

Harmony

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Preface

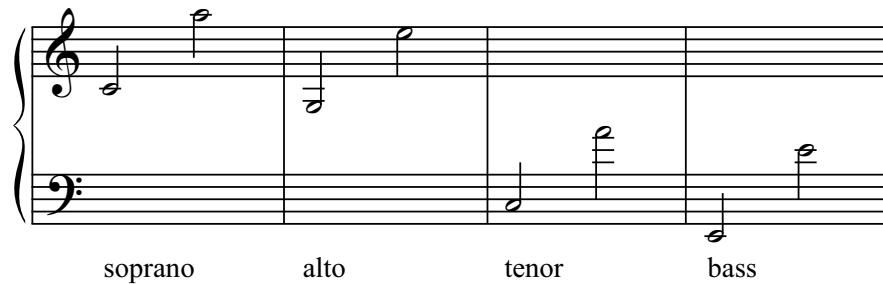
This text aims to function as practical course material for a harmony course in the first and (partly) second year of a conservatory education. Each topic is dealt with very succinctly, enabling the student to find the desired pages quickly when she or he is involved in harmony homework.

Because of the conciseness of this text, it can however not be seen as a comprehensive, autonomous harmony textbook, and can therefore not replace more elaborate books on the same topic, like *Harmony and Voice Leading* by Edward Aldwell and Carl Schachter, or the Dutch textbook *Harmonie* by Ernest Mulder.

1 Writing for four voices

When writing for four voices, there are a number of general rules and definitions:

- The four voices are, from high to low: soprano, alto, tenor, and bass. Soprano and alto are notated on the upper staff, in the treble clef. Tenor and bass are notated on the lower staff, in the bass clef. The soprano voice is also often simply called the melody. The range of the voices is more or less as follows:



- The distance between soprano and alto should not exceed the octave; the same holds for alto and tenor. The distance between tenor and bass is unlimited.
- Voice crossing (i.e. soprano below alto, bass above tenor, etc.) is usually incorrect. In most cases of voice crossing, it is rather straightforward to create a better solution without voice crossing.
- We speak of a chord in close position when the notes in the three upper voices are as close to each other as possible, i.e. there is no room for another chord tone. For example, these are three C major chords in four voices in close position:



- We speak of a chord in open position when, between the notes in the three upper voices, there is room for exactly one chord tone. These are C major chords in open position:



- We speak of a chord in octave position, third position, and fifth position when the root note, the third of the chord, or the fifth, respectively, is in the soprano. In the example right above, we see first an open fifth position, then an open octave position, and finally an open third position.

2 The main degrees: I, IV en V

duplication: bass

I, IV, and V are the most important representatives of the harmonic functions tonic, subdominant, and dominant, respectively. For this reason, they are called the main triads. Of all possible connections between these chords, V-IV occurs the least often. It is best to avoid this connection.

The remaining connections comprise two categories:

- The root notes of the two chords are a fifth apart. This is the case in I-V, V-I, I-IV, and IV-I. The relationship between two such chords is called a **fifth relationship**.
- The root notes of the two chords are a second apart. This is the case in IV-V. The relationship between two such chords is called a **second relationship**.

2.1 Fifth relationships

Two chords in a fifth relationship are connected by applying the following guidelines:

1. duplicate the root note of both chords (the bass),
2. do not change the position (open or close),
3. avoid leaps, especially in the inner voices.

Examples:

The image shows a musical score with four pairs of chords, each pair connected by a fifth relationship. The chords are labeled above the staff as C, C, O, O, C, C, O, O. Below the staff, the chords are labeled as V, I, I, V, I, IV, IV, I. The notation shows the bass line duplicated for each pair, and the inner voices are connected by stepwise motion.

If these guidelines are not followed, (incorrect) fifth and/or octave parallels may occur:

all voices leap

V I V I C O I V I V

wrong right wrong right

Parallel fifths and octaves are also incorrect when written in contrary motion:

I IV

wrong

Although as a rule we do not change the position (open or close) of the chord, this *is* often needed when there is a leap in the soprano:

O O O C

I V I V

wrong right

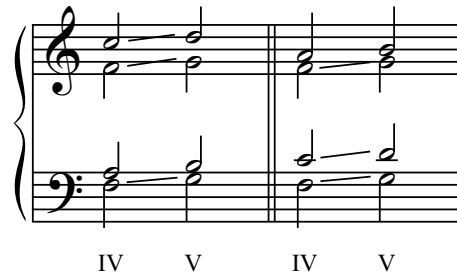
Additionally, it is always permitted (given there is enough time) to change the position if the chord doesn't change:

C O

I

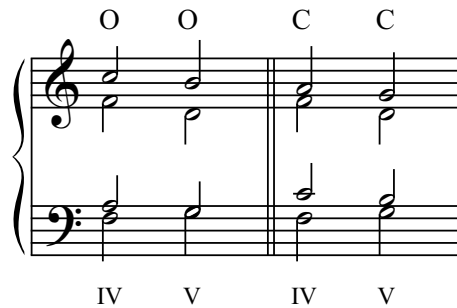
2.2 Second relationships

In a second relationship, the bass ascends a second. If the other voices were to do the same, fifth and octave parallels would occur:



The image shows a piano accompaniment with two staves. The right staff is in treble clef and the left staff is in bass clef. The music consists of four measures. The first two measures are labeled 'IV' and the last two are labeled 'V'. In the first measure, the bass line has a G2 and a D2. In the second measure, it has an A2 and an E2. In the third measure, it has an A2 and a D2. In the fourth measure, it has a B2 and an E2. The treble staff has chords that move in parallel motion with the bass line, illustrating fifth and octave parallels.

To prevent these mistakes, chords in second relationship are connected using **contrary motion**: the bass ascends a second, while the three remaining voices descend to the nearest chord tone:



The image shows a piano accompaniment with two staves. The right staff is in treble clef and the left staff is in bass clef. The music consists of four measures. The first two measures are labeled 'O' and the last two are labeled 'C'. In the first measure, the bass line has a G2 and a D2. In the second measure, it has an A2 and a C2. In the third measure, it has an A2 and a D2. In the fourth measure, it has a B2 and an E2. The treble staff has chords that move in contrary motion with the bass line, illustrating the correct technique for a second relationship.

