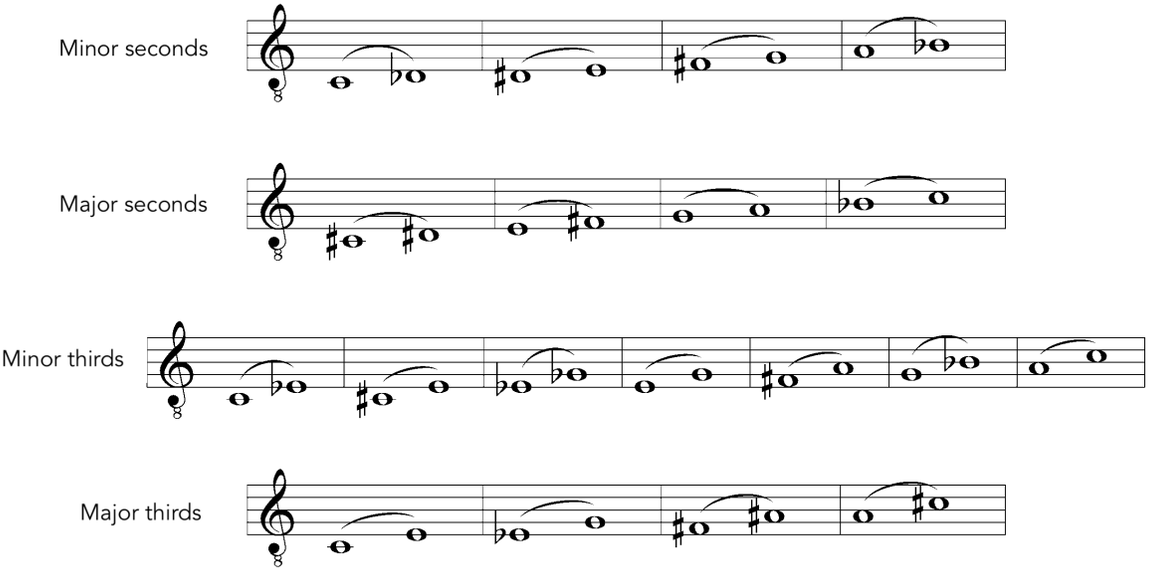


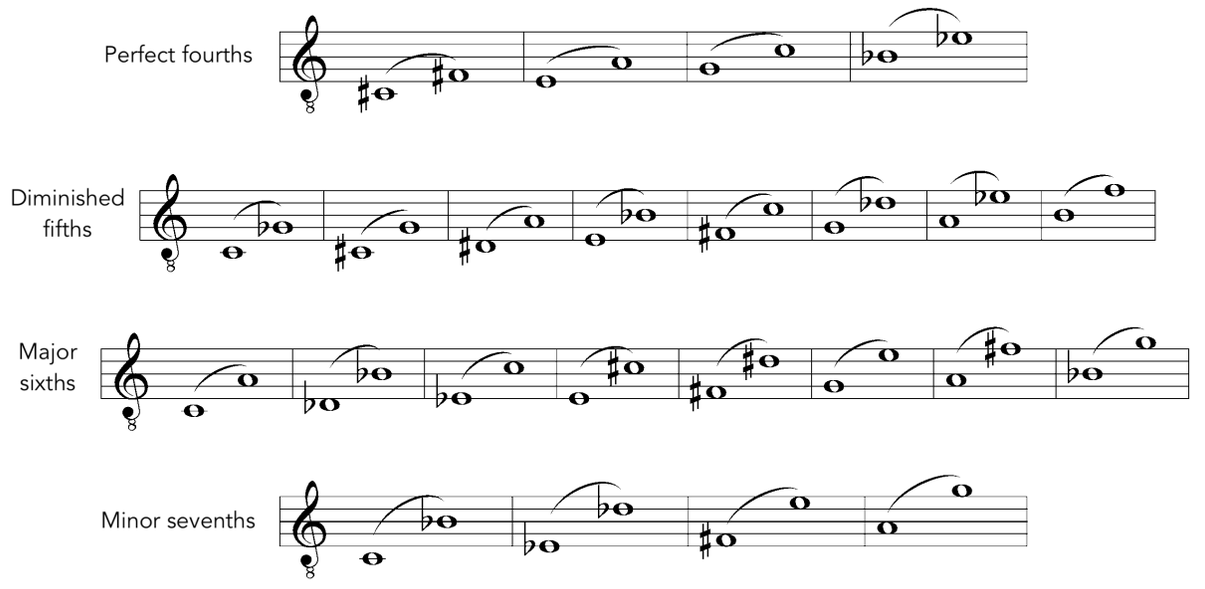
As can be seen, in addition to the dominant structure formed by the intervals 1, 3, 5, and 7, this scale also presents the extensions b9, #9, #11, and 13. We can say that the dominant symmetrical octatonic scale presents, as complementary intervals, two altered ninths and a major thirteenth, in addition to the augmented eleventh. This augmented eleventh can also be understood as the enharmonic representation of the diminished fifth interval, which allows for a double interpretation of this interval. The dominant symmetrical octatonic scale, through the analysis of its intervals thus made, can also be the basis of melodic formulation within tonal structures where the chord of the dominant function presents these same extensions and alterations. It can also, within tonal structures and due to the characteristic of its intervals, create melodic tensions in a situation where the dominant seventh chord is a simple tetrad or has only one of the extensions described above. The dominant octatonic scale, due to its symmetry, offers us interesting possibilities for interval combinations in chord structuring. See some examples and note that the notes have been enharmonically enhanced to better represent these chords.



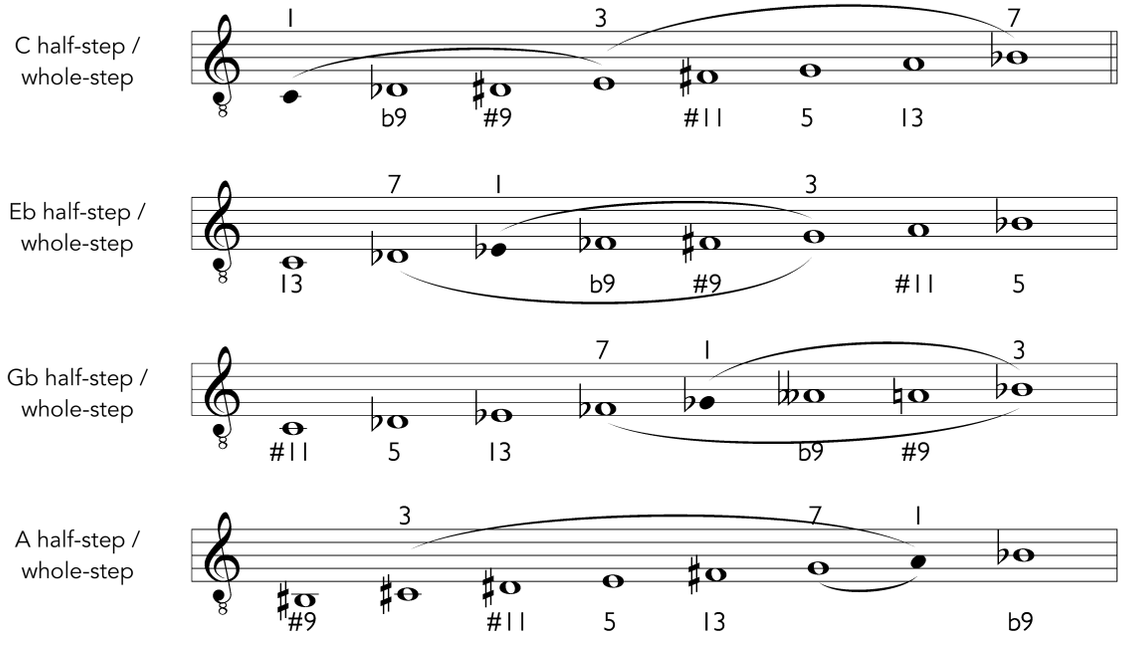


See also the possible interval combinations that this octatonic scale offers for melodic treatment:



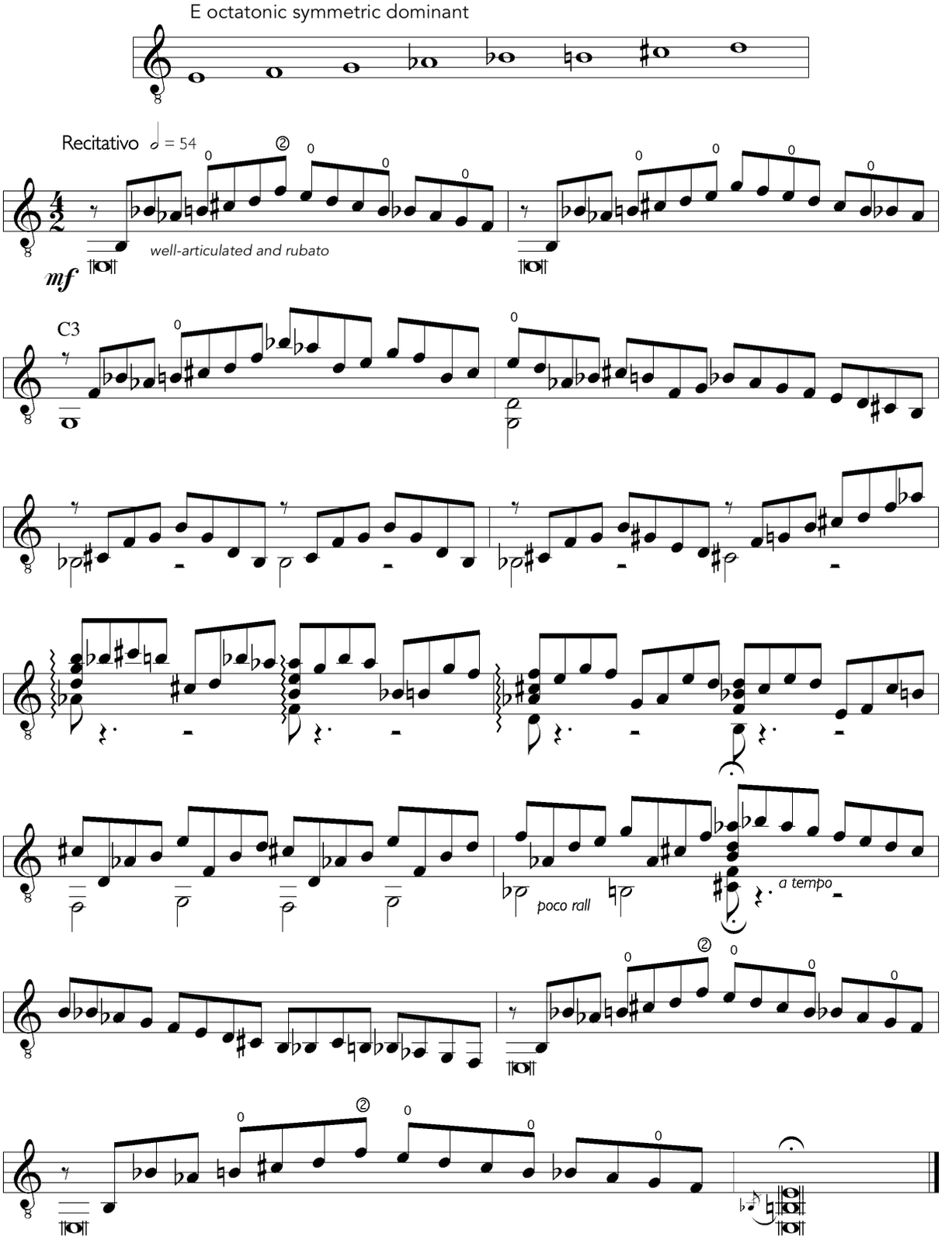


Due to their symmetry, there are only three dominant octatonic scales, as the scale repeats every minor third. See the example below illustrating the enharmonic relationship between the dominant octatonic scales:



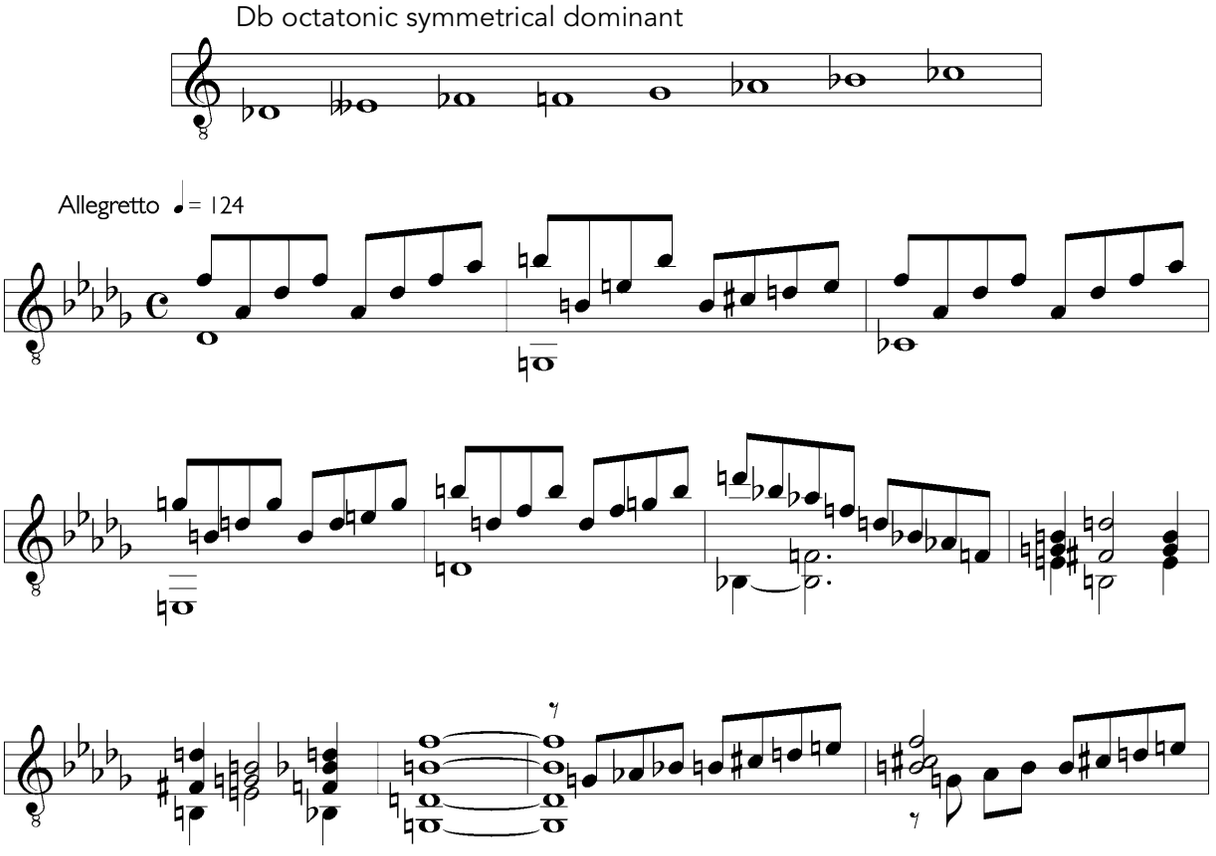
Below are some examples developed from the dominant octatonic symmetrical scale with its melodic and harmonic elements.

