

Lesson AAA – Basic Interval Progressions

Introduction:

Consider the following exercise, where you might be asked to provide a four-part texture for a given bass line:

Example 1:

The image shows a musical staff with a treble clef and a bass clef. The bass clef staff contains a sequence of notes: G2, C3, E2, G2, and C3. Below each note is a Roman numeral: I, IV, ii, V, and I. The treble clef staff is empty.

One approach to this exercise would be to simply “fill out” each Roman numeral. In other words, you might create upper voices by making sure each Roman numeral had all of its members present (C, E, and G for I; F, A, and C for IV; and so on). Although that method will produce correct harmonies, it does not take into account the melodic path of each part, nor the relationships among the parts. This melodic aspect of tonal music is crucial, particularly in four-part vocal settings (SATB) such as the one shown above. This lesson will introduce you to a set of tools for creating such multi-voiced textures that address both harmonic and melodic considerations.

Interval progression, as the phrase implies, is simply a series of two or more intervals. Interval progressions form the backbone of counterpoint, and counterpoint is the foundation of tonal music. The purpose of this lesson is to familiarize you with the concept and handling of basic interval progressions. A firm understanding of interval progressions will guarantee proper and problem-free part-writing.

This lesson will begin by presenting you with a catalog of standard interval progressions. In subsequent lessons you will be given an opportunity to expand these progressions by adding a third and fourth voice (see Lesson BBB).

Background principles:

By the time of J.S. Bach, a number of interval progressions had become standard. This lesson will not delve too deeply into the history of why certain progressions became standard, but several guiding principles are worth mentioning.

Contrary Motion. In early multi-voice (polyphonic) music, composers began to prefer contrary motion between voices, giving each part melodic independence. If one voice descended, the other voice would typically ascend, and vice versa, as illustrated here:

Example 2:



The voices, though singing together, maintained their own identity, leading to a richer, more interesting texture.

Parallel Motion. Parallel motion, where two voices move simultaneously in the same direction keeping the same intervallic distance between them, was also permissible in this style, though with some regulations. Because parallel motion diminishes the independence of the voices, it could be used only with certain intervals. Voices forming *perfect* intervals (unison, fifth, octave) blended together so well that it seemed as though they were undifferentiated. If voices maintained perfect intervals as they moved up or down, as here:

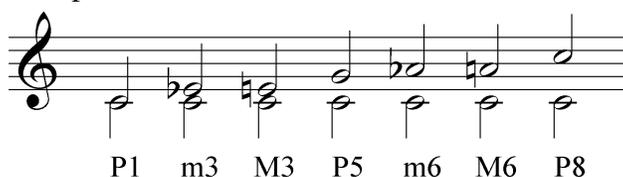
Example 3:



they would lose their independence altogether. Parallel motion is therefore permitted only with *imperfect* intervals (minor/major thirds and minor/major sixths). We will return to this concept shortly.

Consonant Intervals Only. For now, we will consider only consonant intervals: The perfect consonances (unison, perfect fifth, and perfect octave), and imperfect consonances (minor/major thirds and minor/major sixths).

Example 4:



The following intervals are excluded for now:

Example 5:



We will not yet consider dissonant intervals (minor/major seconds, minor/major sevenths, augmented or diminished intervals). The perfect fourth, however, is a special case. Although considered consonant by some definitions, it is treated as a dissonance in two-voice textures. When only two voices are present, they are not permitted to form a perfect fourth or any other dissonance.

Activity 1.1:

In order to fully understand basic interval progressions, it is essential that you first have a firm understanding of the intervals themselves. In this activity you will identify a series of intervals and specify whether they are consonant or dissonant.

Exercise 1.1a:

[Multiple choice question:] Identify the following interval:



[Possible answers: m2, M2, m3, M3, P4, A4, d5, P5, m6, M6, m7, M7, P8]

[Answer: M2. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again..."]

[Follow-up question:] Is this interval consonant or dissonant in two-voice textures?

[Answer: dissonant. Response if correct: "Correct! A major second is dissonant." Response if incorrect: "Incorrect. Try again..."]

Exercise 1.1b:

[Multiple choice question:] Identify the following interval:



[Possible answers: m2, M2, m3, M3, P4, A4, d5, P5, m6, M6, m7, M7, P8]

[Answer: P5. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again..."]

[Follow-up question:] Is this interval consonant or dissonant in two-voice textures?

[Answer: consonant. Response if correct: "Correct! A perfect fifth is consonant." Response if incorrect: "Incorrect. Try again..."]

Exercise 1.1c:

[Multiple choice question:] Identify the following interval:



[Possible answers: m2, M2, m3, M3, P4, A4, d5, P5, m6, M6, m7, M7, P8]

[Answer: m7. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again..."]

[Follow-up question:] Is this interval consonant or dissonant in two-voice textures?

[Answer: dissonant. Response if correct: "Correct! A minor seventh is dissonant." Response if incorrect: "Incorrect. Try again..."]

Exercise 1.1d:

[Multiple choice question:] Identify the following interval:



[Possible answers: m2, M2, m3, M3, P4, A4, d5, P5, m6, M6, m7, M7, P8]

[Answer: P8. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again..."]

[Follow-up question:] Is this interval consonant or dissonant in two-voice textures?

[Answer: consonant. Response if correct: "Correct! A perfect octave is consonant." Response if incorrect: "Incorrect. Try again..."]

Exercise 1.1e:

[Multiple choice question:] Identify the following interval:



[Possible answers: m2, M2, m3, M3, P4, A4, d5, P5, m6, M6, m7, M7, P8]

[Answer: P4. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again..."]

[Follow-up question:] Is this interval consonant or dissonant in two-voice textures?

[Answer: dissonant. Response if correct: "Correct! Perfect fourths are considered dissonant in two-voice textures." Response if incorrect: "Incorrect. Try again..."]

Exercise 1.1f:

[Multiple choice question:] Identify the following interval:



[Possible answers: m2, M2, m3, M3, P4, A4, d5, P5, m6, M6, m7, M7, P8]

[Answer: M3. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again..."]

[Follow-up question:] Is this interval consonant or dissonant in two-voice textures?

[Answer: consonant. Response if correct: "Correct! A major third is consonant." Response if incorrect: "Incorrect. Try again..."]

Standard interval progressions:

Parallel motion:

As mentioned above, parallel motion is permitted with imperfect consonances, as shown here:

Examples 6-7:



3 - 3



6 - 6

Note that each of the progressions is also valid in reverse. That principle holds for every interval progression outlined in this lesson. The following examples show the permissible parallel interval progressions in descending motion:

Examples 8-9:



3 - 3



6 - 6

(From this point on, each progression will be given with its reverse.)

Forbidden interval progressions:

Voices that form perfect consonances may not progress in parallel motion. That restriction holds for voices forming a unison. THE FOLLOWING INTERVAL PROGRESSIONS ARE NOT ALLOWED:

Examples 10-15:

The examples show six musical staves, each with two voices. The first two examples show parallel motion of unisons (1-1). The next two examples show parallel motion of perfect fifths (5-5). The last two examples show parallel motion of perfect octaves (8-8). Each example is labeled with its interval progression below the staff.

Activity 1.2:

Certain types of parallel interval progressions are allowed in two-voice textures while others are forbidden. In this activity you will be presented with various types of parallel interval progressions. It is up to you to determine which are permissible and which are not allowed.

Exercise 1.2a:

Is the following parallel interval progression permissible or forbidden?

The notation shows two voices in a minor key (three flats). The first voice has a half note G4, and the second voice has a half note D5. They move in parallel motion to a second measure where the first voice has a half note C5 and the second voice has a half note G5.

[Answer: forbidden. Response if correct: "Correct! Parallel fifths are not allowed." Response if incorrect: "Incorrect. Try again."]

Exercise 1.2b:

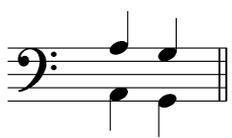
Is the following parallel interval progression permissible or forbidden?

The notation shows two voices in a major key (two sharps). The first voice has a half note G4, and the second voice has a half note B4. They move in parallel motion to a second measure where the first voice has a half note A4 and the second voice has a half note C5.

[Answer: permissible. Response if correct: "Correct! Parallel thirds are allowed." Response if incorrect: "Incorrect. Try again."]

Exercise 1.2c:

Is the following parallel interval progression permissible or forbidden?



[Answer: forbidden. Response if correct: “Correct! Parallel octaves are not allowed.” Response if incorrect: “Incorrect. Try again.”]

Exercise 1.2d:

Is the following parallel interval progression permissible or forbidden?



[Answer: permissible. Response if correct: “Correct! Parallel thirds are allowed, even with chromatic alterations.” Response if incorrect: “Incorrect. Try again.”]

Exercise 1.2e:

Is the following parallel interval progression permissible or forbidden?



[Answer: forbidden. Response if correct: “Correct! Parallel fifths are not allowed.” Response if incorrect: “Incorrect. Try again.”]

Exercise 1.2f:

Is the following parallel interval progression permissible or forbidden?



[Answer: permissible. Response if correct: “Correct! Parallel sixths are allowed.” Response if incorrect: “Incorrect. Try again.”]

Contrary Motion:

Because of special acoustic properties, the group of permitted parallel interval progressions is relatively small. By contrast, the group of interval progressions where voices move in contrary motion is much larger. We can divide this group into three categories:

- Both voices move by step
- One voice moves by step, the other by skip
- Both voices move by skip

Contrary motion – Both voices move by step:

We will begin by looking at interval progressions where each voice moves by step in contrary motion. These progressions may start from a unison, a third or a sixth. In each case, the two voices begin with a consonant interval and move in opposite directions (contrary motion). A unison expands to a third, a third to a perfect fifth, and a sixth to an octave, as shown here.

Examples 16-21:

1 - 3 3 - 1

3 - 5 5 - 3

6 - 8 8 - 6

(Notice that there is no standard interval progression in which the voices expand outwards by step from a perfect fifth. If two voices forming a fifth were to move away from each other by step, the result would be a seventh, which is a dissonance and is not allowed here.)

These interval progressions can also appear as compound intervals. In other words, the “1 - 3” interval progression can be written as an octave followed by a tenth:

Example 22:

1 - 3 becomes... 8 - 10

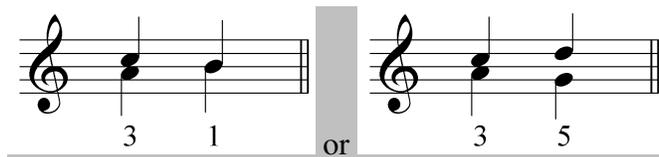
All of the interval progressions given in lesson are also valid in their compound forms. For the sake of clarity, however, interval progressions will only be listed in their simple forms. Compound intervals will only be used for naming progressions when the intervals expand from smaller than an octave to greater than an octave or vice versa.

Activity 1.3:

This activity will give you the opportunity to complete a short interval progression. For each exercise, provide a second interval so that both voices move by step in contrary motion. For example, the following minor third:

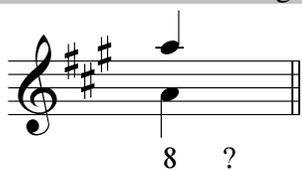
3 ?

could move in stepwise, contrary motion to either a unison or a perfect fifth:



Exercise 1.3a:

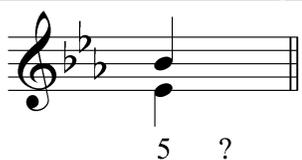
Continue the following interval progression with stepwise, contrary motion:



[Answers: upper voice to G[#] and lower voice to B or upper voice B and lower voice to G[#]. Response if correct: "Correct!" Response if incorrect: "Incorrect. Remember, for this exercise both voices must move by step in opposite directions. Try again."]

Exercise 1.3b:

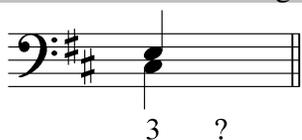
Continue the following interval progression with stepwise, contrary motion:



[Answers: upper voice to A^b and lower voice to F. Response if correct: "Correct!" Response if upper voice to C and lower voice to D: "Incorrect. Your answer does move in contrary motion, but the C and D form a minor seventh, which is a dissonance. Try again." All other answers: "Incorrect. Remember, for this exercise both voices must move by step in opposite directions. Try again."]

Exercise 1.3c:

Continue the following interval progression with stepwise, contrary motion:



[Answers: upper voice to F[#] and lower voice to B or both voices to D. Response if correct: "Correct!" Response if incorrect: "Incorrect. Remember, for this exercise both voices must move by step in opposite directions. Try again."]

Exercise 1.3d:

Continue the following interval progression with stepwise, contrary motion:



[Answers: upper voice to E^b and lower voice to C. Response if correct: "Correct!" Response if upper voice to C and lower voice to E^b: "Incorrect. Your answer does move in contrary motion, but by having the upper voice move down and the lower voice move up, you create a voice crossing. Try again." All other answers: "Incorrect. Remember, for this exercise both voices must move by step in opposite directions. Try again."]

Contrary motion – One voice moves by step, the other by skip:

The second category of interval progressions includes those in which one voice moves by step and the other by skip, again in contrary motion. One example is a perfect fifth expanding to a perfect octave:

Examples 23-24:

5 - 8 8 - 5

In this example, the upper voice ascends by step from B to C while the lower voice skips from E down to C. These roles could be reversed as well. In the following example, the upper voice skips, while the lower voice descends by step:

Examples 25-26:

5 - 8 8 - 5

A third expands to a sixth in the same way, a step in one voice, a skip in the other:

Examples 27-30:

3 - 6 6 - 3

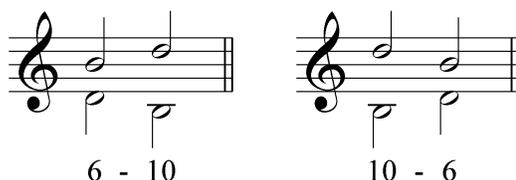
and

3 - 6 6 - 3

Contrary motion – Both voices move by skip:

Finally, there is the third category of contrary motion in which both voices move by skip. The only permitted progression in this category is the “6 - 10” progression:

Examples 31-32:



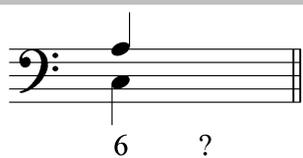
This progression contains a voice exchange. Notice that while the soprano moves from B to D, the bass does just the opposite: D to B. Voice exchanges are a common contrapuntal procedure.

Activity 1.4:

There are usually several different possibilities for following a given interval in a basic interval progression. In this activity, you will become more familiar with this multiplicity of successions by completing an interval progression in four different ways.

Exercises 1.4a-d:

Complete the following interval progression in four unique and valid ways by providing voices for the second beat moving in either parallel or contrary motion.



[Answers:

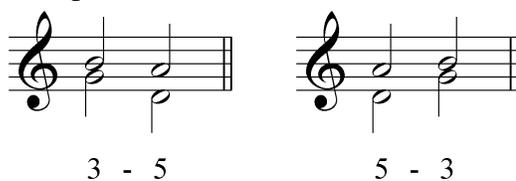
- Upper voice to B / lower voice to D
- Upper voice to G / lower voice to B
- Upper voice to G / lower voice to E
- Upper voice to F / lower voice to D
- Upper voice to B / lower voice to B
- Upper voice to C / lower voice to A

Response if correct: "Correct!" Response if incorrect: "Incorrect. Those voices don't create a valid parallel- or contrary-motion interval progression. Try again."

Similar motion:

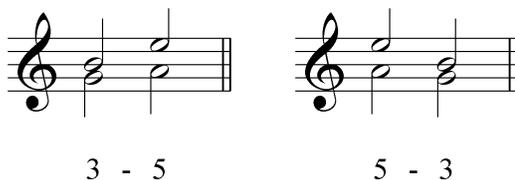
A second large category of interval progressions includes those where voices move in similar motion. In each of these progressions, one voice moves by step, the other by skip (or leap) in the same direction. In the following example, we see two voices forming a third expanding to a fifth with both moving in the same direction.

Examples 33-34:



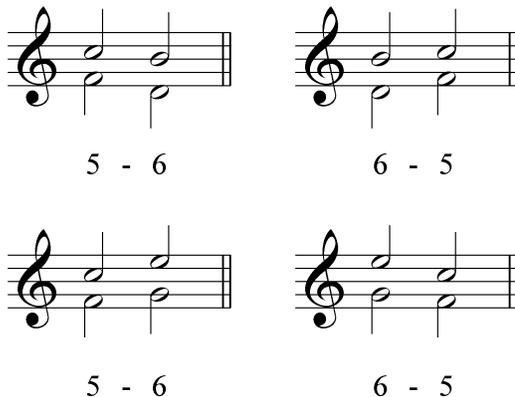
Like the second category of contrary-motion progressions, the roles of the two voices may be reversed. In the previous example, the upper voice moved by step while the lower voice moved by skip. In the following example, it is the lower voice that moves by step and the upper by skip:

Examples 35-36:



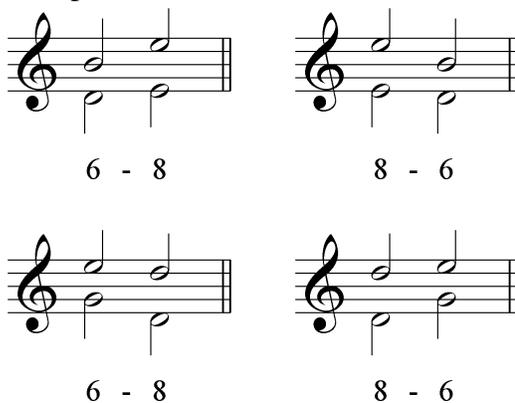
There are two other such similar-motion interval progressions, “5 - 6” (and its reverses):

Examples 37-40:



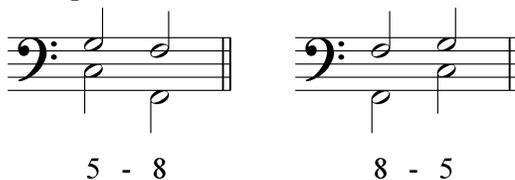
and “6 - 8” (and its reverses):

Examples 41-44:



There is one special type of similar-motion interval progressions which occurs mainly between the bass and one upper voice. As we will see later, this progression is typical for falling-fifth chord progressions. In this progression, the upper voice moves by step while the bass leaps by fifth in the same direction:

Examples 45-46:

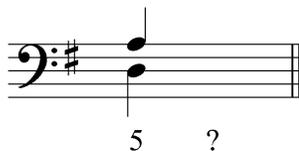


Activity 1.5:

As you saw in the previous activity, there are often several possibilities for following an interval. In this activity, you will complete an interval progression in four different ways using similar motion.

Exercises 1.5a-d:

Complete the following interval progression in four unique and valid ways by providing voices for the second beat moving using similar motion only.



[Answers:

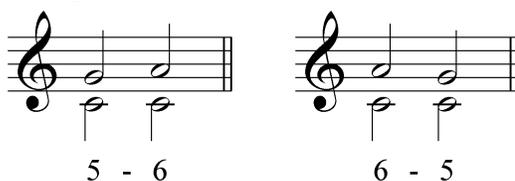
- Upper voice to G / lower voice to G
- Upper voice to G / lower voice to B
- Upper voice to C / lower voice to E
- Upper voice to B / lower voice to G
- Upper voice to E / lower voice to C

Response if correct: "Correct!" Response if incorrect: "Incorrect. Those voices don't create a valid similar-motion interval progression. Try again."]

Oblique motion:

The last type of motion for interval progressions is oblique motion, where one voice remains stationary while the other moves against it by step (or skip). The "5 - 6" progression is typical, as shown here.

Examples 47-48:

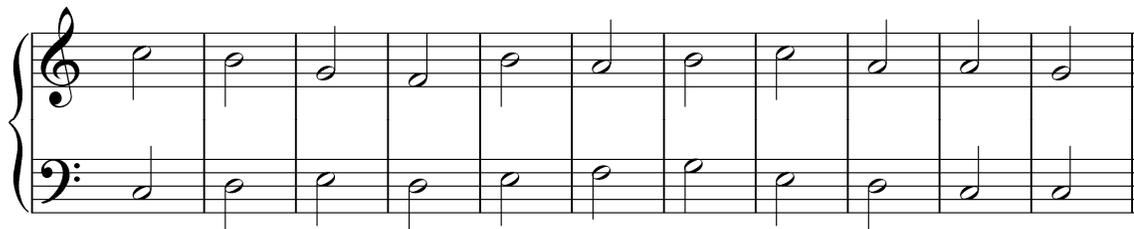


Activity 1.6:

Being able to recognize the various basic interval progressions will help you immeasurably in your study of tonal music. In this activity you will identify various basic interval progressions and classify them as having parallel, contrary, similar, or oblique motion.

Exercise 1.6a:

Identify all of the intervals in the following two-voice progression:



[Answer:

Musical notation for Exercise 1.6a. The top staff contains interval numbers: 8, 6, 3, 3, 5, 3, 3, 6, 5, 6, 5. The bottom staff contains corresponding notes.

Exercise 1.6b:

Now label each pair of intervals as having parallel, contrary, similar, or oblique motion.

[Answer:

Musical notation for Exercise 1.6b. The top staff contains interval numbers: 8, 6, 3, 3, 5, 3, 3, 6, 5, 6, 5. The bottom staff contains corresponding notes. Below the staves are labels: C, C, P, S, C, P, C, S, O, O.

Activity 1.7:

Basic interval progressions form the basis of tonal music. In this exercise you will identify basic interval progressions in an excerpt from a chorale by J.S. Bach (BWV 269, “Aus meines Herzens Grunde,” mm. 1-7). You may notice that not all of the voices seem to follow basic interval progressions exactly. This will be clarified in later lessons.

Exercise 1.7a:

Identify the basic interval progression being followed by the red notes:

Musical notation for Exercise 1.7a. The bass line shows two red notes: a G4 and an A4.

[Answer: parallel thirds (3-3). Response if correct: “Correct! The tenor and the bass are moving in parallel thirds.” Response if incorrect: “Incorrect. Try again.”]

Exercise 1.7b:

Identify the basic interval progression being followed by the red notes:

Musical notation for Exercise 1.7b. The soprano line shows a G4 and an A4. The bass line shows a G3 and an A3.

[Answer: parallel thirds (3-3). Response if correct: “Correct! The soprano and the bass are moving in contrary motion from an octave to a sixth.” Response if incorrect: “Incorrect. Try again.”]