Also here, there is no change in position (open or close).

3 The main degrees in first inversion: I⁶, IV⁶ en V⁶

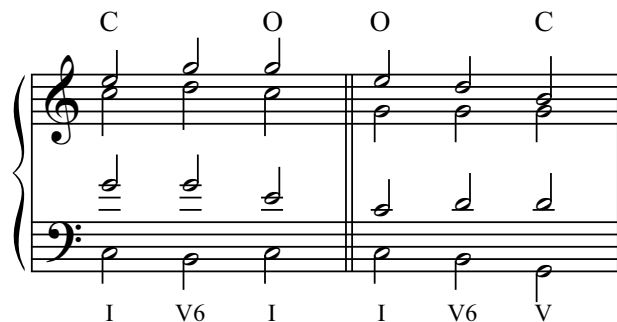
duplication: melody

When writing a main degree in sixth position, we usually duplicate the melody note. This means that there are three possible shapes for a sixth chord of a main degree:



- 1) The alto duplicates the soprano one octave lower.
- 2) The tenor duplicates the soprano.
- 3) The alto duplicates the soprano in the same register.

A strict open or close position as discussed with root positions therefore does not exist with sixth chords. It is possible, however, to change from an open to a close position of a root position chord via a sixth chord:



When writing sixth chords, so called **covered fifth and octave parallels** can occur. This happens when two voices move in the same direction, reaching a perfect fifth or octave. This can occur in many situations and often it is not considered incorrect. As a general rule we can say: covered parallels are not allowed between the bass and one of the other voices, when the bass moves stepwise.¹

¹See http://m.hoening.myahk.nl/frameset/harmonie3_g.html (in Dutch) for a more elaborate discussion of this rule.

I
IV
V6
I
right
wrong

With the use of sixth chords, the possibilities for writing **thirds and sixths between the outer voices** increase greatly. Often, this sounds well; it keeps the music moving forward. Therefore it is advisable to consider using a sixth chord when the root or fifth of the chord is in the melody, while using a root position when the third is in the melody. For example:

| | | | | | | | | | |
|-------------------------|---|----|---|----|---|-----|----|---|---|
| <i>interval between</i> | I | I6 | V | V6 | I | IV6 | V6 | V | I |
| <i>outer voices:</i> | 3 | 6 | 3 | 3 | 8 | 6 | 3 | 5 | 8 |

Although we cannot exclude it as a rule, it is often not recommended to use a sixth chord **when the third of the chord is already in the melody**.

3.1 Two sixth chords in succession

When two sixth chords are used in direct succession, it is not possible to use the same shape twice, since this would result in parallels:

IV6 V6

In such a case, you have two options:

1. Select a different shape for one of the chords. In the example below, the melody note is first duplicated by the tenor, and then by the alto:

A musical score for two staves (treble and bass clefs) showing a progression from IV6 to V6. The IV6 chord has a melody note on the treble staff (G4) and a tenor note on the bass staff (D4). The V6 chord has a melody note on the treble staff (A4) and an alto note on the bass staff (E4). The bass line consists of two notes: D4 and E4.

2. Accept a non-standard duplication. In the example below, the bass is duplicated in IV6:

A musical score for two staves (treble and bass clefs) showing a progression from IV6 to V6. The IV6 chord has a melody note on the treble staff (G4) and a tenor note on the bass staff (D4). The V6 chord has a melody note on the treble staff (A4) and an alto note on the bass staff (E4). The bass line consists of two notes: D4 and E4.

Contrary to root positions, lastly, with sixth chords it is possible to go from a Vth to a IVth degree. Especially the progression V-IV⁶ is quite common:

A musical score for two staves (treble and bass clefs) showing a progression from V to IV6. The V chord has a melody note on the treble staff (G4) and a tenor note on the bass staff (D4). The IV6 chord has a melody note on the treble staff (F4) and a tenor note on the bass staff (D4). The bass line consists of two notes: D4 and D4.

4 The main degrees in second inversion: I_4^6 , IV_4^6 en V_4^6

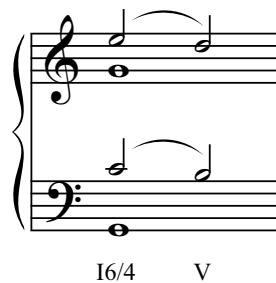
duplication: bass

Six-four chords contain the interval of a fourth on top of the bass. Because of this fourth, a six-four chord is too unstable to function autonomously. Six-four chords can therefore not be applied at will. In principle, six-four chords are **not** used, unless they can be explained as belonging to one of four categories:

1. cadential six-four chord,
2. passing six-four chord,
3. neighbor six-four chord,
4. arpeggiated six-four chord.

4.1 Cadential six-four chord

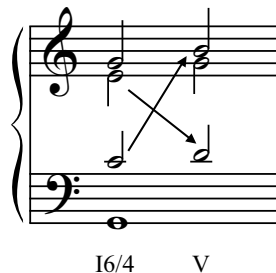
A cadential six-four chord delays the actual chord by means of two suspensions: one for the third of the chord, and one for the fifth. For example:



The six-four chord arises more or less coincidentally as a result of ornamental notes, in this case suspensions. Just like a suspension, a cadential six-four chord comes on a **relatively strong beat**.

The cadential six-four chord is encountered most frequently as I_4^6 (resolving to V). In this stage, the progression IV_4^6-I can be applied as well.

Sometimes it is possible to treat the resolution of the suspensions in a cadential six-four chord freely. The resolutions to the suspensions then appear in another voice. For example:



I_4^6 is often encountered as a suspension for V in a cadence, both in a half cadence and in an authentic cadence. In this Mozart example it is used in both situations:

Andante grazioso

16/4 V
half cadence

16/4 V7 I
perfect authentic cadence

Figure 1: Beginning of Mozart's piano sonata in A major, K. 331

4.2 Passing six-four chord

A passing six-four chord is constructed on a passing tone in the bass. That means the bass makes a step-wise ascending or descending motion.