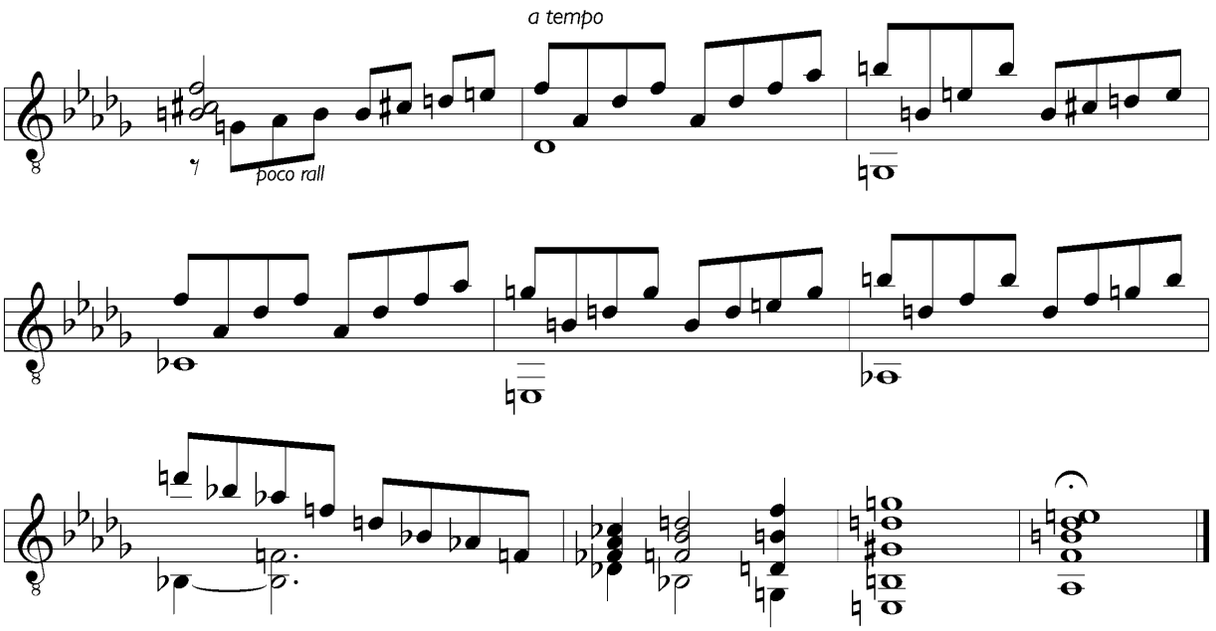
Track 28



We have already seen that dominant octatonic scales offer rich intervallic combinations. In addition to three-note structures—triads—and four-note structures—tetrads—there is the possibility of constructing denser chords with the addition of various extensions such as the minor ninth, the augmented ninth, the augmented eleventh, and the major thirteenth. With the various enharmonic options that these intervals offer, we can further increase the range of chords that can be applied. The following example was created from the simplest structures that the octatonic scale offers: triads and tetrads. Note the interesting intervallic relationship that occurs between the chords used. Centered on D-flat, the example uses, in the first few measures, the chords Db, G, Db7, Em7, and Bb7. Subsequently, other structures (sometimes written in their enharmonic representation) of this same scale are also used, and in the last two measures, with the increase in chord density, we have the following harmonic structures: Dbm7, Bb, G7, E7(#9), and Db7(#9).

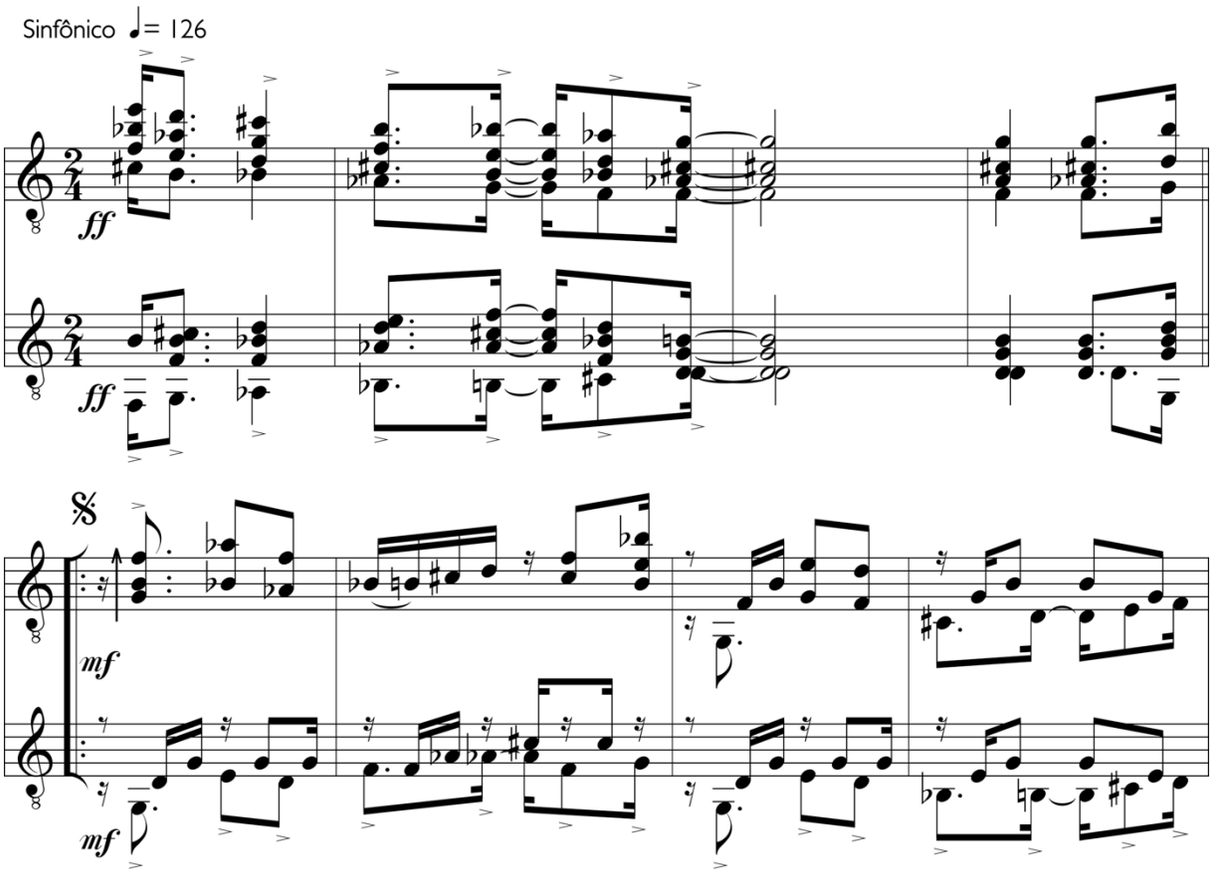
Track 29

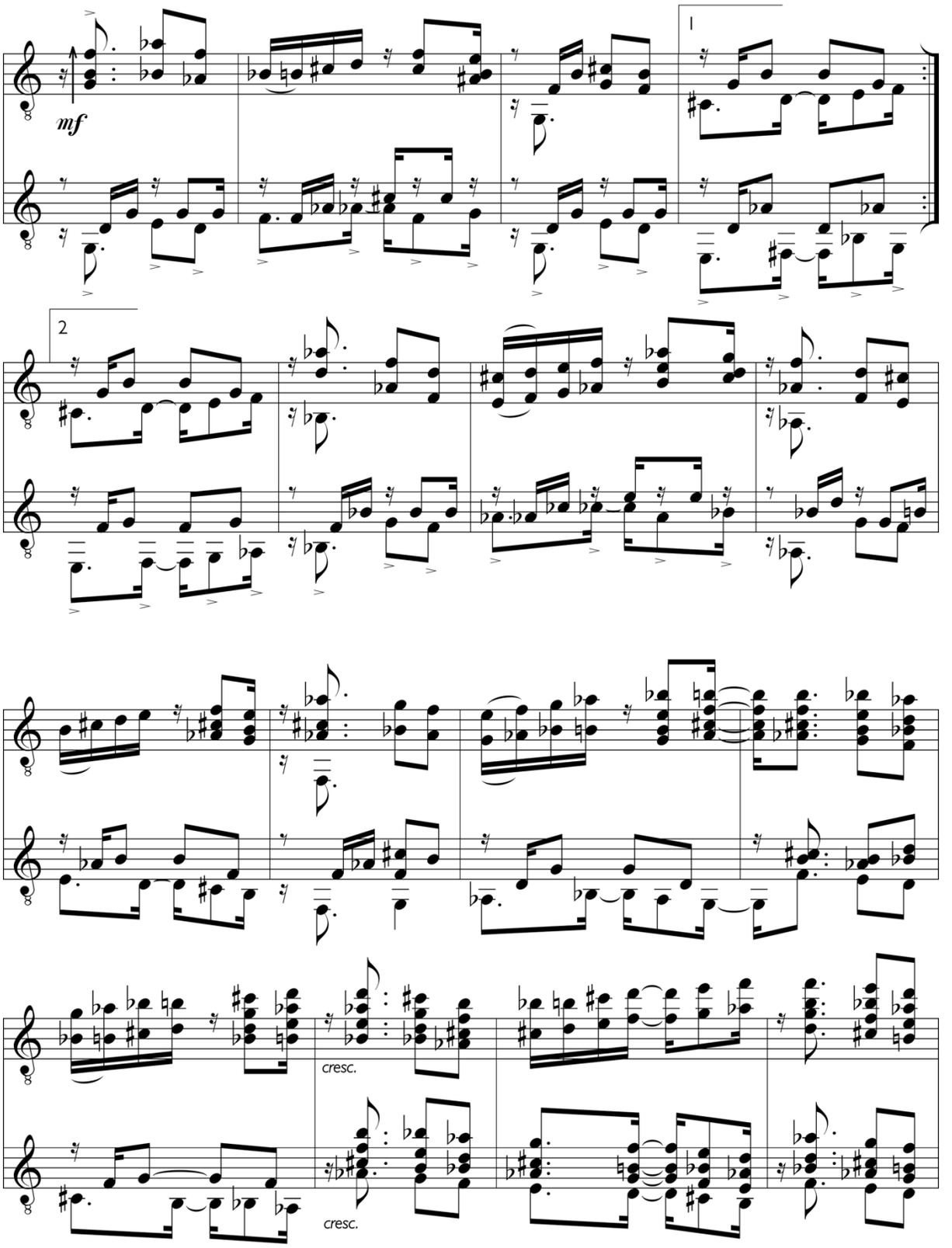


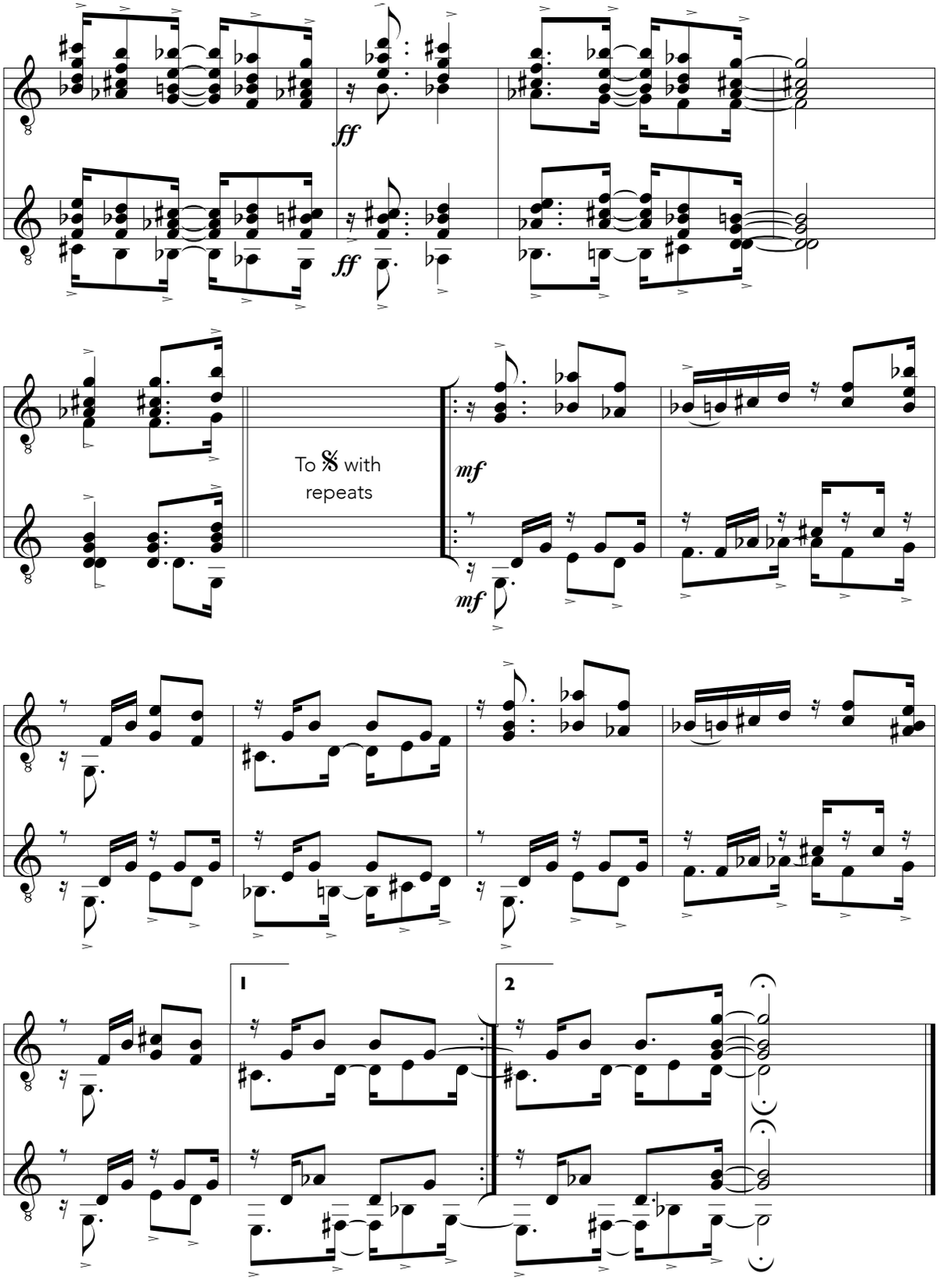


Next, another example of the octatonic scale, this time written for two guitars using the rhythm of the chula, a traditional rhythm from Bahia.

Track 30

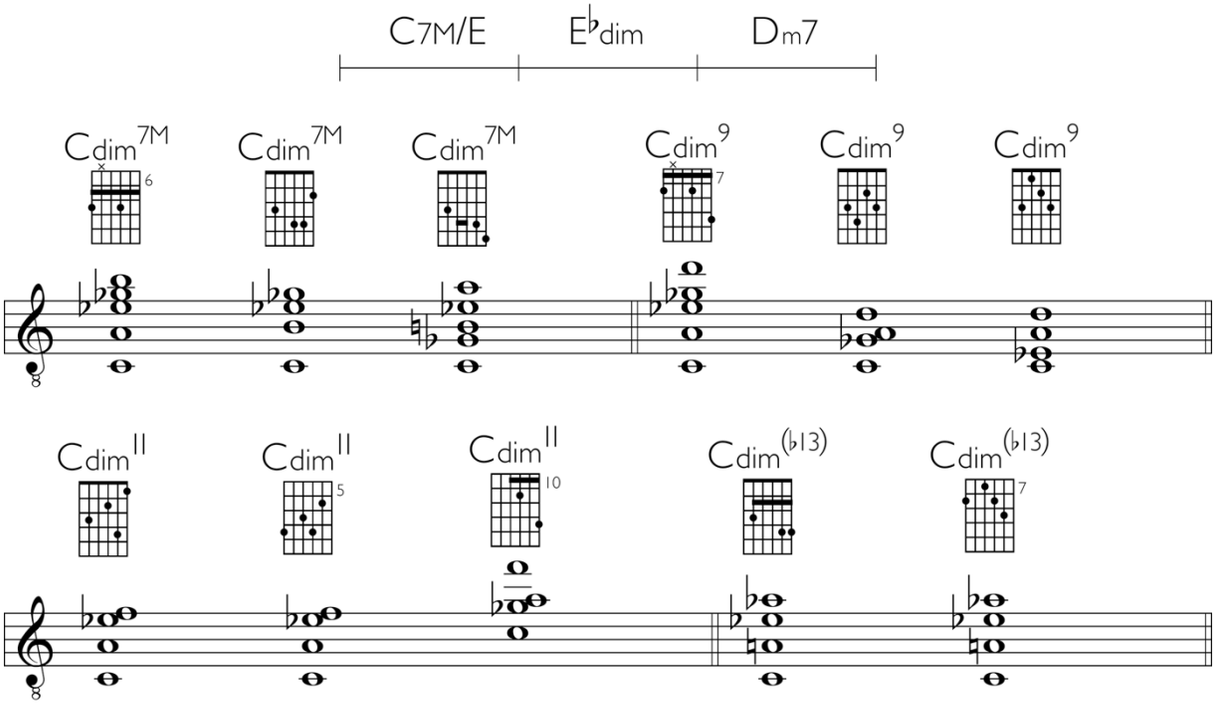




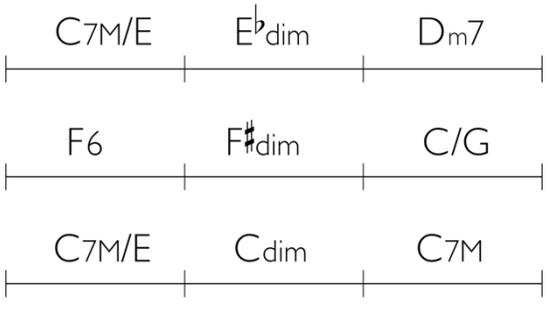


Symmetrical diminished octatonic scale

Octatonic diminished scales are structured based on whole-tone-half-tone symmetry, and their greatest interest lies in the role they play within tonal structures, always associated with the non-dominant diminished chord. We know that this chord is common in progressions between the tonic and subdominant functions, making the chromatic connection between two notes of the chords that represent them. Furthermore, the symmetrical diminished scale offers four extensions that can be applied to these chords.[1] See again the structure of this scale and its extensions:



Common chord progressions to which the diminished octatonic scale can be applied:



[1] *In these cases, the major seventh serves as an extension to the diminished chord.*

Modes of harmonic scales

In the same way that we associate modal scalar structures with the major scale and the melodic minor scale, we can also do so with harmonic minor and major scales. The harmonic minor scale and the harmonic major scale are mode generators, as are the major and harmonic minor scales with the lowered second degree – b2.

