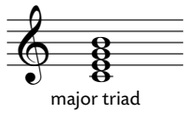
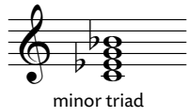
C major 7th



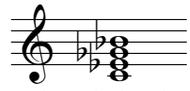
major triad
major 7th

C minor 7th



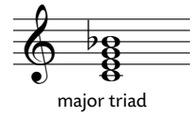
minor triad
minor 7th

C minor 7th
with lowered 5th



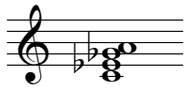
diminished triad
minor 7th

C dominant 7th



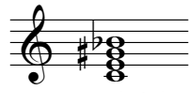
major triad
minor 7th

C diminished 7th



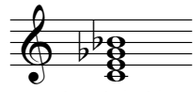
diminished triad
diminished 7th (spelled
enharmonically)

C augmented
dominant 7th



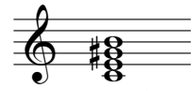
augmented triad
minor 7th

C dominant 7th
with lowered 5th



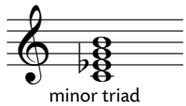
major triad with
diminished 5th
minor 7th

C augmented
major 7th



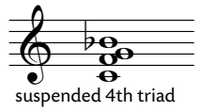
augmented triad
major 7th

C minor triad
with major 7th



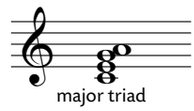
minor triad
major 7th
(Obviously!)

C dominant 7th
with suspended 4th



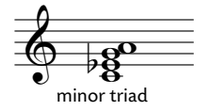
suspended 4th triad
minor 7th

C major 6th



major triad
major 6th

C minor 6th



minor triad
major 6th

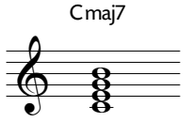
Some observations about a few of these chords:

- The minor 7th with a lowered 5th is not identified as a half diminished chord. This will be explained.
- The 7th of the diminished 7th chord is often notated without double flats.
- The dominant 7th with a suspended 4th does not contain a supporting triad constructed in thirds.
- The suspended 4th is a replacement for the 3rd of the dominant 7th chord.

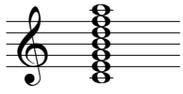
There are other chord types, but not as common as those above.

Chord Scale Theory

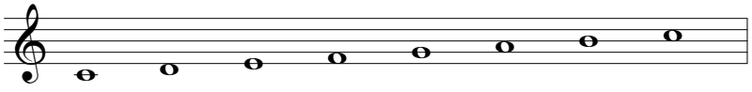
To review: the following chord symbol defines the notes of the 7th chord:



And, at the same time *implies* the upper extensions of the chord (9th, 11th, 13th):



Not all seven pitches are harmonically stable, but they are *melodically available*:



When arranged as a scale, the harmonic and melodic pitches are a *chord scale*. The chord scale defines basic harmonic and limited melodic activity (when compared to the chromatic scale) for a given chord symbol.

The individual components of a chord scale are:

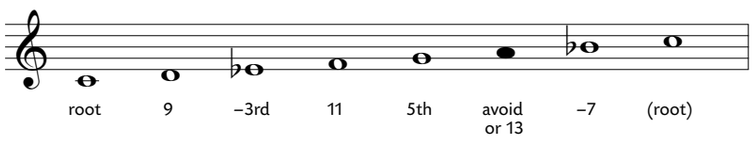
1. Chord Tones,
2. available Tension(s),
3. harmonically Avoided Note(s).

As with chord symbols, ♭ means "lowered", ♯ means "raised."

The chord scales used for major 7th and major 6th chords are the above mentioned Ionian and Lydian scales. Major 6 and minor 6 chords are used as alternatives for the maj7 and min(maj)7 chords especially if the melody pitch is the root of a chord containing maj7. The root should represent an avoid note inasmuch as it is a half step above the major 7th. The melody can not be avoided. The alternative 6th chord is used to compensate for this dilemma.

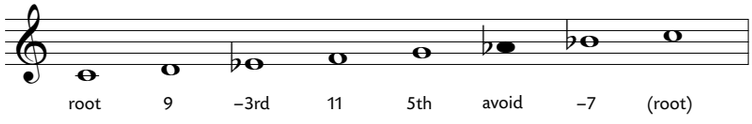
The chord scales used for –7th chords are:

C–7 = C Dorian

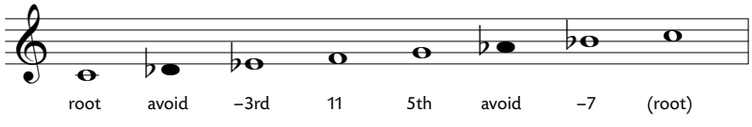


refer to the text

C–7 = C Aeolian



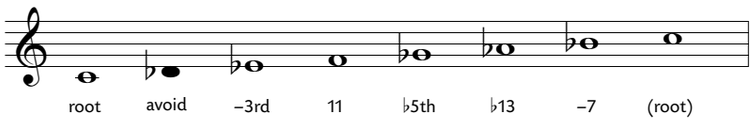
C–7 = C Phrygian



The 6th degree of the Dorian scale is an acceptable whole step above the 5th, *but* it is still avoided. All other –7 chord scales avoid the 6th degree. In the Dorian chord scale, major 6th along with the minor 3rd of the chord creates a tritone which is the basis for dominant sound and function. This exception to avoid notes is slowly changing, especially in jazz situations where 13 occurs as a melody pitch. More and more we will find a Dorian chord scale being used with 13 as an available tension. For now it will be considered an avoid note. Although avoid notes do not occur harmonically, their inclusion melodically is what defines a specific function for a chord. Avoid notes are the pitches from which each chord derives its characteristic sound.