I V6/4 I6

We again see the six-four chord arising as a result of ornamental notes (the d's in the outer voices are passing tones, the b in the tenor is a neighbor tone). Just like a passing chord, a passing six-four chord comes on a **relatively weak beat**.

Besides V_4^6 , in this stage I_4^6 can be used as passing six-four, in the progressions $IV-I_4^6-IV^6$ and $IV^6-I_4^6-IV$.

4.3 Neighbor six-four chord

A neighbor six-four chord emerges as a result of the use of two neighbor tones on an unchanging bass note:

I IV6/4 I

A neighbor six-four chord comes, just like a neighbor tone, on a **relatively weak beat**. In this stage, we can also use I_4^6 as a neighbor six-four in the progression $V-I_4^6-V$.

4.4 Arpeggiated six-four chord

The arpeggiated six-four chord emerges when the bass arpeggiates a triad while the chord remains unchanged:

I 6/4 6

When the bass moves through such an arpeggiation, usually both the first and last of these chords are *not* a six-four chord. Also the arpeggiated six-four chord comes on a **relatively weak beat**.

*
* *

The above examples show that in a six-four chord **the bass is duplicated**.

5 The dominant seventh chord: V^7

Instead of a triad, often a seventh chord on V is used. The seventh chord contains a tritone (in C major: b–f), which has a strong tendency to resolve. This emphasizes the dominant quality of the chord. The most important rule for the resolution of a dominant seventh chord is that *the third (the leading tone) ascends stepwise and the seventh descends stepwise*.

V^7 resolves to I; both chords are in root position. This progression can be found at the end of all classical (i.e. late eighteenth-century) compositions. For example:

Figure 2: Last measures of Beethoven’s piano sonata in C major, opus 2 no. 3

Figure 3: Last measures of the first movement of Mozart’s piano sonata in C major, K. 309

As you can see in the examples, the seventh of the dominant seventh chord indeed descends stepwise, and the leading tone ascends stepwise (f goes to e, b goes to c). The root note of V^7 leaps to the root note of I. The fifth of the chord, the d, then moves stepwise to the c.

In a four-voice setting this could look like this:

Since the leading tone (b) resolves to the root note (c) and also the d goes to c and not to e (which would result in a duplicated third), the tonic chord is incomplete: the fifth is missing.

When V^7 goes to one, as a rule **one of the chords is incomplete**. The other chord *is* complete. The case of an incomplete dominant seventh chord looks like this:

incompl. compl.

One way to realize a complete setting of both chords, is by making the leading tone leap down to the fifth of the tonic. This can only be done when the leading tone is in an inner voice. When the leading tone is in the soprano, the tendency to resolve is usually too strong. For example:

compl. compl.

Other examples:

a) b) c) d) e)

A:V7 I e:V7 I e:V7 I F:V7 I F:V7 I

In examples c) and e) the leading tone is in the tenor and leaps down to the fifth of the tonic chord, making the tonic chord complete. In examples a) and d) this is not possible since the leading tone is in the soprano.

6 Inversions of the dominant seventh chord

The dominant seventh chord can be used in all positions. All positions can resolve to (one or more specific positions of) the first degree. (The complete/incomplete rule, as discussed in the previous chapter, is not applicable in these situations.)

6.1 $V_5^6 \rightarrow I$

V_5^6 resolves to I in root position. The leading tone is in the bass; it has to resolve up stepwise. An example from Mozart:

The musical score shows the beginning of Mozart's piano sonata in G major, K. 283. It is in 3/4 time, marked 'Allegro' and 'p'. The score consists of two staves: a treble clef staff and a bass clef staff. The first measure is G:I. The second measure is V3/4. The third measure is V5/6. The fourth measure is I. The bass line in the V5/6 chord shows a descending eighth-note pattern.

Figure 4: Beginning of Mozart's piano sonata in G major, K. 283

V_5^6 in measure 3 resolves to I in measure 4. The seventh (the c) is in the melody and resolves stepwise descending. Other examples:

The musical score shows five examples of V_5^6 resolving to I. The chords are a:V5/6, f:V5/6, C:V5/6, G:V5/6, and E:V5/6, each resolving to I. The score is in 3/4 time and shows the chord progression in both treble and bass clefs.

We observe the same procedures: the root note of V_5^6 does not move, the third ascends stepwise, and the fifth and seventh descend stepwise.

6.2 $V_3^4 \rightarrow I$ or I^6

V_3^4 can be resolved in two ways: it can resolve to I and to I^6 . The chord is often used as a passing chord between I and I^6 :

C:I V3/4 I6 C:I6 V3/4 I

The chord can however also go back to where it came from, as you can see in this Mozart theme:

Allegro

C:I V3/4 I C:I6 V3/4 I

Figure 5: Beginning of Mozart's piano sonata in C major, K. 545

Other examples:

a) b) c)

a:I V3/4 I6 G:I6 V3/4 I d:I V3/4 I6

When V_3^4 resolves to I^6 , *the seventh ascends stepwise*. You can see this here in example a) (melody: d goes to e) and in example c) (melody: g goes to a). The seventh ascends to prevent a duplicated third in the ensuing tonic. Note that this creates fifth or fourth parallels (in the examples here between soprano and alto). These are acceptable.