Exercise 1.7c:

Identify the basic interval progression being followed by the red notes:

[Answer: “3-5. Response if correct: “Correct! The tenor and the bass are moving in contrary motion from a third to a fifth.” Response if incorrect: “Incorrect. Try again.”]

Exercise 1.7d:

Identify the basic interval progression being followed by the red notes:

[Answer: “3-3”. Response if correct: “Correct! The tenor and the bass are moving in parallel thirds.” Response if incorrect: “Incorrect. Try again.”]

Exercise 1.7e:

Identify the basic interval progression being followed by the red notes:

[Answer: “3-1”. Response if correct: “Correct! The tenor and the bass move by contrary motion from a third to a unison.” Response if incorrect: “Incorrect. Try again.”]

Exercise 1.7f:

Identify the basic interval progression being followed by the red notes:

[Answer: “3-3”. Response if correct: “Correct! The soprano and the alto are moving in parallel thirds.” Response if incorrect: “Incorrect. Try again.”]

Conclusion:

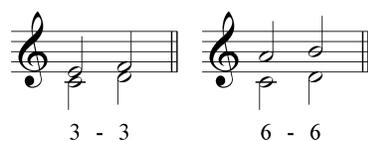
These standard interval progressions form the backbone of counterpoint in tonal music. In the following lesson (Lesson BBB), you will be given opportunities to use them in constructing a multi-voiced texture and to see them at work in a chorale by J.S. Bach. The list of progressions may seem daunting at first and for that reason we have included a printable overview summarizing them all by category. With time and some practice, you will easily become familiar with all of them.

[Click here for a printable table of the standard interval progressions.]

Table of Standard Interval Progressions

(All progressions are also valid in reverse as well as in compound intervals.)

Parallel motion:



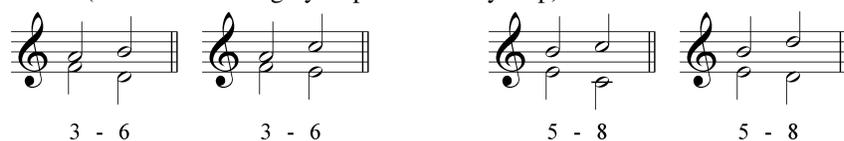
Contrary motion (both voices moving by step):



Contrary motion (both voices moving by skip):



Contrary motion (one voice moving by step the other by skip):



Similar motion:



Oblique motion:



Forbidden interval progressions:

Three musical staves are shown, each with a treble clef and a double bar line at the end. The first staff contains two quarter notes on the first line (F4 and G4) with the fingering '1 - 1' below. The second staff contains two quarter notes on the fifth line (B4 and C5) with the fingering '5 - 5' below. The third staff contains two quarter notes on the eighth line (B5 and C6) with the fingering '8 - 8' below.

Lesson BBB – Three- and Four-Voice Progressions

Introduction:

In this follow-up to Lesson AAA (Basic Interval Progressions), you will first be given an opportunity to expand basic interval progressions by adding a third voice. While four-part, SATB textures are much more common, working with three voices will raise your sensitivity to the behavior of interval progressions in tonal music.

Once the three-part texture is secure, we will add a fourth voice to see how the principles apply to SATB part-writing. Finally, a chorale by J.S. Bach will be analyzed to show how interval progressions work in traditional repertoire.

Basic interval progressions in three voices:

As mentioned in the introduction, three-voice textures will provide a helpful intermediate step on the way to handling four-voice textures. Working initially with three voices will clarify how the basic interval progressions behave in settings of more than two voices. The examples below will begin with a two-voice, soprano/bass framework. We will then add a third voice, creating standard interval progressions with these framing voices. Since there are only three voices, it will be easy to see all of the contrapuntal relationships between voice pairs.

This part of the lesson is broken into three sections examining three common types of progressions. These three types are based on root motion between two chords: by fifth (as in V - I), by third (as in I - vi or I - iii) and by step (as in IV - V).

Root motion by fifth:

We begin with the following example of a V - I progression:

Example 1:



V - I

Above, you see a common interval progression in two voices. Roman numerals indicate which chords are used. V - I is a progression which illustrates root movement by fifth. We will now add a third, inner voice to this progression. The movement of the third voice will be decided by the standard interval progressions.

There are two important constraints to follow when adding a third voice:

- The added pitches must be members of the given chords. (In this case, for example, the added voice above the “V” must be a member of the V chord: G, B, or D. The added voice above the “I” chord must likewise be a C, E, or G.)
- The added pitches must form valid interval progressions with at least one of the given voices.

For the time being, since we are only working with three voices, do not worry about creating complete triads. Tripled roots and open-fifth sonorities are acceptable for now. Complete triads will be important further on, when we create four-voice textures. Try to include the third of the triad whenever possible while creating valid interval progressions. The result will be a richer, fuller harmony.

Keeping the above two constraints in mind, let us try adding a third voice to the Example 1. As mentioned above, try to include the third of the triad whenever possible. Let us start by adding a B to the V chord:

Example 2:

V - I

The next step, after picking a first pitch, is to survey the list of standard interval progressions. By adding a B to the V chord, we've created an interval of a third with the soprano voice. On the next beat, the soprano ascends away from the middle voice. Ask yourself which of the standard interval progressions begins with a third. "3 - 1" begins with a third, but since the soprano in our example ascends, the two parts cannot converge onto a unison. What about a "3 - 5" progression?:

Example 3:

3 - 5
3 - 6
V - I

At first glance, this might seem like a good answer. But remember, one of the two constraints requires that added voices must be members of the given chords. The pitch A is not a member of the I chord, so B - A is not a valid inner voice.

What if our middle voice ascended by step, forming parallel thirds with the soprano?

Example 4:

3 - 3

V - I

In this case, both of the added pitches are chord members: B is the third of V and C is the root of I. The 3 - 3 progression is also valid. Furthermore, B is the leading tone of C major and has a tendency to resolve to the tonic C. (We will return to the concept of tendency tones later on in Lesson EEE: The Dominant Seventh Chord.)

What if we chose a different starting pitch for our added voice? Let us try to find a valid middle voice that begins with G, the root of the V chord:

Example 5:

V - I

This G forms a fifth with the upper voice. What are some potential interval progressions that begin with a fifth and have the upper voice ascending by step? We know that the added voice cannot also ascend by step, because this would lead to parallel fifths, one of the forbidden interval progressions. One possibility is the oblique “5 - 6” progression:

Example 6:

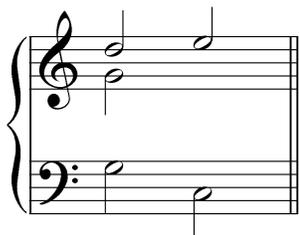
5 - 6

V - I

In this case, the added voice maintains the pitch G, which is a member of both the V and I chords. This is a valid added voice.

Activity 2.1:

As you will see with multi-voice progressions, there is often more than one possible outcome for a given setup. Taking the setup from Example 5, can you think of another pitch (other than sustaining G) that the middle voice could move to?

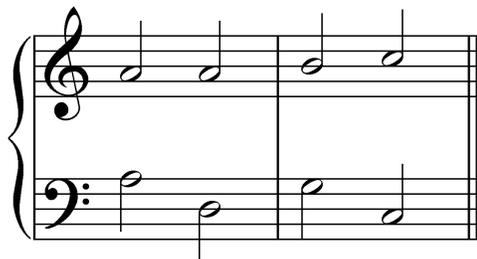


V - I

[Students enter answer onto score. Answer: up a fourth to C. Response if correct: “Correct! The middle voice could move from G up a fourth to C, creating a “5 - 3” progression with the soprano.” Response if student goes down a third to E: “Moving down to E will create a “5 - 8” progression with the soprano. While the “5 - 8” progression is valid, it is typically found between the bass and one of the upper voices. Try again.” Response if student goes to any other C, E, or G: “That pitch does belong to the I chord, but does not create valid interval progressions with the outer voices. Try again.” Response if student enters any other pitch: “That pitch does not belong to the I chord in C major. Try again.”

Now we will add a middle voice to a slightly longer passage. Here we have a short progression of four chords, each with falling-fifth root motion:

Example 7:



vi - ii - V - I

Let us begin by adding a C as a middle voice, creating a sixth with the soprano:

Example 8:



vi - ii - V - I

We can see that on the next beat, the soprano sustains its A. With this sustained pitch, we know that the interval progression must have oblique motion. What is the only standard interval progression that exhibits oblique motion?

Activity 2.2:

What is the only standard interval progression that exhibits oblique motion?

[Answer: "5 - 6" or "6 - 5." Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

The sixth must contract to a fifth:

Example 9:

6 - 5

vi - ii - V - I

In the next step, from the ii chord to the V chord, the soprano ascends by step. Using basic interval progressions, what pitches could the middle voice move to and be a member of the V chord?

Activity 2.3:

Using basic interval progressions, what pitch could the middle voice move to and be a member of the V chord?

6 - 5

vi - ii - V - I

[Answer: hold on D. Response if correct: "Correct! By sustaining D, the middle voice creates another oblique interval progression with the soprano." Response if student goes up a fourth to G: "This is a valid interval progression with the soprano ("5 - 3"), but beware of the parallel octaves created with the bass. Think of another answer and try again." Response if student goes down a third to B: "This creates a valid interval progression with the soprano ("5 - 8"), but it creates a doubled leading tone, B. Both Bs above the V chord will have a strong pull to C which would in turn create parallel octaves between the soprano and the middle voice. Think of another answer and try again." Response for any other G, B, or D: "This pitch does belong to the V chord, but does not create valid interval progressions with the outer voices. Try again." Response for any other pitch: "That pitch does not belong to the V chord in C major. Try again."]

The best option is for the middle voice to remain on D, creating another oblique “5 - 6” progression with the soprano:

Example 10:

6 - 5 - 6

vi - ii - V - I

Finally, as the progression moves from V to I, the soprano ascends from the leading tone to the tonic pitch. There are two valid pitches that the middle voice could move to, what are they?

Activity 2.4:

There are two valid pitches that the middle voice could move to, what are they?

6 - 5 - 6

vi - ii - V - I

[There should be two answer fields so that students can enter both answers. Answers: up a step to E and down a step to C. Response if student moves up a step to E: “Correct! Stepping up to E creates parallel sixths with the soprano.” Response if student moves down a step to C: “Correct! Stepping down to C creates a “6 - 8” with the soprano and a “5 - 8” with the bass.” Response for any other C, E, or G: “This pitch does belong to the I chord, but does not create valid interval progressions with the outer voices. Try again.” Response for any other pitch: “That pitch does not belong to the I chord in C major. Try again.”]

Of the two options, E or C, C is the better choice because of the stronger sense of resolution created by the valid interval progressions with both the soprano and the bass:

Example 11:

6 - 5 - 6 - 8

vi - ii - V - I

Root motion by third:

So far, all of the progressions to which we've added a third voice have had root motions of a fifth. Let us now try adding a voice to a progression in which the roots move by a third:

Example 12:

I vi

As mentioned above, it is a good idea to include the third of the chord whenever possible. Here, we've added the third of the I chord (E) as the middle voice:

Example 13:

I vi

What pitch could the middle voice move to that both belongs to the chord and forms valid interval progressions?

Activity 2.5:

What pitch could the middle voice move to that both belongs to the chord and forms valid interval progressions?

I vi

[Answer: down a third to C. Response if correct: “Correct! This is the best choice since it is a member of the vi chord and creates valid interval progressions with both the bass (“3 - 3”) and the soprano (“3 - 6”).” Response for any other A, C, or E: “This pitch does belong to the vi chord, but does not create valid interval progressions with the outer voices. Try again.” Response for any other pitch: “That pitch does not belong to the vi chord in C major. Try again.”]

C is the best choice, forming a “3 - 3” progression with the bass and a “3 - 6” with the soprano:

Example 14:

3 - 6

3 - 3

I vi

The same process could be applied to a progression in which the root motion *ascends* by a third. The following example shows a completed, three-voice progression:

Example 15:

6 - 3

3 - 3

I iii

Here, the root-progression moves up by a third from I to iii. The outer voices form the familiar “8 - 5” progression. To these, an inner voice has been added, consisting of the third of the I chord (E) moving to the third of the iii chord (G). This inner voice forms valid interval progressions with both the soprano (“6 - 3”) and the bass (“3 - 3”).

Root motion by step:

Finally, there is one other type of progression to consider: root motion by step (step progression). This type of progression is slightly more difficult because of a greater risk of forbidden parallel fifths and octaves. Let us start with a typical step progression:

Example 16:

IV V

Here we have a IV - V progression with the outer voice framework forming a “5 - 3” progression. Let’s try adding a middle voice beginning on F:

Example 17:

IV V

Noting the fifth that this F creates with the soprano, it might be tempting to have the middle voice ascend to form a “5 - 3” progression with the soprano:

Example 18:

IV V

While the two upper voices form a valid interval progression, this motion in the middle voice creates forbidden parallel octaves with the bass. As noted above, parallel fifths and octaves are a common threat in step progressions. The best way to avoid those forbidden interval progressions is to strive for contrary motion between the bass and the upper voices. In this case, the middle voice may descend to D:

Example 19:

IV V

Having the middle voice descend from F to D creates valid interval progressions with both the bass and soprano.

Activity 2.6:

The progression given in Example 16 could also have a middle voice beginning on A (the third of the IV chord). What member of the V chord could this A move to while forming valid interval progressions?

IV V

[Answer: down a step to G. Response if correct: “Correct! Stepping down to G will create valid interval progressions with the soprano (“3 - 3”) and the bass (“3 - 1”).” Response if student steps up to B: “While this may seem to be a valid answer (it creates valid interval progressions with both the bass and the soprano), it leads to a doubled leading tone in the V chord. Since B has such a strong pull to C in C major, this will lead to a parallel unison. Try again.” Response for any other G, B, or D: “This pitch does belong to the V chord, but does not create valid interval progressions with the outer voices. Try again.” Response for any other pitch: “That pitch does not belong to the V chord in C major. Try again.”]

Basic interval progressions and four-part textures:

The principles outlined above form the foundation of voice leading in tonal music. To demonstrate, we will now examine several chorale-style SATB passages to see how standard interval progressions work in a four-voice texture. Consider, for example, the following four-voice progression:

Example 20:

I - V - I

This short passage can be broken down to show that each inner voice forms a standard interval progression with another voice. Let us begin with just the outer voices:

Example 21:

I - V - I

This is a very common outer-voice framework for a I - V - I progression. We can add an inner voice by having the soprano voice act as the upper part of a standard interval progression. In the following example, the alto voice is added, forming first a 6 - 5 progression with the soprano and then a 5 - 6:

Example 22:

6 - 5 - 6

I - V - I

The tenor voice can be added in a similar way. In this case, the tenor follows the soprano in parallel tenths:

Example 23:

10 - 10 - 10

I - V - I

And so we have created a four-voice texture for this I - V - I progression. It is worth noting that the intervals between the tenor and alto also follow a standard interval progressions (5 - 6 - 5). This will not always be the case. Consider the following example:

Example 24:

I - V - I

Just as with Example 23, the added voices form standard interval progressions. In this case, the alto part creates parallel sixths with the soprano:

Example 25:

6 - 6 - 6

I - V - I

...and the tenor part forms a 6 - 5 - 6 with the alto part:

Example 26:

6 - 5 - 6

I - V - I

However, this example differs from the previous one in one important respect. Look at the intervals between the soprano and the tenor parts. These two parts form a 4 - 3 - 4 progression. Neither 4 - 3 nor 3 - 4 is a standard interval progression. In fact, you may have noticed that fourths do not appear at all among the basic interval progressions. As explained earlier, fourths are considered dissonant in two-voice textures and are therefore disallowed there. However, that rule must be qualified for textures with three or more voices.

When perfect fourths come about as the byproduct of adding additional voices, they are valid and common between any voice pairs not involving the bass. (Perfect fourths involving the bass require a further qualification of the rule regarding their use. This will be discussed in Lesson III.) In other words, they are allowed between a pair of upper voices. In such situations, the fourths are referred to as

resultant intervals—byproducts (results) of standard interval progressions between other voices. This is because when perfect fourths occur between upper voices, they are actually inversions of (consonant) perfect fifths. A fourth formed with the bass, on the other hand, is in almost all cases a dissonant fourth, the result of a melodic event. (We will return to this subject in Lesson HHH on nonharmonic tones.) It is important that you be able to distinguish resultant intervals from those that are part of standard interval progressions.

Activity 2.7:

In this activity, you will complete the two inner voices of a “I - V” progression in G major. The first pitches have been provided:

I - V

[Students must enter both answers correctly. Answers: B in alto moves down by step to A and G in tenor moves down by step to F[#]. Response if both answers are correct: “Correct! Both voices can move down by step.” Response if alto is correct but tenor is incorrect: “That is almost correct. Check your tenor voice and try again (remember, both voices must be members of the V chord and form valid interval progressions).” Response if alto is correct but tenor is incorrect: “That is almost correct. Check your tenor voice and try again (remember, both voices must be members of the V chord and form valid interval progressions).” Response if both voices are incorrect: “Both voices are incorrect. Try again.”]

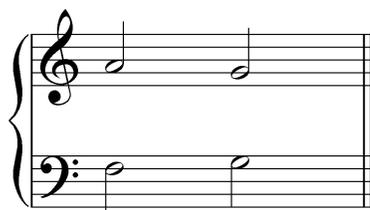
In the above two examples, we considered standard interval progressions at work in a progression with root motion of a fifth. The same situation exists with progressions of chords whose roots are a third or a step apart. In the following example, let us determine how the inner voices move in a step progression:

Example 27:

IV - V

The bass and soprano form a “10 - 8” progression:

Example 28:



IV - V

To this we may add the tenor voice which forms a “5 - 3” progression with the bass:

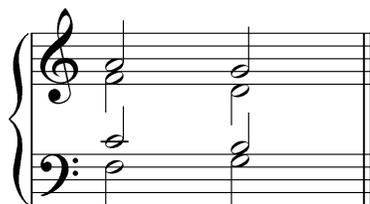
Example 29:



5 - 3
IV - V

(The tenor voice may alternatively be seen as creating a “6 - 6” progression with the soprano.) And finally, the alto voice forms an “8 - 5” progression with the bass as well:

Example 30:

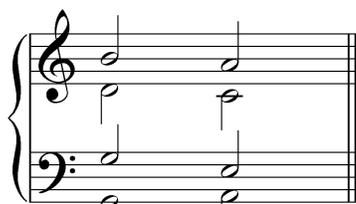


8 - 5
IV - V

The “3 - 4” progression between the soprano and alto and the “4 - 3” progression between the alto and tenor are, as in Example 27, resultant intervals.

Activity 2.8:

In this activity you will analyze the voice leading in a progression from V to vi.



V - vi

Bass and soprano: _____ [Answer: “3 - 1.”]

Bass and alto: _____ [Answer: “5 - 3.”]

Bass and tenor: _____ [Answer: “8 - 5.”]

Tenor and soprano: _____ [Answer: “3 - 4.”]

Tenor and alto: _____ [Answer: “5 - 6.”]

Alto and soprano: _____ [Answer: “6 - 6.”]

[Students must fill in each blank correctly. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up multiple choice question 1:]

Do any of these progressions contain resultant intervals?

[Possible answers: Yes/No. Answer: Yes. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up multiple choice question 2:]

Which of these progressions contains resultant intervals?

[Possible answers: the list from above. Answer: “Tenor and soprano.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Analysis of a Bach chorale using basic interval patterns:

Now that we are able to build four-part textures using basic interval patterns, we can analyze larger pieces of music. Consider the following chorale by J.S. Bach:

Example 30 (J.S. Bach, BWV 67.7, “Du Friedefürst, Herr Jesu Christ”):

Analyzing the entire chorale may seem daunting at first, so let us begin with the first phrase:

Example 31:

If we consider only the outer voices we can see the standard interval progressions that form the basis of this chord progression:

Example 32:

Musical score for Example 32, showing interval progressions between the soprano and bass staves. The key signature is three sharps (F#, C#, G#) and the time signature is common time (C). The soprano staff contains a melodic line with a fermata on the final note. The bass staff contains a line with a decorative eighth note on the first beat. Interval numbers are written below the notes: 3, 5 6 8 3 6, 6 5 3.

As you can see, all of the intervals between the soprano and bass form valid interval progressions. Even the decorative passing eighth note in the bass takes advantage of the oblique “5 - 6” progression. Adding the alto voice, we see that most of the intervals formed with the bass or soprano are valid:

Example 33:

Musical score for Example 33, showing interval progressions between the soprano and bass staves. The key signature is three sharps (F#, C#, G#) and the time signature is common time (C). The soprano staff contains a line with a fermata on the final note. The bass staff contains a line with a decorative eighth note on the first beat. Interval numbers are written below the notes: 3 3 3 3 4 4 3 3, 8, 3 6 8 10, 10 10 8.

For the most part, the alto voice harmonizes the soprano with parallel thirds. At the end of the first measure, however, the intervals between the alto and soprano diverge to form fourths. These dissonant intervals are justified by the interval progressions formed by the alto and the bass. These are all valid progressions and we can see that the alto is harmonizing the bass at the end of m.1 (“8 - 10 - 10 - 10”). The dissonant fourths, therefore, are resultant intervals.

When we add the remaining voice, the tenor, we can see that it forms valid interval progressions with the soprano (except for the dissonant seventh on beat two of the second measure) and the bass:

Example 34:

Musical score for Example 34, showing interval progressions between the soprano, alto, and bass staves. The key signature is three sharps (F#, C#, G#) and the time signature is common time (C). The soprano staff contains a line with a fermata on the final note. The alto staff contains a line with a fermata on the final note. The bass staff contains a line with a fermata on the final note. Interval numbers are written below the notes: 6 5 6 6 8 6 7 6, 4, 3 4 4 5, 3 5 4, 5 1 3 5 6 8 6 5.

Except for the third on the downbeat of m.1 and the “5 - 3 - 5” at the end of the same measure, the intervals formed between the alto and bass are mostly resultant intervals.

Activity 2.9:

In this activity, you will analyze the interval progressions of the second phrase of the same chorale.

Identify the interval progressions between the tenor and the soprano voices:

[Students will receive feedback for each of the intervals they identify. Answers: 8, 6, 6, 4, 5, 6. Response for correct answer: “Correct!” Response for incorrect answer: “This interval is incorrect. Try again.”]

[Follow-up multiple choice question 1:]

Do any of these progressions contain resultant intervals?

[Possible answers: Yes/No. Answer: Yes. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up multiple choice question 2:]

Which of these is a resultant interval?