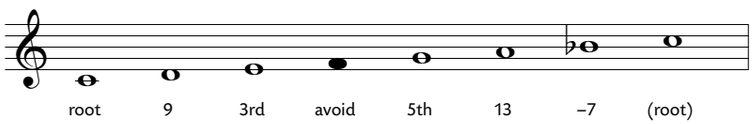
The chord scale used for the **–7(♭5)** chord is *Locrian:*

C–7(♭5) = Locrian

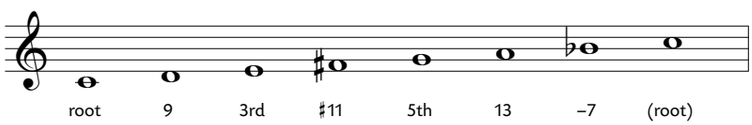


The chord scales for dominant 7th chords are too numerous to mention at this point. They will be introduced gradually. The two most common **dominant 7th chord scales** are *Mixolydian and Lydian ♭7*:

C7 = C Mixolydian



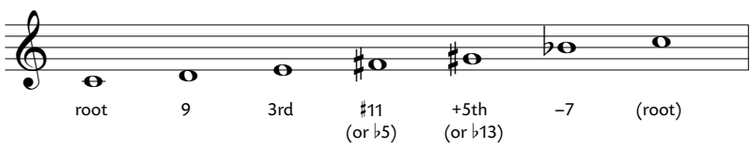
C7 = C Lydian ♭7



The Lydian♭7 scale is nondiatonic to any key. (Nondiatonic means "not belonging to a controlling tonal center." "Nondiatonic" will also be used when referring to a chord's function.) Also of importance is the fact that Lydian ♭7 has *not* been identified as a Mixolydian ♯11. There is a significant reason for this distinction, that will eventually be examined in detail.

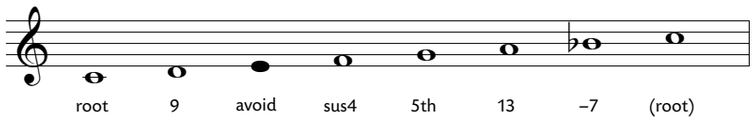
The **chord scale** used for the **+7th** and the **7(♭5)** chord is *whole-tone*. The 7(♭5) is most often a wrong spelling for dominant 7(♯11); the real 7(♭5) is rare.

C+7 and C7(♭5) = whole-tone



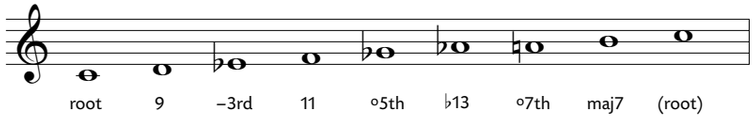
The **chord scale** used for a dominant **7th (sus4)** is a Mixolydian chord scale but the *avoid note is the 3rd*:

C7(sus4) = C Mixolydian



The chord scales used for **°7th chords** are also numerous. Each will be examined individually. For now, a common scale associated with the °7th chord is:

C°7 = symmetric diminished



This last scale contains eight pitches. This situation creates an unusual numbering pattern. In this case, the available tensions include major 7 which is usually considered a chord tone. This scale will be examined later.

Chord Scale Summary

Ionian for maj7 and maj6 chords

Dorian, Phrygian, Aeolian for –7 chords

Lydian for maj7 and maj6 chords

Mixolydian for dominant 7 and dominant 7(sus4) chords

Locrian for –7(♭5) chords

Lydian ♭7 for dominant 7 chords

whole-tone for +7 and 7(♭5) chords

symmetric diminished for °7 chords

Avoid Note Summary

Ionian: avoid 11 (=4)

Dorian: avoid 13 (= 6)

Phrygian: avoid ♭9 and ♭13 (= ♭2 and ♭6)

Mixolydian: avoid 11 (=4) – avoid 3 for (sus4)

Aeolian: avoid ♭13 (=♭6)

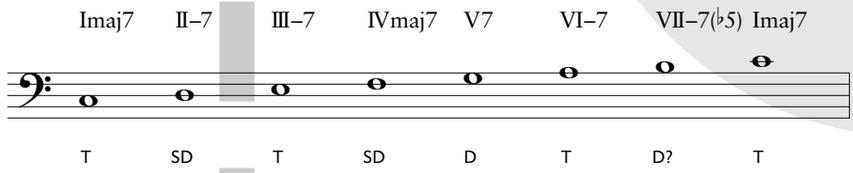
Locrian: avoid ♭9 (=♭2)

Lydian, Lydian ♭7, whole-tone and symmetric diminished have no avoid notes

Root Motion and Patterns

If the diatonic chords in the key of C major are arranged in steps (2nds) and their functional sound is examined, the unfolding of harmonic progression from most stable to least stable can be seen. (For demonstration purposes, the VII–7(♭5) has been awarded a questionable dominant function.):

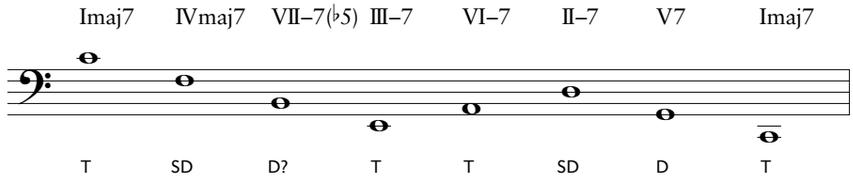
Cycle 2:



Notice when diatonic chords move in stepwise root motion, there will be movement of unstable nontonic sound to stable tonic sound or unstable to very unstable then to tonic (except when the V7 moves down to IVmaj7). This defines *progression*, with the exception of the *retrogression* of V7 to IVmaj7 (an uncommon chord pattern in jazz contexts except in the blues).

If the chords are arranged in root motion of diatonic 5ths, the same symmetry of function will occur, only here the patterns are unstable – very unstable – stable, except in retrograde:

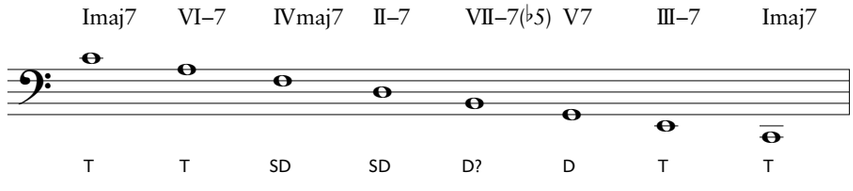
Cycle 5



This root motion of 5ths represents the building up of tension and then its release. Notice the only place in the pattern of motion where the string of perfect 5ths changes is when moving down to the VII–7(♭5). This 5th pattern, when inverted, will create retrogressions except when II–7 moves to VI–7 and IVmaj7 moves to Imaj7.