6.3 $V_2 \rightarrow I^6$

An example from Haydn:

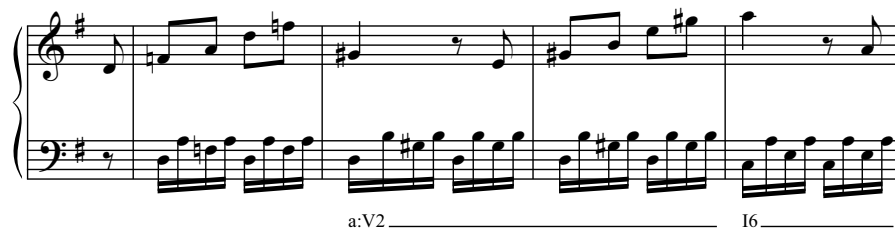
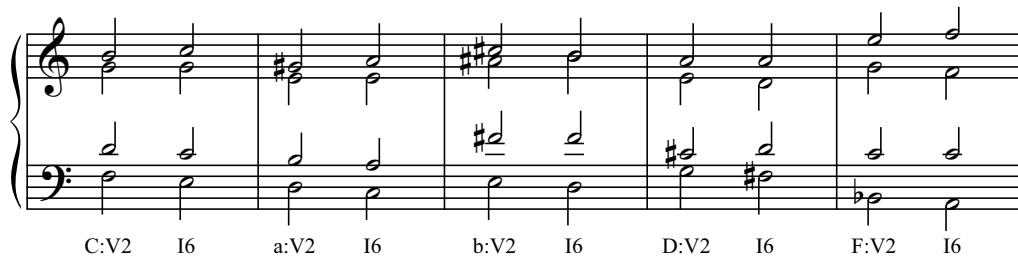


Figure 6: From Haydn's piano sonata in G major, Hob. XVI: 27

The seventh is now in the bass. Since it has a strong tendency to resolve down stepwise, the resulting tonic chord is in sixth position. Other examples:



6.4 Summary

An overview of the resolutions of the dominant seventh chord:

| | | |
|---------|---|---|
| V^7 | → | I (one of the chords is incomplete) |
| V^6_5 | → | I |
| V^4_3 | → | I of I^6 (when resolving to I^6 , the seventh ascends stepwise) |
| V^2 | → | I^6 |

7 The supertonic: II

The IInd degree, like IV, is a subdominant. II⁶ is the most common position, but also root position is usable (in major), as well as all inversions of II⁷.

7.1 II⁶

duplication: bass

In the majority of cadences, II⁶ is used instead of IV. It is useful to think of II⁶ not necessarily as an inversion of II, but as a variant of IV – a variant in which the fifth has been raised to a sixth. Just like in IV, the bass note is duplicated, which in this case is the third, and just like in the progression IV-V, we use contrary motion in II⁶-V.

Examples:

The image shows three musical examples of II⁶-V-I progressions. Each example is written in a grand staff (treble and bass clefs).
Example 1: II⁶ (F major, bass notes C and G) - V (F major, bass notes C and F) - I (F major, bass notes C and F).
Example 2: II⁶ (C major, bass notes E and G) - V (C major, bass notes F and C) - I (C major, bass notes F and C).
Example 3: IV (C major, bass notes F and C) - II⁶ (C major, bass notes E and G) - V (C major, bass notes F and C) - I (C major, bass notes F and C).
In all cases, the bass line shows the duplication of the third degree of the chord.

II⁶ can also resolve to the tonic directly in a plagal progression:

The image shows a plagal progression from II⁶ to I. It is written in a grand staff. II⁶ (C major, bass notes E and G) - I (C major, bass notes F and C). The bass line shows the duplication of the third degree.

7.2 II

duplication: bass

In the major mode, a root position II can be used as well. (In minor this is not possible, because a diminished triad in root position does not sound well.) The root note is duplicated (so not the third, as in II⁶):

7.3 II⁷

In II⁷, just like in V⁷, the seventh of the chord has the tendency to resolve down stepwise. Since, contrary to the dominant seventh chord, the third of the chord is minor (in the major mode the chord is a minor seventh chord, in minor it is half-diminished), II⁷ has a more mellow sound than V⁷, and there is no need to resolve the third as if it were a leading tone. In the minor mode, the fifth needs special attention, though, which must resolve stepwise descending.

Examples:

7.4 II₅⁶

II₅⁶ can be seen as a variant of II⁶. As a result of the added seventh, the sound is richer. When resolving to V, the seventh must resolve downward. It is also possible to resolve II₅⁶ to I, though; the root note of II then ascends to the third of I and the seventh does not descend but stays on the same pitch.²

Examples:

²This non-descending seventh can be explained by interpreting II₅⁶ in the progression II₅⁶-I not as a IInd degree, but as a IVth degree to which a sixth has been added, a so-called *sixte ajoutée*. In this interpretation, the c is not the seventh, but the fifth; in the progression IV-V this tone does not move, and likewise in the progression II₅⁶-I.

II5/6 V7 I IV II5/6 I

7.5 II₃⁴

II₃⁴ resolves to V. The seventh descends stepwise:

II3/4 V7 I II3/4 V7 I

7.6 II₂

Since in II₂ the seventh is in the bass, the chord resolves to V⁶ or V₅⁶:

II2 V7 I

8 Alterations of the subdominant

Using chromatic alterations, the subdominant can be enriched in a number of ways.

8.1 Modal mixture: $b\hat{6}$ in major

In the major mode it is possible to borrow $b\hat{6}$ from the minor mode (ab in C major). This note has the tendency to resolve down stepwise. Examples:

A musical score in C major showing two measures. The first measure contains chords I (C major), II6MD (D minor with a flat 6th), V7 (G7), and I (C major). The second measure contains chords I (C major), IVMD (F major with a flat 6th), and I (C major). The bass line shows a descending stepwise motion from the 6th degree of the first measure to the 5th degree of the second measure.

8.2 Modal mixture: $\#\hat{6}$ in minor

In the minor mode it is possible to use $\#\hat{6}$ (which comes either from the harmonic or melodic minor scale, or from the major mode). Often this note is followed by $\#\hat{7}$, and subsequently the root note (melodic minor). For example:

A musical score in C minor showing two measures. The first measure contains chords IV6DM (F major with a flat 6th) and V6 (G7 with a flat 6th). The second measure contains chord I (C minor). The bass line shows a descending stepwise motion from the 6th degree of the first measure to the 5th degree of the second measure.

8.3 The Neapolitan

In the IInd degree, it is possible to lower the root note ($b\hat{2}$). This is called the “Neapolitan IInd.” It is encountered most frequently in minor; in major, also $b\hat{6}$ must be used:

A musical score in C minor showing two measures. The first measure contains chords II6N (D minor with a flat 2nd) and V (G7). The second measure contains chord I (C minor). The bass line shows a descending stepwise motion from the 6th degree of the first measure to the 5th degree of the second measure.