[Possible answers: the list from above (or simply have students click on the correct answer). Answer: the 4 on beat three of the first complete measure. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Conclusion:

The standard interval progressions discussed in Lesson AAA form the basis of multi-voiced tonal music. A great deal of multi-part music is found in chorale-style SATB setting. Keeping track of four voices at once can be a formidable task, so familiarity with the workings of two- and three-voice progressions will aid in the writing and analysis of more complex textures.

In three-voice textures it is possible to maintain valid interval progressions between any pair of voices. This is not always the case with four-voice textures. Because of the increased number of inter-voice relationships, dissonant, resultant intervals are often formed. These dissonances arise as the result of valid interval progressions between other voice pairs and are effectively covered up by the consonances.

These basic interval progressions are the foundation of multi-voiced textures and govern pieces even as complex as a chorale by J.S. Bach. By breaking an SATB setting down first into its outer voices and then adding the inner voices, you will be able to trace these fundamental progressions and explain the resultant dissonances that inevitably occur.

Lesson CCC – The Minor Scale

Introduction:

In tonal music, the major scale is undoubtedly the most important and frequently used organization of pitches:

Example 1:



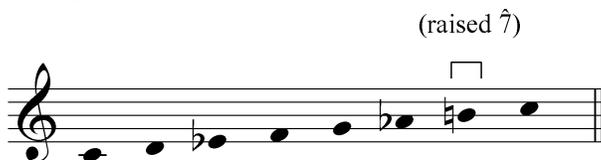
As you know, the major scale is built using a specific pattern of whole steps and half steps: W-W-H-W-W-W-H. This pattern is used in every manifestation of the major scale. The minor scale, on the other hand, is not as easy to define. You have probably come across three different versions of the minor scale, the natural minor scale:

Example 2:



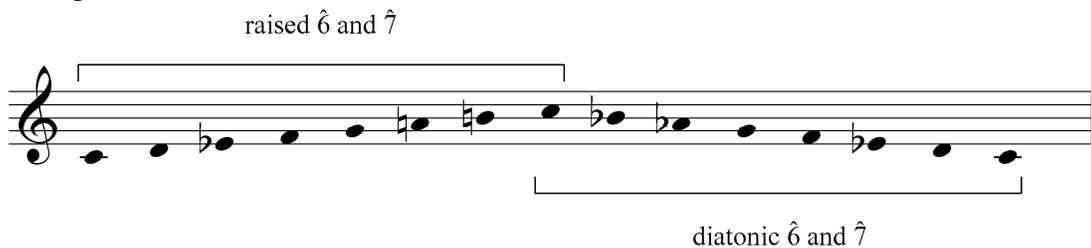
the harmonic minor scale, with its raised seventh scale degree:

Example 3:



and the melodic minor scale, with the sixth and seventh scale degrees raised when ascending and lowered when descending:

Example 4:



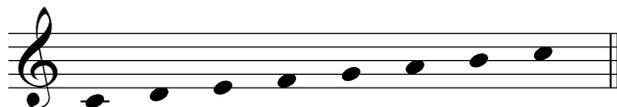
Of the three, the natural minor scale holds a privileged position. The natural minor scale is the diatonic form, which undergoes specific adjustments, based on musical context, to produce the other two forms. In this lesson, we will refer to the natural minor scale as the *diatonic* minor. As you will see, the harmonic and melodic minor scales incorporate tonality-defining characteristics of the major scale. In a sense, the harmonic and melodic minor scales are *composite* scales whose members mix defining traits of the diatonic (natural) minor and major scales.

In this lesson we will examine the diatonic minor scale and its two derivatives. For each version, we will also discuss where and why it appears.

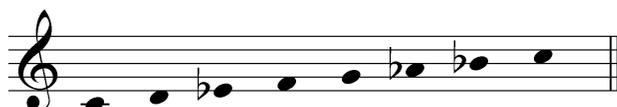
The diatonic minor scale:

Because the major scale is so prevalent in tonal music, it is helpful to think of minor scales with respect to their parallel majors. Compare Examples 5 and 6:

Example 5 (the C major scale):



Example 6 (the diatonic C minor scale):



The majority of the members of each scale are the same. Both share scale degrees $\hat{1}$, $\hat{2}$, $\hat{4}$, and $\hat{5}$ (C, D, F, and G in this case). The minor scale is distinguished by its lowered scale degrees $\hat{3}$, $\hat{6}$ and $\hat{7}$ (E \flat , A \flat , and B \flat instead of E, A, and B).

Activity 3.1:

A major scale and its parallel minor share the majority of their pitches. The minor scale is distinguished by its lowered scale degrees $\hat{3}$, $\hat{6}$, and $\hat{7}$. In this activity you will be presented with a series of major scales. For each example, you will be asked to identify which pitches need to be altered to create the parallel minor scale.

Exercise 3.1a:

G-major scale:



Adjust the pitches as necessary to create a G-minor scale.

Exercise 3.1b:

E \flat -major scale:



Adjust the pitches as necessary to create an E \flat -minor scale.

Exercise 3.1c:

D-major scale:



Adjust the pitches as necessary to create a D-minor scale.

Exercise 3.1d:

B^b-major scale:



Adjust the pitches as necessary to create a B^b-minor scale.

The result of this construction is a different pattern of whole and half steps. While a major scale has a W-W-H-W-W-W-H pattern, the natural minor scale has W-H-W-W-H-W-W. This pattern gives the minor scale its distinctive sound.

The introduction to this unit explained that the natural (diatonic) minor scale differs from the major scale. The differences become apparent when the natural minor scale is used in common harmonic progressions. Consider the following short progression:

Example 7:

C: I ii⁶ V I

In this common cadential pattern the dominant chord—set up by the predominant ii⁶ chord—pulls strongly toward tonic. Now consider the same progression using the pitches of the diatonic minor:

Example 8:

c: i ii⁶ v i

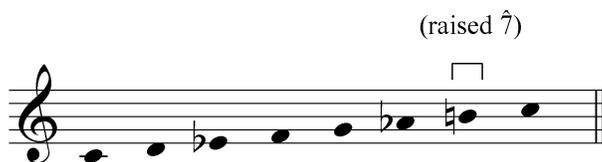
This progression sounds modal rather than tonal. Compared to Example 7, Example 8 lacks the strong pull from v to i. The reason for the lack in pull toward the tonic is the absence of a leading tone in the diatonic minor scale. Look again at Example 2 and note that the seventh scale degree is a whole step away from the tonic. The half-step relationship between the leading tone and the tonic in the diatonic major scale has a clearly perceptible directional force, while the analogous scale degrees in the diatonic minor lack that force. Because of its tendency to resolve to the tonic, the leading tone is one of the most important pitches of the major scale. Since the diatonic minor scale lacks a leading tone, the tension and pull toward the tonic are absent.

The harmonic minor composite:

The harmonic minor composite (often referred to as the “harmonic minor scale”) adjusts scale degree $\hat{7}$ of the diatonic minor scale in imitation of the major scale in order to create the otherwise missing

leading tone. The $B\flat$ of the diatonic C minor scale is adjusted upward to $B\natural$, creating the needed leading tone, as shown here:

Example 9 (the harmonic minor composite):



The following example reproduces Example 8, this time with the leading-tone adjustment:

Example 10:

As you can hear, the presence of the leading tone in creates a stronger, satisfying sense of resolution at the arrival of tonic. The following example shows the triads built with the leading-tone adjusted harmonic minor scale:

Example 11:

As Example 11 shows, the raised seventh scale degree applies only to the chords built on $\hat{5}$ and $\hat{7}$, both of which have a dominant function. If these chords were built using the pitches of the diatonic minor, V would be minor (v) and vii° would be major (VII). Neither v nor VII pull toward tonic as do their leading-tone adjusted forms, although both appear in other functional roles in a minor key. Listen again to Example 8 and compare it to Example 10. Which version of the V chord has a stronger pull back to tonic? The addition of a leading tone gives Example 10 a strong sense of resolution. The same would be true of a progression using vii° instead of VII .

In adjusting the diatonic minor scale by incorporating the leading tone from the major scale, we have the same V and vii° triads in minor as we do in the parallel major. The leading-tone adjustment not only strengthens the sense of tonality in a minor key, but also allows for modulation from a major key to its parallel minor, and vice versa, as we will see in later sections.

Popup box: As you may have noticed, the raised seventh scale degree does not apply to the chord built on scale degree $\hat{3}$. If the seventh scale degree were to be raised in a III chord, the result would be an augmented triad. The triad built on scale degree $\hat{3}$ is the tonic of the relative major. Having an augmented triad here would subvert this important relationship and is therefore not permitted. In this

light, one should think of the harmonic minor scale not as a key in its own right, but rather a variant of the diatonic minor used at times to create a stronger sense of tonality.

Activity 3.2:

The harmonic minor composite incorporates a leading tone to give a stronger sense of tonality. In this activity you will be presented with a series of chords in minor keys. Some of these chords require a raised leading tone while others do not. Adjust the notes to incorporate a raised leading tone where appropriate. If no adjustments are required, click “No Change.”

[Incorrect answer response: “Try again. Remember, in the harmonic minor composite the leading tone is raised for chords built on scale degrees $\hat{5}$ and $\hat{7}$.]

Exercise 3.2a:



A minor: V

Does this chord require any adjusted notes? If so, adjust the notes where necessary to reflect the harmonic minor composite. If not, click “No Change.”

Exercise 3.2b:



F# minor: III

Does this chord require any adjusted notes? If so, adjust the notes where necessary to reflect the harmonic minor composite. If not, click “No Change.”

Exercise 3.2c:



D minor: vii^{°6}

Does this chord require any adjusted notes? If so, adjust the notes where necessary to reflect the harmonic minor composite. If not, click “No Change.”

Exercise 3.2d:



B minor: vii^{°5}

Does this chord require any adjusted notes? If so, adjust the notes where necessary to reflect the harmonic minor composite. If not, click “No Change.”

Exercise 3.2e:



E minor: III

Does this chord require any adjusted notes? If so, adjust the notes where necessary to reflect the harmonic minor composite. If not, click “No Change.”

Exercise 3.2f:

G minor: V⁷

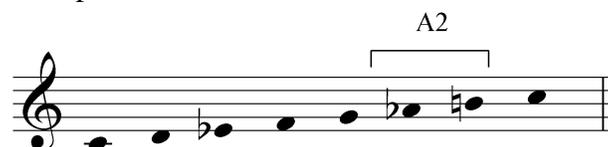
Does this chord require any adjusted notes? If so, adjust the notes where necessary to reflect the harmonic minor composite. If not, click “No Change.”

The melodic minor composite:

The melodic minor composite (often referred to as the “melodic minor scale”) provides a further modification of the diatonic minor to accommodate certain melodic circumstances. As with the harmonic minor composite, the melodic minor has a leading-tone adjustment. The raised seventh scale degree serves the same purpose as in the harmonic minor composite: it creates a pull toward the tonic. Just as the V chord in Example 7 resolves to tonic harmony, the leading tone of the melodic minor scale resolves to scale degree $\hat{8}$. This type of goal-directed melodic motion is at the heart of tonal music.

Raising scale degree $\hat{7}$ to create a leading tone, however, creates a melodic problem: an augmented second appears between the sixth and seventh scale degrees:

Example 12:



Augmented intervals are difficult to sing, sound awkward in the tonal style, and are therefore generally avoided. In the harmonic minor composite, the augmented second disrupts the otherwise smooth flow of half and whole-step motion in the melodic ascent. Furthermore, scale degree $\hat{6}$ in minor is a half-step away from scale degree $\hat{5}$ and thus tends strongly toward scale degree $\hat{5}$. By raising scale degree $\hat{6}$, we avoid both of these issues. The interval between $\hat{6}$ and $\hat{7}$ contracts to become a major second, thereby smoothing out the melodic line, and the whole-step distance between $\hat{5}$ and $\hat{6}$ eliminates the downward pull of $\hat{6}$ toward $\hat{5}$. Scale degrees $\hat{6}$ and $\hat{7}$ in minor appear in diatonic or adjusted form depending on several factors, primarily the harmonic context. The form used must be explained on a case-by-case basis. For demonstration purposes, Example 13 summarizes the harmonic minor composite scale, with the adjusted forms of scale degrees $\hat{6}$ and $\hat{7}$ in the scalar ascent, and the diatonic forms of those degrees in the descent.

Example 13:

raised $\hat{6}$ and $\hat{7}$

diatonic $\hat{6}$ and $\hat{7}$

Activity 3.3:

Like the harmonic minor composite, the melodic minor composite sometimes incorporates a leading tone to create a pull towards the tonic. To avoid the augmented interval between the submediant and the leading tone, the melodic minor composite will raise scale degree $\hat{6}$. In this activity, you will be presented with a series of diatonic minor scales. For each example, change scale degrees $\hat{6}$ and $\hat{7}$ to conform to the adjustments made in the melodic minor composite.

Exercise 3.3a:

Change scale degrees $\hat{6}$ and $\hat{7}$ to conform to the adjusted melodic minor composite.

Exercise 3.3b:

Change scale degrees $\hat{6}$ and $\hat{7}$ to conform to the adjusted melodic minor composite.

Exercise 3.3c:

Change scale degrees $\hat{6}$ and $\hat{7}$ to conform to the adjusted melodic minor composite.

Exercise 3.3d:

Change scale degrees $\hat{6}$ and $\hat{7}$ to conform to the adjusted melodic minor composite.

Conclusion:

The minor mode is less straightforward than the major mode. It consists of a primary form, the diatonic minor (also known as the “natural minor”), and two composite forms that incorporate elements of the diatonic major scale. Because the diatonic minor scale lacks a leading tone, it does not allow for the all-important cadential progression of dominant to tonic in tonal music. In order to allow for that vital progression in a minor key, scale degree $\hat{7}$ of the diatonic minor is adjusted (raised by a half step) to create a leading tone, in imitation of the major scale, resulting in a composite scale commonly known as the harmonic minor. Another composite minor scale, commonly known as the melodic minor, adjusts scale degree $\hat{6}$ upward in addition to raising scale degree $\hat{7}$ in order to eliminate the awkward augmented second between $\hat{6}$ and $\hat{7}$, and to smooth out melodic motion between scale degree $\hat{5}$ and $\hat{8}$. Scale degrees

$\hat{6}$ and $\hat{7}$ can also be restored to their diatonic form in scalar descents.

It is important to remember that the natural (diatonic) minor scale is the basis of the two composite forms of the minor scale. The diatonic minor scale constitutes a key, the counterpart of the major key. The harmonic and melodic minor composites do *not* constitute independent keys. Rather, they are mixed-mode scales featuring adjustments to diatonic degrees $\hat{6}$ and $\hat{7}$ to suit the harmonic and melodic context.

Lesson DDD: Figured Bass

Introduction:

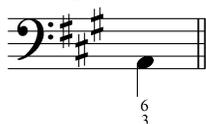
In this lesson you will learn about the various uses of figured bass. Figured bass comes from a Baroque compositional practice in which composers used a numerical shorthand to provide an accompanist with a harmonic blueprint. The blueprint consisted of a bass line above a series of symbols and arabic numerals. The numerals indicated intervals to be played above the bass. Unless otherwise specified, the notes that form the intervals specified by the figured-bass signatures are understood to be diatonic—that is, in accordance with the key signature. The actual voicing of the intervals (register, doublings, etc.) was left to the accompanist. In this way, the composer would be able to quickly specify harmonic progressions, though not the chord voicings or, for the most part, voice leading among chords.

For music analysts today, figured bass is useful in two ways: for representing intervals and melodic motion above a bass line, and for indicating chord inversions. In this lesson, we will discuss both of those applications and how they interact. Because figured bass developed as a type of shorthand, numerous abbreviations are used; our discussion will cover the most common ones.

Intervals above the bass:

Example 1 shows a bass note with figures:

Example 1:



As explained, the arabic numerals indicate intervals above the bass. In other words, the 6 and the 3 specify that a sixth and a third must occur over the A. The quality of each interval (major, minor, etc.) is determined by the key signature unless otherwise specified (more on this below). In this case, a third above the bass A would be C[#] and a sixth above the bass would be an F[#], as dictated by the A-major key signature. The following example shows the complete chord:

Example 2:



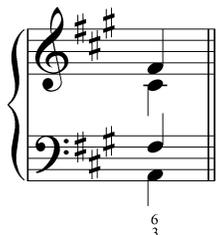
You may have noticed that the sonority shown in this example is an F[#]-minor chord in first inversion. The use of figured bass to indicate inversions will be discussed in greater detail below.

The figures specify the intervals to be played above the bass, but they do not specify the register of pitches forming those intervals, nor anything about doublings. Both of the following examples show valid SATB voicings of the figured bass from Example 1:

Example 3:



Example 4:



Example 3 has wider spacing and doubles the bass two octaves above in the alto. Example 4 doubles the sixth and has the voices more tightly arranged.

Activity 4.1:

“In this activity you will be presented with a series single-note of figured bass examples. For each exercise, indicate the pitches that must appear above the bass according to the figures. (Remember, unless otherwise specified, the quality of the interval is determined by the key signature.)”

Exercise 4.1a:



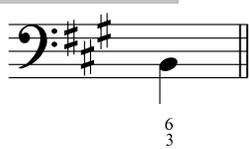
Question: “According to the figured bass signature, what pitches must appear above this bass note?” [Answers: “A” and “F#.” Incorrect answer response: “Incorrect. Remember, the arabic numerals indicate the intervals above the bass. The quality is determined by the key signature. Try again.”]

Exercise 4.1b:



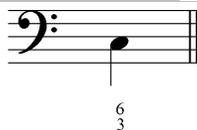
Question: “According to the figured bass signature, what pitches must appear above this bass note?” [Answers: “B^b” and “G.” Incorrect answer response: “Incorrect. Remember, the arabic numerals indicate the intervals above the bass. The quality is determined by the key signature. Try again.”]

Exercise 4.1c:



Question: “According to the figured bass signature, what pitches must appear above this bass note?” [Answers: “G[#]” and “D.” Incorrect answer response: “Incorrect. Remember, the arabic numerals indicate the intervals above the bass. The quality is determined by the key signature. Try again.”]

Exercise 4.1d:



Question: “According to the figured bass signature, what pitches must appear above this bass note?” [Answers: “A” and “E.” Incorrect answer response: “Incorrect. Remember, the arabic numerals indicate the intervals above the bass. The quality is determined by the key signature. Try again.”]

Figures under a bass line can also indicate melodic motion in the upper voices:

Example 5:

In Example 5, the figures indicate that the sixth above the bass will step down to the fifth, from F[#] to E. This is indicated specifically by the “6 - 5” figure. (The “- 5” applies only to the 6, because they are found next to one another on the same line.) Simultaneous motion in several voices can also be indicated in this manner:

Example 6:

Activity 4.2:

“The figured bass signatures in each of the following exercises indicate the presence of melodic motion in one or more of the upper voices. For each exercise, identify the voice or voices where the melodic motion should occur. Then, indicate the pitch to which that voice should move.”

Activity 4.2a:

6 - 5

Question: “In which voice will the “6 - 5” motion indicated by the figured bass occur?” [Options: “Soprano,” “Alto,” and “Tenor.” Correct answer: “Alto.” Incorrect answer response: “That voice does not form a sixth (or compound sixth) with the bass. Try again.”]

Followup question: “Which pitch should the alto voice move to?” [Correct answer: “F#.” Incorrect answer response: “Incorrect. Remember to make sure that your answer forms a fifth with the bass and corresponds with the key signature. Try again.”]

Activity 4.2b:

8 - 7

Question: “In which voice will the “8 - 7” motion indicated by the figured bass occur?” [Options: “Soprano,” “Alto,” and “Tenor.” Correct answer: “Alto.” Incorrect answer response: “That voice does not form an octave with the bass. Try again.”]

Followup question: “Which pitch should the alto voice move to?” [Correct answer: “E^b.” Incorrect answer response: “Incorrect. Remember to make sure that your answer forms a fifth with the bass and corresponds with the key signature. Try again.”]

Activity 4.2c:

6 - 5
4 - 3

Question 1: “In this example there is melodic motion in two voices. In which voice will the “6 - 5” motion indicated by the figured bass occur?” [Options: “Soprano,” “Alto,” and “Tenor.” Correct answers: “Alto.” Incorrect answer response: “That voice does not form a sixth (or compound sixth) with the bass. Try again.”]

Question 2: “In which two voices will the “4 - 3” motion indicated by the figured bass occur?” [Options: “Soprano,” “Alto,” and “Tenor.” Correct answers: “Soprano.” Incorrect answer response: “That voice does not form a fourth (or compound fourth) with the bass. Try again.”]

Followup question 1: “Which pitch should the alto voice move to?” [Correct answer: “E.”
Incorrect answer response: “Incorrect. Remember to make sure that your answer forms a fifth with the bass and corresponds with the key signature. Try again.”]

Followup question 2: “Which pitch should the soprano voice move to?” [Correct answer: “C#.”
Incorrect answer response: “Incorrect. Remember to make sure that your answer forms a third with the bass and corresponds with the key signature. Try again.”]

Activity 4.2d:



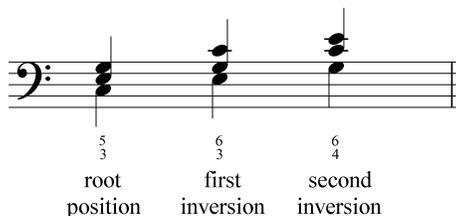
Question: “In which voice will the “6 - 5” motion indicated by the figured bass occur?” [Options: “Soprano,” “Alto,” and “Tenor.” Correct answer: “Tenor.” Incorrect answer response: “That voice does not form a sixth (or compound sixth) with the bass. Try again.”]

Followup question: “Which pitch should the tenor voice move to?” [Correct answer: “G.”
Incorrect answer response: “Incorrect. Remember to make sure that your answer forms a fifth with the bass and corresponds with the key signature. Try again.”]

Figured bass and inversions:

In Examples 2-4, the completed harmony is an F[#]-minor triad in first inversion. By using figured bass, composers can specify any inversion of a given harmony. The inversion of a chord is determined by the lowest note (the bass). The upper voices can be in any position. Consider the three positions of a triad. A root position triad has the root in the bass while the first and second inversions have the third and fifth in the bass respectively. The following example shows the three positions of a C-major triad using figured bass to indicate the intervallic content:

Example 7:

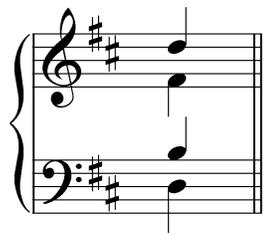


A root position triad has the root in the bass, with the other notes of the triad forming a third and fifth above the bass. The complete figured-bass signature is thus $\frac{5}{3}$. A first inversion triad inverts the interval between the root and third of the chord (C and E in this case) to a sixth and retains the third between the third and the fifth (E and G), hence the figured-bass signature $\frac{6}{3}$. A second inversion triad inverts both of the original intervals and therefore contains a fourth and a sixth above the bass, thus the figured-bass signature $\frac{6}{4}$. You will frequently encounter triads referred to by their interval content (“six-three triad” instead of “first-inversion triad”).