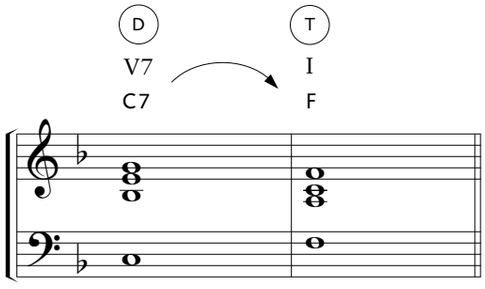
If the diatonic chords are arranged in root motion of diatonic 3rds, a different symmetric pattern of events occurs. Root motion in 3rds is usually downward:

Cycle 3

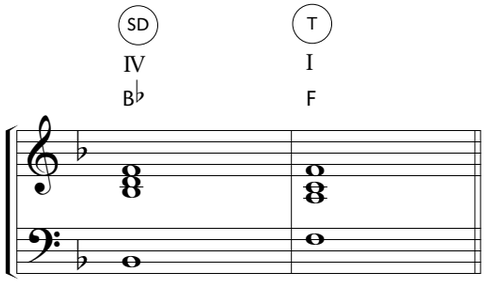


Cadences

The cadence is the most important harmonic formula in music. It represents or confirms a tonal center and therefore appears mostly at the end of a musical section. In general the chords of a cadence form a harmonic goal or are heading for one. All types of traditional cadences also apply to jazz, though some are more important than others. The most important progression, as mentioned before, is V7 going to I, known as **authentic cadence** or **authentic resolution**:

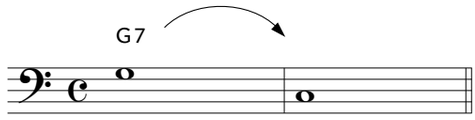


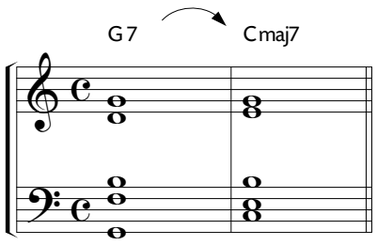
The **plagal cadence** or **plagal resolution** is most often found in Blues (refer to chapter *Blues*), but may be also found in popular songs like "Yesterday" by the Beatles.

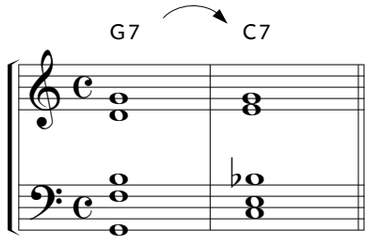


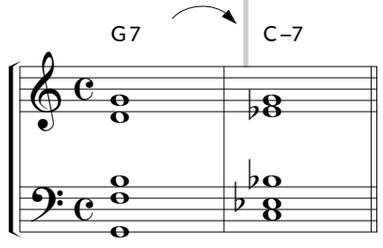
Notice that no arrow is used.

A dominant chord can resolve to any quality of chord. Resolution to a °7th or a –7(♭5) ("Stella by Starlight") is uncommon. The only requirement for resolution of a dominant chord is root motion down a perfect 5th:

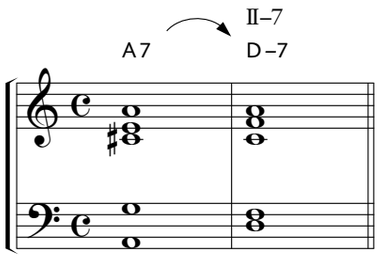


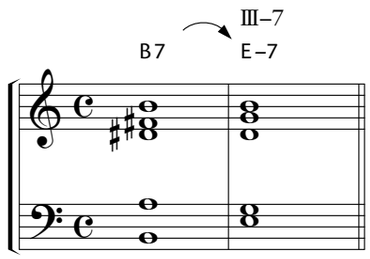


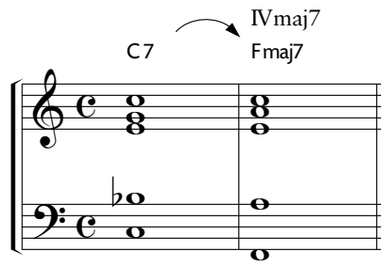


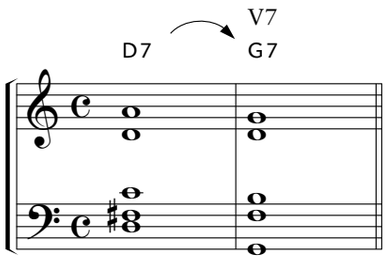


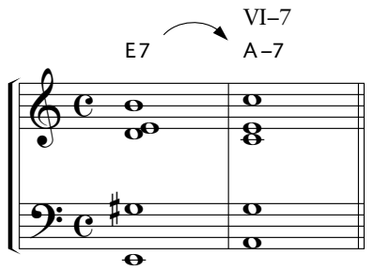
The *primary dominant's* resolution is down a perfect 5th to Imaj7. A *secondary dominant's* resolution is down a perfect 5th to one of the diatonic chords *other than Imaj7 or VII–7(♭5)*. (Here again the VII–7(♭5) chord is relegated to a different status.):