8.4 Cross-relations

When writing chromatic alterations, one must be careful to prevent so-called cross-relations, i.e. a chromatic line distributed over two voices. This is a very expressive tool in tonal music; when it is not used deliberately it is almost always wrong. When using the Neapolitan IInd, however, it is correct (and unavoidable):

The image shows three musical examples in a grand staff (treble and bass clefs) illustrating cross-relations. Each example consists of two measures.

- wrong:** The first example shows a chromatic line from G4 to F#4 in the treble clef and a chromatic line from B3 to Bb3 in the bass clef. A solid line connects the G4 in the first measure to the Bb3 in the second measure, crossing the staff boundary.
- wrong:** The second example shows a chromatic line from G4 to F#4 in the treble clef and a chromatic line from B3 to Bb3 in the bass clef. A solid line connects the G4 in the first measure to the Bb3 in the second measure, crossing the staff boundary.
- right:** The third example shows a chromatic line from G4 to F#4 in the treble clef and a chromatic line from B3 to Bb3 in the bass clef. A dashed line connects the G4 in the first measure to the Bb3 in the second measure, staying within the treble clef staff.

Below the notation, Roman numerals indicate the chords for each measure:

- Example 1: IV, IVMD, I
- Example 2: I, IVDM, IV, I
- Example 3: II6N, V, I

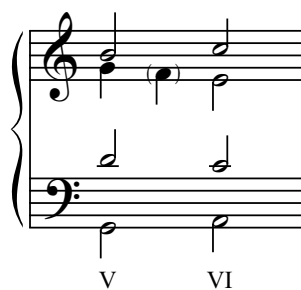
9 The submediant: VI

The VIth degree can possess both tonic and subdominant function. Tonic function is most clear in the progression V-VI, in which VI acts as a replacement for I. In other cases the function of VI is often ambivalent and can be seen to be either tonic or subdominant.

9.1 VI after V

duplication: third

When using VI after V we are dealing with a second relationship. Therefore we must use contrary motion. However, the leading usually *is* resolved upward, especially when it is in the soprano. As a result, the VIth degree gets a duplicated third:



When this progression is used in a cadential context, we speak of a deceptive cadence: the melody seems to come to an end, but the last tone (the first scale-degree) is supported by an unexpected chord. The VIth degree here substitutes for the expected tonic.³

The progression V-VI can also be used outside of a cadential context, as in this Mozart example:

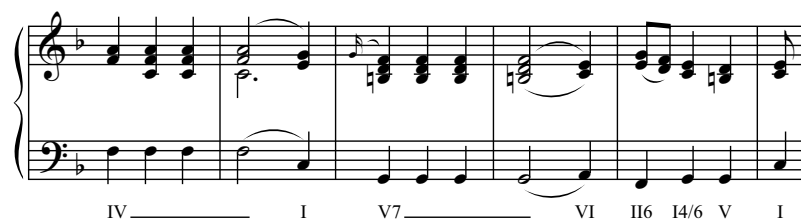


Figure 7: From Mozart's piano sonata in F major, K. 332, first movement

The V-VI progression in measure 4 is not a deceptive cadence; the actual cadence (an IAC) does not materialize until measures 5 and 6. The harmony in measure 4 is best described as a deceptive *progression* or *resolution* instead of a deceptive *cadence*.

9.2 Other cases

duplication: bass

³When in such a situation a different unexpected chord like IV⁶ is used, we also speak of a deceptive cadence.

In other usages of VI, it is usually reached via the Ist or IIIrd degree.⁴ The root note is duplicated. VI can then be followed by any chord, but usually not directly by I. Just like the deceptive cadence, in this case also IV⁶ can be used instead of VI.

For example:

I VI II6 V _____

9.3 Modal mixture

Occasionally, the VIth scale degree from the minor mode is used in the major mode (the other way around is far less common):

I6 II6 I6/4 V7 \flat VI

⁴The progression III-VI is found within the context of a descending fifth sequence, see ahead Chapter 13.

10 The mediant: III

10.1 Major

The IIIrd degree in major has quite an indeterminate quality. Outside of sequences it appears rarely in the classical style. In the nineteenth century its popularity increases.

The indeterminate character of III is related to the fact that it shares two notes with both I and V, tonic and dominant. Usage of the IIIrd degree in major is most common when the leading tone is in the melody and descends stepwise. For example:

A musical score for piano in G major. The right hand (treble clef) plays a descending stepwise melody: G4, A4, B4, A4, G4. The left hand (bass clef) plays a simple harmonic accompaniment: G3, B3, D4, G3, B3, D4, G3, B3, D4. The chords are labeled I, III, IV, I below the staff.

Besides this situation, III⁶ is on occasion used as a variant of V in a V-I progression. In such a case the bass is duplicated, just like in V:

A musical score for piano in G major. The right hand (treble clef) plays a descending stepwise melody: G4, A4, B4, A4, G4. The left hand (bass clef) plays a simple harmonic accompaniment: G3, B3, D4, G3, B3, D4, G3, B3, D4. The chords are labeled III6, I, III6, I below the staff.

10.2 Minor

In the minor mode, the IIIrd degree is much less ambiguous than in major. This is because in minor it corresponds to the tonic of the relative major key. That means the chord can function as a point of repose, and it is often used to briefly bring to mind the sound of the relative major key.

NB: In the classical style, the IIIrd degree usually does not contain the leading tone (i.e. no harmonic major is used). In the nineteenth century and with Bach you occasionally do find this. The resulting augmented chord has a tendency to resolve to VI. Apply judiciously.

11 The leading-tone chord: VII

A chord on $\hat{7}$ has three notes in common with V^7 . The VIIth degree is therefore often thought of as a V with absent root note. Just like V, VII has dominant function.

As a triad, VII is used most frequently in first inversion. The seventh chord of VII is usable in all inversions.