Activity 4.3:

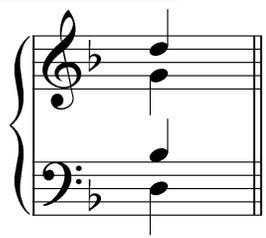
“In this activity you will be presented with a series of triads in SATB setting. For each exercise, choose the appropriate figured bass signature ($\frac{5}{3}$, $\frac{6}{3}$, or $\frac{6}{4}$) to represent the inversion of the triad.”

Exercise 4.3a:



Question: “Which figured bass signature would be used to represent this chord?” [Options: “ $\frac{5}{3}$,” “ $\frac{6}{3}$,” and “ $\frac{6}{4}$.” Correct answer: “ $\frac{6}{3}$.” Incorrect answer response: “Incorrect. Remember, the figured bass signature represents the intervals that appear above the bass. Disregarding octave doublings, make sure your answer accounts for all the intervals formed with the bass.”]

Exercise 4.3b:



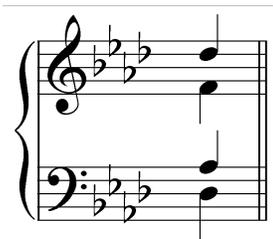
Question: “Which figured bass signature would be used to represent this chord?” [Options: “ $\frac{5}{3}$,” “ $\frac{6}{3}$,” and “ $\frac{6}{4}$.” Correct answer: “ $\frac{6}{4}$.” Incorrect answer response: “Incorrect. Remember, the figured bass signature represents the intervals that appear above the bass. Disregarding octave doublings, make sure your answer accounts for all the intervals formed with the bass.”]

Exercise 4.3c:



Question: “Which figured bass signature would be used to represent this chord?” [Options: “ $\frac{5}{3}$,” “ $\frac{6}{3}$,” and “ $\frac{6}{4}$.” Correct answer: “ $\frac{6}{3}$.” Incorrect answer response: “Incorrect. Remember, the figured bass signature represents the intervals that appear above the bass. Disregarding octave doublings, make sure your answer accounts for all the intervals formed with the bass.”]

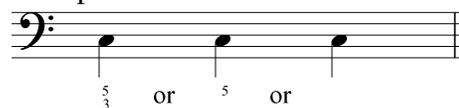
Exercise 4.3d:



Question: “Which figured bass signature would be used to represent this chord?” [Options: “ $\frac{5}{3}$,” “ $\frac{6}{3}$,” and “ $\frac{6}{4}$.” Correct answer: “ $\frac{5}{3}$.” Incorrect answer response: “Incorrect. Remember, the figured bass signature represents the intervals that appear above the bass. Disregarding octave doublings, make sure your answer accounts for all the intervals formed with the bass.”]

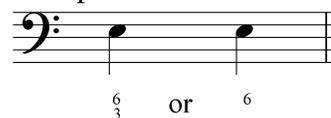
Because figured bass originated as a shorthand technique, the figures used to indicate chord inversions are often abbreviated. Root-position triads are so common that they are generally represented by a bass note with no figure at all. They are also occasionally indicated with only “ $\frac{5}{3}$ ” (the third above the bass is assumed). The following example shows three ways of representing a C-major triad in root position:

Example 8:



First-inversion triads also appear so frequently that the $\frac{6}{3}$ figure is often abbreviated to just “ $\frac{6}{}$ ”, with the third taken for granted. Both of the figures in Example 9 can be used to indicate a C-major triad in first inversion:

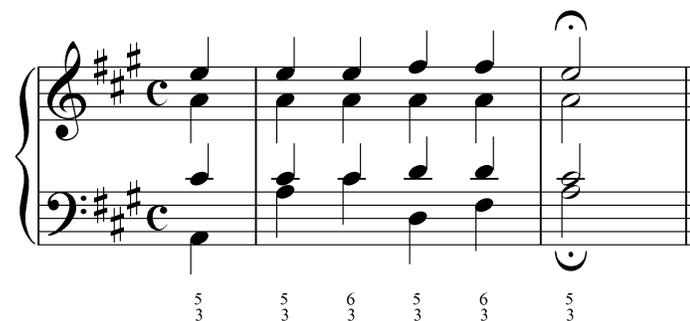
Example 9:



Second inversion triads are always represented with $\frac{6}{4}$.

The following excerpt from a chorale by J.S. Bach shows how figured bass can be used to indicate inversions:

Example 10 (reduction of J.S. Bach, BWV 386, “Nun danket alle Gott,” mm. 1-2):



The first three chords are all A-major triads. As the bass skips up from A to C[#] in the first full measure, the figures change from $\begin{smallmatrix} 5 \\ 3 \end{smallmatrix}$ to $\begin{smallmatrix} 6 \\ 3 \end{smallmatrix}$ indicating the progression from a root position A-major triad to a first inversion A-major triad. A similar situation happens with the two D-major triads on beats three and four of that same measure.

The following table summarizes the various figures for triads and lists the common abbreviations:

Table 1:

Position:	Figured Bass:	Common Abbreviations:
root position	$\begin{smallmatrix} 5 \\ 3 \end{smallmatrix}$	⁵ or no figure
first inversion	$\begin{smallmatrix} 6 \\ 3 \end{smallmatrix}$	6
second inversion	$\begin{smallmatrix} 6 \\ 4 \end{smallmatrix}$	

The various positions of seventh chords also have standard figured-bass signatures. The following example shows the four positions of a dominant-seventh chord on G (see Lesson EEE for more on the dominant seventh chord):

Example 11:

$\begin{smallmatrix} 7 \\ 5 \\ 3 \end{smallmatrix}$ $\begin{smallmatrix} 6 \\ 5 \\ 3 \end{smallmatrix}$ $\begin{smallmatrix} 6 \\ 4 \\ 3 \end{smallmatrix}$ $\begin{smallmatrix} 6 \\ 4 \\ 2 \end{smallmatrix}$
 root first second third
 position inversion inversion inversion

The figures indicate the various intervals above the bass. As with triads, the figures for seventh chords are often abbreviated. The following table summarizes the various figures for seventh chords and lists the common abbreviations:

Table 2:

Position:	Figured Bass:	Common Abbreviations:
root position	$\begin{smallmatrix} 7 \\ 5 \\ 3 \end{smallmatrix}$	7
first inversion	$\begin{smallmatrix} 6 \\ 5 \\ 3 \end{smallmatrix}$	$\begin{smallmatrix} 6 \\ 5 \end{smallmatrix}$
second inversion	$\begin{smallmatrix} 6 \\ 4 \\ 3 \end{smallmatrix}$	$\begin{smallmatrix} 4 \\ 3 \end{smallmatrix}$
third inversion	$\begin{smallmatrix} 6 \\ 4 \\ 2 \end{smallmatrix}$	$\begin{smallmatrix} 4 \\ 2 \end{smallmatrix}$ or ²

Activity 4.4:

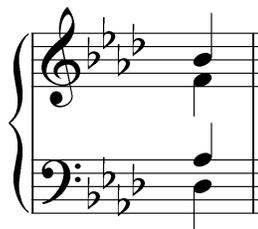
“In this activity you will be presented with a series of seventh chords in SATB setting. For each exercise, choose the appropriate figured bass signature ($\begin{smallmatrix} 7 \\ 5 \\ 3 \end{smallmatrix}$, $\begin{smallmatrix} 6 \\ 5 \\ 3 \end{smallmatrix}$, or $\begin{smallmatrix} 4 \\ 2 \end{smallmatrix}$) to represent the inversion of the chord.”

Exercise 4.4a:



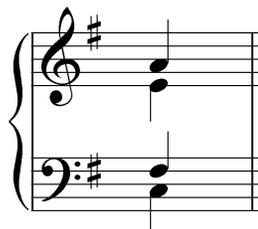
Question: “Which figured bass signature would be used to represent this chord?” [Options: “⁷,” “⁶/₅,” “⁴/₃,” and “⁴/₂.”] Correct answer: “⁷.” Incorrect answer response: “Incorrect. Remember the common abbreviations for figured bass signatures. Only one of the four options makes sense with the given intervals above the bass. Try again.”]

Exercise 4.4b:



Question: “Which figured bass signature would be used to represent this chord?” [Options: “⁷,” “⁶/₅,” “⁴/₃,” and “⁴/₂.”] Correct answer: “⁶/₅.” Incorrect answer response: “Incorrect. Remember the common abbreviations for figured bass signatures. Only one of the four options makes sense with the given intervals above the bass. Try again.”]

Exercise 4.4c:



Question: “Which figured bass signature would be used to represent this chord?” [Options: “⁷,” “⁶/₅,” “⁴/₃,” and “⁴/₂.”] Correct answer: “⁴/₃.” Incorrect answer response: “Incorrect. Remember the common abbreviations for figured bass signatures. Only one of the four options makes sense with the given intervals above the bass. Try again.”]

Exercise 4.4d:



Question: “Which figured bass signature would be used to represent this chord?” [Options: “⁷,” “⁶/₅,” “⁴/₃,” and “⁴/₂.”] Correct answer: “⁴/₂.” Incorrect answer response: “Incorrect. Remember the

common abbreviations for figured bass signatures. Only one of the four options makes sense with the given intervals above the bass. Try again.”]

Activity 4.5:

“In this activity you will be presented with a series single-note of figured bass examples. For each exercise, indicate the pitches that must appear above the bass according to the figures. The exercises will consist of both triads and seventh chords, and the figured bass signatures may be abbreviated. (Remember, unless otherwise specified, the quality of the interval is determined by the key signature.)”

Exercise 4.5a:



Question: “According to the figured bass signature, what pitches must appear above this bass note?” [Answers: “D,” “F#,” and “A.” Incorrect answer response: “Incorrect. Remember, the arabic numerals indicate the intervals above the bass. The quality is determined by the key signature. Try again.”]

Exercise 4.5b:



Question: “According to the figured bass signature, what pitches must appear above this bass note?” [Answers: “D,” and “A^b.” Incorrect answer response: “Incorrect. Remember, the arabic numerals indicate the intervals above the bass. The quality is determined by the key signature. Try again.”]

Exercise 4.5c:



Question: “According to the figured bass signature, what pitches must appear above this bass note?” [Answers: “D#,” “F#,” and “A.” Incorrect answer response: “Incorrect. Remember, the arabic numerals indicate the intervals above the bass. The quality is determined by the key signature. Try again.”]

Exercise 4.5d:

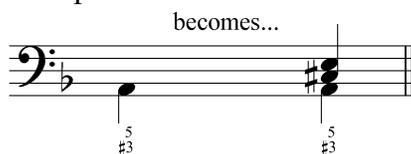


Question: “According to the figured bass signature, what pitches must appear above this bass note?” [Answers: “E” and “G.” Incorrect answer response: “Incorrect. Remember, the arabic numerals indicate the intervals above the bass. The quality is determined by the key signature. Try again.”]

Chromatic alterations:

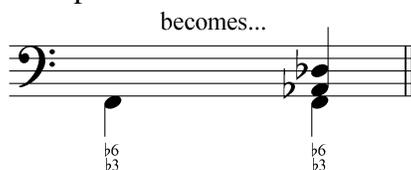
As explained above, figured-bass signatures assume diatonic intervals above bass notes, i.e. the key signature determines the quality of the intervals. If a non-diatonic pitch is necessary in a chord, accidentals (\flat , \sharp , etc.) appear next to the figured-bass signatures.

Example 12:



Example 12 shows a bass A with the figure $\overset{5}{\#3}$. The accidental next to the 3 specifies that a C^\sharp is required instead of a C. An accidental that occurs by itself is assumed to affect the third above the bass (the most frequently altered chord member). Multiple chromatic alterations may occur simultaneously as well:

Example 13:



Another common convention is to indicate a raised pitch by drawing a slash or a small vertical line through the appropriate figure. The A-major triad of Example 12 could also be indicated by the following figured bass:

Example 14:



The slash through the 3 indicates that the third above the bass must be raised by a semitone (C^\sharp instead of C).

Activity 4.6:

“Each of the figured bass signatures in the following exercises require at least one chromatic alteration. For each exercise, indicate the pitches that must appear above the bass according to the figures. The exercises will consist of both triads and seventh chords, and the figured bass signatures may be abbreviated.”

Exercise 4.6a:



Question: “According to the figured bass signature, what pitches must appear above this bass note?” [Answers: “ F^\sharp ” and “A.” Incorrect answer response: “Incorrect. Remember, a slash through a numeral indicates a pitch a half step above the diatonic pitch. Try again.”]

Exercise 4.6b:

labeled “I⁶” because they are in first inversion. Likewise, the chord on the downbeat of measure two is a first inversion seventh chord whose root is D (hence “ii₅⁶”).

As mentioned earlier, figured-bass signatures may also indicate melodic motion above the bass, as in the passing seventh in the second measure. The figures “⁸⁻⁷” indicate that one of the upper voices first forms an octave above the bass, and then steps down to form a seventh with the bass before the next beat.

It is crucial to remember that figured-bass signatures do not always indicate chord inversions. As with the V⁸⁻⁷ in Example 15, they may instead indicate movement over a stationary bass. Consider the following excerpt from a Bach chorale:

Example 16 (J.S. Bach, BWV 290, “Das walt’ Gott Vater und Gott Sohn,” mm. 7-8):

On the fourth beat of m. 7 we find what appears to be iii⁶ chord in F major. The bass C is doubled at the octave in the tenor while the alto and soprano have E and A respectively. Although this sonority contains all the pitches of a iii⁶ chord, it would be incorrect to label it as such. The soprano and tenor voices contain accented passing tones (A and C, respectively). These passing tones resolve to G and B^b on the second eighth note, creating a root-position V⁷ chord. The passage should therefore be analyzed like this:

Example 17:

F: I I⁶ IV V₆₋₇⁸⁻⁷ vi V⁸⁻⁷ I

To label beat four as anything other than a V chord would undermine its important role in the underlying “IV - V - vi” progression. What appears to be an A-minor chord on beat four is a byproduct of voice leading. Such byproducts are quite common and it is important that you learn to identify them. Consider the following example:

Example 18:

I IV⁶ I

In Example 18, the entire measure consists of a C-major chord. Melodic motion above a stationary bass appears in two of the upper voices: the soprano and alto voices are each decorated with upper neighbor tones. Because the two neighbor notes together with the stationary bass coincidentally produce the pitches of an F-major chord, it is tempting to analyze passage like this:

Example 19:

I IV⁶ I

However, that analysis is inaccurate because the chord does not function as a subdominant. We refer to such coincidentally formed chords as *auxiliary sonorities*. (See Lesson III for more information on auxiliary sonorities.) A correct analysis will demonstrate that the I chord is being prolonged throughout the measure, using figured-bass signatures to indicate the melodic motion:

Example 20:

I₃⁵ - 6₄ - 5₃

If we compare the figures in this example with the figures in Example 10, we can see the different roles of figured bass. In Example 10, the figures indicate chord inversion. In Example 18, the figures indicate part movement above a stationary bass. Many sonorities—like the A-minor chord in Example 16 or the F-major chord in Examples 18-20—arise from melodic motion in one or more of the upper voices. It is crucial that you learn to distinguish these voice-leading byproducts from the fundamental chords.

Activity 4.7:

In this activity, you will be presented with a short passage from a Bach chorale (the second phrase of BWV 279, “Christ lag in Todesbanden,” mm. 3-4). Each exercise will have you analyze a single chord from the excerpt by providing a roman numeral with figures.

Exercise 4.7a:

Question: “What roman numeral should appear under the chord indicated by the arrow?”

[Answer: “ii.” Incorrect answer response: “Incorrect. Remember, the roman numeral should be determined by the root of the chord (which may be in inversion). Try again.”]

Followup question: “What figures, if any, should accompany the roman numeral?” [Answer: “ $\frac{6}{5}$ ” or “ $\frac{6}{5}_3$.” Incorrect answer response: “Incorrect. Try again.”]

Exercise 4.7d:

Question: “What roman numeral should appear under the chord indicated by the arrow?”

[Answer: “i.” Incorrect answer response: “Incorrect. Remember, the roman numeral should be determined by the root of the chord (which may be in inversion). Try again.”]

Followup question: “What figures, if any, should accompany the roman numeral?” [Answer: “ $\frac{5}{3}$,” “ $\frac{5}{3}_3$,” or no figure. Incorrect answer response: “Incorrect. Try again.”]

Conclusion:

Figured bass originated as a compositional shorthand. It consists of a bass line accompanied by a series of arabic numerals. These numerals—figured-bass signatures—indicate intervals to be played above the bass. The intervals are assumed to be diatonic (in accordance with the prevailing key signature) unless the figured-bass signatures are modified by accidentals or slashes. Melodic motion in the upper voices are indicated by figured-bass signatures printed horizontally.

Figured-bass signatures can also be used to indicate inversions of triads and seventh chords. The figure $\frac{5}{3}$ (or 5 or no figure at all) is used to indicate a triad in root position, and $\frac{6}{3}$ (or 6) and $\frac{6}{4}$ are used to represent triads in, respectively, first and second inversions. Similarly, $\frac{7}{5}$ (7) is used to indicate a seventh chord in root position while $\frac{6}{5}$ (or $\frac{6}{5}$), $\frac{6}{4}$ ($\frac{4}{3}$), and $\frac{6}{2}$ ($\frac{4}{2}$ or 2) are used to represent seventh chords in first, second, and third inversions respectively. These figures can be combined with roman numerals to show the root progression and inversion simultaneously, but care must be taken to distinguish between functional harmonies and sonorities that arise coincidentally as the result of melodic motion in one or more upper voices.

Lesson EEE – The Dominant Seventh Chord

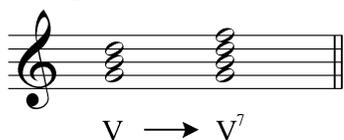
Introduction:

In this lesson, you will learn about the dominant-seventh chord, its inversions, and how to handle its voice leading.

Construction:

The dominant seventh chord is constructed by adding a diatonic seventh ($\hat{4}$) to the dominant triad.

Example 1:



The following example shows a dominant seventh chord in C major in an SATB setting:

Example 2:

C: V⁷

The construction of the V⁷ is the same in minor:

Example 3:

V → V⁷

As with Example 1, Example 3 shows the construction of the dominant seventh chord as a major triad on scale degree $\hat{5}$ with an added diatonic seventh. Remember the necessary leading-tone adjustment for scale degree $\hat{7}$ in dominant chords in minor keys (G to G# in this case). The following example shows a dominant seventh chord in A minor in SATB setting:

Example 4:

a: V⁷

Activity 5.1:

Each of the following V^7 chords is presented in SATB setting and is missing one note. Provide the missing note as directed for each of the exercises.

Exercise 5.1a:

F: V^7

What pitch in the alto voice will complete this V^7 chord in F major?

[Answer: E. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again. (Hint: This V^7 chord is missing scale degree $\hat{7}$.)"]

Exercise 5.1b:

c: V^7

What pitch in the soprano voice will complete this V^7 chord in C minor?

[Answer: F. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again. (Hint: This V^7 chord is missing scale degree $\hat{4}$.)"]

Exercise 5.1c:

A: V^7

What pitch in the bass voice will complete this V^7 chord in A major?

[Answer: E. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again. (Hint: This V^7 chord is missing scale degree $\hat{5}$.)"]

Exercise 5.1d:

b: V^7

What pitch in the tenor voice will complete this V^7 chord in B minor?

[Answer: A[#]. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Hint: This V⁷ chord is missing scale degree $\hat{7}$.”]

Activity 5.2:

In this activity you will build V⁷ chords in various keys starting with the root.

Exercise 5.2a:



G: V⁷

What is the root of a V⁷ chord in G major?

[Answer: D. Response if correct: “Correct!” Response if incorrect: “Try again. Remember, the root of a V⁷ chord is scale degree $\hat{5}$.”]

[Follow-up question:] Complete the V⁷ chord by adding the upper voices.

[Answers: F[#], A, and C. Response if correct: “Correct!” Response if incorrect: “Try again. That pitch does not belong to V⁷ in G major.”]

Exercise 5.2b:



g: V⁷

What is the root of a V⁷ chord in G minor?

[Answer: D. Response if correct: “Correct!” Response if incorrect: “Try again. Remember, the root of a V⁷ chord is scale degree $\hat{5}$.”]

[Follow-up question:] Complete the V⁷ chord by adding the upper voices. (Remember to raise the leading tone in minor keys.)

[Answers: F[#], A, and C. Response if correct: “Correct!” Response if incorrect: “Try again. That pitch does not belong to V⁷ in G minor.”]

Exercise 5.2c:



E^b: V⁷

What is the root of a V⁷ chord in E^b major?

[Answer: B^b. Response if correct: “Correct!” Response if incorrect: “Try again. Remember, the root of a V⁷ chord is scale degree $\hat{5}$.”]

[Follow-up question:] Complete the V⁷ chord by adding the upper voices.

[Answers: D, F, and A^b. Response if correct: “Correct!” Response if incorrect: “Try again. That pitch does not belong to V⁷ in E^b major.”]

Exercise 5.2d:



e: V⁷

What is the root of a V⁷ chord in E minor?

[Answer: B. Response if correct: “Correct!” Response if incorrect: “Try again. Remember, the root of a V⁷ chord is scale degree $\hat{5}$.”]

[Follow-up question:] Complete the V⁷ chord by adding the upper voices. (Remember to raise the leading tone in minor keys.)

[Answers: D[#], F[#] and A. Response if correct: “Correct!” Response if incorrect: “Try again. That pitch does not belong to V⁷ in E minor.”]

Tendency tones:

Certain tones of the diatonic scale are more stable than others. Scale degrees $\hat{1}$, $\hat{3}$, and $\hat{5}$ —the pitches of the tonic triad—are the most stable. Other scale members form dissonances with these stable tones and are therefore less stable scale members. Because of this dissonance, those scale members pull strongly toward the stable tones. Unstable pitches that gravitate towards pitches of greater stability are referred to as *tendency tones*.