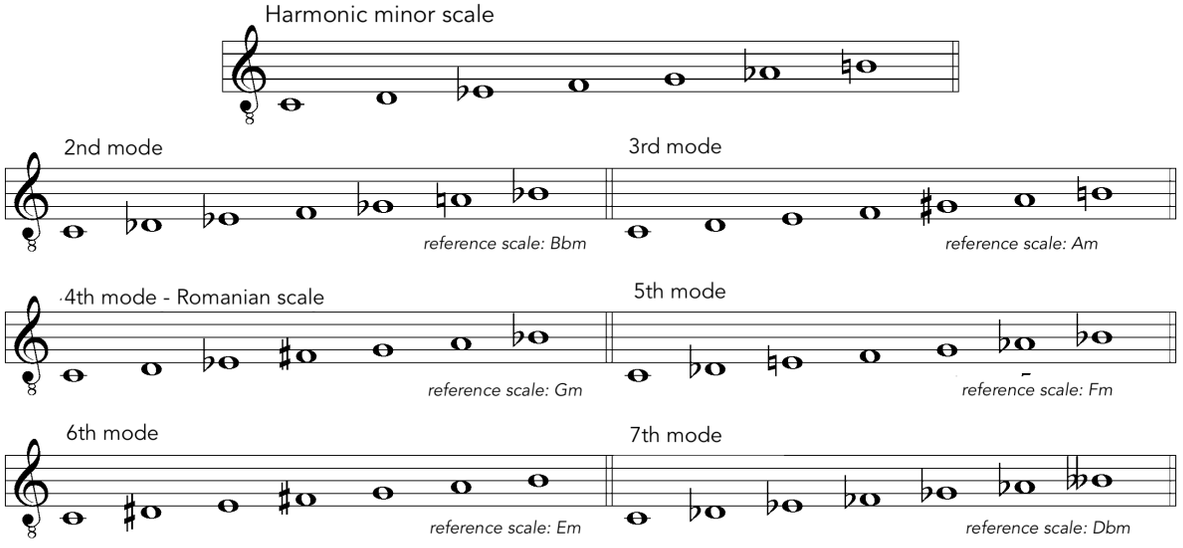
Within the traditional jazz language, these modes have not become as established as the previous ones, and the main reason for the lack of interest in them is due to the augmented second intervals, which are part of their structures. These intervals create a certain discrepancy with the aesthetics of this language. Furthermore, there are not enough folkloric manifestations that use these modes to the point of establishing them. There are few modes that derive from harmonic scales and that have an impact on popular and folk music or that have been used clearly and deliberately by classical composers. Only two examples are more relevant and deserve highlighting: the 4th mode of the harmonic minor scale – Romanian scale – and the 5th mode of the harmonic minor scale b2 – Andalusian scale.

Due to this limited use, a consecrated nomenclature associated with them has not been developed. Despite some isolated attempts to create a specific terminology for these modes, we are far from a consensus regarding their use and application. A nomenclature in the style of those that exist for the modes associated with the major and melodic minor scales has already been attempted without much success. As we said before, we are not interested in filling this gap with any attempt to rename these modes, which we consider unnecessary. What can be found, in some musical environments, is a type of nomenclature that is based on the same simplistic relationship adopted for the modes associated with the melodic minor scale, where the titles are directly related to the structures of the modes of the major scale. Just for the record, the terminology that sporadically appears for the classification of modes in the harmonic minor scale, for example, does nothing more than add sharps and flats to the Greek names that have so often been used to name the modes, whether in Hellenistic Greece itself, in Gregorian Chant of the Middle Ages, or in the practice of jazz during the second half of the 20th century. It is based on the names adopted for

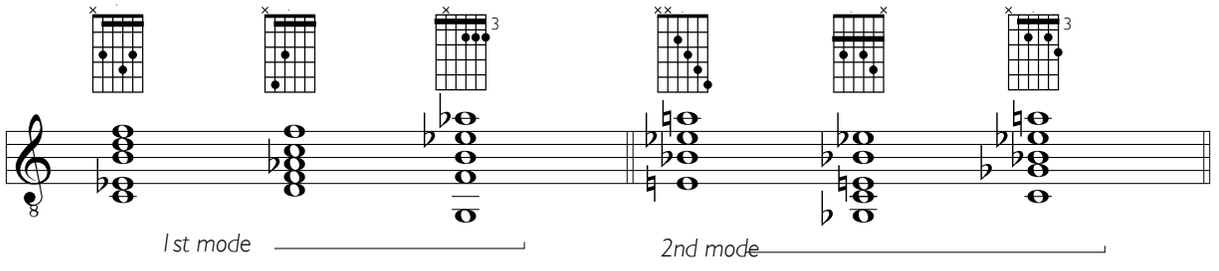
the modes of the major scale and justifies the intervallic differences through a comparative process of little theoretical relevance: Locrian #6, Lydian b3 or Lydian #2, Phrygian dominant, Ultralocrian, etc. On the other hand, the b2 harmonic scales have not even had the privilege of receiving this attention and remain without any classification. From now on, we will treat these specific modes by their relationship with the scales to which they are associated: 6th mode of the harmonic minor scale, 3rd mode of the b2 harmonic major scale, and so on.

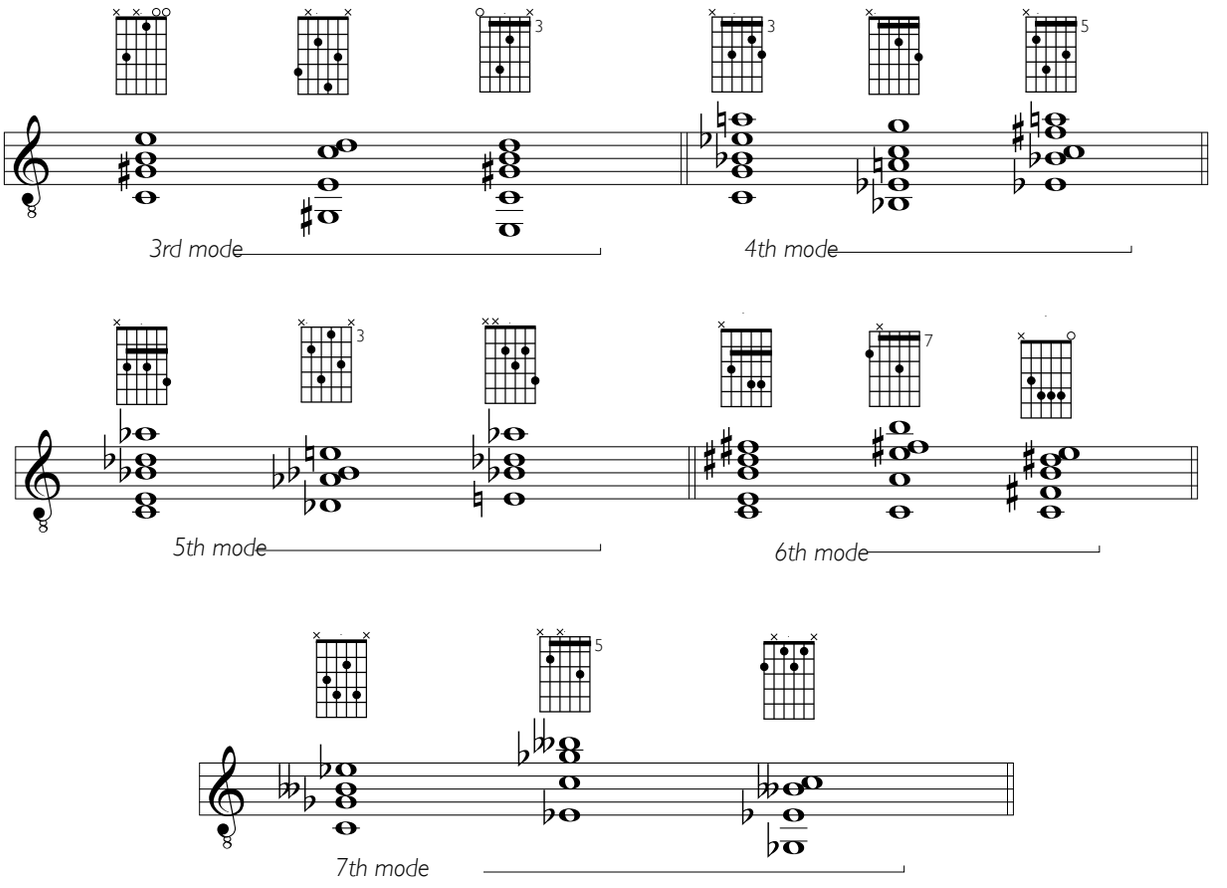
Regarding chords that are structured from harmonic scales and their possible progressions, we will not use the alphanumeric notation of the intervallic structure starting from the root note.