11.1 VII⁶

duplication: third

VII⁶ is most commonly used as a passing chord between I and I⁶. The third of the chord is usually duplicated:

I VII6 I6 I VII6 I6

The fifth parallel that emerges when resolving to I⁶ is acceptable. The mellow sound of the first-inversion tonic also renders the effect of the fifth parallel milder. This wouldn't work the other way around:

wrong

I6 VII6 I

11.2 VII⁷

As a rule, the seventh chord on VII is a *diminished seventh chord*. This means that in the major mode, the seventh of the chord is lowered (in C major: $a\flat$ instead of a). This creates an extra leading tone for the fifth of the ensuing tonic. When resolving VII⁷ to I, all voices move stepwise, and in I the third is duplicated. If the root note were to be duplicated, there would be a risk of fifth parallels:

right
wrong

VII7 I
VII7 I

These fifth parallels can also be avoided by repositioning the chord in such a way that we get *fourth* parallels. In this case the root note of the tonic *can* be duplicated. For example:

right

VII7 I

11.3 VII₅⁶, VII₃⁴ and VII₂

Resolving the inversions of VII⁷ does not pose any additional difficulty. Three remarks:

1. VII₅⁶ cannot resolve to I in root position. This would result in fifth parallels. VII₅⁶ therefore resolves to I⁶.
2. The fifth parallels that emerge when resolving to I⁶ are acceptable.
3. VII₂ would have to resolve to I₄⁶, but since this is not a tonic but a (suspension for the) dominant, this progression isn't very customary: VII₂-I₄⁶-V would come down to three successive dominant chords. More usual would be to harmonize the (lowered) sixth note of the scale with a subdominant, yielding VI-V-I or IV⁶-V-I.

Examples:

VII6/5 I VII6/5 I6 VII6/5 I6 VII4/3 I6 VII4/3 I6 VII2 I6/4

↑
A subdominant would be more likely here.

12 Secondary dominants

A secondary dominant is a dominant for another degree than I. A secondary dominant is either a major triad, a dominant seventh chord (secondary $V^{(7)}$), or a diminished triad or diminished seventh chord (secondary $VII^{(7)}$). A secondary dominant is notated as “ $(V^{(7)})\rightarrow$ ” or “ $(VII^{(7)})\rightarrow$ ”, the arrow pointing to the degree to which the secondary dominant belongs.

It is not possible to use a secondary dominant for a diminished or augmented triad. That means that, in major, $(V)\rightarrow VII$ is impossible, and in minor $(V)\rightarrow VII$ and $(V)\rightarrow II$ are impossible.

A secondary dominant contains at least one chromatic note.

12.1 Secondary V

When using a secondary $V^{(7)}$, the same voice-leading rules apply as for a diatonic $V^{(7)}$ -I progression. The secondary $V^{(7)}$ can, just like the regular $V^{(7)}$, be used in all positions.

Examples:

I $(V4/3) \rightarrow$ VI $(V4/3) \rightarrow$ IV $(V6) \rightarrow$ I6/4 V I

12.1.1 Deceptive resolutions

It is possible to write a secondary dominant that does not resolve to its corresponding (local) tonic chord, but to give it a deceptive resolution instead, just like the V-VI progression seen before. The next chord then must be a major or minor triad (not diminished or augmented) and gets a duplicated third (just like VI after V). The notation will have to make clear to which degree the secondary dominant belongs (see the arrow in example below):

I V 2 I6 $(V7) \rightarrow$ II 6 I6/4 V I

IV

12.1.2 Dominant chain

By placing several secondary dominants after each other, we can realize a so-called dominant chain. This leads to a new possibility with respect to the treatment of the leading tone:

1. the leading tone can *resolve*, i.e. ascend stepwise (as known),
2. the leading tone can *leap away* to the fifth of the next chord, only possible in an inner voice (as known),
3. the alteration that had resulted in the leading tone can be *undone*; the tone that follows is usually the seventh of the chord.

To illustrate:

The musical notation shows a sequence of chords in a grand staff. The chords are: I, (V6/5), (V), (V7), V, 7, and I. Annotations include:

- 'undone' with an arrow pointing to the leading tone of the (V) chord.
- 'resolves' with an arrow pointing to the leading tone of the (V) chord.
- 'leaps away' with an arrow pointing to the leading tone of the (V) chord.

I (V6/5) → (V) → (V7) → V 7 I

12.2 Secondary VII

A secondary VII⁷ can, like VII⁷, be encountered in all positions, that are all resolved in the same way as the case of VII⁷. Secondary VII⁶ is also usable. See Chapter 11 on page 31 on how to use the VIIth degree.

Examples:

The musical notation shows a sequence of chords in a grand staff. The chords are: I, (VII7), II (VII6/5) → II6, (VII7) → V, (VII7) → VI, II6, I6/4, V, and I.

I (VII7) II (VII6/5) → II6 (VII7) → V (VII7) → VI II6 I6/4 V I

13 The descending fifth sequence

When V^7 resolves to I, the bass makes a leap of a descending fifth (or ascending fourth). Using the same bass progression, II can move to V and I to IV. This harmonic progression is possible on every degree, and it is possible to visit each degree exactly once by using the same progression over and over:

$$I - IV - VII - III - VI - II - V - I$$

Such a progression is called a descending fifth sequence. It does not, however, always need to be applied in its entirety. Also a selected sub-progression can be called a descending fifth sequence. As a rule, we speak of a descending fifth sequence when we encounter at least four chords from the above progression, for instance I-IV-VII-III.

The descending fifth sequence is a harmonic sequence, in which the model consists of two chords (for example I-IV), which is then sequenced one tone lower (VII-III, etc.). This harmonic sequence is often (though not necessarily) combined with a melodic sequence.

The positions of the chords in the model (and therefore also in the sequences) are usually:

1. two root positions (e.g. I-IV, VII-III, etc.),
2. one root position and one sixth chord (e.g. I-IV⁶, VII-III⁶, etc.), or
3. one sixth chord and one root position (e.g. I⁶-IV, VII⁶-III, etc.).