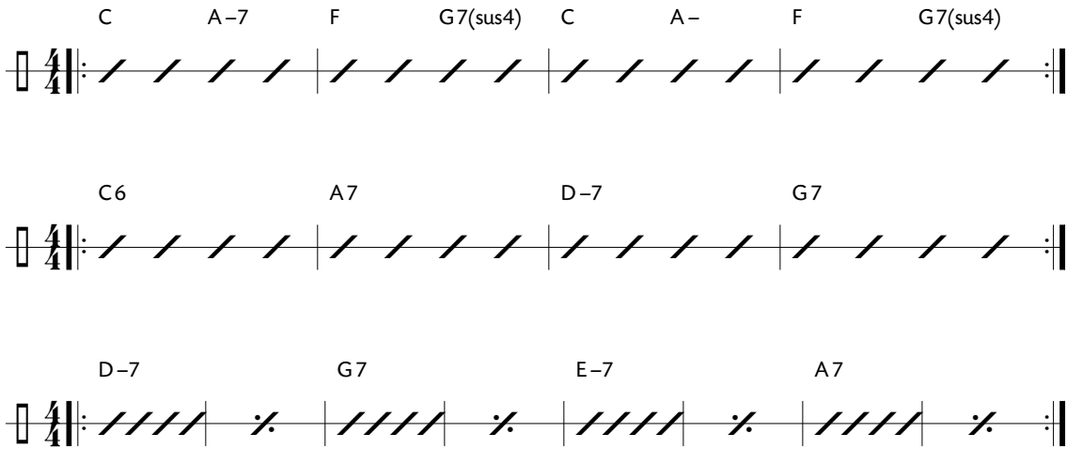




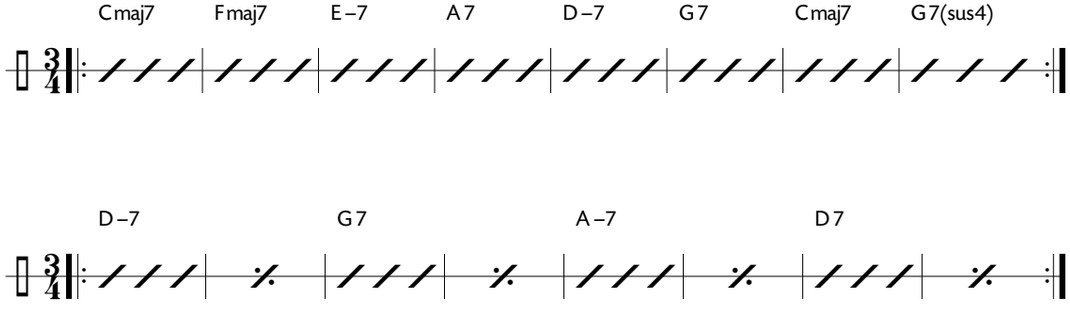


Harmonic Rhythm

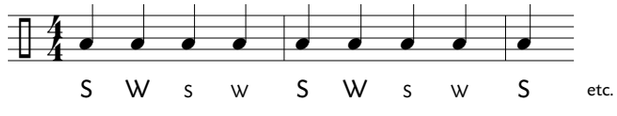
Harmonic rhythm is the rate of harmonic change. In common time the typical rhythms are 2, 4 and 8 beats per chord:



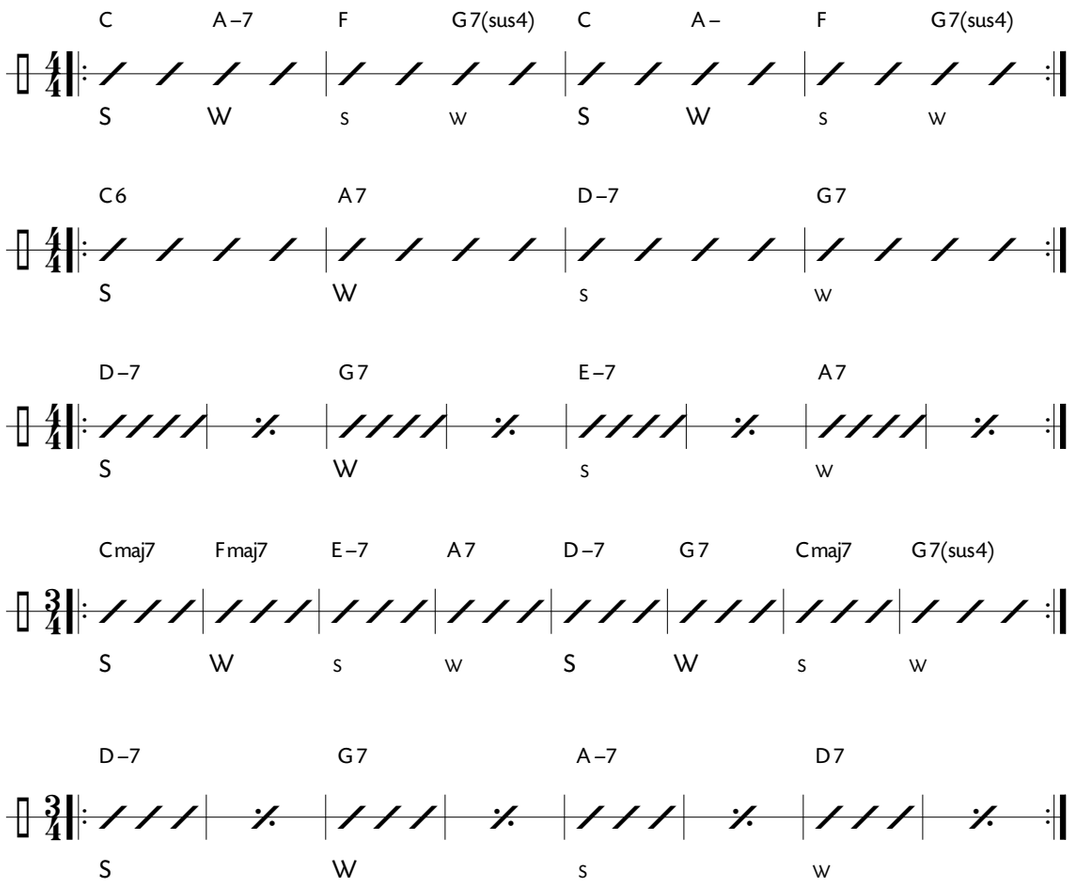
In triple meters the common rhythms are 3 and 6 beats per chord:



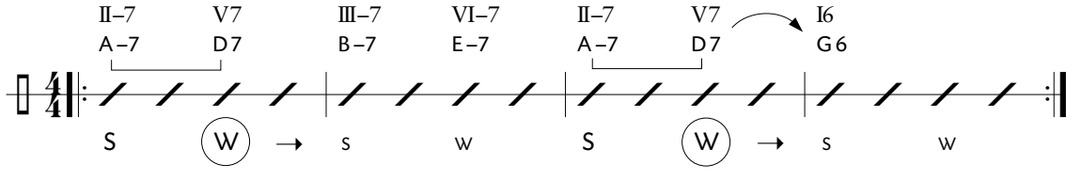
In any grouping of rhythmic pulsations, we tend to hear multiples of four. The first pulse is the strongest; the third is not so strong; the second is weaker; the fourth is the weakest:



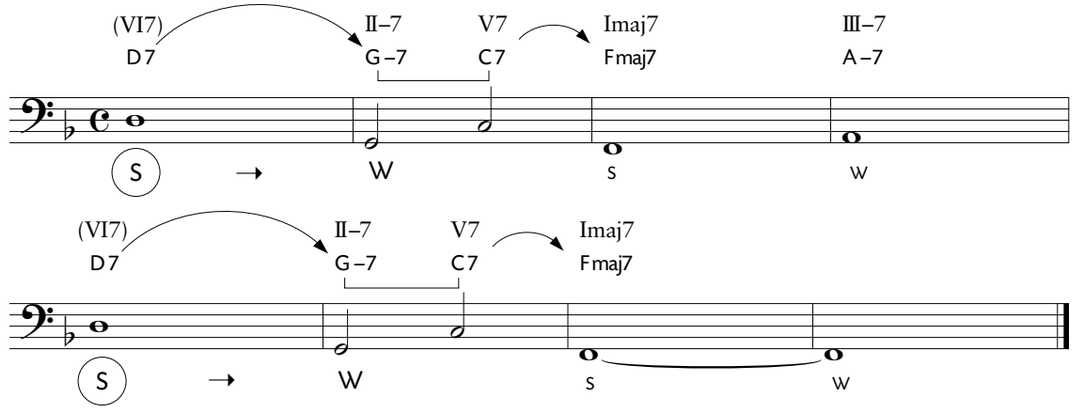
This stress pattern can be demonstrated for any harmonic rhythm:



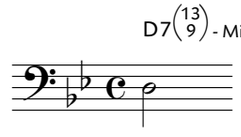
Harmonic cadences, with few exceptions, are found moving from a weak beat to a stronger beat. The V7 chord typically moves to a tonic chord from weak to strong:



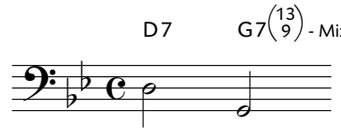
If one studies all this confusing criteria for sequential dominants closely it will be seen that it is possible for a sequential dominant progression to be only one chord that is on a strong stress and resolves to a diatonic chord – starting criterion met – ending criterion met. Unusual, but it does occur. The parentheses are used to show that this, and any sequential dominant, *can* change function and resolve diatonically as a secondary dominant (as demonstrated in the beginning of Jobim's "Quiet Nights" and below):



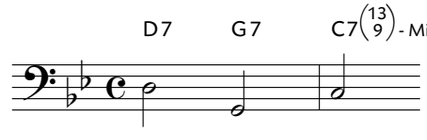
Every sequential dominant in a series will be heard as a dominant of a dominant – V7/V. *The chord scale will be the same as a V7/V – Mixolydian*, whether it is diatonic or not:



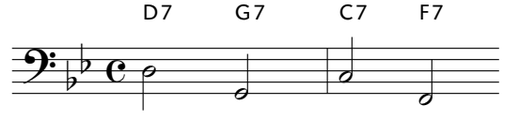
Expected resolution to G7 as V7/V



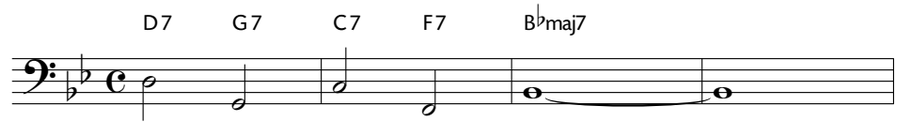
Expected resolution to C7 as V7/V



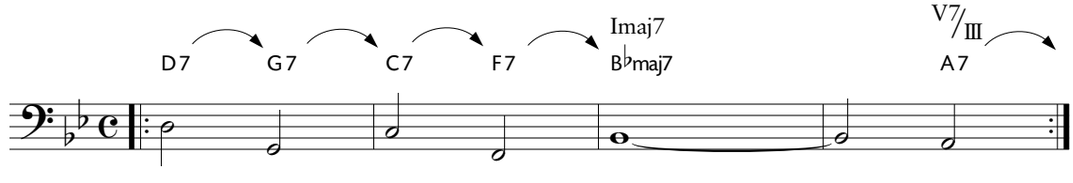
Expected resolution to F7 as V7/V



This is the weakest stress in the progression. Most listeners will expect a diatonic resolution, or a continuation of the pattern.

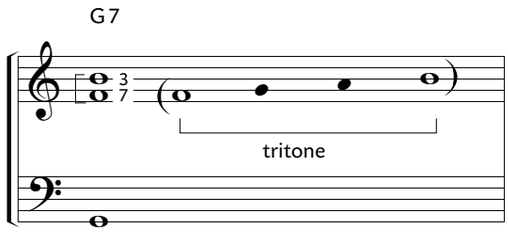


Chords are first analyzed for their *sound*:

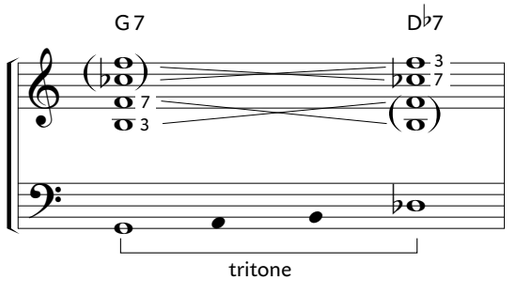


Substitute Dominants

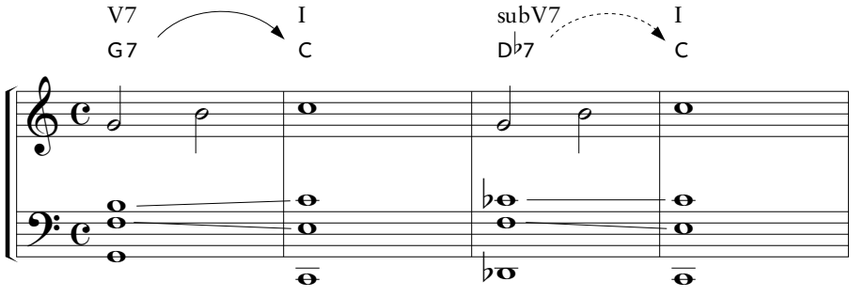
The instability of a dominant chord is attributed to the tritone. In order for the chord to have a dominant sound, the tritone *must represent the 3rd and 7th of the chord:*