Modes of the harmonic minor scale

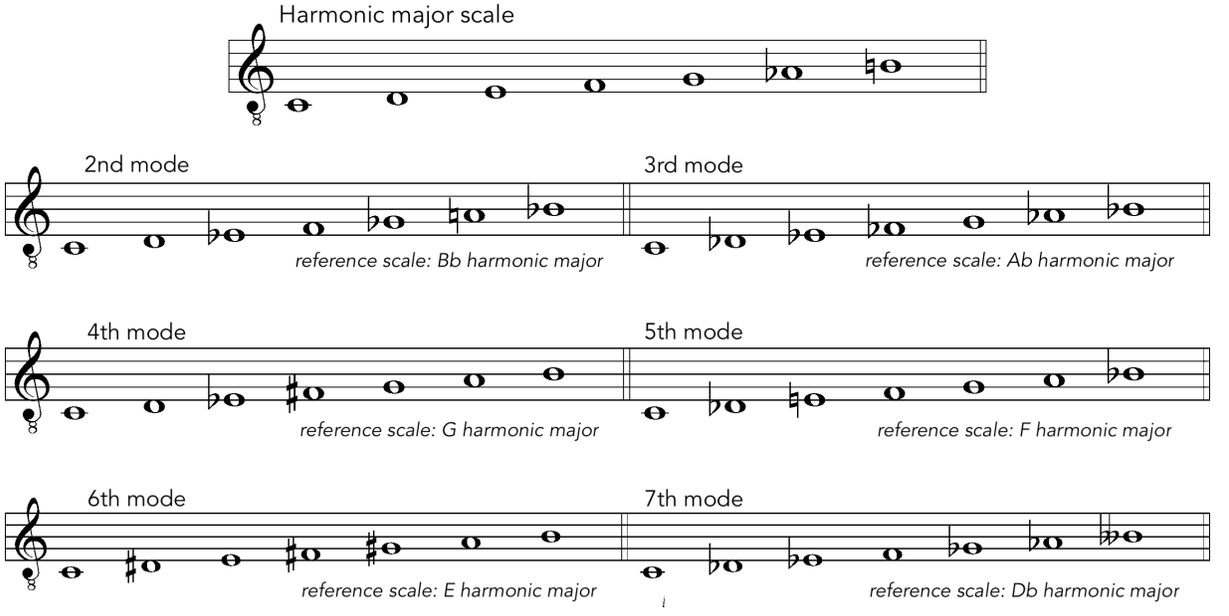


Modes of the harmonic minor scale – chords

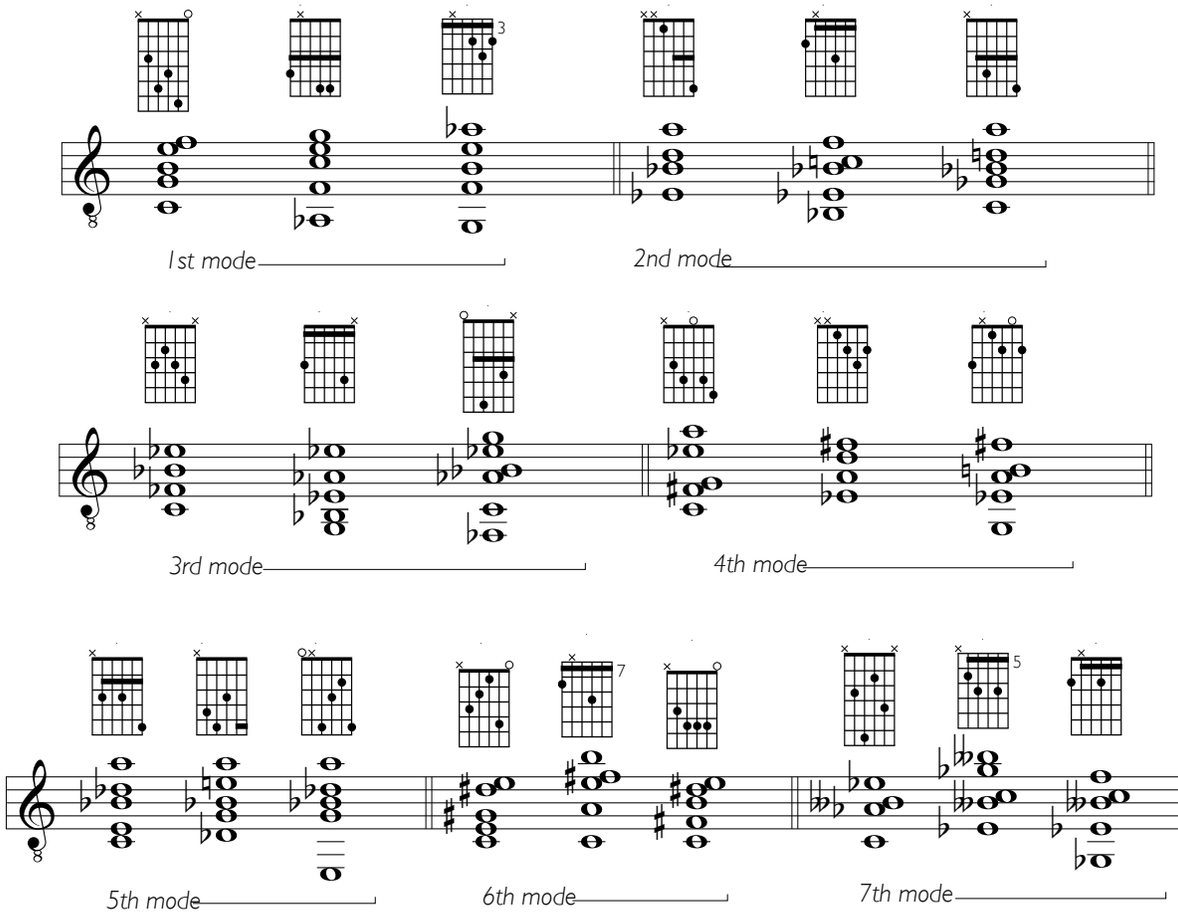




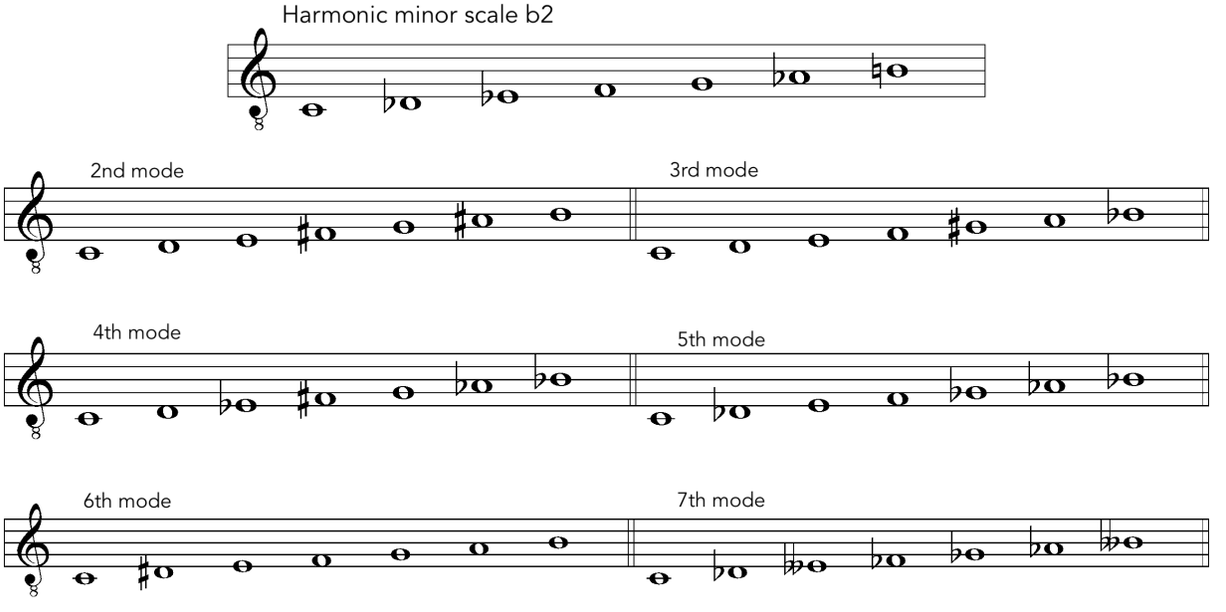
Modes of the harmonic major scale



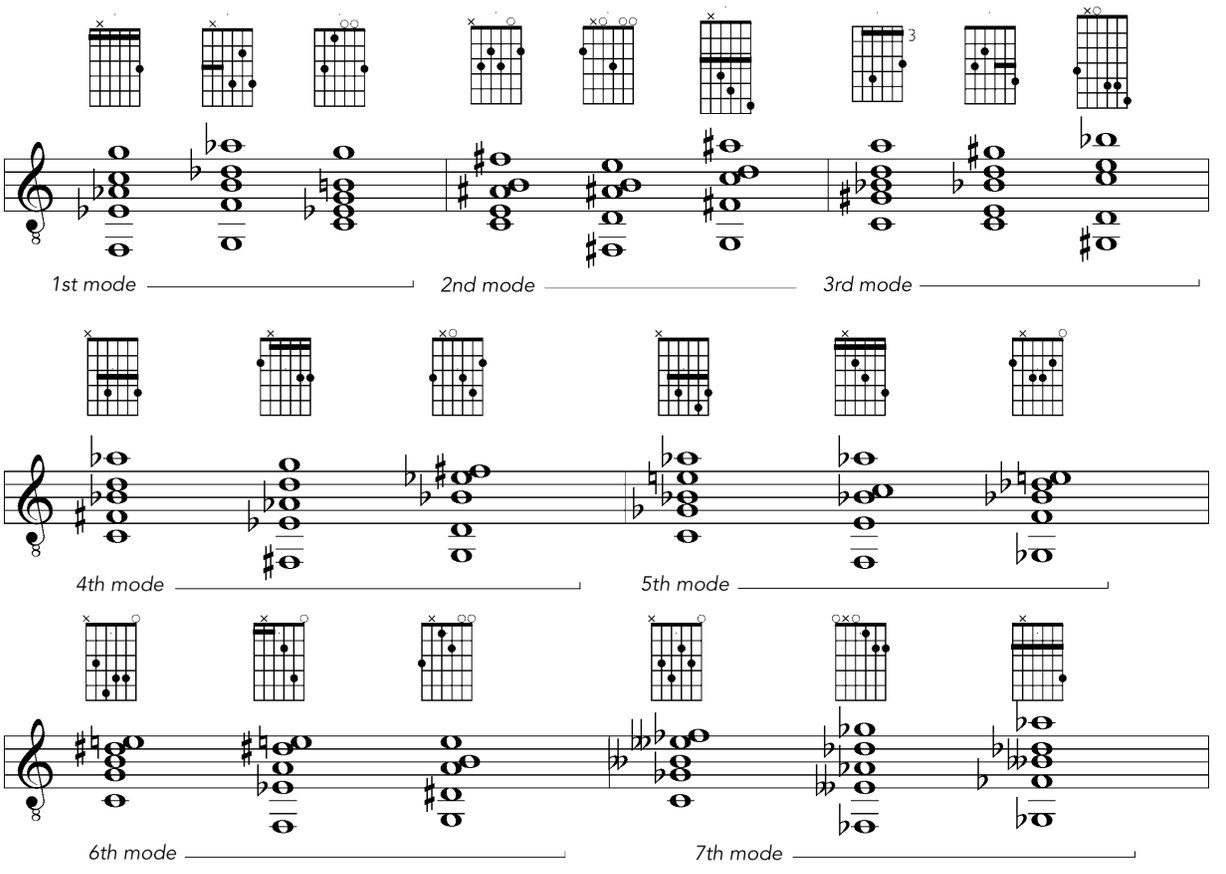
Modes of the harmonic major scale – chords



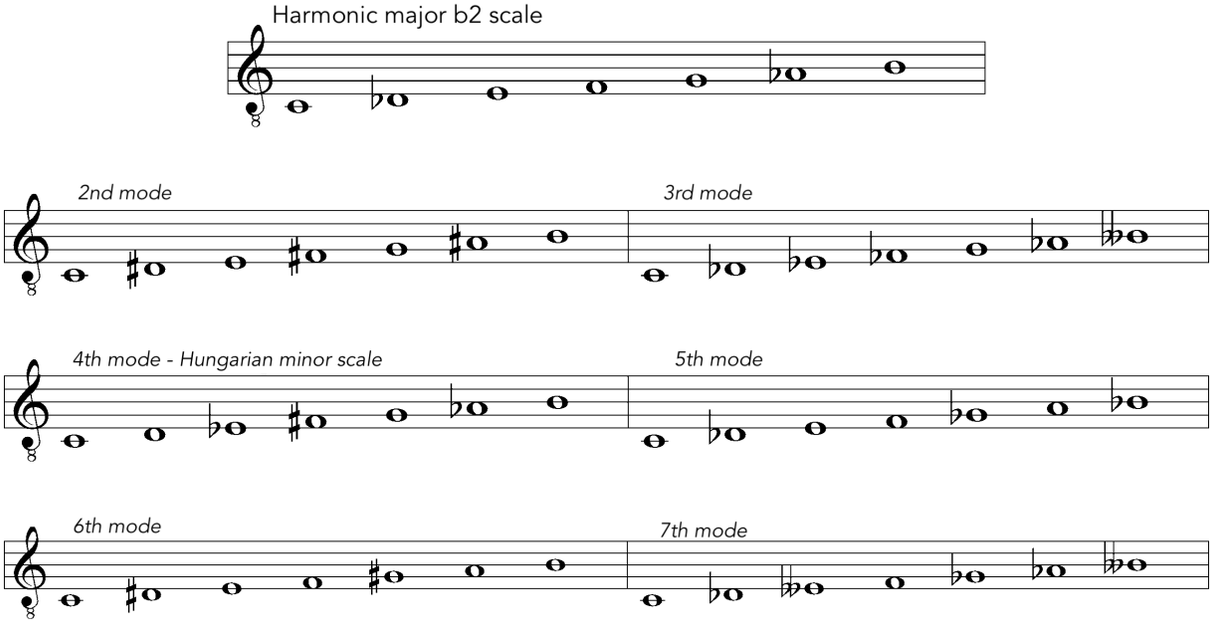
Modes of the harmonic minor scale b2



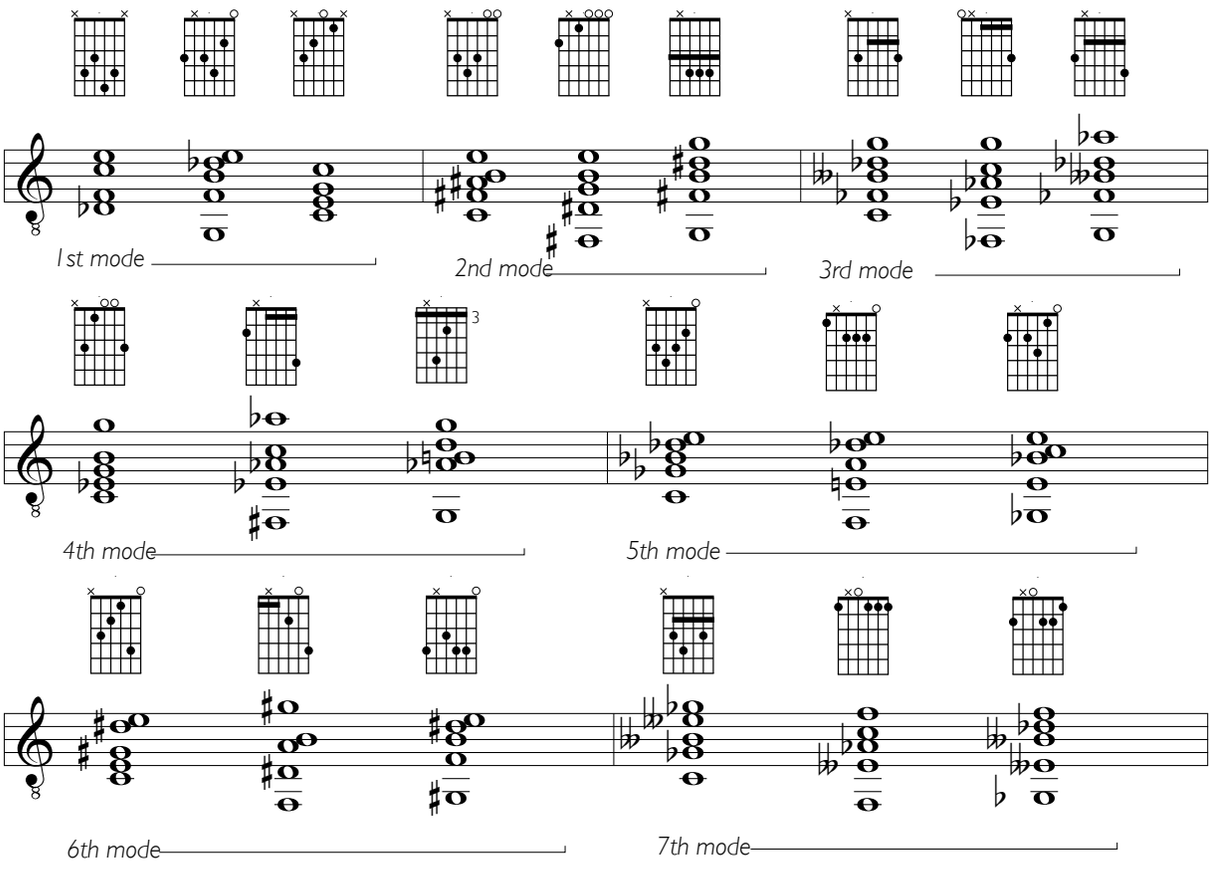
Modes of the harmonic minor b2 scale - chords



Modes of the harmonic major b2 scale



Modes of the harmonic major b2 scale - chords



Exercise

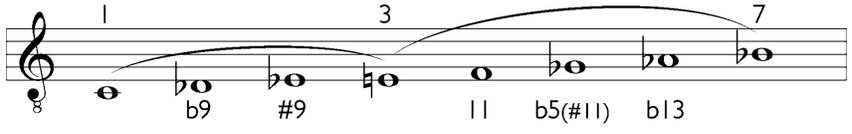
1. Extract the modes and build chords from the following scales:

a) D harmonic minor
b) F harmonic major
c) C harmonic major
d) A harmonic major b2
e) G harmonic minor b2
f) D harmonic major b2
g) E harmonic minor
h) C harmonic minor b2
i) B harmonic minor
j) E harmonic major b2
k) F sharp harmonic minor
l) C sharp harmonic minor b2

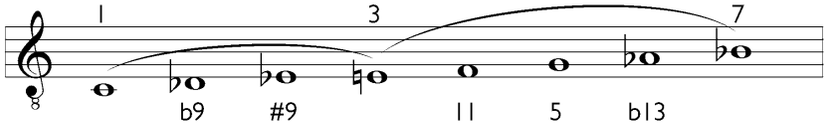
Other scales

There are many other scales used in specific musical situations. Some express relevant melodic bases from different cultures around the world, while others, although not deserving attention for their degree of applicability, stand out for the curious aspect of their structures. In general, they are byproducts of other scales and were developed and used by 20th-century European composers. Within the first context, we can mention four of these varied scales: the eight-note Spanish scale, the hybrid harmonic-natural scale[1], the Hungarian major scale, and the Romanian scale. The first three have a dominant scalar structure; that is, they form in their main chord a dominant 7th tetrad with different extensions. For this reason, in addition to serving an exclusively modal practice, they constitute a melodic basis for certain situations of altered dominants within tonal structures. See how the relationship between their intervals presents itself when verticalized:

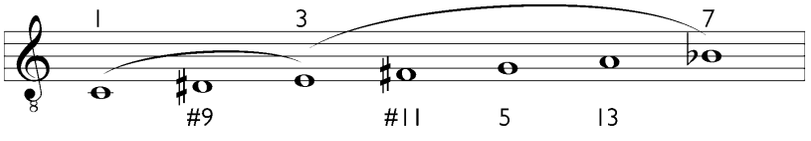
Eight-note Spanish scale



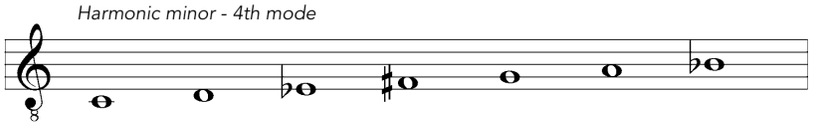
Hybrid Harmonic-Natural Scale



Hungarian major scale



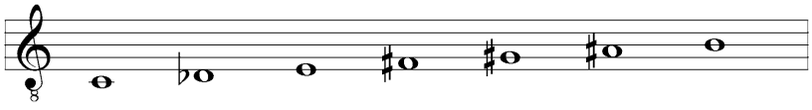
Romanian scale



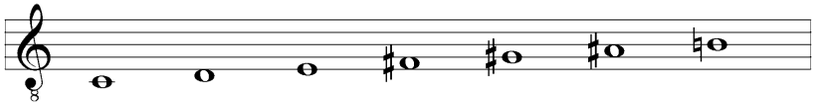
[1] *Similar to the eight-note Spanish scale, the harmonic-natural hybrid scale combines the harmonic minor scale with the natural minor scale, resulting in a minor scale with a leading tone and subtonic. It is generally applied using its 5th mode.*

In a second section on exotic scales, we have some synthetic scales used by 20th-century classical composers. With rather limited application, these scales deserve mention for their unusual aspect. The most relevant are:

Enigmatic scale

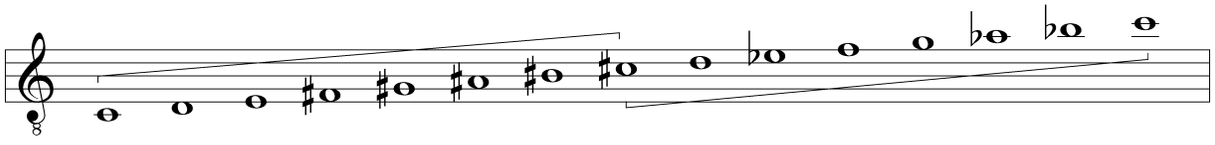


Whole tone scale with leading tone

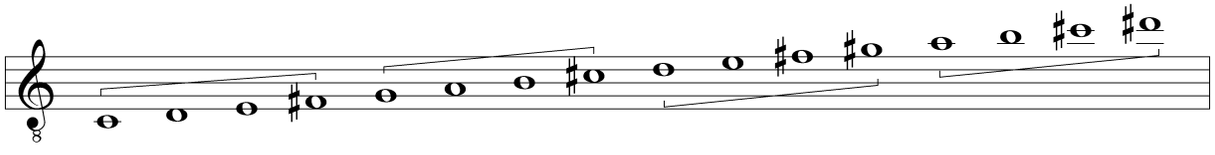


Two-octave scale

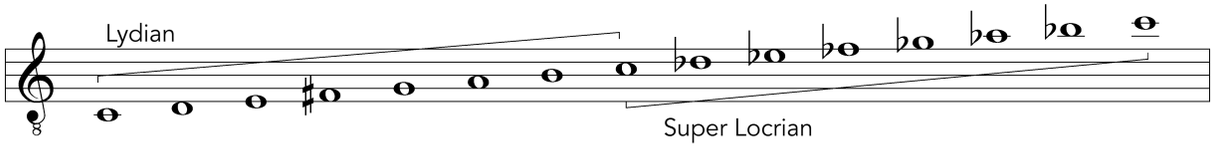
Type 1: Two octaves without repeating the first degree in the first octave.