An example of a descending fifth sequence with first a sixth chord and then a root position can be found in this Mozart theme:

The musical score shows a descending fifth sequence of chords in the bass line. The sequence is: G:16, V2, I6, V2, I6, IV, VII6, III, VI6, II, V6, I, II6, I6/4, V7, I. A bracket under measures 18-21 is labeled "descending fifth sequence".

Figure 8: From Mozart's piano sonata in C major, K. 545, first movement

In four voices a descending fifth sequence could look like this:

I⁶ IV VII⁶ III VI⁶ II V⁶ I

Also seventh chords can be used in a descending fifth sequence. The seventh of the chord then descends stepwise:

I^{6/5} IV VII^{6/5} III VI^{6/5} II V^{6/5} I

The label I⁶ in the above example is remarkable. Since the first degree is the most important tonic representative, it usually does not get a seventh. In a descending fifth sequence, however, the association between *degree* and *function* is not as strong as usual – the chords lose some of their own identity in favor of the effect of the sequence. It can therefore be meaningful to speak of I⁷ and its inversions in the context of a descending fifth sequence.

When encountered in the minor mode, the descending fifth sequence does not use harmonic minor in III and VII, since the seventh note of the scale in the chords does not resolve as a leading tone. When then speak of III aeolian and VII aeolian. For example:

I IV⁶ VII^{aeol.} III^{6aeol.} VI II⁶ V I

It is recommended to sequence the duplications exactly like the model, even when this results in unusual duplications for some chords. In the example above, IV⁶ and III^{6aeol.} have a duplicated third, which is not customary, so that as a result of the sequence the II⁶ chord also gets a duplicated third, which *is* customary.

Lastly, it is possible to substitute one or more chords in a descending fifth sequence by a secondary dominant. The figuring must then also be adapted:

The image shows two musical staves, each with a grand staff (treble and bass clefs). The top staff shows a descending fifth sequence in C major: I6/5 (C6), IV (F), VII6/5 (G7), III (C), VI6/5 (D7), II (F), V6/5 (C7), and I (C). The bottom staff shows the same sequence with a secondary dominant substitution: (V6/5) (D7), IV (F), VII6/5 (G7), III (C), (V6/5) (F7), II (D), V6/5 (C7), and I (C). Arrows point from the I6/5 and VI6/5 labels in the top staff to the (V6/5) labels in the bottom staff, indicating the substitution.

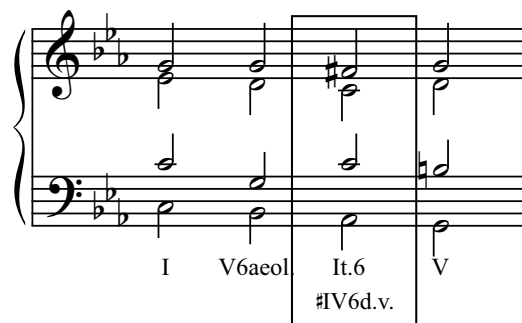
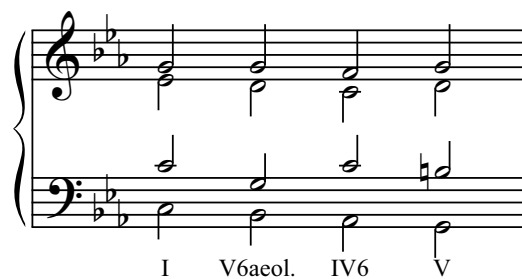
14 Augmented sixth chords

Augmented sixth chords contain two leading-tones for the fifth scale degree, which together form an augmented sixth:



aug.6 p.8

The augmented sixth chord became popular during the Baroque period, during which it was often used as a chromatic alteration on a lamento bass:



The resulting chord is called the *Italian sixth chord* (hence the designation “It.6”). It consists of the notes $F\sharp-A\flat-C$, and can therefore be understood as a triad on the *raised fourth degree*, which is then a diminished third chord (in Dutch: *dubbelverminderd*):



The first inversion of this chord (with the A \flat in the bass) is however by far the most common of all positions. Augmented sixth chords can be encountered in both the major and the minor mode and are the same in both modes.

14.1 Variants

We distinguish three variants of the augmented sixth chord.

14.1.1 Italian sixth chord

Dutch: “overmatig sextakkoord”

As already discussed, the Italian sixth chord in c minor looks as follows:



Voice-leading

In the Italian sixth chord, the fifth of the chord is duplicated (the only tone that is not a leading tone and therefore will not result in parallel octaves): one of these ascends stepwise, the other descends stepwise.

14.1.2 German six-five chord

Dutch: “overmatig kwintsextakkoord”

The German six-five chord can be seen as an Italian sixth chord to which a seventh has been added. In c minor, the seventh on the IVth degree is an e flat:



Ger.6/5
Dutch: #IV6/5d.v.

Voice-leading

When a German six-five resolves directly to V, fifth parallels will result:



Ger.6/5 V
Dutch: #IV6/5d.v.

These fifth parallels are called “Mozart fifths” (Dutch: “Mozartkwinten”). They are not commonly found in the classical style, but were not considered problematic by many composers from the Romantic era. They can be avoided by making use of a dominant six-four chord:



Ger.6/5 I6/4 V
Dutch: #IV6/5d.v.

14.1.3 French four-three chord

Dutch: “overmatig tertskwartakkoord”

The French four-three chord can be seen as an Italian sixth chord to which the second scale-degree (in c minor: the d) has been added:



Fr.4/3
Dutch: II4/3h.v.

Due to the addition of the d, the chord is no longer on the fourth degree, but on the *second*:



D7^b5
Fr.7
Dutch: II7_{h.v.}

The resulting chord is a dominant flat five chord (hence the designation D7^b5), or *hardverminderd septiemakkoord* in Dutch (hence II_{h.v.}⁷).

Voice-leading

Resolving the French four-three chord is very similar to resolving the Italian sixth chord, and does not introduce any new problems:



Fr.4/3 V
Dutch: II4/3h.v.

14.2 Other inversions

Contrary to most other chords, the most common position for augmented sixth chords is not root position. In the most common scenarios, as we have seen above, we are dealing with either a chord in first (Italian, German) or in second inversion (French).