Scale degree $\hat{7}$, for example, forms a dissonant minor second with the tonic and tends to resolve to scale degree $\hat{1}$. Likewise, scale degree $\hat{4}$ forms a minor second with scale degree $\hat{3}$, and therefore tends to resolve downwards by step. In the diatonic minor scale (see Lesson CCC), scale degree $\hat{6}$ is a tendency tone that resolves to $\hat{5}$ for the very same reason.

There are two tendency tones in the V⁷ chord: scale degrees $\hat{7}$ and $\hat{4}$. These two tendency tones form a tritone—a dissonance that requires resolution.

Example 5:



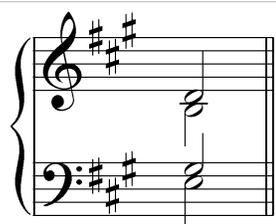
C: V⁷

Activity 5.3:

It is important that you be able to recognize the tendency tones present in a V⁷ chord and treat them accordingly. In this activity you will identify the tendency tones and the interval they form.

Exercise 5.3a:

Identify the two tendency tones in the following V⁷ chord (scale degrees $\hat{7}$ and $\hat{4}$):



A: V^7

[Answers: G[#] and D. Response if correct: “Correct!” Response if partially correct: “That is partially correct. [X] is a tendency tone, but [Y] is not. Try again.” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:] What interval do these two tendency tones form?

[Answer: diminished fifth (d5). Response if correct: “Correct! G[#] and D form a diminished fifth.” Response if incorrect: “Incorrect. Try again.”]

Exercise 5.3b:

Identify the two tendency tones in the following V^7 chord (scale degrees $\hat{7}$ and $\hat{4}$):



B^b: V^7

[Answers: A and E^b. Response if correct: “Correct!” Response if partially correct: “That is partially correct. [X] is a tendency tone, but [Y] is not. Try again.” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:] What interval do these two tendency tones form?

[Answer: diminished fifth (d5). Response if correct: “Correct! A and E^b form a diminished fifth.” Response if incorrect: “Incorrect. Try again.”]

Exercise 5.3c:

Identify the two tendency tones in the following V^7 chord (scale degrees $\hat{7}$ and $\hat{4}$):



f[#]: V^7

[Answers: E[#] and B. Response if correct: “Correct!” Response if partially correct: “That is partially correct. [X] is a tendency tone, but [Y] is not. Try again.” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:] What interval do these two tendency tones form?

[Answer: augmented fourth (A4). Response if correct: “Correct! E[#] and B form an augmented fourth.” Response if incorrect: “Incorrect. Try again.”]

Exercise 5.3d:

Identify the two tendency tones in the following V^7 chord (scale degrees $\hat{7}$ and $\hat{4}$):

g: V⁷

[Answers: F[#] and C. Response if correct: “Correct!” Response if partially correct: “That is partially correct. [X] is a tendency tone, but [Y] is not. Try again.” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:] What interval do these two tendency tones form?

[Answer: diminished fifth (d5). Response if correct: “Correct! F[#] and C form a diminished fifth.” Response if incorrect: “Incorrect. Try again.”]

Scale degree $\hat{7}$, the leading tone, pulls strongly upward toward scale degree $\hat{1}$, which is only a half step away. (Despite this strong pull, the voice containing the leading tone does not always resolve directly to the tonic. These exceptional cases are discussed below.) Scale degree $\hat{4}$, the other tendency tone, pulls strongly downward to $\hat{3}$, its half-step neighbor. These dual tendencies create an urgent need for resolution of a dominant seventh chord. The following example demonstrates the proper resolutions of tendency tones $\hat{4}$ and $\hat{7}$ to $\hat{3}$ and $\hat{8}$:

Example 6:

C: V⁷

In this case the augmented fourth formed by $\hat{4}$ and $\hat{7}$ resolves outward to a sixth. (You may wish to refer back to Lesson FFF where the tritone interval progressions are explored in greater depth. This particular example uses the progression from Example 4 in Lesson FFF.)

Activity 5.4:

In this activity, you will resolve the tendency tones from the V⁷ chords of the previous lesson.

Exercise 5.4a:

Resolve the two tendency tones in the following V⁷ chord:

A: V⁷

[Answer:

A: V⁷

Response if correct: "Correct!" Response if incorrect: "Incorrect. Remember, scale degree $\hat{7}$ tends to resolve to $\hat{1}$ and scale degree $\hat{4}$ tends to resolve to $\hat{3}$. Try again."

Exercise 5.4b:

Resolve the two tendency tones in the following V⁷ chord:

B \flat : V⁷

[Answer:

B \flat : V⁷

Response if correct: "Correct!" Response if incorrect: "Incorrect. Remember, scale degree $\hat{7}$ tends to resolve to $\hat{1}$ and scale degree $\hat{4}$ tends to resolve to $\hat{3}$. Try again."

Exercise 5.4c:

Resolve the two tendency tones in the following V⁷ chord:

f#: V⁷

[Answer:

Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, scale degree $\hat{7}$ tends to resolve to $\hat{1}$ and scale degree $\hat{4}$ tends to resolve to $\hat{3}$. Try again.”]

Exercise 5.4d:

Resolve the two tendency tones in the following V^7 chord:

[Answer:

Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, scale degree $\hat{7}$ tends to resolve to $\hat{1}$ and scale degree $\hat{4}$ tends to resolve to $\hat{3}$. Try again.”]

There remain, however, two other notes in the V^7 chord: the root ($\hat{5}$) and the fifth ($\hat{2}$). These two voices, forming a fifth in the V^7 chord, usually resolve in similar motion to an octave. This “5 - 8” motion is one of the basic interval progressions outlined in Lesson AAA. The following example shows the basic interval progressions in the upper and lower voice pairs:

Example 7:

As you’ll recall from Lesson AAA, four-part harmony is an extension of three-part harmony which, in turn, is built from combinations of basic interval progressions. The voice leading in Example 7 can be

explained in this manner. The outer voices form the primary interval progression of a third expanding to an octave. The tenor, then, supports the soprano with a “6 - 8” progression. Finally, the alto harmonizes with the tenor in parallel thirds (“3 - 3”). Looking at the progression this way, we can see that the augmented fourth between the alto and soprano is a resultant interval.

In the example above, you might have noticed that the resolution chord has three roots, a third, and no fifth. This voicing of the I chord is common at cadences. This type of voice leading, with both chords in root position, provides a strong sense of repose and, thus, closure.

Examples 5-7 show the resolution of a V7 chord in C major. The same rules apply to dominant seventh chords in minor keys. Example 8 shows a V7 chord in C minor resolving to the tonic harmony:

Example 8

c: V⁷ i

Note that all the same voice leading patterns appear: the augmented fourth (tritone) formed by F and B \flat resolves outward to a sixth (a major sixth in minor, because scale degree $\hat{4}$ must now resolve a whole-step down to $\hat{3}$), $\hat{2}$ resolves stepwise to $\hat{1}$, and $\hat{5}$ leaps down to $\hat{1}$.

Activity 5.5:

In this exercise, you will complete the resolution of the previous activities to the I chord.

Exercise 5.5a:

Taking your answer from the previous activity, complete the resolution to the I chord by providing pitches for the bass and alto:

A: V⁷ I

[Answer:

A: V⁷ I

(allow for bass to be up an octave). Response if correct: “Correct!”

Response if incorrect: “Incorrect. Remember, both scale degrees $\hat{2}$ and $\hat{5}$ will resolve to $\hat{1}$ as V⁷ moves to I. Try again.”]

Exercise 5.5a:

Taking your answer from the previous activity, complete the resolution to the I chord by providing pitches for the bass and soprano:

Bb: V⁷ I

[Answer:

Bb: V⁷ I

(allow for bass to be up an octave). Response if correct: “Correct!”

Response if incorrect: “Incorrect. Remember, both scale degrees $\hat{2}$ and $\hat{5}$ will resolve to $\hat{1}$ as V⁷ moves to I. Try again.”]

Exercise 5.5a:

Taking your answer from the previous activity, complete the resolution to the I chord by providing pitches for the bass and tenor:

f#: V⁷ I

[Answer:

f#: V⁷ I

(allow for bass to be up an octave). Response if correct: “Correct!”

Response if incorrect: “Incorrect. Remember, both scale degrees $\hat{2}$ and $\hat{5}$ will resolve to $\hat{1}$ as V⁷ moves to I. Try again.”]

Exercise 5.5a:

Taking your answer from the previous activity, complete the resolution to the I chord by providing pitches for the bass and tenor:

g: V⁷ I

[Answer:

g: V⁷ I

(allow for bass to be up an octave). Response if correct: "Correct!"

Response if incorrect: "Incorrect. Remember, both scale degrees $\hat{2}$ and $\hat{5}$ will resolve to $\hat{1}$ as V^7 moves to I. Try again."]

Inversions:

The V^7 chord often appears in inversion. While the preferred resolutions of the tendency tones generally remain the same regardless of the position of V^7 , the resolution of $\hat{5}$ and $\hat{2}$ vary somewhat, depending on context. Consider the following example, where a dominant seventh chord in first inversion resolves to the tonic triad:

Example 9:

C: V₅⁶ I

In this example, both tendency tones resolve as expected: $\hat{7}$ to $\hat{1}$ in the bass and $\hat{4}$ to $\hat{3}$ in the soprano. As in Example 7, $\hat{2}$ resolves to $\hat{1}$. In this case, however, because the root of the V^7 chord ($\hat{5}$) is not in the bass, we sustain it as a common tone between the V and I chords. Because of its smoothness, this is the preferred voice-leading.

The resolution of the dominant seventh in second inversion follows the same voice-leading patterns as Example 9: $\hat{2}$ resolves to $\hat{1}$ in the bass, $\hat{5}$ is held in the tenor as a common tone, and the tendency tones resolve normatively in the alto and soprano:

Example 10:

C: V_3^4 I

Example 11 shows the resolution of the remaining position of the dominant seventh chord:

Example 11:

C: V_2^4 I^6

The third inversion of the dominant seventh chord is a special case. In a V_2^4 , the chordal seventh is exposed in the bass. This makes it very audible and therefore powerful. Consequently, it is generally reserved for circumstances where heightened musical expression is appropriate. Because of the tendency of $\hat{4}$ to resolve to $\hat{3}$, the chord of resolution is necessarily in first inversion (I^6). It should be noted that this formation of the V^7 to I cadence is the least stable and requires further motion.

Pop-up Box: Rules for resolving V^7 :

- The tendency tones must be resolved properly: $\hat{7}$ resolves to $\hat{1}$ and $\hat{4}$ resolves to $\hat{3}$.
- $\hat{2}$ resolves to $\hat{1}$.
- $\hat{5}$ should be held to promote smooth voice-leading. This is possible in every inversion of the dominant seventh, but not in root position where the bass must leap from $\hat{5}$ to $\hat{1}$.

Activity 5.6:

So far in this lesson, the activities have focused on resolving dominant seventh chords in root position. Dominant seventh chords frequently appear in inversion, however, and it is important that you be able to resolve these chords as well. In this activity you will resolve an inverted dominant seventh chord according to the guidelines outlined above.

Exercise 5.6a:

Identify the leading tone in the following V_5^6 chord:

E_b : V_5^6 I

[Answer: D (bass). Response if correct: "Correct!" Response if incorrect: "Incorrect. That is not the leading tone. Try again."]

[Follow-up question:] Resolve the leading tone according to the guidelines outlined above.

[Answer:

E \flat : V $_3^6$ I

. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, the leading tone tends to resolve to the tonic. Try again.”]

Exercise 5.6b:

Now identify the tendency tone (scale degree $\hat{4}$):

E \flat : V $_3^6$ I

[Answer: A (tenor). Response if correct: “Correct!” Response if incorrect: “Incorrect. That is not scale degree $\hat{4}$. Try again.”]

[Follow-up question:] Resolve scale degree $\hat{4}$ according to the guidelines outlined above.

[Answer:

E \flat : V $_3^6$ I

. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, scale degree $\hat{4}$ tends to scale degree $\hat{3}$. Try again.”]

Exercise 5.6c:

Because this dominant seventh chord is in inversion, we can retain the root as a common tone as we resolve to I. Identify the root of the following V $_3^6$ chord:

E \flat : V $_3^6$ I

[Answer: B b (soprano). Response if correct: “Correct!” Response if incorrect: “Incorrect. That is not the root. Try again.”]

[Follow-up question:] Hold the root as a common tone into the I chord.

[Answer:

Eb: V_5^b I

. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, because the dominant seventh chord is in inversion, we can retain the root as a common tone into the I chord. Try again.”]

Exercise 5.6d:

Now there is only one voice to be resolved. Resolve scale degree $\hat{2}$ according to the guidelines outlined above.

Eb: V_5^b I

[Answer:

Eb: V_5^b I

. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, scale degree $\hat{2}$ tends to resolve to the tonic. Try again.”]

Other leading tone resolutions:

Despite the strong upwards pull on the leading tone, there are occasions where it does not resolve to scale degree $\hat{1}$. Consider the following resolution of V^7 to I:

Example 12:

C: V^7 I

In this case, the alto has $\hat{7}$ in the V^7 chord. Instead of moving as expected to $\hat{1}$, the alto skips down to $\hat{5}$. This is permissible for two reasons. Most importantly, the soprano begins on $\hat{2}$, just above the leading

tone in the alto. When the soprano resolves downward from $\hat{2}$ to $\hat{1}$, we hear the alto's leading tone as if resolving to the same $\hat{1}$. With the soprano acting as a surrogate resolution for the leading tone, the alto is free to skip to $\hat{5}$.

The result of this $\hat{7}$ to $\hat{5}$ motion is a complete triad in the resolution. While in Example 7, the dominant seventh resolved to a I with three roots, a third, and no fifth, Example 12 illustrates resolution to a fuller sonority.

Occasionally, as in the following two examples, the leading tone leaps to a pitch other than scale degree $\hat{1}$ *without* another voice fulfilling the surrogate duty:

Example 13, Bach BWV 41.6s, "Jesu, nun sei gepreiset," mm. 7-8:

Example 14, Bach BWV 248(5).53, "Gott des Himmels und der Erden," m. 4:

In Example 13, the tenor has the leading tone (B) at the cadence. Instead of resolving upwards to scale degree $\hat{1}$ (C), the tenor leaps down to scale degree $\hat{5}$ (G). This is very similar to Example 12 but in this case, the voice immediately above (the alto) is not acting as a surrogate resolution to $\hat{1}$. Instead, the soprano resolves to the necessary C, but an octave higher! In Example 14, the tenor has the leading tone (G^\sharp). In this case, the leading tone jumps up to scale degree 3 (C^\sharp). As in Example 13, the missing tonic appears an octave higher in the soprano. In either case, the unresolved leading tone appears in an inner voice where it is not so easily noticed.

Popup Box: Typically, the tendency tone $\hat{7}$ is required to resolve to $\hat{1}$ in a V^7 chord. Occasionally, however, the voice singing $\hat{7}$ may leap to $\hat{3}$ or $\hat{5}$. Sometimes, as in Example 12, another voice can act as a surrogate resolution. However, as Examples 13 and 14 illustrate, this surrogate resolution need not always be in the correct register.

Conclusion:

In this lesson we have discussed the various configurations of one of the most important harmonic progressions and cadential idioms in tonal music: V^7 to I. The voice leading of these various configurations is determined primarily by the presence of tendency tones $\hat{7}$ and $\hat{4}$, as well as a preference

for smoothness in voice leading to the resolution. The dominant seventh chord may appear in any of its four positions, each of which leads to characteristic resolutions. While the conventions for resolution have been given here as simplified rules, it is important to remember that basic interval progressions and dissonance treatments are still the guiding criteria of voice leading.

Lesson FFF – The vii° Chord

Introduction:

Six of the seven diatonic triads are consonant—that is, they are built of consonant intervals only. I, IV, and V are major triads; ii, iii, and vi are minor triads.

Example 1:

Example 1 shows seven diatonic triads in the bass clef, labeled I, ii, iii, IV, V, vi, and vii°. The triads are built on the notes of a diatonic scale: C (I), D (ii), E (iii), F (IV), G (V), A (vi), and B (vii°).

Activity 6.1 [multiple choice question]:

What makes the vii° chord unique?

- It is built entirely of diatonic pitches. [response: While the vii° chord *is* made entirely of diatonic pitches, it is not alone. All of the diatonic triads are built using only diatonic pitches. Try again...]
- It is dissonant. [response: Yes! The vii° chord constitutes the only dissonant member of the set of diatonic triads. All of the other triads are consonant; they are either major or minor.]
- It is a minor triad. [response: Incorrect. Although the symbol for the vii° chord is written with lowercase letters, it also has a small circle indicating that it is not minor, but rather diminished. Try again...]

The triad built on scale degree 7 (vii°) is dissonant. While all other triads are framed by a *perfect* fifth, the vii° is dissonant because it is framed by a *diminished* fifth:

Example 2:

Example 2 shows the vii° chord in the bass clef. The intervals between the notes are labeled as d5 (diminished fifth) and m3 (minor third).

Because of its construction, using it in three and four-part writing requires an exception to the practice observed so far about using only consonant intervals when adding a third part to a given two-voice framework. Further, in order to avoid a diminished fifth formed with the bass, which makes the dissonant interval sound too harsh, the vii° generally appears with its third in the bass (first inversion), as shown here.

Example 3:

Example 3 shows the vii°6 chord in first inversion in the bass clef. The third of the chord is in the bass, and the intervals between the notes are labeled as m3 and d5.

Putting the triad in first inversion creates consonant intervals between the bass and all upper voices. In this case, the bass forms a sixth with the tenor, a third with the alto, and an octave with the soprano. The diminished fifth is hidden in the inner voices between the tenor and alto: it is a resultant interval formed by the avoidance of dissonance with the bass.

Activity 6.2:

This exercise will reinforce your understanding of the various intervals found in a $vii^{\circ 6}$ in SATB setting. In each of the following exercises, identify the tritone-forming pitches.

Exercise 6.2a:



D: $vii^{\circ 6}$

[answers:] C# and G

[follow-up question for each answer:] What interval does this pitch form with the bass?

[answers:] C# forms a M6 (major sixth) with the bass and G forms a m3 (minor third) with the bass.

[follow-up question:] What type of tritone is formed by C# and G in Exercise 6.2a?

[answer:] d5 (diminished fifth)

Identify the tritone-forming pitches.

Exercise 6.2b:



e: $vii^{\circ 6}$

[answers:] A and D#

[follow-up question for each answer:] What interval does this pitch form with the bass?

[answers:] A forms a m3 (minor third) with the bass and D# forms a M6 (major sixth) with the bass.

[follow-up question:] What type of tritone is formed by A and D# in Exercise 6.2b?

[answer:] A4 (augmented fourth)

Identify the tritone-forming pitches.

Exercise 6.2c:



A \flat : $vii^{\circ 6}$

[answers:] G and D \flat

[follow-up question for each answer:] What interval does this pitch form with the bass?

[answers:] G forms a M6 (major sixth) with the bass and Db forms a m3 (minor third) with the bass.

[follow-up question:] What type of tritone is formed by G and Db in Exercise 6.2c?

[answer:] d5 (diminished fifth)

Identify the tritone-forming pitches.

Exercise 6.2d:



d: vii^o

[answers:] C# and G

[follow-up question for each answer:] What interval does this pitch form with the bass?

[answers:] C# forms a M6 (major sixth) with the bass and G forms a m3 (minor third) with the bass.

[follow-up question:] What type of tritone is formed by C# and G in Exercise 6.2d?

[answer:] d5 (diminished fifth)

Treatment of the vii^o chord:

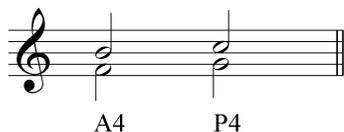
Dissonances are unstable and therefore require motion towards stability (resolution). In order to allow tritones to be used under these circumstances—as they routinely are in music—we must expand our catalog of interval progressions. There are four distinct interval progressions associated with the tritone: two with contrary motion and two with similar motion. The choice of interval progression depends on the movement of the bass, as we shall see. If the tritone appears as an augmented fourth, its voices may move by step in contrary motion, expanding to either a minor sixth in major keys or a major sixth in minor keys:

Example 4:



Contrary motion, such as in the above example, is the preferred movement involving a tritone. Alternatively, the voices may move in similar motion to a perfect fourth (the same is true for major or minor keys):

Example 5:



If the tritone appears as a diminished fifth, the voices either contract to a third (a major third in major keys or a minor third in minor keys):

Example 6:

Major: Minor:

d5 M3 d5 m3

or may alternatively move in similar motion to a perfect fifth:

Example 7:

A4 P4

At first glance, Example 7 resembles forbidden parallel fifths. However, this is not the case. Recall that parallel perfect fifths are forbidden because they undermine the independence of the voices. Voices a perfect fifth apart blend together so well that they sound almost as though they are singing the same pitch. In the progression from a diminished to a perfect fifth, the voices sing two very different intervals. Each voice is clearly heard as the dissonance of the tritone resolves to the perfect fifth. Although this resolution of the tritone is less common than Examples 4-6, it does appear in the tonal repertoire. Examples 8 and 9 show two excerpts from Bach chorales where diminished fifths resolve to perfect fifths (the tritone occurs between the alto and soprano in both cases):

Example 8 (J.S. Bach, “Vater unser im Himmelreich,” BWV 416, m. 1):

d5 P5

Example 9 (J.S. Bach, “Herr Jesu Christ, mein’s Lebens Licht,” BWV 335, mm. 5-6):

d5 P5

These two similar-motion resolutions of the tritone (A4 to P4 and d5 to P5) may seem counterintuitive. Their validity is explained by the interval progressions formed with the bass. In both cases, one of the voices moves in parallel thirds with the bass while the other creates parallel sixths with the bass. Look again at example 8. The alto and soprano voices form a tritone on beat three which resolves to a perfect fifth on beat four. Now consider the intervals formed with the bass; the alto moves in parallel sixths with the bass while the soprano moves in parallel thirds with the bass. The same is true for Example 9. The interval progressions formed with the bass validate the similar motion in the upper voices. With permissible interval progressions occurring between the bass and each of the upper voices, the tritone in each case may be thought of as resultant intervals, and the similar-motion progression as a byproduct.

[Activity 6.3:

In each of the following examples you are presented with a tritone (consisting of the leading tone and scale degree $\hat{4}$) and the resolution of one of the voices. Complete each tritone resolution by providing the pitch for the second voice.