Type 2: multi-octave scales with same structure tetrachords.

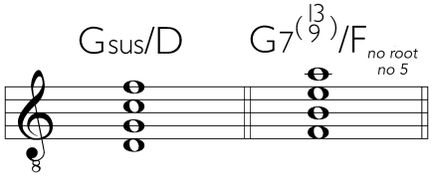


Type 3: by combining two diatonic modes with repetition of the first degree.

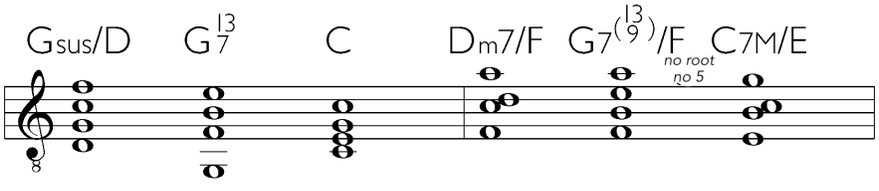


Quartal chords

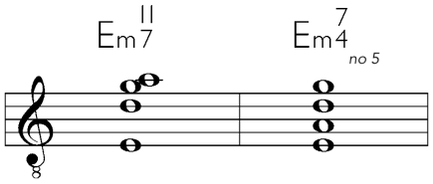
Harmonic structures based on superimposed fourths, or quartal chords, were not introduced into the musical works of European composers as replacements for chord structures by thirds. It was simply one of several elements used in the process of breaking with the cadential tonal practice that had developed for more than four centuries. At the turn of the 19th to the 20th century, some composers seeking previously unusual musical elements used harmonic structures based on superimposed fourths to further expand harmonic possibilities, mixing traditional tonal elements with a more open and free modal practice. We find some good examples in the works of Claude Debussy, Maurice Ravel, Igor Stravinsky, and Béla Bartók, as well as in works by composers of the Vienna School founded by Arnold Schoenberg and maintained by his disciples and followers; among these, notable figures such as Alban Berg and Anton Webern. Structures based on superimposed fourths have always intrigued some musicologists and historians, even generating some conflicts of interpretation. A series of chords in tonal and Modal Harmony, generated from structures based on thirds, results in quartal structures when inverted or when there is a change of position in the chord. A simple case, already analyzed previously, occurs in the second inversion of the suspended dominant chord in its basic formation (1, 4, 5, 7) and also in the third inversion of the incomplete dominant tetrad that contains only the tritone added to major ninth and thirteenth extensions:



These structures regularly connect in tonal harmonic progressions.



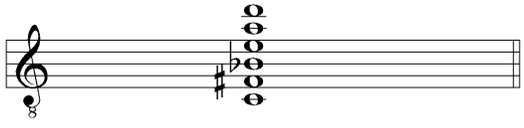
Minor chords also contain some structures based on perfect fourths, depending on their presentation. These are the minor chords with a seventh and eleventh *(without the fifth)*.



The structures described above are found both in the cadential process of tonal music and in the freer harmonic progressions and structures of 20th-century modal practice. As we have said, in most cases, chords that combine augmented and diminished fourths *(enharmonic versions of major thirds)* with perfect fourths are structures generated from the superposition of thirds when changing state and presenting the chord. It is in this type of situation that some errors of interpretation occur. Some examples, which have become independent harmonic entities, illustrate this issue well. Two very well-established and constantly debated cases deserve highlighting and attention:

1. Scriabin's mystical chord

chord with two augmented fourths, one diminished fourth, and two perfect fourths



Note:

It represents the 'acoustic chord' formed by the first eleven notes associated with the harmonic series. It is also an altered dominant chord that can be analyzed as a C7(b5, 9, 13) or a C7(9, #11, 13), depending on its presentation.

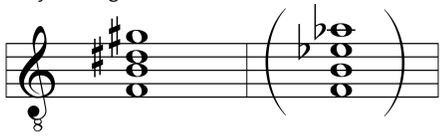
Finally, it can be interpreted as the main chord of the Lydian Dominant mode.

(see Chapter – Modes of the melodic minor scale)

2. The Tristan Chord

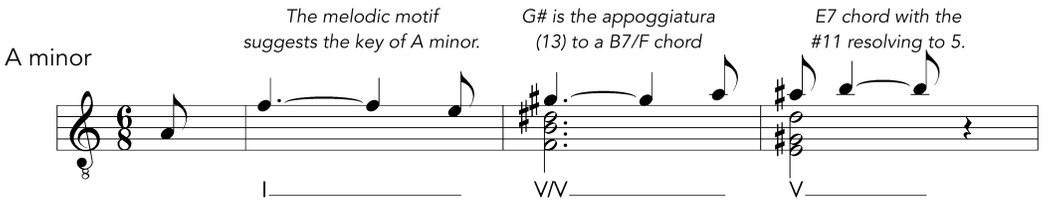
A chord with an augmented fourth, a diminished fourth, and a perfect fourth.

according to the original score by R. Wagner *misinterpretation as a quartal chord*



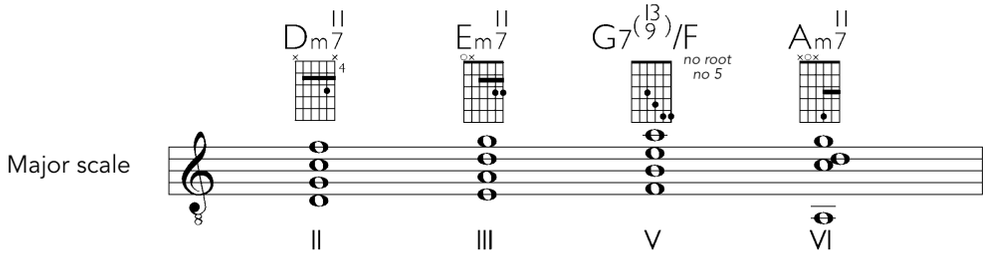
Note:

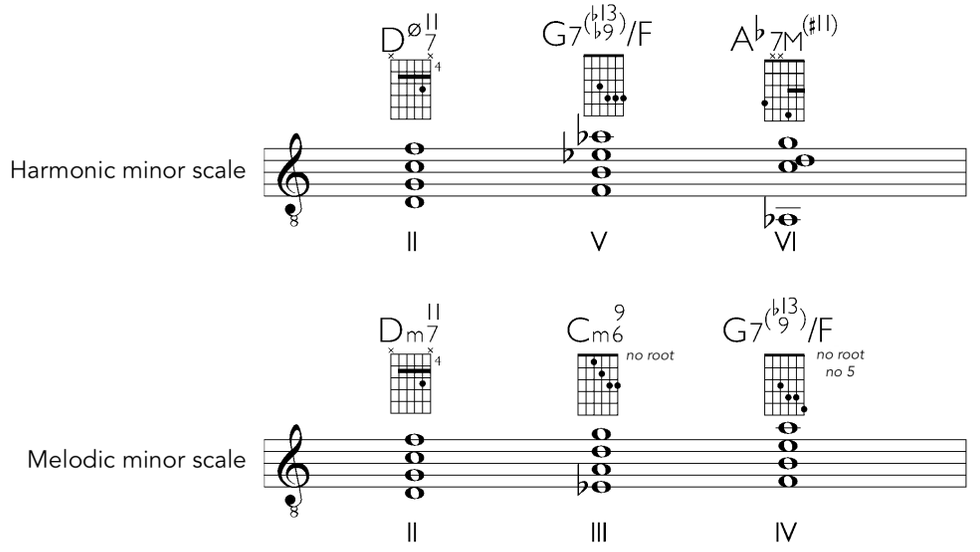
The so-called 'Tristan Chord', which cannot be analyzed in isolation from its harmonic context, represents a dominant chord of the dominant (V/V) with the diminished fifth in the bass and an appoggiatura (13) of the seventh that will follow. See, in the following example, the first measures of the Overture of Tristan and Isolde, by Richard Wagner.



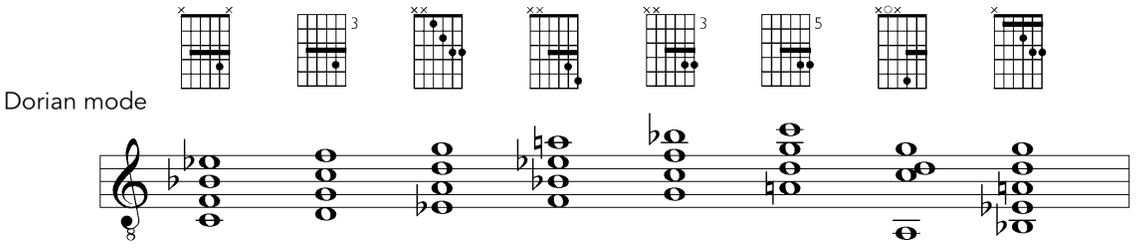
As we can see, this type of misunderstanding occurs frequently, since within the tonal process any isolated analysis of harmonic structures is inadvisable. The chaining of chords within the tonal system must always obey the movement-rest principle, as explained in the first volume of the Harmony Notebooks series, and therefore, any isolated analysis of chords is incorrect. Thus, we can say that within the modal and post-tonal harmonic process, the chords by fourths that are most effective in their application are those structured in the relationship of perfect fourths. It was in this way that these chords acquired unequivocal harmonic quality and opened space for the exploration of new sonorities and new paths in musical practice.

In jazz, chords by fourths became part of the common harmonic language based on stylistic characteristics determined by three of the most important contemporary pianists: McCoy Tyner, Chick Corea, and Herbie Hancock. They all, more or less simultaneously, began to harmonize, often using chords of three and four notes, structured in superimposed perfect fourths. Frequently, this application was not directly linked to modal structures and was practiced in tonal situations governed by one of the following scales.

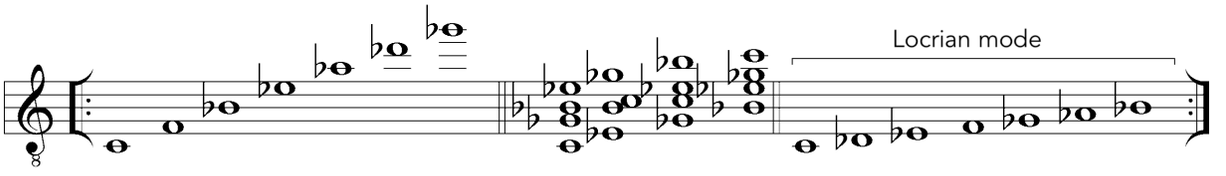




However, the best solutions for applying chords by fourths are found in the modal strucutre. The harmonic treatment of modes based on chords by fourths offers a unique result and has been adopted by many jazz musicians around the world. See how the chart of chords by fourths looks when applied to the Dorian mode of C:

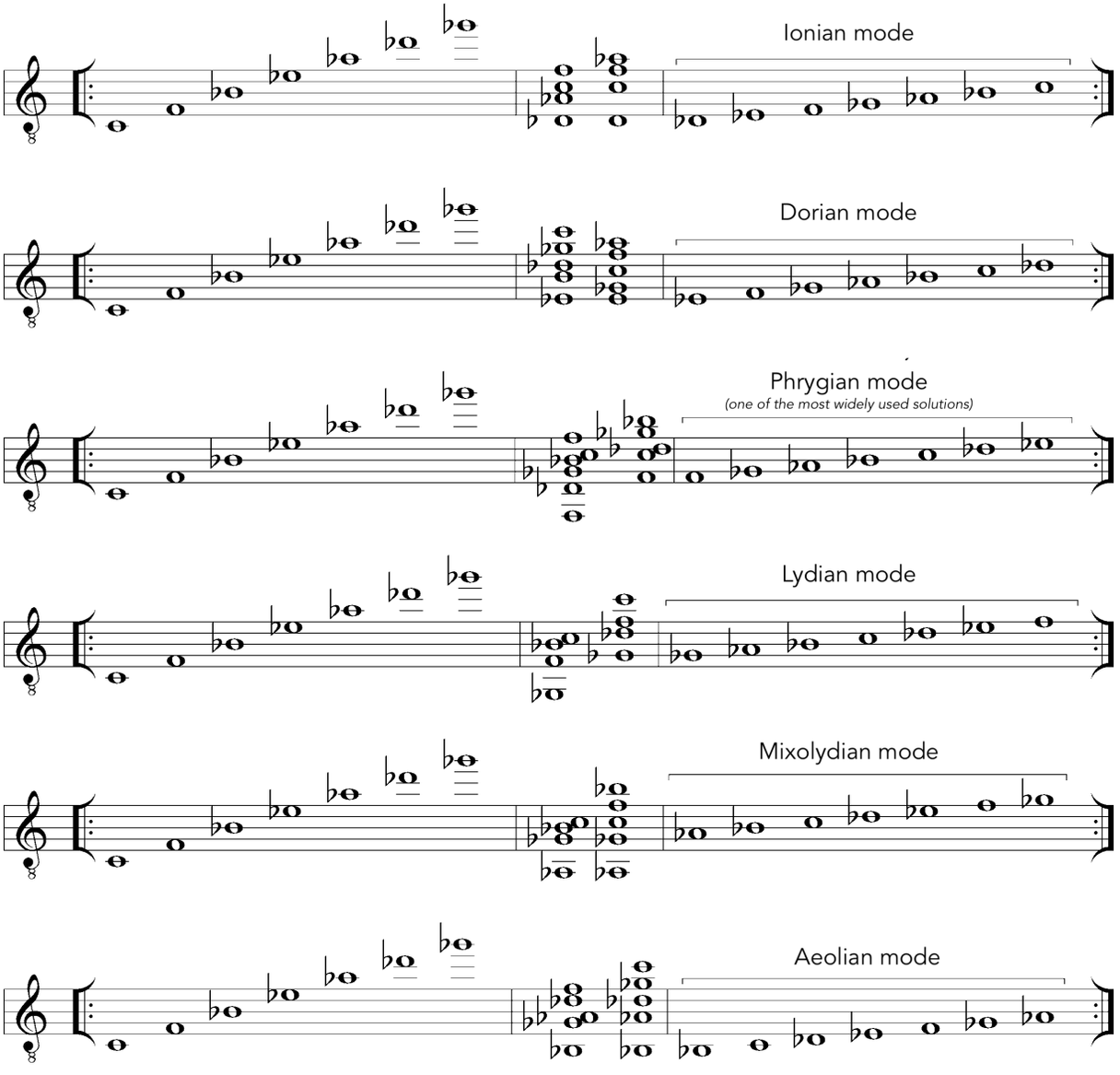


Structures based on superimposed fourths are open structures with a very peculiar sound. In the modal application of this type of chord, it is possible to associate them with the different modes of the major scale[1]. Interestingly, a structure of seven notes based on superimposed perfect fourths gives us as a result the series of notes that form the **Locrian mode**. This means that whatever the basis on which a chord with six superimposed fourths is built, the melodic result will be referenced to this mode.