If the tritone is inverted, the enharmonic spelling of the 3rd and 7th can be heard exchanging positions resulting in a different dominant chord root that contains the same tritone:

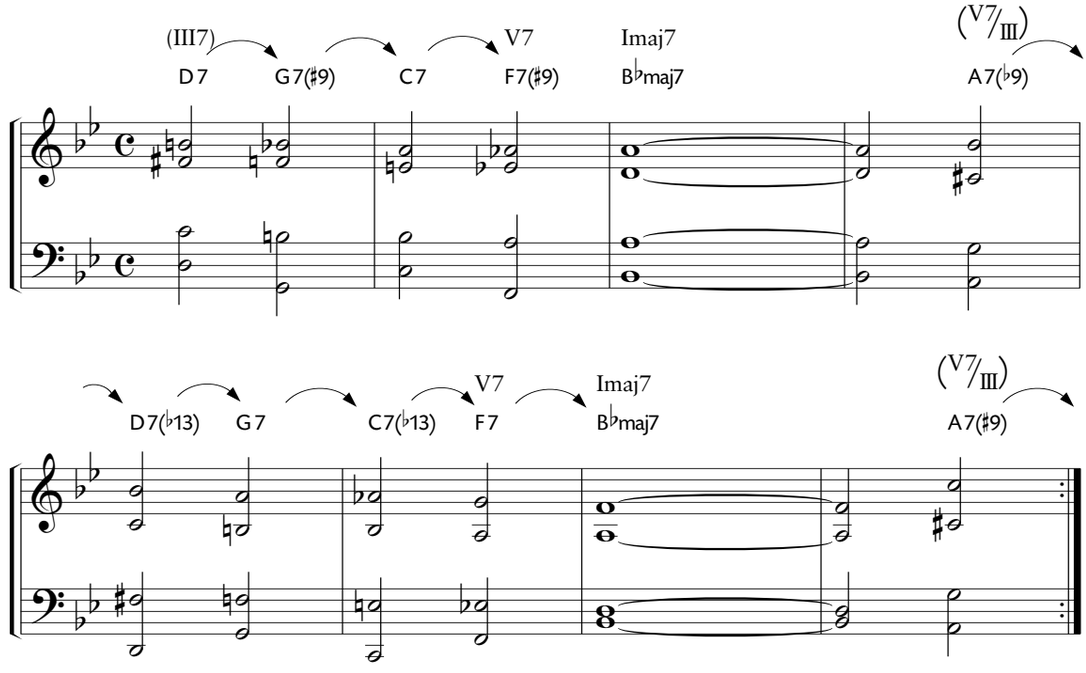


These are *substitute dominant* chords. They are also known as *tritone substitute* chords because they share common tritones and their roots are a tritone apart. In C major, G7 is the primary dominant and D♭7 is its substitute dominant. G7 is V7 and D♭7 will be analyzed as subV7. This analysis means *substitute for V7*.



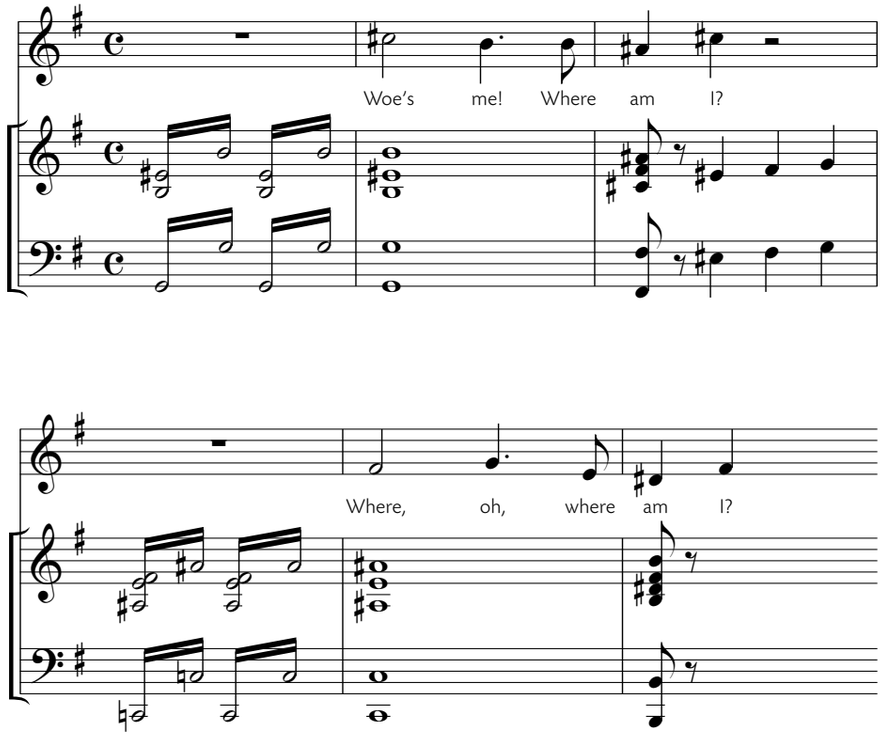
Sequential Substitute Dominants

Sequential substitute dominant motion is not as common as sequential dominant motion. The chord movement during sequential dominant activity follows the cycle of 5ths and is shown with solid arrows:



The following excerpt shows the application of sequential substitute dominants in traditional music. The subV7 chords were traditionally written as German augmented sixth chords. Note that the melody implies Lydian ♭7 as the appropriate chord scale:

F. Schubert,
op. 83, 2



Tunes to Analyze for Substitute Dominants

"One Note Samba"

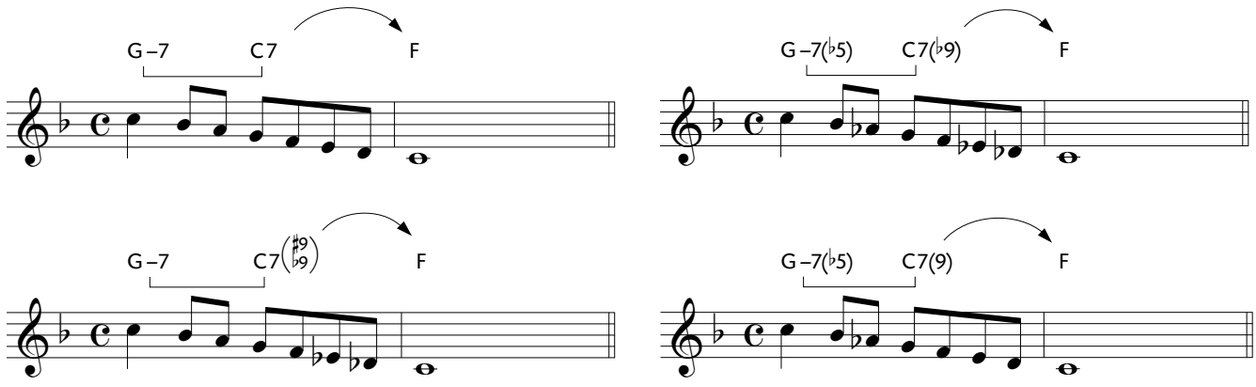
"The Girl From Ipanema" (A section)

"Peace" (It's difficult!)