Exercise 6.3a:



[possible answers:]

- (E) Yes! This is a valid answer. If the lower voice ascends to E, the tritone resolves from an A4 (augmented fourth) to a P4 (perfect fourth).
- (C#) Yes! This is a valid answer. If the lower voice descends to C, the tritone resolves from an A4 (augmented fourth) to a m6 (minor sixth).
- (D) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The lower voice may not sustain D. Try again...
- (above E or below C#) This is not a valid answer. Both voices must move by step when resolving a tritone. Your answer, [X], creates disjunct motion in the lower voice. Try again...

Exercise 6.3b:



[possible answers:]

- (A) Yes! This is the only valid answer. If the lower voice ascends to A, the tritone resolves from a d5 (diminished fifth) to a m3 (minor third).
- (G#) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The lower voice may not sustain G#. Try again...
- (F) This is not a valid answer. The tritone may only resolve from a d5 (diminished fifth) to a P5 (perfect fifth) if both voices are ascending by step. In this example, the lower voice may not descend because it is the leading tone and must resolve upwards to the tonic. Try again...
- (all other possibilities) This is not a valid answer. Both voices must move by step when resolving a tritone. [X] creates disjunct motion in the lower voice.

Exercise 6.3c:



[possible answers:]

- (F) Yes! This is a valid answer. If the upper voice ascends to F, the tritone resolves from an d5 (diminished fifth) to a P5 (perfect fifth).
- (Eb) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The upper voice may not sustain Eb. Try again...
- (D) Yes! This is a valid answer. If the upper voice descends to D, the tritone resolves from an d5 (diminished fifth) to a M3 (major third).

- (above F or below D) This is not a valid answer. Both voices must move by step when resolving a tritone. Your answer, [X], creates disjunct motion in the lower voice.

Exercise 6.3d:



[possible answers:]

- (F) Yes! This is the only valid answer. If the upper voice ascends to F, the tritone resolves from an A4 (augmented fourth) to a M6 (major sixth).
- (E) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The upper voice may not sustain E. Try again...
- (Db) This is not a valid answer. The tritone may only resolve from a A4 (augmented fourth) to a P4 (perfect fourth) if both voices are ascending by step. In this example, the upper voice may not descend because it is the leading tone and must resolve upwards to the tonic. Try again...
- (all other possibilities) This is not a valid answer. Both voices must move by step when resolving a tritone. [X] creates disjunct motion in the lower voice.

[Activity 6.4:

In each of the following exercises, you will be presented with a tritone (consisting of the leading tone and scale degree $\hat{4}$). Resolve the tritone according to the rules given in this lesson by first providing a pitch for the upper voice, then one for the lower voice.

Exercise 6.4a:



[possible answers for upper voice:]

- (E) Yes! This is the only valid answer. In this exercise, the upper voice has the leading tone and must resolve to the tonic (E).
- (D#) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The upper voice may not sustain E. Try again...
- (C) This is not a valid answer. In this case, the upper voice has the leading tone which must resolve to the tonic. Try again...
- (above E or below C) This is not a valid answer. Each voice must move by step when resolving a tritone. [X] creates disjunct motion in the upper voice. Try again...

[possible answers for lower voice with E as the upper voice:]

- (B) Yes! This is a valid answer. If the lower voice ascends to B, the tritone resolves from an A4 (augmented fourth) to a P4 (perfect fourth).
- (A) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The lower voice may not sustain A. Try again...
- (G) Yes! This is a valid answer. If the lower voice descends to G, the tritone resolves from an A4 (augmented fourth) to a M6 (major sixth).
- (above B or below G) This is not a valid answer. Both voices must move by step when resolving a tritone. Your answer, [X], creates disjunct motion in the lower voice. Try again...

Exercise 6.4b:



[possible answers for upper voice:]

- (C) Yes! This is the only valid answer. In this exercise, the upper voice has the leading tone and must resolve to the tonic (C).
- (B) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The upper voice may not sustain B. Try again...
- (A) This is not a valid answer. In this case, the upper voice has the leading tone which must resolve to the tonic. Try again...
- (above C or below A) This is not a valid answer. Each voice must move by step when resolving a tritone. [X] creates disjunct motion in the upper voice. Try again...

[possible answers for lower voice with C as the upper voice:]

- (G) Yes! This is a valid answer. If the lower voice ascends to G, the tritone resolves from an A4 (augmented fourth) to a P4 (perfect fourth).
- (F) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The lower voice may not sustain F. Try again...
- (E) Yes! This is a valid answer. If the lower voice descends to E, the tritone resolves from an A4 (augmented fourth) to a m6 (major sixth).
- (above G or below E) This is not a valid answer. Both voices must move by step when resolving a tritone. Your answer, [X], creates disjunct motion in the lower voice. Try again...

Exercise 6.4c:



[possible answers for upper voice:]

- (B) Yes! This is a valid answer.
- (A) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The upper voice may not sustain B. Try again...
- (G#) Yes! This is a valid answer.
- (above C or below A) This is not a valid answer. Each voice must move by step when resolving a tritone. [X] creates disjunct motion in the upper voice. Try again...

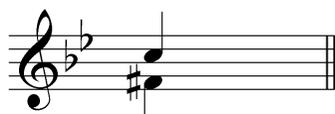
[possible answers for lower voice with B as the upper voice:]

- (E) Yes! This is the only valid answer. If the upper voice ascends out of a d5 (diminished fifth), the lower voice must also ascend. The tritone then resolves from a d5 to a P5 (perfect fifth). Furthermore, D# is the leading tone and must resolve to the tonic.
- (D#) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The lower voice may not sustain D#. Try again...
- (C#) This is not a valid answer. If the lower voice descends to C#, the resulting interval will be a m7 (minor seventh). This is also a dissonance and cannot be used as a resolution from a tritone. Furthermore, D# is the leading tone and must resolve to the tonic. Try again...
- (above E or below C#) This is not a valid answer. Both voices must move by step when resolving a tritone. Your answer, [X], creates disjunct motion in the lower voice. Try again...

[possible answers for lower voice with G# as the upper voice:]

- (E) Yes! This is the only valid answer. If the lower voice ascends to E, the tritone resolves from a d5 (diminished fifth) to a M3 (major third).
- (D#) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The lower voice may not sustain D#. Try again...
- (C#) This is not a valid answer. The tritone may only resolve from a d5 (diminished fifth) to a P5 (perfect fifth) if both voices are ascending by step. In this example, the lower voice may not descend because it is the leading tone and must resolve upwards to the tonic. Try again...
- (above E or below C#) This is not a valid answer. Both voices must move by step when resolving a tritone. [X] creates disjunct motion in the lower voice.

Exercise 6.4d:



[possible answers for upper voice:]

- (D) Yes! This is a valid answer.
- (C) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The upper voice may not sustain B. Try again...
- (Bb) Yes! This is a valid answer.
- (above D or below Bb) This is not a valid answer. Each voice must move by step when resolving a tritone. [X] creates disjunct motion in the upper voice. Try again...

[possible answers for lower voice with D as the upper voice:]

- (G) Yes! This is the only valid answer. If the upper voice ascends out of a d5 (diminished fifth), the lower voice must also ascend. The tritone then resolves from a d5 to a P5 (perfect fifth). Furthermore, F# is the leading tone and must resolve to the tonic.
- (F#) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The lower voice may not sustain F#. Try again...
- (Eb) This is not a valid answer. If the lower voice descends to Eb, the resulting interval will be a m7 (minor seventh). This is also a dissonance and cannot be used as a resolution from a tritone. Furthermore, F# is the leading tone and must resolve to the tonic. Try again...
- (above G or below Eb) This is not a valid answer. Both voices must move by step when resolving a tritone. Your answer, [X], creates disjunct motion in the lower voice. Try again...

[possible answers for lower voice with Bb as the upper voice:]

- (G) Yes! This is the only valid answer. If the lower voice ascends to E, the tritone resolves from a d5 (diminished fifth) to a m3 (minor third).
- (F#) This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The lower voice may not sustain D#. Try again...
- (Eb) This is not a valid answer. The tritone may only resolve from a d5 (diminished fifth) to a P5 (perfect fifth) if both voices are ascending by step. In this example, the lower voice may not descend because it is the leading tone and must resolve upwards to the tonic. Try again...
- (above G or below Eb) This is not a valid answer. Both voices must move by step when resolving a tritone. [X] creates disjunct motion in the lower voice.

We now turn to a progression involving the vii^o chord. In the following three-voice example, a vii^o chord resolves to I⁶:

Example 10:

vii^{°6} I[°]

In this case the tritone of the vii^{°6} chord appears between the soprano and the middle voice. In the following example, the tritone is resolved normatively using a “d5 - P5” progression:

Example 11:

vii^{°6} I[°]

More importantly, note that the bass forms familiar progressions with the soprano (“3 - 3”) and the middle voice (“6 - 6”). Because of these consonant interval progressions, we can think of the tritone as a resultant interval formed by pitches that are consonant with the bass. At this point, we can also add a fourth voice for a full SATB texture:

Example 12:

vii^{°6} I[°]

[Activity 6.5:

In each of the following exercises, you will be presented with a short progression consisting of a vii[°] chord resolving to a I chord. In each case, you will be asked whether or not the voice leading is correct in every voice.

Exercise 6.5a:

e: vii^{°6} i

[multiple choice question:] Is the voice-leading correct for the resolution of this vii[°] chord?

- Yes. [response: That is incorrect. Look again at the alto voice and try again.]
- No. [response: Correct!]

[follow-up multiple choice question:] Which voice needs to be adjusted?

- Soprano. [response: That is incorrect. Try again...]
- Alto. [response: Correct!]
- Tenor. [response: That is incorrect. Try again...]
- Bass. [response: That is incorrect. Try again...]

[follow-up question:] What pitch should the D# in the alto resolve to?

- (E) Yes! D# is the leading tone and must resolve to the tonic (E).
- (any other pitch) Incorrect. D# is the leading tone and must resolve to the tonic. Try again...

Exercise 6.5b:

A: vii[°] I

[multiple choice question:] Is the voice-leading correct for the resolution of this vii[°] chord?

- Yes. [response: Correct! All of the voices resolve properly. There is no need to adjust any of the voices.]
- No. [response: That is incorrect.]

Exercise 6.5c:

c vii[°] i

[multiple choice question:] Is the voice-leading correct for the resolution of this vii[°] chord?

- Yes. [response: Correct! All of the voices resolve properly. There is no need to adjust any of the voices.]
- No. [response: That is incorrect.]

Exercise 6.5d:

E^b: vii[°] I

[multiple choice question:] Is the voice-leading correct for the resolution of this vii[°] chord?

- Yes. [response: That is incorrect. Look again at the soprano voice and try again.]
- No. [response: Correct!]

[follow-up multiple choice question:] Which voice needs to be adjusted?

- Soprano. [response: Correct!]
- Alto. [response: That is incorrect. Try again...]
- Tenor. [response: That is incorrect. Try again...]
- Bass. [response: That is incorrect. Try again...]

[follow-up question:] What pitch should the D in the soprano resolve to?

- (Eb) Yes! D is the leading tone and must resolve to the tonic (Eb).
- (any other pitch) Incorrect. D is the leading tone and must resolve to the tonic. Try again...

Other diminished triads:

For the sake of clarity, we have been looking at only one example of a diminished triad so far: vii° in a major key. Of course, this is not the only diminished triad you will encounter. Consider, for example, the triads of the minor scale (refer to Lesson CCC for more on the minor scale):

Example 13:



As you can see, there are two diminished triads in the minor mode, one on $\hat{2}$ and one on $\hat{7}$. (In minor, vii° is the result of the raised leading tone creating a diminished triad from a naturally major one.) In both cases, the tritone must be handled carefully according to the interval progressions outlined above.

Conclusion:

As the above examples show, an exception to the dissonance rule is required in order to accommodate the vii° chord. Tritones are permitted when they are part of this particular triad. (Later, we will explore other permissible uses of the tritone, such as in a V^7 chord.) However, because of this interval's dissonant quality, it must be treated delicately. First, the vii° chord appears in first inversion in order to avoid a dissonance with the bass. By inverting the triad, we hide the tritone within the inner voices, presenting it as a resultant interval. All of the upper voices are then consonant with the bass. Second, the tritone must also be resolved properly. This is to be done with both voices moving by step in either contrary or similar motion.

Lesson GGG – Seventh Chords

Introduction:

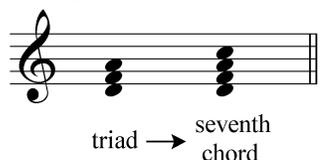
Seventh chords provide an additional range of sonorities to the harmonic landscape. Because they contain four distinct pitches and include a dissonance by definition, they offer richer harmonies than their triadic counterparts. It is this very dissonance, however, that makes the voice leading of seventh chords a matter requiring special attention.

This lesson will present the various categories of seventh chords and familiarize you with their construction. A more specific discussion follows, touching on the commonly used seventh chords and the reasons why other seventh chords are not used. (Seventh chords are also frequently used as auxiliary sonorities. For more information on auxiliary sonorities, refer to Lesson III.)

Construction and types of seventh chords:

Seventh chords are built by extending triadic construction to include a fourth voice. A triad consists of two stacked thirds; a seventh chord simply adds a diatonic third above the fifth of the triad. In the following example, a D-minor triad becomes a seventh chord with the addition of the pitch C:

Example 1:



A triad is a consonant harmony. The seventh chord, containing a seventh, is naturally dissonant. The added pitch forms a dissonant seventh with the root of the chord and must be treated carefully. We will return to this matter shortly.

The following examples show the diatonic seventh chords of C major and C minor respectively. Like triads, the quality of a seventh chord built on any particular scale degree depends on whether the key is major or minor.

Example 2:

I ii⁷ iii⁷ IV⁷ V⁷ vi⁷ vii⁷
 MM mm mm MM Mm mm ø

Example 3:

i⁷ ii⁷ III⁷ iv⁷ V⁷ IV⁷ vii⁷
 mm ø MM mm Mm MM o

As you can see from Examples 2 and 3, seventh chords are labeled with the Roman numeral of their defining triads (look at the open noteheads of each chord) with a superscript “7” to the right. “I⁷” refers to the diatonic seventh chord built on scale degree $\hat{1}$, “ii⁷” to the chord built on $\hat{2}$, and so on.

Activity 7.1:

In this activity you will be presented with a triad in SATB setting. Change one of the pitches in the upper voices to transform the triad into a seventh chord. Then, identify the seventh chord with roman numerals.

Exercise 7.1a:

Move one of the upper voices to change the triad into a seventh chord:



e: ii^o

[Answer: soprano should be changed from F[#] to E.]

[Follow-up question:] Give this new chord a roman numeral.

[Answer: ii^{o7}]

Exercise 7.1b:

Move one of the upper voices to change the triad into a seventh chord:



B^b: V

[Answer: soprano should be changed from F to E^b.]

[Follow-up question:] Give this new chord a roman numeral.

[Answer: V⁷]

Exercise 7.1c:

Move one of the upper voices to change the triad into a seventh chord:



a: V

[Answer: alto should be changed from E to D.]

[Follow-up question:] Give this new chord a roman numeral.

[Answer: V⁷]

Exercise 7.1d:

Move one of the upper voices to change the triad into a seventh chord:



A: vii°

[Answer: soprano should be changed from G# to F#.]

[Follow-up question:] Give this new chord a roman numeral.

[Answer: vii^{o7}]

Below each line of Roman numerals in Examples 2 and 3 is another line of letters and symbols. These markings indicate the intervallic content of the chord and in doing so describe the sonority. For the chords labeled with letters, the first M describes the quality of the triad (“M” for a major triad; “m” for a minor triad) and the second M indicates the quality of the seventh (again, “M” for a major seventh; “m” for a minor seventh). You will find two other symbols as well. These symbols are used for seventh chords built on diminished triads: “^o” indicates a half-diminished seventh chord (a diminished triad with a major seventh) and “^{o7}” indicates a fully-diminished seventh chord (a diminished triad with a minor seventh). The following table summarizes the various types of commonly encountered seventh chords:

Quality of Triad	Quality of Seventh	Symbol	Name
major	major	MM	major-major seventh chord
major	minor	Mm	dominant seventh chord or major-minor seventh chord
minor	minor	Mm	minor-minor seventh chord
diminished	minor	^o 7	half-diminished seventh chord
diminished	diminished	^{o7}	fully-diminished seventh chord

The dominant seventh chord is unique to each collection of diatonic seventh chords. It is the most important seventh chord in tonal music and as such has its own lesson (see Lesson EEE).

Activity 7.2:

In this activity you will examine the intervallic content of various seventh chords by identifying the quality of the triad and the quality of the seventh.

[For each question, the options for triad quality are “major,” “minor,” and “diminished.” The options for seventh quality are “major,” “minor,” and “diminished.”]

Exercise 7.2a:

g: vii^{o7}

[Fill in the blank:]

The quality of the triad is _____.

The quality of the seventh is _____.

[Answers: “diminished” and “diminished.” Response for correct answer: “Correct! The vii^{o7}

chord in G minor is a fully-diminished seventh chord.” Response for incorrect answer:

“Incorrect. Check your intervals and try again.”]

Exercise 7.2b:

G: IV⁷

[Fill in the blank:]

The quality of the triad is _____.

The quality of the seventh is _____.

[Answers: “major” and “major.” Response for correct answer: “Correct! The IV⁷ chord in G major is a major-major seventh chord.” Response for incorrect answer: “Incorrect. Check your intervals and try again.”]

Exercise 7.2c:

c: V⁷

[Fill in the blank:]

The quality of the triad is _____.

The quality of the seventh is _____.

[Answers: “major” and “minor.” Response for correct answer: “Correct! The V⁷ chord in C minor is a major-minor seventh chord.” Response for incorrect answer: “Incorrect. Check your intervals and try again.”]

Exercise 7.2d:

D: ii⁷

[Fill in the blank:]

The quality of the triad is _____.

The quality of the seventh is _____.

[Answers: “minor” and “minor.” Response for correct answer: “Correct! The ii⁷ chord in D minor is a minor-minor seventh chord.” Response for incorrect answer: “Incorrect. Check your intervals and try again.”]

Inversions of seventh chords:

As with triads, seventh chords may also be written in inversion. Because there are four distinct pitches in a seventh chord, there are, accordingly, four possible positions (determined by the lowest pitch). The following example shows the four positions of a ii⁷ chord in C major:

Example 4:

C : ii⁷ ii⁶ ii⁴ ii²

Like triads, inverting a seventh chord alters the intervallic relationships between the upper voices and the bass. The notation for labeling seventh chords indicates the intervals formed with the bass, although

abbreviated notation is often used. For example, a seventh chord in first inversion contains the intervals of a 6th, a 5th, and a 3rd above the bass. Rather than write three numerals every time ($\overset{6}{\underset{3}{5}}$), the convention is to assume the 3rd and simply write: $\overset{6}{5}$. The following table summarizes the figured-bass signatures of the inversions of seventh chords, and gives the notational short hand in the rightmost column:

Position	Chord Member in the Bass	Intervallic Content	Figured Bass Short Hand
root position	root	7 5 3	7
first inversion	third	6 5 3	$\overset{6}{5}$
second inversion	fifth	6 4 3	$\overset{6}{4}3$
third inversion	Seventh	6 4 2	$\overset{4}{2}$ or 2

Activity 7.3:

In this activity you will be asked to identify various seventh chords and their inversions.

Exercise 7.3a:



G: ?

What roman numeral should appear in place of the question mark? Be sure to indicate the inversion in your answer.

[Answer: $ii^{\flat 6}_5$. Response for correct roman numeral but wrong inversion: “That is the correct roman numeral, but the wrong inversion. Try again. (Hint: Which member of the chord is in the bass?)” Response for correct inversion but wrong roman numeral: “That is the correct inversion, but the wrong roman numeral. Try again. (Hint: The root of the chord is which scale degree in G major?)”]

Exercise 7.3b:



F: ?

What roman numeral should appear in place of the question mark? Be sure to indicate the inversion in your answer.

[Answer: V_5^6 . Response for correct roman numeral but wrong inversion: “That is the correct roman numeral, but the wrong inversion. Try again. (Hint: Which member of the chord is in the bass?)” Response for correct inversion but wrong roman numeral: “That is the correct inversion, but the wrong roman numeral. Try again. (Hint: The root of the chord is which scale degree in F major?)”]

Exercise 7.3c:

What roman numeral should appear in place of the question mark? Be sure to indicate the inversion in your answer.

[Answer: vii^{07} . Response for correct roman numeral but wrong inversion: “That is the correct roman numeral, but the wrong inversion. Try again. (Hint: Which member of the chord is in the bass?)” Response for correct inversion but wrong roman numeral: “That is the correct inversion, but the wrong roman numeral. Try again. (Hint: The root of the chord is which scale degree in B minor?)”]

Exercise 7.3d:

What roman numeral should appear in place of the question mark? Be sure to indicate the inversion in your answer.

[Answer: V_2^4 . Response for correct roman numeral but wrong inversion: “That is the correct roman numeral, but the wrong inversion. Try again. (Hint: Which member of the chord is in the bass?)” Response for correct inversion but wrong roman numeral: “That is the correct inversion, but the wrong roman numeral. Try again. (Hint: The root of the chord is which scale degree in G minor?)”]

Activity 7.4:

In this activity you will build various types of seventh chords in different keys.

Exercise 7.4a:

Write a vii^{07} chord in E minor in four-part SATB voicing.

[Answer: D# in the bass, F#/A/C in the upper voices in any arrangement.]

Exercise 7.4b:

g: $ii_5^{\flat 6}$ Write a $ii_5^{\flat 6}$ chord in G minor in four-part SATB voicing.[Answer: C in the bass, A/E^b/G in the upper voices in any arrangement.]

Exercise 7.4c:

A: V_3^4 Write a V_3^4 chord in A major in four-part SATB voicing.[Answer: B in the bass, E/G[#]/D in the upper voices in any arrangement.]

Exercise 7.4d:

B^b: V_2^4 Write a V_2^4 chord in B^b major in four-part SATB voicing.[Answer: E^b in the bass, F/A/C in the upper voices in any arrangement.]**Preparing and resolving seventh chords:**

As mentioned earlier, the characteristic feature of a seventh chord is the dissonant seventh formed with the root. This dissonance is unstable and must resolve. Chordal sevenths always resolve downward by step. This can be explained by considering the origin of the seventh chord. Example 5 shows a common cadential pattern where the octave above the bass in the V chord (scale degree $\hat{5}$) steps down through a passing tone to scale degree $\hat{3}$. Over time, this passing tone became incorporated into the chord (as shown by the arrow).