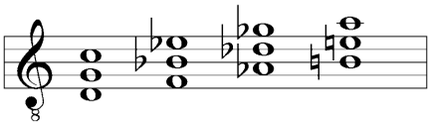


[1] *There are no chord symbols for chords formed by superimposing fourths.*

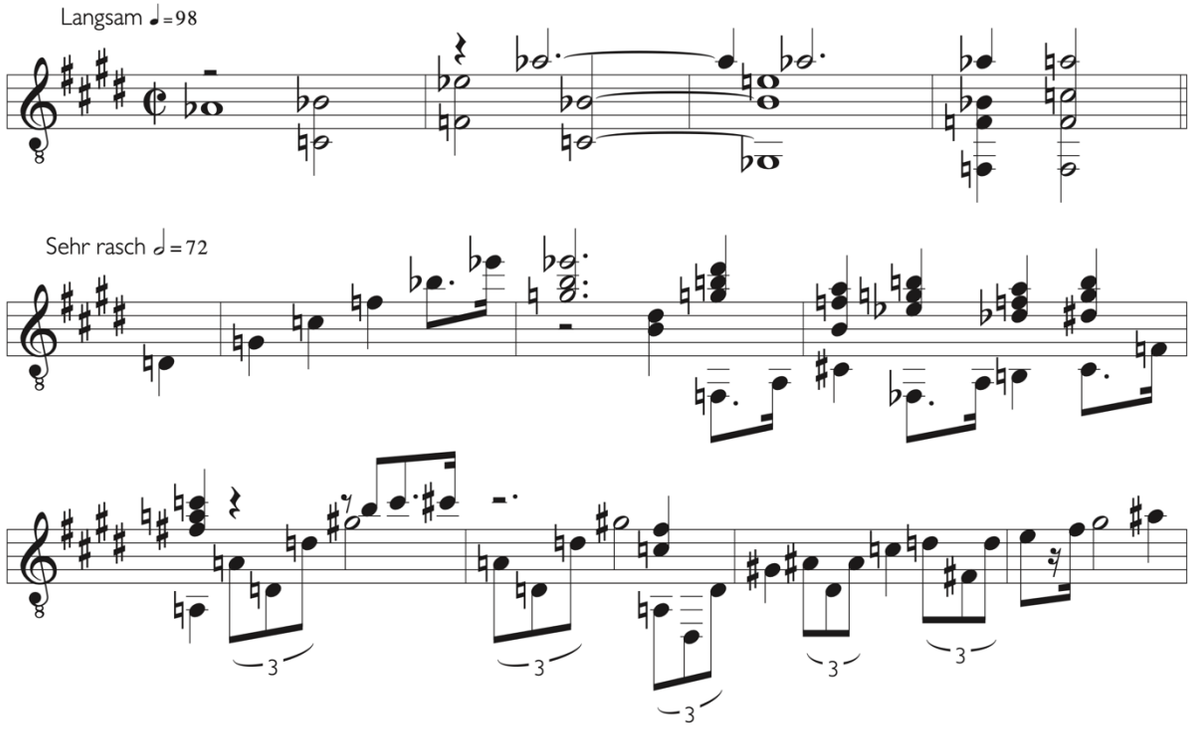
Following this principle, we can also find some interesting solutions in associating quartal chords with other modes, such as Dorian, Phrygian, Lydian, Mixolydian, and Aeolian. The table presented below gives us an overview of these possibilities.



If fourths are stacked, in addition to the scheme shown above, we will have a representation of the entire chromatic scale.

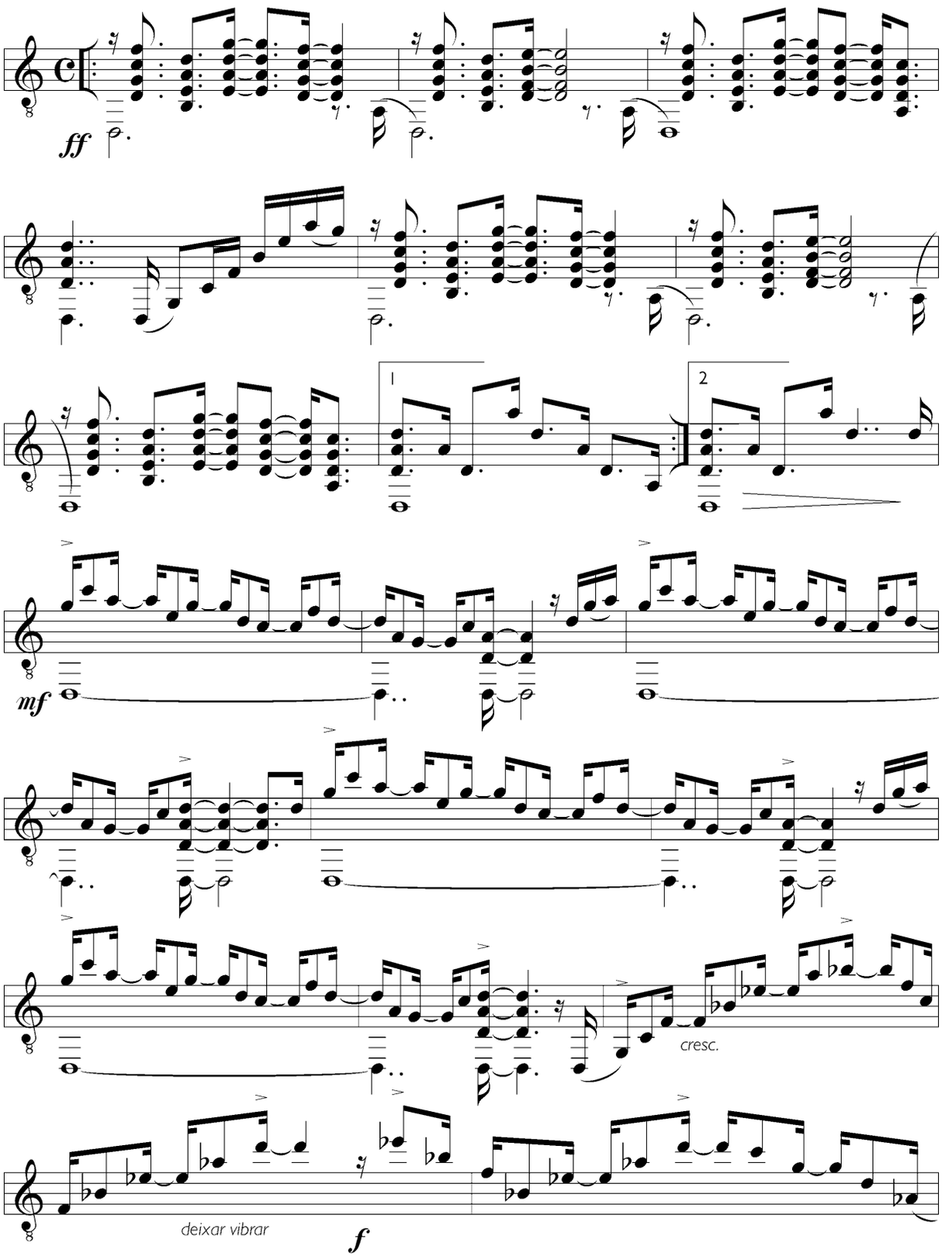


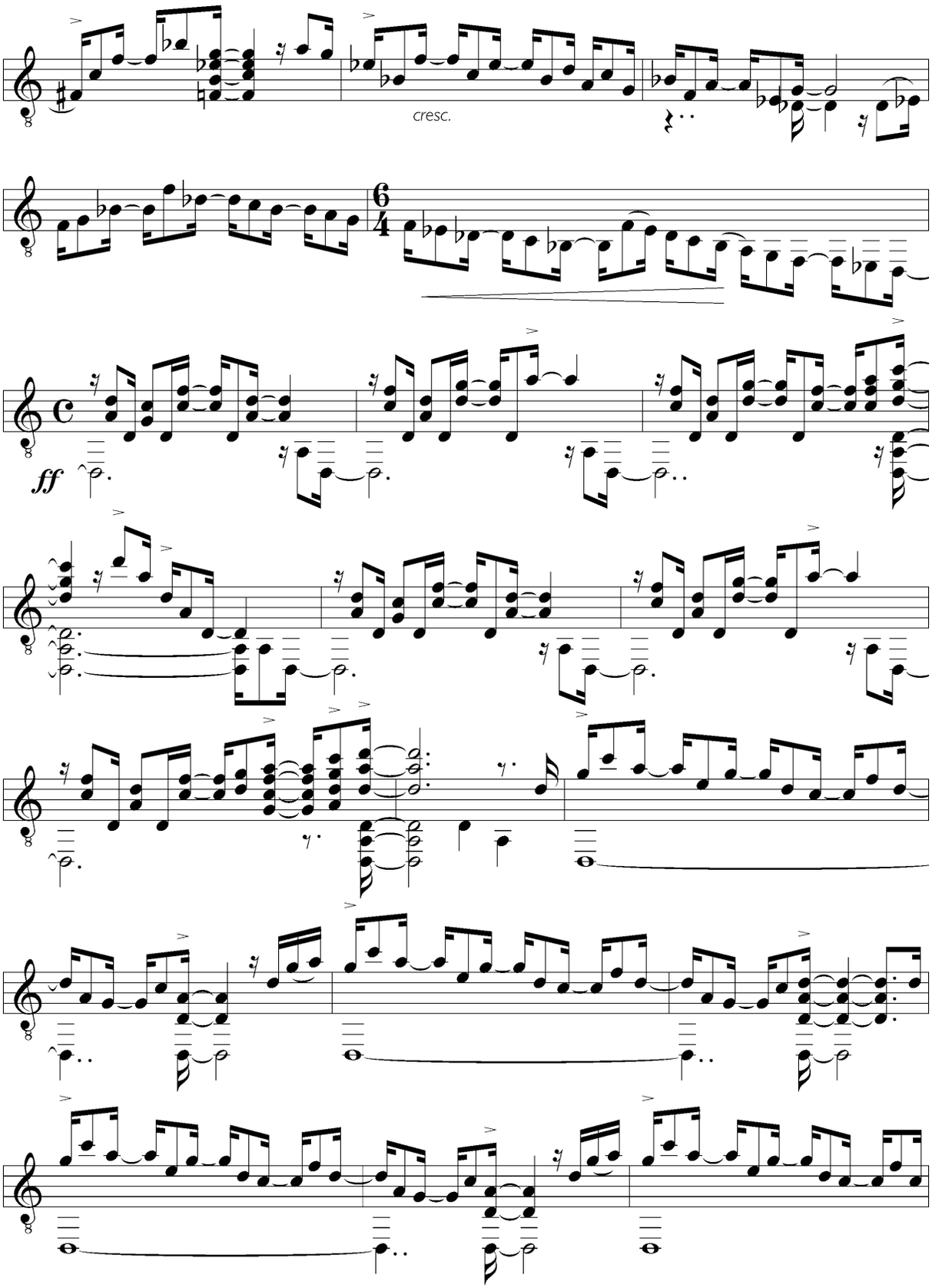
In early 20th-century European music, one of the most significant references on the subject is Arnold Schoenberg's Chamber Symphony Op. 9. Written in 1906, this work pioneered the exploration of harmonic structures in fourths. It is a composition elaborated from extremely complex and original harmonic and formal elements. From a harmonic perspective, the Chamber Symphony Op. 9 shows us an intricate variety of chromatic elements, in addition to other modes and the whole-tone scale. Even with this variety of elements, this work by Schoenberg maintains a vague but effective tonal centralism based on E major. We do not intend here to delve into any kind of harmonic analysis of this work, because that would require extensive and exclusive work to explain its content in any depth. The idea is simply to draw the student's attention to the superimposed harmonic structures in fourths, which represent one of its main harmonic elements. See below a guitar reduction of the first measures of this symphony.

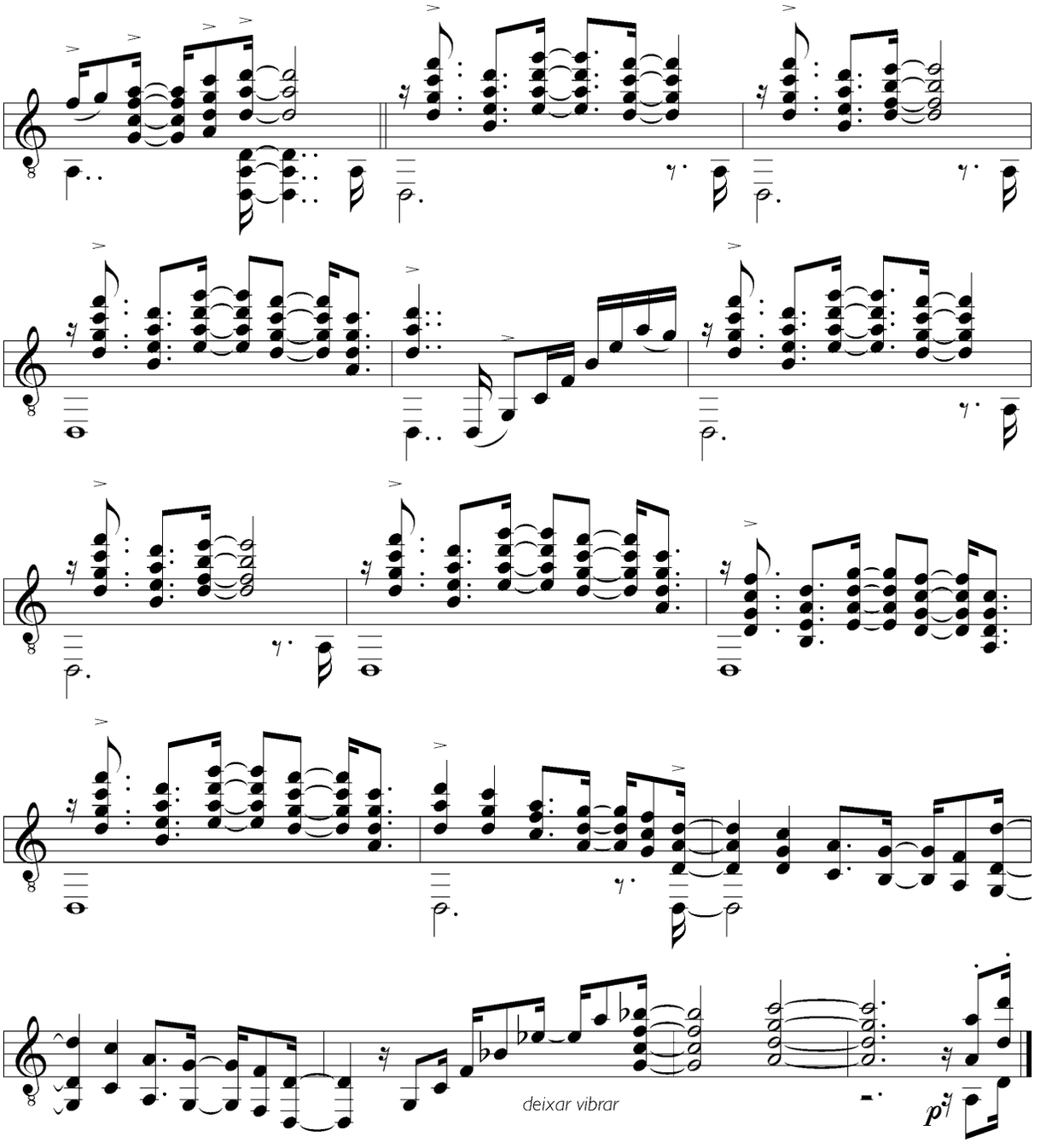


Quartal chords were also effectively applied to certain tunes in Brazilian popular music of the 1960s. Influenced by some jazz musicians, Brazilian instrumentalists incorporated quartal chords into their harmonizations. See, in the following example, the use of quartal chords in this case.

Track 31







Exercises

1. Quartal chords from tonal scales

   • Develop diatonic melodies exploring fourths from the major, harmonic minor, and melodic minor scales.

   • Practice inversions and changes of position in quartal chords from tonal scales.

   • Harmonize diatonic melodies developed from the scales mentioned above with quartal chords extracted from them.

2. Quartal chords in secondary dominants

   • Develop a tonal melody involving secondary dominants, exploring perfect and augmented fourth intervals.

   • Through alterations and omissions *(fifth, root, third, or seventh)*, form quartal chords and develop possible progressions with them.

3. Quartal chords from the modes

   • Create melodies using the Dorian, Phrygian, Lydian, Mixolydian, and Aeolian modes. Harmonize them with quartal chords, structuring them with three and four notes, according to the notes that are part of each chosen mode.