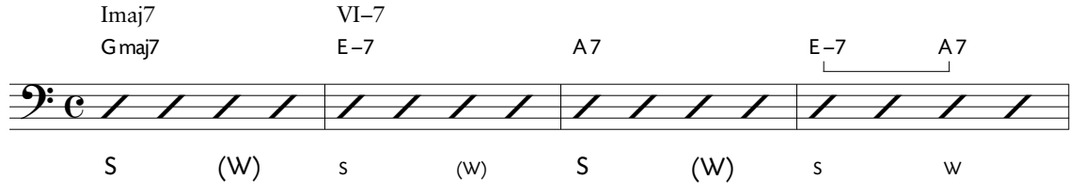
"Turn Out the Stars" (Bill Evans – the last 3rd)

"Sophisticated Lady"

The ⌊——⌋ may appear with alterations to both chords or to either chord. All the following combinations represent the sound of ⌊——⌋ :

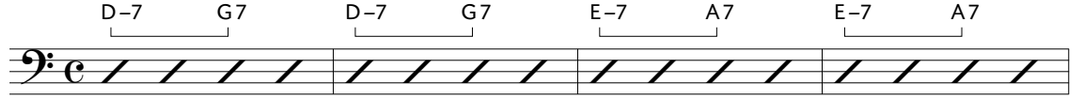


In order for the relationship to sound as a ⌊——⌋, the harmonic rhythm must be II–7 – *strong stress*, V7 – *weak stress.* This is an absolute must for the listener. A prime example are the changes in the beginning of the tune "I Got It Bad and That Ain't Good" by Duke Ellington.



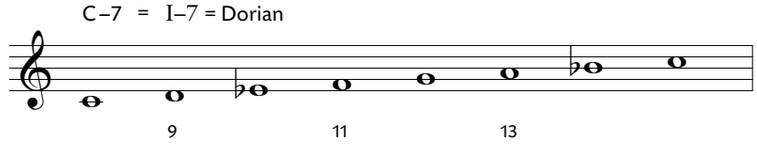
The chord in the second measure is VI–7; in the 4th measure it is a related II–7 although the E–7 A7 appears in both locations. The harmonic rhythm is what forces the issue.

The ⌊——⌋ may repeat itself and not effect the function of either chord. The chords from the beginning of another Duke tune "Satin Doll" can demonstrate this (as does "Speak Low"):

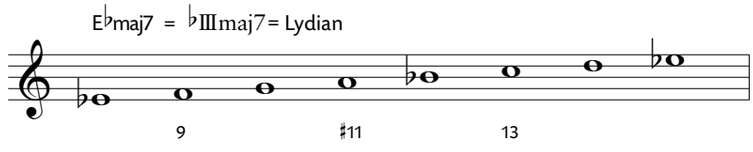


The chord scales for the modal interchange chords from natural minor will reflect their use in a major key or their origin in a minor key or a combination of both considerations.

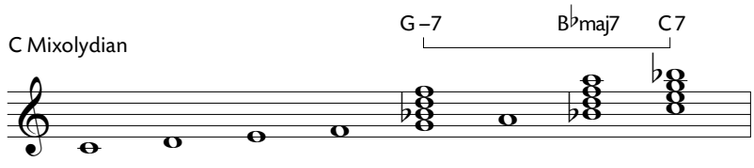
The tonic minor chord scales usually contain the natural 6 scale degree since ♭6 represents the functional sound of the subdominant minor chords. The **I–7** chord is most often a *Dorian* chord scale with 13 as an available tension. The natural 13 reinforces the major key while the minor scale implies the minor key:



The **♭IIImaj7** chord is usually a Lydian scale. The ♯11 holds the progression to the key of I major – not implying movement into the natural minor key's related major (key of ♭III):



If the **V–7** is functioning as a tonic minor chord from natural minor, its chord scale is *Aeolian*. However, it most often occurs as a chord borrowed from the key of *Mixolydian* because of its close relationship to the tonic chord in that key. A chord closely related to V–7 is ♭VIImaj7 that can also be seen as a Mixolydian modal interchange chord. The chord scale for ♭VIImaj7 is *Lydian* to reflect its nontonic function:

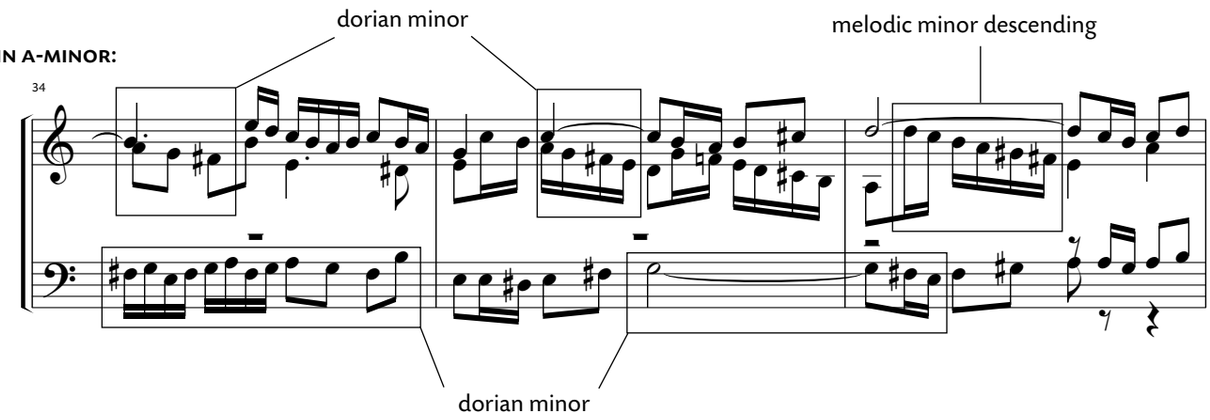


Traditional harmony mostly deals with three different minor scales: Natural, harmonic, and melodic minor, although dorian minor is an important tonal source for transitions and modulations.