Example 5:

V - 7 I \longrightarrow V⁷ I

In the previous section we saw that seventh chords can be categorized according to their intervallic content and their sonority. However, not all seventh chords are treated equally. A seventh chord built

on scale degree $\hat{1}$, for example, is always the result of a melodic phenomenon and should be analyzed as a triad (to do otherwise would undermine its primacy in defining tonality). Seventh chords built on scale degrees $\hat{2}$, $\hat{3}$, $\hat{4}$, $\hat{5}$, $\hat{6}$, and $\hat{7}$, however, occur frequently in tonal music and the rules for approaching and resolving them are similar. (The V^7 chord, as mentioned above, is a special case and has its own lesson: Lesson FFF.)

The following example shows a typical progression involving a seventh chord—in this case, a ii_5^6 chord:

Example 6:

I ii_5^6 V

Note that the seventh of the ii_5^6 chord (C in the tenor voice) is prepared as a common tone by the preceding I chord. As mentioned above, the seventh of a seventh chord is a dissonance and originated as a melodic event. The preparation of a chordal seventh as a common tone with the preceding harmony is the ideal voice leading into a seventh chord. Stepwise motion to the chordal seventh would be the next best alternative, should common-tone preparation be impossible. Chordal sevenths are seldom approached by leap as this would overemphasize the dissonance.

Activity 7.5:

In this activity you will be asked to complete a progression from I to ii_5^6 .

Exercise 7.5a:

In the following example, which voice will contain the seventh of the ii_5^6 chord?

G: I ii_5^6

[Answer: tenor. Response if correct. “Correct! The tenor will prepare the seventh of the ii_5^6 as a common tone G from the I chord.” Response if incorrect: “Incorrect. Remember, the seventh of the ii_5^6 chord should be prepared as a common tone. Try again.”]

[Follow-up activity:] Complete the ii_5^6 by adding the two remaining voices.

[Answer:

G: I ii_5^6]

Exercise 7.5b:

In the following example, which voice will contain the seventh of the ii_5^6 chord?

Chord progression: $E_b: I \ ii_5^6$

[Answer: soprano. Response if correct. “Correct! The soprano will prepare the seventh of the ii_5^6 as a common tone E^b from the I chord.” Response if incorrect: “Incorrect. Remember, the seventh of the ii_5^6 chord should be prepared as a common tone. Try again.”]

[Follow-up activity:] Complete the ii_5^6 by adding the two remaining voices.

[Answer:

Chord progression: $E_b: I \ ii_5^6$

Exercise 7.5c:

In the following example, which voice will contain the seventh of the ii_5^6 chord?

Chord progression: $A: I \ ii_5^6$

[Answer: soprano. Response if correct. “Correct! The soprano will prepare the seventh of the ii_5^6 as a common tone A from the I chord.” Response if incorrect: “Incorrect. Remember, the seventh of the ii_5^6 chord should be prepared as a common tone. Try again.”]

[Follow-up activity:] Complete the ii_5^6 by adding the two remaining voices.

[Answer:

Chord progression: $A: I \ ii_5^6$

Exercise 7.5d:

In the following example, which voice will contain the seventh of the ii_5^6 chord?

Chord progression: $F: I \ ii_5^6$

[Answer: alto. Response if correct. “Correct! The alto will prepare the seventh of the ii_5^6 as a common tone F from the I chord.” Response if incorrect: “Incorrect. Remember, the seventh of the ii_5^6 chord should be prepared as a common tone. Try again.”]

[Follow-up activity:] Complete the ii_5^6 by adding the two remaining voices.

[Answer:

F: I ii_5^6

Seventh chords typically resolve by falling-fifth root motion. In other words, a seventh chord will normatively resolve to the sonority whose root is a fifth below (or a fourth above) its own root. In Example 6, the ii_5^6 chord (whose root is D) resolves to V (whose root, A, is a fifth below). Note that the falling-fifth root motion is not affected by the fact that the ii_5^6 chord appears in inversion.

As a dissonance, the seventh of any seventh chord requires resolution. Because of its descending passing-tone origin, the seventh always resolves down by step. In the tenor voice of Example 6, the seventh of the ii_5^6 chord steps down to B in following the V chord.

Activity 7.6:

In this activity you will continue the “I - ii_5^6 ” progressions from the Activity 7.5 by adding a V chord.

Exercise 7.6a:

Where should the chordal seventh of the ii_5^6 (G) chord resolve to?

G: I ii_5^6 V

[Answer: F[#]. Response if correct: “Correct! The chordal seventh resolves down by step to F[#].” Response if incorrect: “Incorrect. Remember, the chordal seventh must resolve down by step. Try again.”]

[Follow-up activity:] Complete the V chord by adding the resolution of the chordal seventh and the two remaining voices.

[Answers:

G: I ii_5^6 V or G: I ii_5^6 V

Exercise 7.6b:

Where should the chordal seventh of the ii^6_5 (E^b) chord resolve to?

Eb: I ii^6_5 V

[Answer: D. Response if correct: "Correct! The chordal seventh resolves down by step to D."]

Response if incorrect: "Incorrect. Remember, the chordal seventh must resolve down by step. Try again."]

[Follow-up activity:] Complete the V chord by adding the resolution of the chordal seventh and the two remaining voices.

[Answers:

Eb: I ii^6_5 V or Eb: I ii^6_5 V

Exercise 7.6c:

Where should the chordal seventh of the ii^6_5 (A) chord resolve to?

A: I ii^6_5 V

[Answer: $G^\#$. Response if correct: "Correct! The chordal seventh resolves down by step to $G^\#$."]

Response if incorrect: "Incorrect. Remember, the chordal seventh must resolve down by step. Try again."]

[Follow-up activity:] Complete the V chord by adding the resolution of the chordal seventh and the two remaining voices.

[Answers:

A: I ii^6_5 V or A: I ii^6_5 V

Exercise 7.6d:

Where should the chordal seventh of the ii^6_5 (F) chord resolve to?

F: I ii⁵₆ V

[Answer: E. Response if correct: “Correct! The chordal seventh resolves down by step to E.”
Response if incorrect: “Incorrect. Remember, the chordal seventh must resolve down by step. Try again.”]

[Follow-up activity:] Complete the V chord by adding the resolution of the chordal seventh and the two remaining voices.

[Answers:

F: I ii⁵₆ V or F: I ii⁵₆ V

Example 6 demonstrates the proper preparation and resolution of a chordal seventh using a ii⁷ chord as an example, but this treatment can be used for any seventh chord. Consider the following example:

Example 7:

iii vi⁷ ii

Example 7 shows a progression where a vi⁷ chord, prepared by a iii chord, resolves to a ii chord. Again, we see the falling-fifth motion between the root of the vi⁷ chord (A) and the resolution ii chord (D). The seventh of the vi⁷ chord (G) is prepared as a common tone in the preceding iii chord, and resolved downwards by step to F. These same rules may be used for any other seventh chord. A iii⁷ chord, for example, typically resolves to vi. (These two seventh chords, vi⁷ and iii⁷, are usually found in root position.)

Popup Box: Because chordal sevenths are inherently dissonant, they must be treated carefully. Keep the following guidelines in mind when approaching and resolving seventh chords.

- **Chordal seventh should be prepared as a common tone:** Ideally, a chordal seventh should be prepared as a common tone by the preceding harmony in order to lead as smoothly as possible into the dissonance. If the seventh cannot be prepared as a common tone, approach by step is the next best alternative. Leaping to the chordal seventh should be avoided.
- **Falling-fifth root motion:** In most cases, the root of the chord of resolution will be a fifth below the root of the seventh chord.
- **Chordal seventh descends by step:** Because of the origin as accented passing tones, chordal sevenths must always resolve downwards by step.

Specific seventh chords and their functions:

Some seventh chords have specific functions. In the following sections, we will explore the unique roles played by several seventh chords: the supertonic seventh chord, the subdominant seventh chord, and the leading-tone seventh chord.

The supertonic seventh chord (ii^7 in major; $ii^{\flat 7}$ in minor):

Second to the dominant seventh chord (V^7), the supertonic seventh chord (ii^7 in major; $ii^{\flat 7}$ in minor) is the most commonly used seventh chord. Recall that the triad built on scale degree $\hat{2}$ typically functions as a pre-dominant. The seventh of the supertonic seventh chord heightens that pre-dominant function because the dissonant seventh increases the necessity for resolution, and creates a sense of motion toward V.

As a pre-dominant, the supertonic seventh chord often appears in progressions approaching V. The supertonic seventh chord may appear in any position, but first inversion (ii^6_5) is quite common. Example 8 shows the progression used above in which a ii^6_5 chord, prepared by I, leads to V:

Example 8:

I ii^6_5 V

As mentioned above, the rules for proper approach and resolution of the ii^6_5 chord are all in place: the chordal seventh is prepared as a common tone, the seventh chord resolves by falling-fifth root motion, and the chordal seventh resolves downwards by step.

The ii^6_5 chord may also move to a dominant with 6_4 suspensions in the upper voices. Example 9 adds a 6_4 suspension to the progression given in Example 8. Note that the suspended 4th above the bass delays the obligatory descending stepwise resolution of the seventh of the ii^7 (C in the tenor):

Example 9:

Example 9 shows a four-measure progression in a grand staff. The chords are: I (C major), ii^6_5 (D minor, first inversion), V^6_4 (G major, second inversion), and a triad (C major) with a 5/3 interval. The notes are: C4, E4, G4 for I; F4, A4, C5 for ii^6_5 ; B3, D4, F4 for V^6_4 ; and C4, E4, G4 for the final triad.

Finally, the supertonic seventh chord can also appear in root position. Though occurring less frequently than the supertonic seventh chord in first inversion, the root-position supertonic seventh chord is also a possible precursor to V.

Example 10:

Example 10 shows a three-measure progression in a grand staff. The chords are: I^6 (C major, first inversion), ii^7 (D minor, root position), and V^7 (G major, seventh). The notes are: E4, G4, C5 for I^6 ; F4, A4, C5 for ii^7 ; and B3, D4, F4, G4 for V^7 .

As in Example 8, the seventh of the ii^7 chord is held over as a common tone from the I chord (this time in the soprano). In Example 10, the third of the ii^7 chord (F) appears in an upper voice instead of the bass and is therefore not obligated to step up to the root of the V chord (see F - G in the bass of Example 8). Instead, it is held as a common tone, thereby again preparing the seventh of the V^7 . Because of this, ii^7 typically moves to a V^7 chord instead of a triad. Note also the proper resolution of the seventh of the ii^7 chord: the C in the soprano steps down to the leading tone (B) of the V^7 chord.

Other inversions of the supertonic seventh chord ($\frac{4}{3}$ and $\frac{4}{2}$) may be used, but do not typically appear in cadential situations but rather midstream in progressions leading up to a cadence.

The subdominant seventh chord (IV^7 in major; iv^7 in minor):

The diatonic seventh chord built on scale degree $\hat{4}$ —the subdominant seventh chord (IV^7 in major; iv^7 in minor)—is closely related to the supertonic seventh chord differing only by one member. It too has a pre-dominant function, leading to V. By far, IV^7 appears most frequently in root position. Example 11 shows the typical voice leading in the progression I - IV^7 - V:

Example 11:

Example 11 shows a three-measure progression in a grand staff. The chords are: I (C major), IV^7 (F major, seventh), and V (G major). The notes are: C4, E4, G4 for I; F4, A4, C5, F4 for IV^7 ; and B3, D4, F4, G4 for V.

You should be able to recognize most of the same conventions from Example 6. The seventh of the IV⁷ chord (E) is prepared by common tone from the preceding I chord. As the harmony changes on the third beat, the seventh resolves downwards by step—in this case to D, the fifth of the V chord. Because the seventh chord does not resolve by falling root-motion, one exception to conventional voice leading can be found in the tenor voice. Note how the tenor leaps from A down to D as the IV⁷ moves to V. This leap is necessary in order to avoid what would otherwise have been parallel fifths between the tenor and alto had the tenor moved to the nearest member of the V chord (D). The result of the exceptional voice leading is a doubled fifth in the V chord.

Activity 7.7:

In this activity you will complete a “I - IV⁷ - V” progression in four voices. In each exercise, the voicing of the I chord has been given to you. (Remember, the seventh of the IV⁷ chord must be prepared as a common tone and must resolve downwards by step. Also, be sure to avoid parallel fifths in the move from IV⁷ to V.)

Exercise 7.7a:

Complete the following progression by filling in the remaining notes for the upper voices:

G: I IV⁷ V

[Answer:

G: I IV⁷ V

Exercise 7.7b:

Complete the following progression by filling in the remaining notes for the upper voices:

A: I IV⁷ V

[Answer:

A: I IV⁷ V

Exercise 7.7c:

Complete the following progression by filling in the remaining notes for the upper voices:

F: I IV⁷ V

[Answer:

F: I IV⁷ V

Exercise 7.7d:

Complete the following progression by filling in the remaining notes for the upper voices:

E^b: I IV⁷ V

[Answer:

E^b: I IV⁷ V

The leading-tone seventh chord (vii^{o7} in major; vii^{o7} in minor):

The leading-tone seventh chord (vii^{o7} in major; vii^{o7} in minor) is a uniquely dissonant sonority. The triad built on the leading tone naturally has a diminished fifth between the root and fifth of the chord. Adding a seventh (scale degree $\hat{6}$) to this sonority increases the dissonance. The chordal seventh forms the interval of a minor seventh with the root in major keys, and the interval of a diminished seventh with the root in minor keys, as illustrated here:

Example 12:

C: vii^oc: vii^o

The leading-tone seventh chord differs both in content and function from supertonic and subdominant seventh chords. As its name indicates, the leading-tone seventh chord includes the leading tone as its root and also shares scale degrees $\hat{2}$ and $\hat{4}$ with the dominant seventh chord. For these reasons, the leading-tone seventh chord often serves as a substitute for a dominant harmony.

Resolution of the leading-tone seventh chord follows many of the same voice-leading conventions as the vii^o triad. As discussed in Lesson FFF, the vii^o triad contains a tritone, a dissonance that must be

resolved properly. If the tritone appears as a diminished fifth, both voices will normally resolve inwards by step to form a third. If, on the other hand, the tritone is in the form of an augmented fourth, the voices will expand outwards by step to form a sixth. In either case, scale degrees $\hat{7}$ and $\hat{4}$ fulfill their tendencies to resolve to $\hat{1}$ and $\hat{3}$ respectively.

The fully-diminished $\text{vii}^{\circ 7}$ chord contains an additional tritone (between scale degrees $\hat{2}$ and $\hat{6}$). The same rules for resolution apply to this tritone. Typically, this has scale degree $\hat{2}$ stepping up to $\hat{3}$ and scale degree $\hat{6}$ stepping down to $\hat{5}$. The following example shows a typical resolution of a $\text{vii}^{\circ 7}$ chord. Note that resolving the two tritones normatively results in a i chord with doubled third.

Example 13:

$\text{vii}^{\circ 7}$ i

The half-diminished seventh chord ($\text{vii}^{\flat 7}$ in major keys) resolves similarly. The tritone formed by the leading tone and scale degree $\hat{4}$ should resolve according to the interval progressions outlined in Lesson FFF. The $\text{vii}^{\flat 7}$ chord differs from the $\text{vii}^{\circ 7}$ chord in that the interval between scale degrees $\hat{2}$ and $\hat{6}$ is a perfect fifth instead of a diminished fifth. Regardless, these two voices may resolve similarly to Example 11. Scale degree $\hat{6}$ tends to resolve to $\hat{5}$, in which case $\hat{2}$ must resolve upwards to $\hat{3}$ to avoid forming parallel fifths. The following example shows a half-diminished seventh chord resolving to I :

Example 14:

$\text{vii}^{\flat 7}$ i

Activity 7.8:

In this activity you will be presented with a series of fully-diminished and half-diminished seventh chords. For each exercise you will be asked to identify the tritones and then resolve the chord to the tonic triad.

Exercise 7.8a:

Identify the tritones in the $\text{vii}^{\circ 7}$ chord:

a: $\text{vii}^{\circ 7}$ i

[Answer: G[#]/D and B/F. Response if correct: “Correct! G[#] and D form a diminished fifth while B and F also form a diminished fifth.” Response if incorrect: “Incorrect. Remember, in a vii^{o7} chord, scale degrees $\hat{7}$ and $\hat{4}$ form one tritone and $\hat{2}$ and $\hat{6}$ form the other. Try again.”]

[Follow-up activity:] Now resolve the vii^{o7} to i.

[Answer:

a: vii^{o7} i

Exercise 7.8b:

Identify the tritones in the vii^{o7} chord:

d: vii^{o7} i

[Answer: C[#]/G and B^b/E. Response if correct: “Correct! C[#] and G form a diminished fifth while B^b and E form augmented fourth.” Response if incorrect: “Incorrect. Remember, in a vii^{o7} chord, scale degrees $\hat{7}$ and $\hat{4}$ form one tritone and $\hat{2}$ and $\hat{6}$ form the other. Try again.”]

[Follow-up activity:] Now resolve the vii^{o7} to i.

[Answer:

d: vii^{o7} i

Exercise 7.8c:

Identify the tritone in the vii^{o7} chord:

D: vii^{o7} I

[Answer: C[#]/G. Response if correct: “Correct! C[#] and G form a diminished fifth.” Response if incorrect: “Incorrect. Remember, in a vii^{o7} chord, scale degrees $\hat{7}$ and $\hat{4}$ form a tritone. Try again.”]

[Follow-up activity:] Now resolve the vii^{o7} to i.

[Answer:

D: vii^{o7} I

Exercise 7.8d:Identify the tritone in the $\text{vii}^{\text{o}7}$ chord:E \flat : $\text{vii}^{\text{o}7}$ I

[Answer: D/A. Response if correct: “Correct! D and A form a diminished fifth.” Response if incorrect: “Incorrect. Remember, in a $\text{vii}^{\text{o}7}$ chord, scale degrees $\hat{7}$ and $\hat{4}$ form a tritone. Try again.”]

[Follow-up activity:] Now resolve the $\text{vii}^{\text{o}7}$ to i.

[Answer:

E \flat : $\text{vii}^{\text{o}7}$ I**Conclusion:**

Seventh chords lend variety to the tonal landscape, offering richer, fuller textures than their triad counterparts by adding dissonance. They may be built on any scale degree. However, a I^7 chord would undermine the importance of the tonic harmony and should therefore be analyzed as a triad.

Because of the added dissonance, seventh chords must be treated carefully. To avoid overemphasizing the dissonance, chordal sevenths are ideally prepared by common tone with the preceding chord or through stepwise motion. Seventh chords typically resolve through falling-fifth root motion. In other words, the root of the chord of resolution will be a fifth below (or a fourth above) the root of the seventh chord. Chordal sevenths have their origin as passing tones. Because of this, all chordal sevenths must resolve downwards by step.

Some seventh chords—the supertonic seventh chord, the subdominant seventh chord, the leading-tone seventh chord, and particularly the dominant seventh chord—have specific functions in tonal music. The supertonic and subdominant seventh chords have pre-dominant functions while the leading-tone seventh chord and dominant seventh chord have dominant functions.

Lesson HHH – Nonharmonic Tones

Introduction:

When analyzing tonal music, you will frequently find pitches that do not match those of the harmonies and are therefore dissonant against them. Pitches that do not belong to the prevailing harmony are called nonharmonic tones. In tonal music, nonharmonic tones are used to embellish chords, to allow for distinctive profiles for melodic lines, and in general to animate the musical texture.

Knowing about nonharmonic tones and being able to identify and name them are indispensable for understanding tonal harmony. Without a firm grasp of the types and nature of nonharmonic tones, harmonic analysis becomes confusing and potentially nonsensical. A clear understanding of nonharmonic tones is crucial for distinguishing between structural harmonies and what we will call auxiliary sonorities, those chords that consist partially or wholly of nonharmonic tones (see Lesson III: Auxiliary Sonorities).

In this lesson we will discuss four types of nonharmonic tones. In the first section we will focus on nonharmonic tones that arise from melodic motion: passing tones and neighbor tones. We will then discuss nonharmonic tones that arise from rhythmic action: suspensions and anticipations.

Melodically derived nonharmonic tones:

Passing tones:

Passing tones are nonharmonic tones that fill in the spaces between chord tones. By definition, passing tones are always approached and left by step in the same direction. Consider the following basic interval progression (see Lesson AAA):

Example 1:

6 10

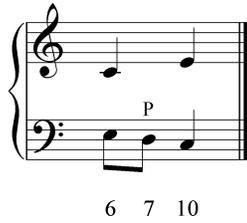
In Example 1, the upper voice may be embellished by adding a passing tone (labeled “P”):

Example 2:

6 7 10

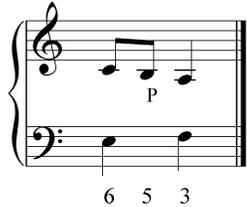
The lower voice could also be embellished with a passing tone:

Example 3:



Passing tones typically create dissonance, as in Examples 2 and 3. However, a passing tone forming part of a “5 - 6” or “6 - 5” progression is of course consonant, as in Example 4:

Example 4:



Activity 8.1:

In this activity, you will be presented with a series of basic interval progressions. For each progression, identify a potential location for a passing tone.

Exercise 8.1a:

Given the following interval progression, where might a diatonic passing tone be inserted? Insert a valid diatonic passing tone.



[Answer: G between F[#] and A in the upper voice. Incorrect answer response: “Incorrect. Try again.”]

Exercise 8.1b:

Given the following interval progression, where might a diatonic passing tone be inserted? Insert a valid diatonic passing tone.



[Answer: G between A and F in the upper voice or G between F and A in the lower voice. Incorrect answer response: “Incorrect. Try again.”]

Exercise 8.1c:

Given the following interval progression, where might a diatonic passing tone be inserted? Insert a valid diatonic passing tone.



[Answers: A between G[#] and B in the upper voice or F[#] between E and G[#] in the lower voice. Incorrect answer response: “Incorrect. Try again.”]

Exercise 8.1d:

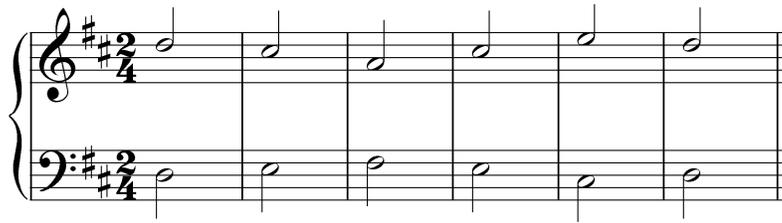
Given the following interval progression, where might a diatonic passing tone be inserted? Insert a valid diatonic passing tone.