Third part

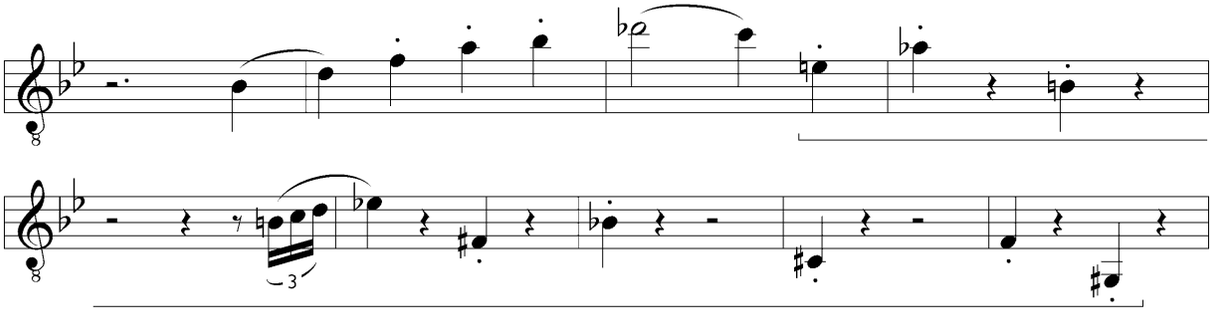
Post-tonal Harmony

Post-Tonal Harmony

In the first quarter of the 18th century, after the temperament of the chromatic scale and the release of Johann Sebastian Bach's 24 Preludes and Fugues, which proved that it was possible to use all major and minor keys equally and in a balanced way, a new era began regarding the tonal system. From then on, the sovereign tonic ceased to be related only to the diatonic notes of a main key and to a few chromatic notes of nearby keys, making all kinds of chromatic tension possible. This meant that, in addition to the fact that all major and minor keys could be used independently, all modulation also became viable. Different deviations from the main tonal centers could then occur without restrictions, taking the harmonic discourse to distant tonal structures. These deviations from the tonic, which in the tonal system occur through different types of chromatic tension, while on the one hand leaving the tonic in a remote position, on the other hand are responsible for an inevitable and comforting return to it at the end. Obviously, until there was complete mastery of the application of the chromatic system within the tonal system and it became common practice, there was a long journey of attempts and experiments. The knowledge and awareness of tonal chromatic procedures was only possible thanks to the tireless contribution of countless composers throughout the history of music and was exhausted, if that is something that can be said, after more than a century and a half of intense musical activity. It was the most important period of European music, which includes works ranging from the creation of Johann Sebastian Bach's Chromatic Fantasy and Fugue to compositions from the beginning of the 20th century, such as Arnold Schoenberg's intriguing string sextet Transfigured Night.

After the death of Johann Sebastian Bach and the subsequent arrival of the Classical period, the chromatic process so well explored by him stagnated for a time, and a certain diatonic monotony returned to dominate European musical discourse. Only with Wolfgang Amadeus Mozart, who had diligently studied Bach's work, was tonal chromaticism used again. We can see this in some of his major works, such as Symphony No. 40 in G minor, for example. In this work, the use of the chromatic process as a melodic and harmonic basis is remarkable. Even subjected to the rigidity of classical tonality, this symphony presents a bold tonal chromaticism without ever losing the elegance,

grace, and fluency that are hallmarks of this period in the history of music. In this work by Mozart, there are numerous chromatic examples and modulating movements *(through the circle of fifths)* that appear throughout its development. One passage, in particular, draws more attention than the others. It is a section of the fourth movement in which all the notes of the chromatic scale are played, except the tonic G.

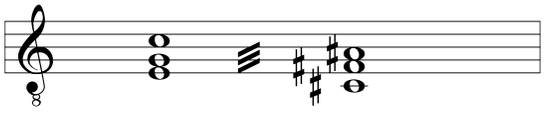


This exceptional example could very well be part of a work written in the 20th century, but it was actually completed in 1788!

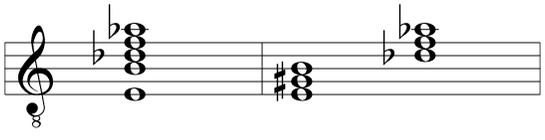
Just as in Mozart's 40th Symphony, countless other examples could be given in an endless list of important contributions to the development of tonal chromaticism. We can cite as examples, in the use of this chromatic process, several works by the composer Franz Liszt, as well as works by some Russian composers such as Rimsky-Korsakov and Mikhail Glinka. In any case, the greatest emphasis should be given to the one who still represents the greatest artistic reference in the application of tonal chromaticism: the German composer Richard Wagner. The way Richard Wagner used the tonal process in his compositions is quite complex and even confused some theorists who believed they were dealing with 'atonal' works, which is certainly a great mistake. Wagner's harmonization, despite frequently using altered chords, chords without a root, exceptional resolutions, and all kinds of modulation, is always related to well-defined tonal fields. This type of tonal chromaticism developed by Wagner became a reference for numerous composers who followed him. The expressiveness afforded by the harmonic approach of his works won admirers in various parts of the world. It was in Austria that his work had the greatest impact and gathered the largest number of followers, who further expanded his harmonic concepts. Gustav Mahler, Arnold Schoenberg, and Anton Bruckner are striking examples of composers

strongly influenced by Wagnerian innovations. These composers ended up developing their own unmistakable styles, but all always acknowledged a strong influence from the German composer from Leipzig.

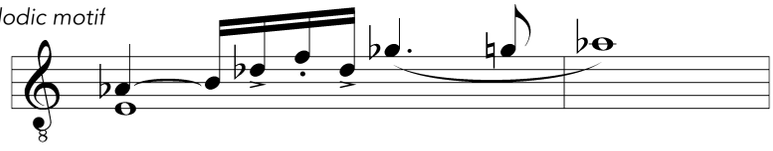
At the beginning of the 20th century, with the tonal system explored in practically all its possibilities, European composers began a search for new directions for musical creation, especially regarding harmonic structuring. One of these attempts was to completely abandon any musical situation that referred to a possible tonic or, even less, any possibility of using cadential processes. One of the methods adopted was the free combination of triads with a significant distance between them to obtain unusual intervallic combinations. A good example of this type of structuring is in the score of Petrushka, a ballet composed by Igor Stravinsky in 1911. In this ballet, Stravinsky makes a free combination of two major triads, spaced by a tritone, forming a chord that became known as the **Petrushka Chord**.



Still within this practice, we can also mention another well-known chord, the **Elektra chord**, found in the score of Richard Strauss's opera Elektra. This chord, whose intervals were also used in the formation of melodic motifs, consists of two major triads, one of E and the other of D-flat.



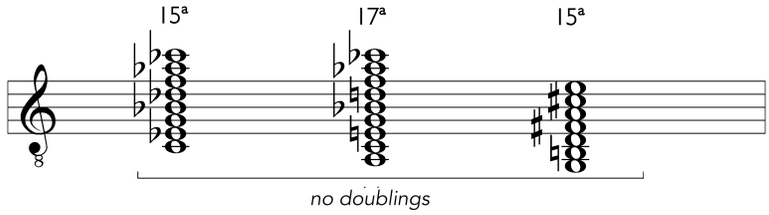
Elektra chord - melodic motif



Other Chords by Thirds

Like Stravinsky, several composers from the early 20th century adopted this and various other types of triad combinations, without any direct link to any scalar structure, to obtain new colors in the harmonic process. One of these processes of combining and superimposing triads resulted in

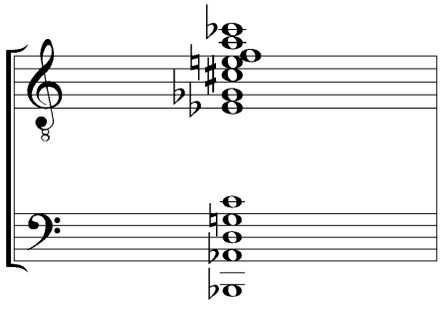
complex structures that exceeded the limit of the thirteenth. These structures formed the fifteenth and seventeenth chords, without any duplication of notes. Alban Berg, Arthur Honegger, Alexandre Tansman, Maurice Ravel, and Villa-Lobos himself, in his Rudepoema, made use of this type of structure.



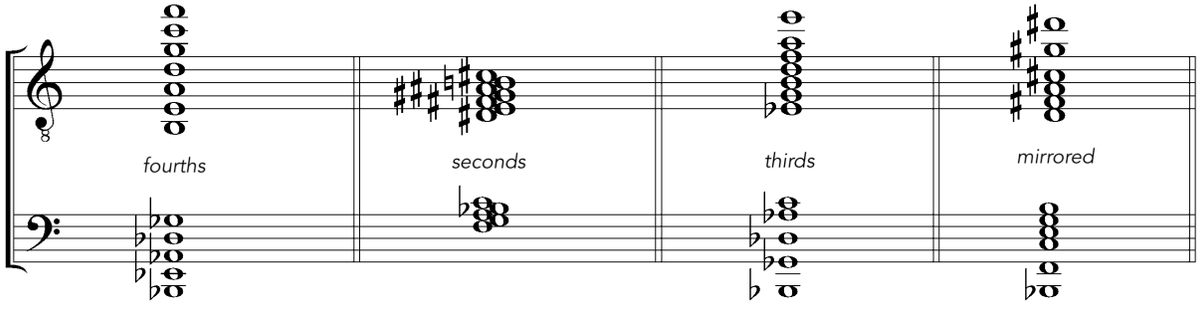
Fifteenth and seventeenth chords are only applicable in short harmonic passages. The density of these structures makes their use difficult in longer passages.

Twelve-note chords

Still within the process of superimposing thirds, we find the use of a final structure, the twenty-third chord. This chord contains all the notes of the chromatic scale, forming a large twelve-note chord. Of rather limited use, this type of chord is also only employed for harmonic punctuations of great tension and offers better results when used in symphonic writing, whose wide tessitura and timbral variety facilitate its use.

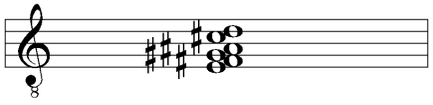


This chord can be built according to various patterns, as in the following example:

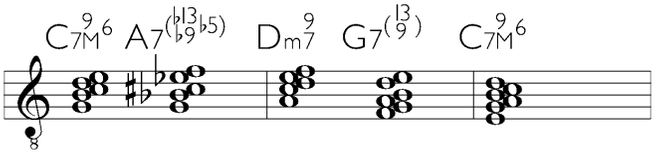


Chords by seconds

Early 20th-century European composers, constantly searching for new harmonic sounds, conducted some successful experiments with chord structures where the vertical relationship is given by the superposition of major and minor second intervals, the chords by seconds, or secundal chords.

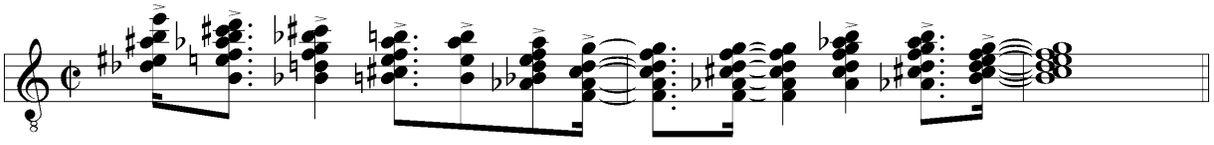


Obviously, chords structured in this way are not applicable to writing for solo guitar, since the fingering possible on that instrument does not allow this type of harmonic structuring. Their application only becomes viable when two or more guitars are required. In this way, the notes of the chords can be distributed by seconds, dividing them into two or more parts so that their notes are interspersed, distributed by thirds or larger intervals. Chords by seconds can be formed by three, four, or more notes, and even though they are characteristic of non-tonal harmonic practice, they can also be applied within the modal caracteristic. An interesting effect can also be achieved when applied within tonal structures. It is possible to structure the chords of a tonal harmonic sequence by seconds, preserving the functions that these chords present within the structures in which they are inserted. Thus, a tonal progression can maintain the clarity of its functions, even when most of the chords in the sequence are structured by seconds.

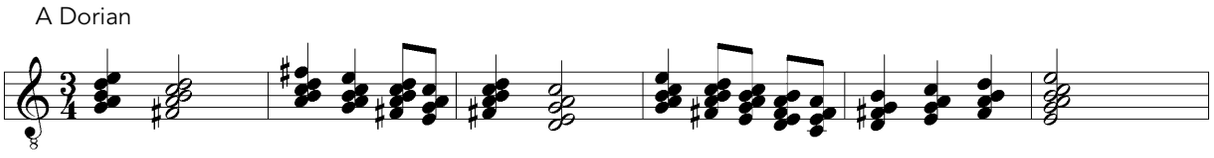


The reason for the formation of secundal chords in tonal passages occurs due to the change in position of these chords in certain harmonic progressions, thus arriving at this type of structure. From this, it can be deduced that secundal chords, when subjected to changes in position, can perfectly transform into structures by superimposed thirds or fourths. In a modal or non-tonal situation, chords by seconds can be treated freely, according to the effect of greater or lesser

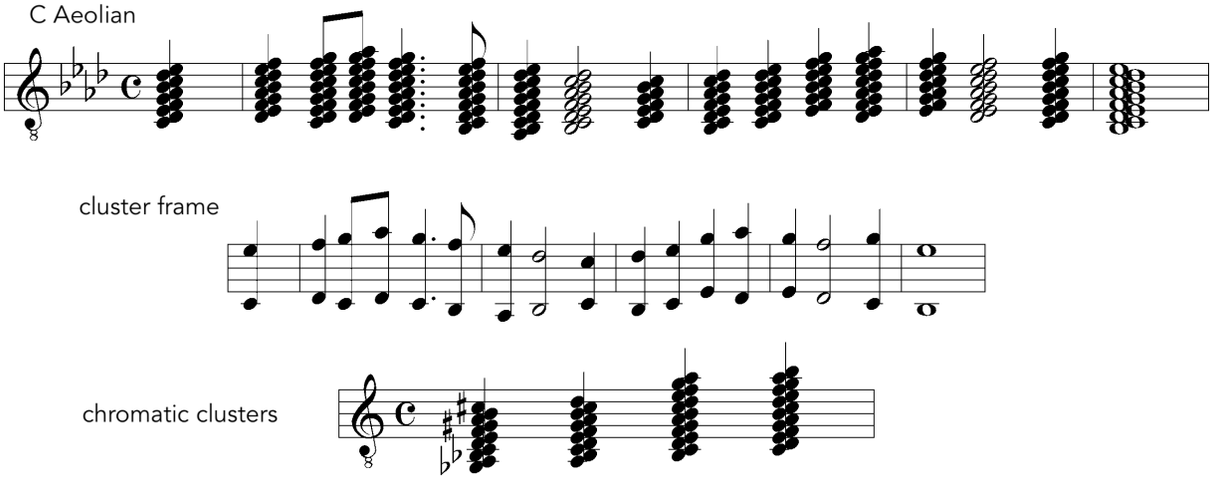
density that we want to obtain. In this case, secundal chords built with three, four, five, or more notes can be applied.



We can also find quartal chords built from modes, as in the following example:

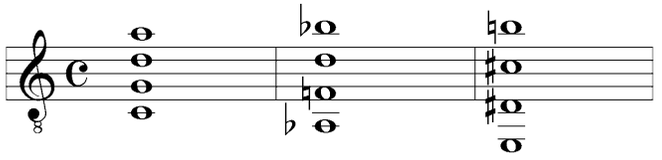


When a sequence of chords structured by seconds maintains its internal intervals fixed, with no independent movement of its voices, we are dealing with a sequence of clusters. A cluster is, therefore, a chord formed by seconds that keeps these intervals constant within its structure. The space between the movement of the extreme voices of the cluster, the highest and lowest voices, must always be filled by intervals of seconds. The extreme notes are those that define the structure of the cluster, and the path defined by these notes always follows parallel movement. Clusters can be structured from any of the modes or from the chromatic scale. When clusters are formed from modes, we say we are dealing with diatonic clusters, and when they are formed from the chromatic scale, they are classified as chromatic clusters. Clusters formed from the chromatic scale are less effective in this type of chord progression, as they quickly become tedious due to their density.

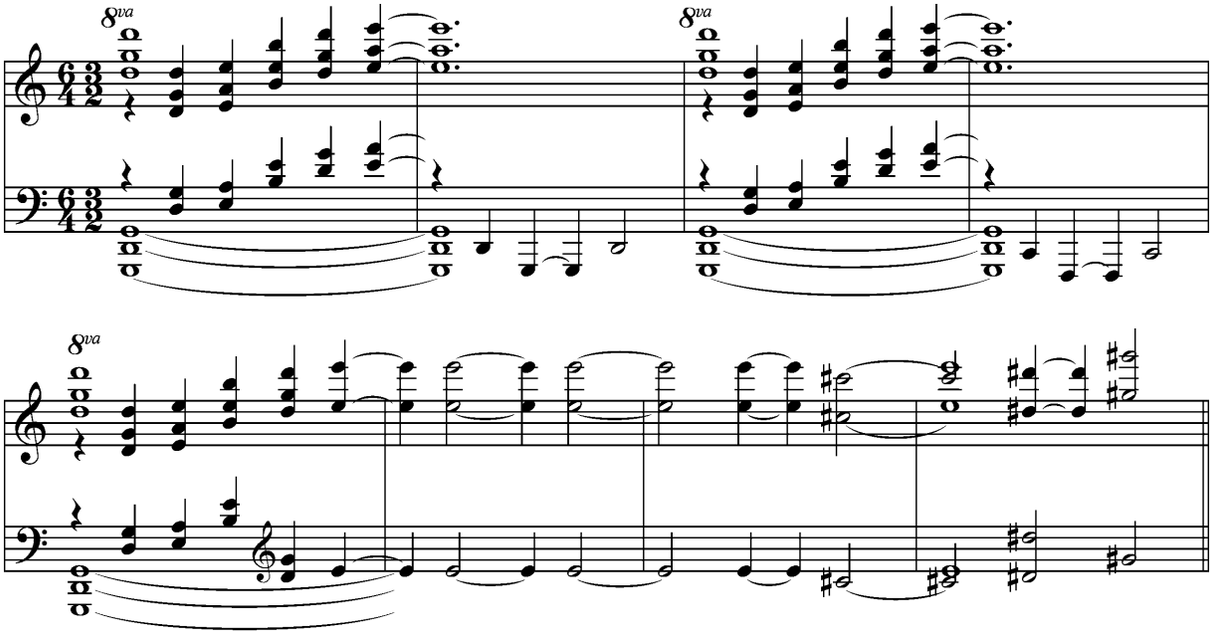


Chords based on fifths, sixths, and sevenths

In addition to chord structures based on superimposed fourths and seconds, we also find other types of chord formations based on intervals in 20th-century European music that maintain symmetry in their structures. These are chords based on fifths, sixths, or sevenths.