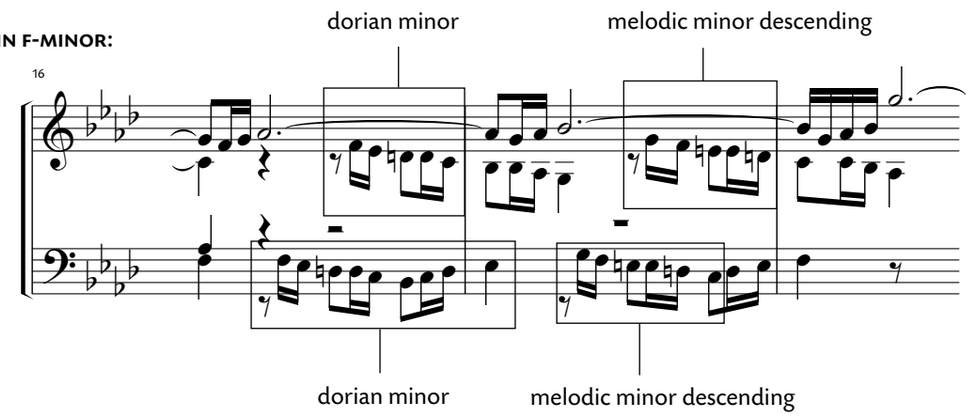
Concerning the traditional interpretation of the melodic minor scale: It is just a guide line and *not* a rule that maj6th and maj7th appear in succession only in ascending and min6th and min7th only in descending lines (natural minor). The contemporary use of the melodic minor scale contains the maj6th and the maj7th ascending *and* descending. But this appearance can be found in several examples of traditional music too:

J. S. Bach, Well-Tempered Clavier, Book I:

Fugue in a-minor:



Fugue in f-minor:

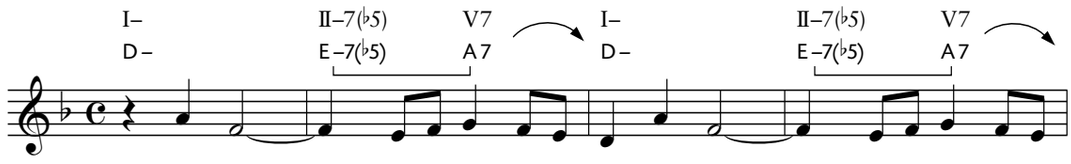


The many choices of scales available in minor key may appear almost endless, however, the truth is there are many more scales that are appropriate for use in minor keys than for major key.

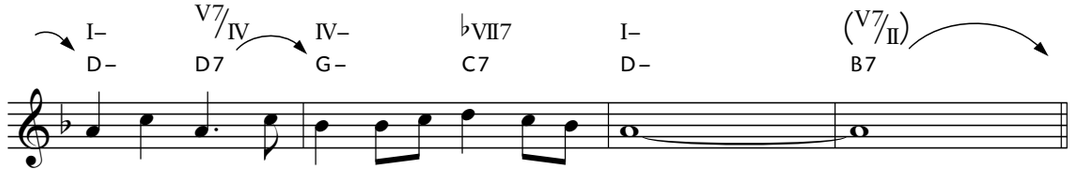
The following tune has been forced to contain typical minor key chord progressions:

Common minor key traits:

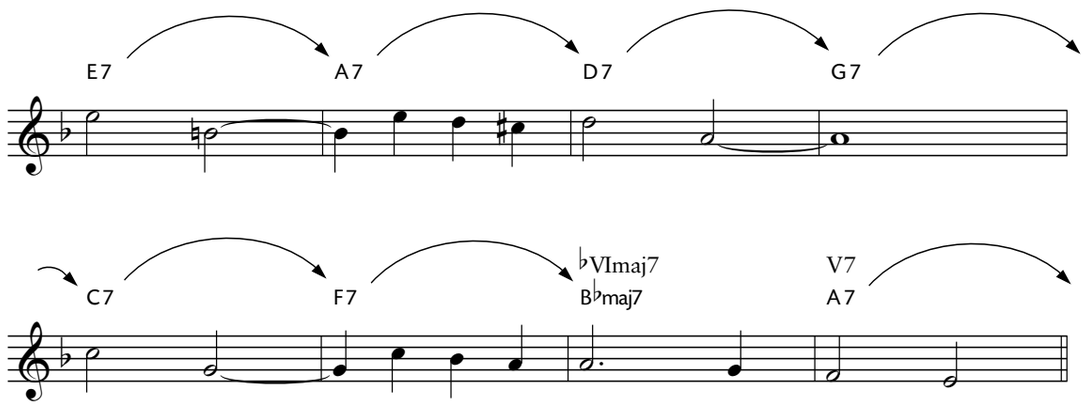
Typically, the minor tonality is established immediately with the tonic chord stressed.



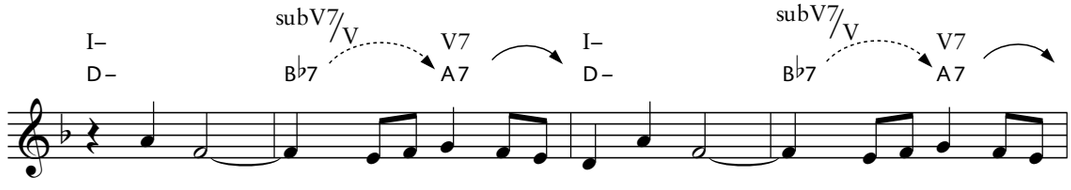
Secondary dominants of II, IV, and V predominate.



Sequential dominants (all diatonically rooted) often occur and, as in major key, ultimately resolve to a diatonic chord.



Unlike major key, the secondary dominant of V may appear on a strong stress where the II–7 would normally be (as in the first A section).



Nondominant cadences from the diatonic ♭VII7 are common.