Nevertheless, other inversions are usable, and can be encountered in the Romantic repertoire. There are no additional voice-leading issues. Just as in the common inversions already covered, both leading tones for the dominant must resolve stepwise in the expected fashion.

Some examples:

#IVd.v. I6/4 V7 I #IV4/3d.v. V6 6/5 I II7h.v. V 7 I
 It.5/3 Ger.4/3 Fr.7

15 Modulations

We speak of a modulation when a certain key is left in favor of another key. If the other key is used only briefly, we also speak of a tonicization of the corresponding degree. If the other key is confirmed by a cadence, then we are sure to be dealing with a modulation.

In classical harmony we distinguish three types of modulation: the diatonic modulation, the enharmonic modulation, and the chromatic modulation.

15.1 Diatonic modulations

A diatonic modulation makes use of the fact that some chords occur in two keys. For instance: a minor is VI in C major, and II in G major. That means that a piece in C major can move to the VIth degree, and subsequently treat this chord as II, realizing a modulation to the dominant key. When a chord has such a double function, we are dealing with a diatonic modulation, and the chord is called a *pivot chord*.

For example:

The image contains two musical examples of diatonic modulation in 3/4 time. The first example shows a progression of chords in C major: C:I, V6, 5/6, I, 6, I6/4, and V. The second example shows a progression in F major: VI=G:II, 6, V2, I6, II7, V, 7, and I. The pivot chord in the second example is the V chord (C7), which functions as VI in G major.

In the Mozart example below, the music modulates from F major to C major, using F: V = C: I as pivot chord:

C:I V4/3 I6 5 VII7=E:b:VII2 V7 VI II6 I6/4 V7 I

In this example, the enharmonisation is made explicit by respelling the b in the bass in measure 2 to become a cb . Usually this respelling is not notated in the score; the composer simply chooses one of the two spellings.

From any diminished seventh chord, one can easily modulate to at least sixteen different keys. This is because a diminished seventh chord can be used in four very typical ways in one and the same key:

1. VII⁷ in major,
2. VII⁷ in minor (using $b\hat{6}$),
3. secondary VII⁷ voor V in major,
4. secondary VII⁷ voor V in minor.

When we combine these four possibilities with the fact that a diminished seventh chord can have four different spellings, we arrive at sixteen different resolutions in sixteen different keys for one and the same chord.

For example:

| | |
|------------------|--|
| b-d-f-ab | c: VII ⁷ C: VII ⁷ f: secondary VII ⁷ for V F: secondary VII ⁷ for V |
| b-d-f-g \sharp | a: VII ⁶ ₅ A: VII ⁶ ₅ d: secondary VII ⁶ ₅ for V D: secondary VII ⁶ ₅ for V |
| b-d-eis-gis | fis: VII ⁴ ₃ Fis: VII ⁴ ₃ b: secondary VII ⁴ ₃ for V B: secondary VII ⁴ ₃ for V |
| ces-d-f-as | es: VII ₂ Es: VII ₂ as: secondary VII ₂ for V As: secondary VII ₂ for V |

These are only the most obvious possibilities, since the diminished seventh chord can also be used as a secondary dominant for other degrees (II, III, IV, VI).

15.2.2 Augmented triad

Modulations using an enharmonic respelling of an augmented triad are rather rare, just like the augmented triad itself. The augmented triad is usually used on the Vth degree. An enharmonic modulation could therefore, for example, respell V of C major (g-b-d \sharp) to V of A \flat major (e \flat -g-b), or V of E major (b-d \sharp -f \times).

15.2.3 Italian sixth and German six-five chords

Both the Italian and German sixth chords are enharmonically equivalent to the dominant seventh chord (in the Italian sixth chord, the tone corresponding to the fifth of the dominant seventh chord is missing). For instance, in c minor, a \flat -c-e \flat -f \sharp (Ger. $\frac{6}{5}$) is enharmonically equivalent to a \flat -c-e \flat -g \flat , which is a dominant seventh chord on a \flat , i.e. the Vth degree of D \flat (the Neapolitan in c).

This principle can be used to steer the music in an unexpected direction, which occasionally happens in the music of the classical style and becomes more common in 19th century Romanticism.

The following example modulates from D \flat major to c minor, using D \flat : V⁷ = c: Ger. $\frac{6}{5}$ as enharmonic pivot chord:

D: I II6 I6/4 V7 = c: \sharp IV6/5d.v. I6/4 II6 V 7 I
Ger.6/5

15.2.4 French four-three chord

A French four-three chord consists of two major thirds a tritone away, and thus two French sixth chords a tritone away are enharmonically equivalent. For example: the French four-three chord in c minor (d-f \sharp -a \flat -c) is enharmonically equivalent to the French four-three chord in f \sharp minor (g \sharp -b \sharp -d-f \sharp).

This equivalence can be used to modulate to a tritone-related key. The following example modulates from c minor to f \sharp minor:

c: I V2 I6 II7h.v. = Fr.7 II4/3h.v. = Fr.4/3 I6/4 II7 I6/4 V7 I

15.3 Chromatic modulations

In a chromatic modulation, no diatonic or enharmonic connection between opening key and goal key is made. As a result, there is no diatonic or enharmonic pivot chord. Usually, it is possible to indicate a *chromatic* pivot chord, but this is often far-fetched and sometimes not even possible at all.

For example:

C:I II6 I6/4 V2 I6 D:V6/5 I 6 V2 I6 II6 V7 I

Opening key C major and goal key D major are not diatonically related (i.e. C major is not a degree in D major, and vice versa), and also no diatonic pivot chord is used to connect both keys. Instead, in measure 2, I⁶ of C major is followed directly by V₅⁶ of D major. The latter chord can only be explained chromatically in C, as secondary V₅⁶ for II. For this reason, this chord could be called a chromatic pivot chord. This, however, is usually not notated.

An example of a situation without a chromatic pivot chord:

C:I VII7/b3 Eb:V (VII7) V7 I

Here, VII₃⁷ of C major is followed directly by V⁷ of Eb major. Both chords cannot be explained in the other key.