These ways of harmonizing represent types of experimentation that were also done searching for new sounds or even as an attempt to break with the centuries-old tradition of superimposed third structures, which form the basis of tonal and modal music. Along with the use of fourth chords, an effective way of dealing with fifth chords was sought, since fifths represent the inversion of fourths. One of the first attempts, and perhaps the most celebrated, was born from the creative genius of Claude Debussy in his first series of preludes for solo piano. This is Prelude No. 10, entitled La Cathédrale Engloutie *(The Sunken Cathedral)*, a descriptive piece inspired by an ancient Breton legend. Although this piece does not only present chords that maintain symmetry by fifths, the essence and originality of this prelude lie in this fact. It was from him that other composers felt motivated to research new harmonic elements, arriving at other forms of harmonic structuring, such as chords based on sixths and sevenths.



Polytonality and Atonality

In the first decades of the 20th century, a process of definitively abandoning all types of tonal or cadential harmonic content used until then began in Europe.[1] This musical trend, which in some ways continues to this day, was marked by free atonality, where harmonic and melodic aspects were based on the free combination of chromatic intervals that avoided any possibility of identifying a tonic. The chromatic scale, treated without any kind of hierarchization of its notes, became one of the main elements of musical composition. The most prominent composers of this musical current were Arnold Schoenberg and his followers associated with the so-called Second Viennese School. Among the works considered pioneering in this free atonality are the chamber melodrama Pierrot Lunaire, Op. 21, by Schoenberg[2] and the opera Wozzeck, by Alban Berg. Schoenberg himself did not accept the term "atonal" to define his new musical writing. He believed there was no antithesis between the centuries of tonal practice and the new directions he himself proposed for the music of the century that was beginning. The fact that composers were beginning to abandon the cadential practice of so-called tonal music did not, according to him, justify the term "atonal."

> *"I must oppose the use of the term atonal because I am a musician and have nothing to do with what might be considered atonal. Atonal could simply mean something that has nothing to do with the nature of sound. The expression 'tonal,' on the other hand, is also used inappropriately if we understand it as an exclusionary rather than inclusive expression. Only that which proceeds from a succession of sounds and constitutes tonality should be understood as 'inclusive,' whether through a direct relationship with a single fundamental or through more complex connections. It is evident that, based on this definition, which is the only most accurate one, one cannot rationally establish an opponent that corresponds to the word 'atonality.' How can we introduce this negation if everything that comes from a succession of sounds must characterize atonality? A piece of music must always be tonal, at least because between one sound and another there must be a relationship that allows them, whether successive or simultaneous, to constitute an intelligible succession as such. Perhaps then, tonality would not be perceptible or demonstrable, and these relationships would be… make them obscure and difficult to grasp or even to understand. However, what cannot be done is to call a relationship between sounds, whatever it may be, 'atonal,' in the same way that a relationship between colors could not be designated as 'aspectral' or 'complementary.' These antitheses do not exist. On the other hand, the following question has not yet been studied: are these new sonorities not contained within a tonality constituted by a series of twelve notes? Probably, this is the case (…) And if there is no other remedy than to give a name to this practice, then we could opt for the terms 'polytonal' or 'pantonal.' (…)" (Harmonielehre – Universal Edition, 1922)*

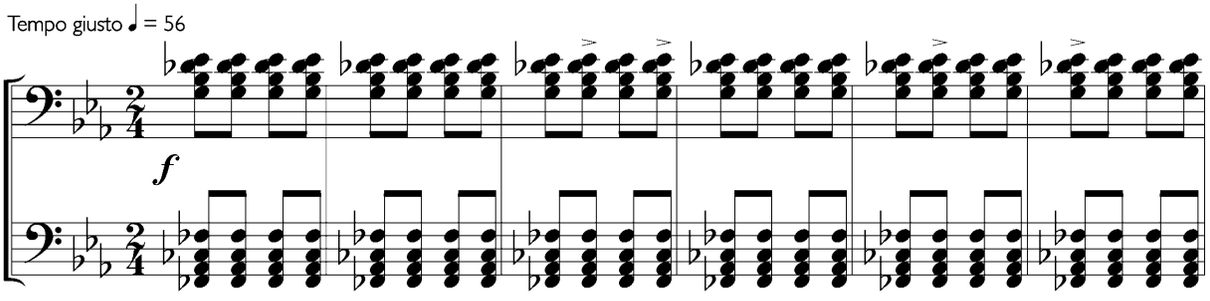
[1] *An important reference to mention is the Bagatelle sans tonalité, for piano, composed in 1885 by Franz Liszt. Even though it is not an atonal work, in the sense that this term came to mean after the Second Viennese School, it is interesting to note that Liszt was already moving in that direction.*

[2] *In this work, Schoenberg also innovates with regard to singing, creating the style of 'sprechgesang'.*

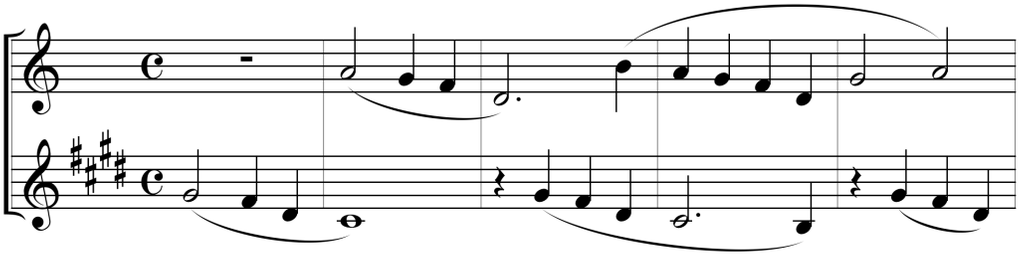
In any case, the legacy left to us, relating to the first two decades of the 20th century, demonstrates a quite varied and original practice. The presence of cadence and tonal centralism, as they were known and practiced for more than four centuries, ceased to exist. Some of the composers who followed the path of atonality, constantly or sporadically, used different elements to express their musical ideas. Some notable examples are in the works of Igor Stravinsky, Alexander Scriabin, Béla Bartók, Sergei Prokofiev, Edgar Varèse, and Olivier Messiaen.

Igor Stravinsky, in his ballet Le Sacre du Printemps, and Béla Bartók, in his piano work Mikrokosmos, used polytonality to elaborate their compositions. Polytonality or bitonality consists of the combination of two or more diatonic scales that represent different tonalities, or even two triads or tetrads that belong to contrasting tonalities.

In the case of Stravinsky, we can cite as an example Les Augures Printaniers: Danses des Adolescentes, the second movement of the ballet Le Sacre du Printemps, where the orchestral score shows the combination of the Eb7 tetrad superimposed on the E major triad *(F flat, in the original score)*.



And in the case of Béla Bartók, an excerpt is taken from piece number 105 of his Mikrokosmos, where one of the melodic lines is developed in C major while the other is in E major.



Schoenberg started from the principle, according to himself, that there was no physical or aesthetic reason that could force the musician to use tonality to express his musical thought. By dealing with

the chromatic total in a free and independent way, Schoenberg gradually began to outline a way of composing that would result in his complex system, **dodecaphonic serialism**. The primary results of his search occurred with the use of a series of intervals that began to replace what had represented the theme of a musical composition for centuries. This technique became known as Reihentechnik, which, in English, would be something like musical composition based on a series of intervals. Arnold Schoenberg's Reihentechnik was the embryo from which he would conceive the entire principle of dodecaphonic serialism. This practice was especially suited to a contrapuntal musical writing that would also be the basis of the new system.

Schoenberg finally arrived at the elaboration of his dodecaphonic system in 1921, and in 1923 he publicly disclosed it. His first twelve-tone work is the simple Waltz from his Opus 23. This was followed by a series of others, some of great size, such as his Variations for Orchestra, Opus 31. His twelve-tone system was developed as follows:

- Every musical composition must use a series of interval combinations that represent the entire chromatic scale.
- This series must not repeat notes and must have a fixed order of notes from 1 to 12.
- The series will become the functional and constitutive element from which the entire work will be built. It will always be used as a unifying element.
- The series can be applied both horizontally, melodically or contrapuntally, and vertically, harmonically.

The twelve-note series also allows for certain variations that occur as follows:

- Eleven transpositions of the original series on the notes of the chromatic scale.
- Retrograde movement of the original series and its eleven transpositions.
- Inversion of the intervals of the original series and its eleven transpositions.
- Retrograde movement of the inversion of the original series and its eleven transpositions.

This all results in four main forms:

1) Original series

2) Retrograde series

3) Inversion of the original series

4) Retrograde of the inversion

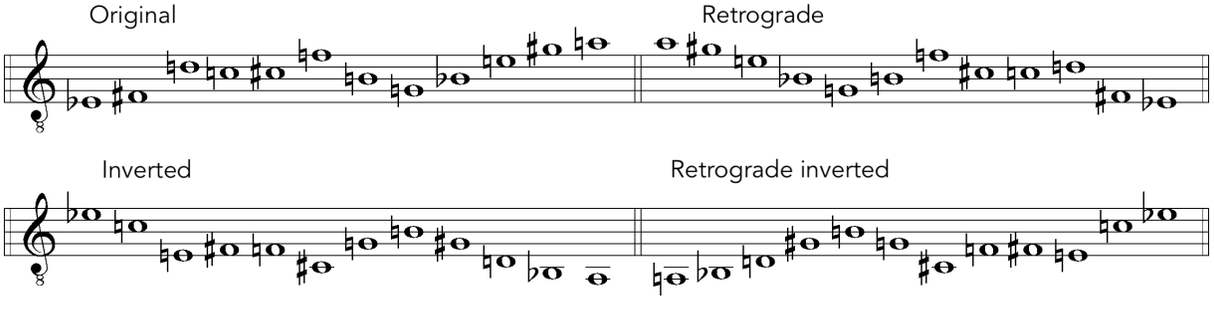
In this way, we will have forty-eight possibilities for applying the same series in a dodecaphonic work. Obviously, this only refers to the succession of notes that each of these four parameters reveals to us. However, if we consider the infinite possibilities of rhythmic, harmonic, and contrapuntal combinations and also consider all the possibilities of timbral variations, dynamics, and formal structures, these numbers become practically incalculable.

Chord structures in the dodecaphonic process

The harmonic aspect in dodecaphonic practice can occur both through the simultaneous emission of several consecutive intervals of the series and through the superposition of several horizontal elements extracted from the different forms of presentation of the series *(retrograde series, inverted series, inverted retrograde series, and their transpositions).*

In this dodecaphonic harmonic process, we cease to apply all traditional rules concerning scales, triads, tetrads, consonance, dissonance, and harmonic tensions. Similarly, we also cease to apply the concepts relating to themes and motifs, and it is not difficult to imagine how these concepts, when first disseminated by Schoenberg, placed a great question mark in the musical world. The entire traditional compositional process, where the use of intuition *(and inspiration)*, always real and praised, now ceased to exist. The composer's intention regarding the rhythmic-melodic-harmonic combination was then outside his musical consciousness: the initial act for a dodecaphonic composer became that of rationally organizing the twelve notes of the chromatic scale.

In the following example, developed within Arnold Schoenberg's dodecaphonic concept, the following series was used:



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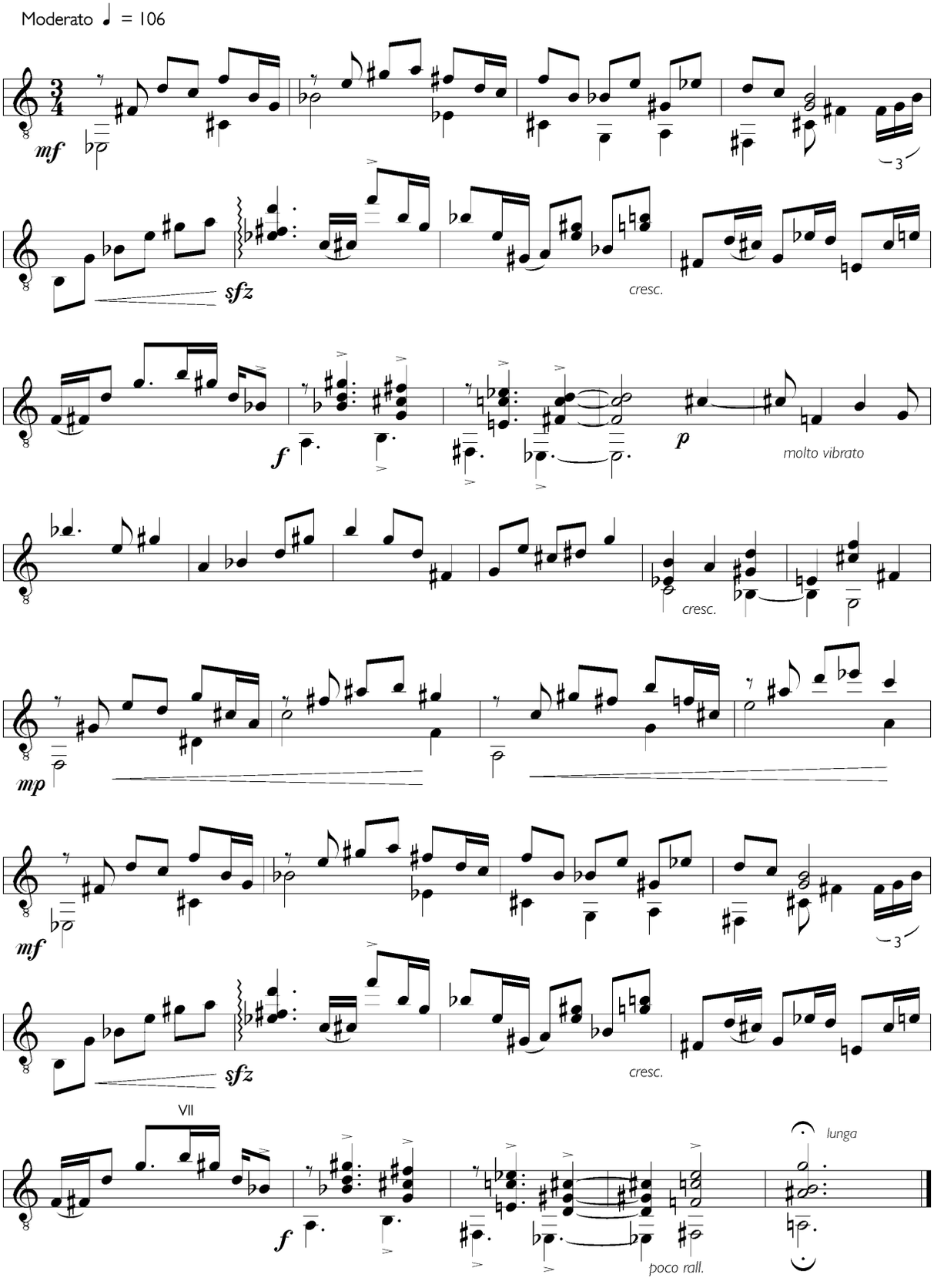

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For orders:
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Estúdio Lontra Music

joaoferraz@lontramusic.com

contato@joaoferraz.com
www.joaoferraz.com

João Ferraz is a guitarist, producer, and sound engineer specializing in samba, choro, jazz, and contemporary instrumental music.

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