[Answer: D between E^b and C in the upper voice or D between C and E^b in the lower voice. Incorrect answer response: “Incorrect. Try again.”]

Exercise 8.2:

Insert three diatonic passing tones into the following passage: [Students can insert passing tones by entering a note or by selecting the two tangent pitches.]



[Possible answers:

- B between C# and A in upper voice, m. 2
- B between A and C# in upper voice, m. 3
- D between C# and E in upper voice, m. 4
- D between E and C# in lower voice, m. 4

Incorrect answer response: “Incorrect. A passing tone cannot be inserted there. Try again”]

Typically, as in Examples 2 through 4, passing tones fill in the interval of a third, but two passing tones may be used consecutively to fill in a fourth between chord tones, as illustrated here.

Example 5:



3 8

Example 6:



3 4 5 8

Example 5 presents an expansion of a C-major chord over two beats: the lower voice skips down from the third of the chord to the root while the upper voice skips from the fifth up to the root. The skip of a fourth in the upper voice can be filled in with two passing tones, A and B. (Although the B is consonant

with the bass, it is still considered a nonharmonic passing tone since it does not belong to the prevailing C-major harmony.)

Passing tones routinely occur between beats or on metrically unaccented beats, but may also be rhythmically or metrically accented, as shown here.

Example 7:

When a passing tone occurs on the beat it is called an *accented* passing tone. In Example 7—as in Example 2—the E in the upper voice is the chord tone and the D is the nonharmonic passing tone. The occurrence of D on the beat with C in the bass emphasizes the dissonance, giving it a sharper effect (listen again and compare Examples 2 and 7). An accented passing tone may be understood as a rhythmic displacement. The pitches are the same in Examples 2 and 7; the only difference is their rhythmic placement. In Example 7 the passing tone D has been rhythmically displaced from between beats 1 and 2 to fall directly on beat 2, for its greater effect there.

Because passing tones are nonharmonic, they are not required to be diatonic. Example 8 shows a chromatic passing tone (G[#]) embellishing the upper voice of a “3 - 6” progression:

Example 8:

Activity 8.3:

In this activity, you will be asked to identify different kinds of passing tones and describe what type each one is.

Exercise 8.3a:

Which note is the passing tone?

[Answer: G^b. Incorrect answer response: “Incorrect. Try again.”]

Follow-up multiple choice question: What type of passing tone is it?

- Unaccented diatonic passing tone
- Accented diatonic passing tone
- Unaccented chromatic passing tone
- Accented chromatic passing tone

[Answer: Unaccented chromatic passing tone. Incorrect answer response: “Incorrect. Try again.”]

Exercise 8.3b:



Which note is the passing tone?

[Answer: D. Incorrect answer response: "Incorrect. Try again."]

Follow-up multiple choice question: What type of passing tone is it?

- Unaccented diatonic passing tone
- Accented diatonic passing tone
- Unaccented chromatic passing tone
- Accented chromatic passing tone

[Answer: Unaccented diatonic passing tone. Incorrect answer response: "Incorrect. Try again."]

Exercise 8.3c:



Which note is the passing tone?

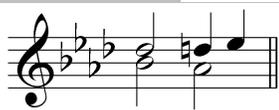
[Answer: C. Incorrect answer response: "Incorrect. Try again."]

Follow-up multiple choice question: What type of passing tone is it?

- Unaccented diatonic passing tone
- Accented diatonic passing tone
- Unaccented chromatic passing tone
- Accented chromatic passing tone

[Answer: Accented diatonic passing tone. Incorrect answer response: "Incorrect. Try again."]

Exercise 8.3d:



Which note is the passing tone?

[Answer: D natural. Incorrect answer response: "Incorrect. Try again."]

Follow-up multiple choice question: What type of passing tone is it?

- Unaccented diatonic passing tone
- Accented diatonic passing tone
- Unaccented chromatic passing tone
- Accented chromatic passing tone

[Answer: Accented chromatic passing tone. Incorrect answer response: "Incorrect. Try again."]

Neighbor tones:

While a passing tone connects two chord tones, a neighbor tone embellishes a single chord tone. In its most common form, a neighbor tone is approached by step and left by step in the opposite direction (returning to the original pitch). There are, therefore, two types of neighbor tones: upper and lower. Example 9 shows a melodic embellishment with an upper neighbor tone:

Example 9:



Here the E is embellished by stepping up to the dissonant F. The melody then returns to E, completing the neighbor tone figuration. Example 10 shows the same situation, though this time with a lower neighbor tone:

Example 10:



Neighbor tones, like passing tones, can be accented or unaccented; diatonic or chromatic. The following examples each show an accented neighbor tone:

Example 11:



Example 12:



In Examples 11 and 12, the C in the bass is held for two beats. An accented neighbor note (lower in Example 11 and upper in Example 12) appears on the second beat before resolving on the second eighth note of the same beat.

Chromatic neighbor tones can occur as lower neighbors, as in Example 13:

Example 13:



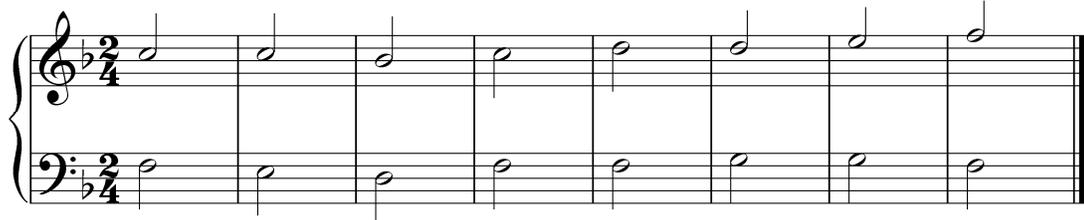
or as upper neighbors, as shown in Example 14:

Example 14



Activity 8.4:

Insert three diatonic neighbor tones into the following passage: [Students can insert neighbor tones by entering a note.]



[Possible answers:

- D between the Cs in upper voice, m. 1
- B^b between the Cs in upper voice, m. 1
- E between the Ds in upper voice, m. 5
- C between the Ds in upper voice, m. 5
- G between the Fs in lower voice, m. 4
- E between the Fs in lower voice, m. 4
- A between the Gs in lower voice, m. 6
- F between the Gs in lower voice, m. 6

Incorrect answer response: “Incorrect. A passing tone cannot be inserted there. Try again”]

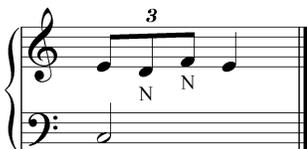
A chord tone may be decorated with two neighbor tones:

Example 15:



In Example 15, the E in the upper voice is first decorated with a lower neighbor (D) and then with an upper neighbor (F). A chord tone may also be embellished with two neighbor tones without returning to the main pitch in between. This figuration, known as a *double neighbor*, can be seen in Example 16:

Example 16:



Activity 8.5:

In this activity, you will be asked to identify different kinds of passing tones and describe what type each one is.

Exercise 8.5a:



Which note is the neighbor tone?

[Answer: B^b. Incorrect answer response: "Incorrect. Try again."]

Follow-up multiple choice question: What type of passing tone is it?

- Upper diatonic neighbor tone
- Lower diatonic neighbor tone
- Upper chromatic neighbor tone
- Lower chromatic neighbor tone
- Double neighbor tones

[Answer: Upper chromatic neighbor tone. Incorrect answer response: "Incorrect. Try again."]

Exercise 8.5b:



Which note is the neighbor tone?

[Answer: C[#] natural. Incorrect answer response: "Incorrect. Try again."]

Follow-up multiple choice question: What type of passing tone is it?

- Upper diatonic neighbor tone
- Lower diatonic neighbor tone
- Upper chromatic neighbor tone
- Lower chromatic neighbor tone
- Double neighbor tones

[Answer: Lower chromatic neighbor tone. Incorrect answer response: "Incorrect. Try again."]

Exercise 8.5c:



Which notes are the neighbor tones?

[Answer: D[#] and F[#]. Incorrect answer response: "Incorrect. Try again."]

Follow-up multiple choice question: What type of passing tone is it?

- Upper diatonic neighbor tone
- Lower diatonic neighbor tone
- Upper chromatic neighbor tone
- Lower chromatic neighbor tone
- Double neighbor tones

[Answer: Double neighbor tones. Incorrect answer response: "Incorrect. Try again."]

Exercise 8.5d:



Which note is the neighbor tone?

[Answer: D. Incorrect answer response: "Incorrect. Try again."]

Follow-up multiple choice question: What type of passing tone is it?

- Upper diatonic neighbor tone
- Lower diatonic neighbor tone
- Upper chromatic neighbor tone
- Lower chromatic neighbor tone
- Double neighbor tones

[Answer: Lower diatonic neighbor tone. Incorrect answer response: "Incorrect. Try again."]

Incomplete neighbor tones:

Unlike passing tones, neighbor tones need not always be approached *and* left by step. When a neighbor tone is approached by leap and left by step, or vice versa, it is known as an *incomplete* neighbor tone. In the following example, the note E in the upper voice is decorated by the neighbor tone F, which is approached by leap and resolved by step.

Example 17:



Instead of approaching the nonharmonic neighbor tone by step (as would be the case with a complete neighbor tone), the upper voice skips up from C up to the neighbor F, forming a dissonant ninth with the lower voice. The nonharmonic tone then resolves by step down to E. Example 18 shows another example of an incomplete upper neighbor, this time embellishing the first of two structural notes:

Example 18:



Here, the upper voice steps up to the upper neighbor E. Then, instead of resolving back down to D before continuing to C, the voice skips away from the dissonant nonharmonic tone, down to C, a chord tone, on the second beat. (This particular type of embellishment, an upper incomplete neighbor note, is called an *échappée*, or *escape tone*, by some authors.)

Lower neighbors may appear in incomplete form as well. In Example 19, the chord tone C in the upper voice is approached with a dissonant incomplete lower neighbor (B):

Example 19:

Musical notation for Example 19. The treble clef contains a quarter note G4, an eighth note F#4, and a quarter note E4. The bass clef contains a quarter note D3 and a quarter note C3. Below the bass clef, the fingerings 10, 7, and 6 are indicated for the notes G, F#, and E respectively.

Incomplete neighbor tones have a different effect than complete neighbor tones because they involve a leap. The leap, especially when the incomplete neighbor forms a dissonance, draws attention to the nonharmonic tone by changing the contour of the melodic line.

The examples of incomplete neighbor tones shown so far are unaccented. However, they also appear in accented form. Example 20 uses the same pitches as Example 17, though here the neighbor tone is rhythmically displaced to produce an accented incomplete upper neighbor tone on beat two:

Example 20:

Musical notation for Example 20. The treble clef contains a quarter note G4, an eighth note A4, and a quarter note E4. The bass clef contains a quarter note D3 and a quarter note C3. Below the bass clef, the fingerings 3, 7, and 6 are indicated for the notes G, A, and E respectively.

The term *appoggiatura* is generally used instead of the cumbersome “accented incomplete upper (or lower) neighbor tone.”

As in the example above, appoggiaturas leap into a dissonant accented neighbor tone and then resolve by step in the opposite direction.

Activity 8.6:

In this activity you will be asked to identify various types of passing and neighbor tones in several excerpts of chorales by J.S. Bach.

Exercise 8.6a:

Identify an unaccented passing tone in this excerpt (J.S. Bach, BWV 411, “Singt dem Herrn ein neues Lied,” mm. 1-2):

Musical notation for Exercise 8.6a. The treble clef contains a quarter note G4, an eighth note A4, and a quarter note E4. The bass clef contains a quarter note D3 and a quarter note C3. The notes are unaccented.

[Answers:

Musical notation for the answer to Exercise 8.6a. The treble clef contains a quarter note G4, an eighth note A4, and a quarter note E4. The bass clef contains a quarter note D3 and a quarter note C3. Red dots are placed under the notes A4 and D3 to highlight the unaccented passing tone.

Exercise 8.6b:

Identify an unaccented upper neighbor tone in this excerpt (J.S. Bach, BWV 411, "Singt dem Herrn ein neues Lied," mm. 1-2):

[Answers:

Exercise 8.6c:

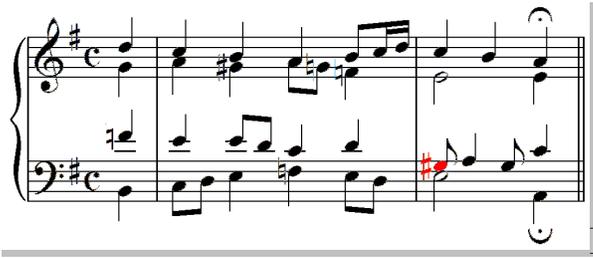
Identify an unaccented lower neighbor tone in this excerpt (J.S. Bach, BWV 411, "Singt dem Herrn ein neues Lied," mm. 1-2):

[Answer:

Exercise 8.6d:

Identify an appoggiatura (accented incomplete neighbor tone) in this excerpt (J.S. Bach, BWV 153.1, "Ach Gott, vom Himmel sieh' darein," mm. 2-4):

[Answer:



Exercise 8.6e:

Identify an accented passing tone in this excerpt (J.S. Bach, BWV 154.8, “Meinen Jesum laß ich nicht, weil er sich für mich gegeben,” mm 1-2):



[Answer:



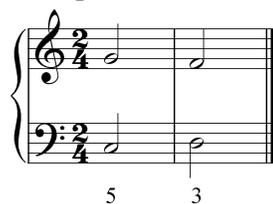
Rhythmically derived nonharmonic tones:

Passing and neighbor tones are nonharmonic tones that fill out or embellish a melody. But that is not the case with all nonharmonic tones. Some result from rhythmic activity and do not add pitches to an underlying basic interval progression. The two main types of rhythmic figurations are suspensions and anticipations. Like passing and neighbor tones, these can be understood as alterations of a basic interval progression framework, this time affecting the rhythm instead of the melody.

Suspensions:

A suspension is a nonharmonic tone that results when a note is held over (suspended) from the preceding harmony, thus rhythmically delaying its melodic continuation, and intruding as a nonharmonic tone on the subsequent harmony. Consider the following familiar interval progression:

Example 21:



What would happen if the upper voice began one beat after than the lower voice? The G in the upper voice would be held over into the second measure while the lower voice continued its melodic ascent to D:

Example 22:

In Example 22, the consonant G of the upper voice prepares the dissonant suspension, a nonharmonic tone, on the following beat. On the downbeat of the second measure, the upper voice holds (suspends) the G as the lower voice changes, creating a dissonant fourth. This is the actual moment of suspension. Finally, the dissonant G resolves down to the chord tone F on the second quarter note of the bar. The F is the resolution of the suspension. This particular suspension is referred to as a “4 - 3 suspension.” (The suspension may be tied to the preparation, as in this case, or it may repeat the pitch.) It is helpful to think of the suspension as occurring in three consecutive stages, the preparation, the suspension, and the resolution:

Example 23:

It is important to note the positions of each part of a suspension: the preparation occurs in a metrically weak position and the suspension occurs in a metrically strong position. Unlike passing and neighbor tones, suspensions are always accented. In Examples 22 and 23, the preparation occurs on the weak beat of the measure while the suspension falls on a downbeat. One common deviation from this pattern finds an extended note forming the preparation:

Example 24:

In Example 24, the G in the upper voice is extended into the second measure before stepping down to F, thus creating a dissonant “4 - 3” suspension.

There are two important rules to remember regarding the resolution of suspensions:

1. Suspensions must always resolve by step (half-step or whole-step).

2. Suspensions usually resolve downward. (Suspended notes that resolve upward are called retardations and will be discussed momentarily.)

Pop-up Box: Rule 1 above states that suspensions must always resolve by step. Occasionally a dissonant suspension will leap to a chord tone and from there leap to the expected resolution, as in the following example:

Example 25:

5 4 8 3

Example 26:

5 4 7 3

In Example 25, the upper voice first leaps down to D before leaping back up to the expected resolution F. Example 26 shows a similarly decorated suspension, this time leaping to a dissonant E (an incomplete lower neighbor) before resolving to the F.

Similarly, the suspension could be decorated with an escape tone:

Example 27:

5 4 5 3

Although there is another pitch in between the suspension and the resolution, the underlying voice leading remains intact in each of these examples: the suspension resolves by step from G to F.

Suspensions are usually labeled by indicating the two intervals formed between the suspended voice and the bass. Four of the most common types of suspensions in the upper voice are shown in Example 28:

Example 28:

4 - 3 6 - 5 7 - 6 9 - 8

In each case, the suspended note becomes a nonharmonic tone. With the exception of the “6 - 5” suspension, all of these nonharmonic tones form a dissonance with the bass.

Suspensions may occur in the lower voice as well. Example 29 shows several common bass suspensions:

Example 29:

Example 29 shows four measures of music in bass clef. Each measure illustrates a different type of suspension in the bass voice. The suspensions are labeled as follows: 2 - 3, 4 - 5, 5 - 6, and 7 - 8. The notes are shown as half notes, and the suspensions are indicated by a slur over the notes.

Again, with the exception of the “5 - 6” suspension, all of the nonharmonic tones form a dissonance.

Popup Box: You may have noticed that nonharmonic tone in the “9 - 8” suspension from Example 28 forms the same interval as the nonharmonic tone in the “2 - 3” suspension from Example 29: a compound second. To distinguish between the two, “9 - 8” is commonly used to indicate a compound second suspension in the upper voice and “2 - 3” is used for a suspension in the lower voice.

Activity 8.7:

Exercise 8.7a:

[Fill-in-the-blank question:] In the following example, which voice contains a suspension: soprano or bass?

Exercise 8.7a shows two measures of music in treble clef. The first measure has a whole note G4. The second measure has a whole note F4, which is a suspension of the G4 from the previous measure. The bass line consists of two whole notes: G3 and F3.

[Answer: “soprano”]

[Follow-up question:] What type of suspension is it?

[Answer: “6-5”]

Exercise 8.7b:

[Fill-in-the-blank question:] In the following example, which voice contains a suspension: soprano or bass?

Exercise 8.7b shows two measures of music in bass clef. The first measure has a whole note G2. The second measure has a whole note F2, which is a suspension of the G2 from the previous measure. The soprano line consists of two whole notes: G4 and F4.

[Answer: “bass”]

[Follow-up question:] What type of suspension is it?

[Answer: “4-5”]

Exercise 8.7c:

[Fill-in-the-blank question:] In the following example, which voice contains a suspension: soprano or bass?



[Answer: “soprano”]

[Follow-up question:] What type of suspension is it?

[Answer: “7-6”]

Exercise 8.7d:

[Fill-in-the-blank question:] In the following example, which voice contains a suspension: soprano or bass?



[Answer: “bass”]

[Follow-up question:] What type of suspension is it?

[Answer: “7-8”]

Exercise 8.7e:

[Fill-in-the-blank question:] In the following example, which voice contains a suspension: soprano or bass?



[Answer: “soprano”]

[Follow-up question:] What type of suspension is it?

[Answer: “9-8”]

Exercise 8.7f:

[Fill-in-the-blank question:] In the following example, which voice contains a suspension: soprano or bass?



[Answer: “bass”]

[Follow-up question:] What type of suspension is it?

[Answer: “2-3”]

As mentioned above, suspensions tend to resolve downward by step. A suspended note that resolves upward to a consonance is called a *retardation*. In the following example, the B of the upper voice is suspended into the second measure:

Example 30:

Preparation Retardation Resolution

3 7 8

The suspended B resolves upward by half-step to the tonic pitch. A suspended leading tone typically resolves to the tonic.

Activity 8.8:

For each exercise in this activity you will be given a bass line and asked to write a suspension in the upper voice. Remember, the preparation occurs on a weak beat and the suspension itself occurs on the following strong beat, resolving on the next weak beat. Here is an example:

4 - 3 becomes... 4 - 3

Exercise 8.8a:

Complete the following suspension by adding the upper voice:

4 - 3

[Answers may vary by octave:]

Exercise 8.8b:

Complete the following suspension by adding the upper voice:

6 - 5

[Answers may vary by octave:]

Exercise 8.8c:

Complete the following suspension by adding the upper voice:



7 - 6

[Answers may vary by octave:]



Exercise 8.8d:

Complete the following suspension by adding the upper voice:



9 - 8

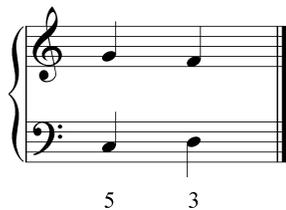
[Answers may vary by octave:]



Anticipations:

Anticipations are in a sense the reverse of suspensions. As we saw, a suspension delays a voice movement until after the harmony changes, creating a dissonance at the change. Conversely, an anticipation rushes the voice movement ahead, creating a dissonance *before* the harmony changes. Further, while suspensions are rhythmically accented, anticipations are unaccented. Consider again the basic interval progression “5 - 3”:

Example 31:



5 3

If the F in the upper voice were to arrive before the bass D on beat two, the following would result:

Example 32:

Anticipation

5 4 3

By stepping down prematurely, the upper voice *anticipates* the arrival of F on beat two. Anticipations usually enter by step and can be tied to the anticipated chord tone or reiterated. One of the most common anticipations occurs at V-I cadences, where scale degree $\hat{1}$ in the soprano is anticipated before tonic arrives in a $\hat{2} - \hat{1}$ movement:

Example 33:

5 4 1

The octave leap in the bass is a typical accompaniment to this ubiquitous anticipation.

Activity 8.9:

Exercise 8.9a:

In the following excerpt (J.S. Bach, English Suite no.2, in A minor, Sarabande, BWV 807, mm. 1-12), what type of nonharmonic tone is the red note?

[Answer: “lower neighbor tone” or “unaccented lower neighbor tone” or “unaccented diatonic lower neighbor tone” or “diatonic lower neighbor tone”]

Exercise 8.9b:

In the following excerpt (J.S. Bach, English Suite no.2, in A minor, Sarabande, BWV 807, mm. 1-12), what type of nonharmonic tone is the red note?

[Answer: “appoggiatura” or “incomplete lower neighbor tone” or “incomplete neighbor tone” or “accented incomplete lower neighbor tone” or “accented incomplete neighbor tone”]

Exercise 8.9c:

In the following excerpt (J.S. Bach, English Suite no.2, in A minor, Sarabande, BWV 807, mm. 1-12), what type of nonharmonic tone is the red note?

[Answer: “passing tone” or “unaccented passing tone” or “unaccented diatonic passing tone” or “diatonic passing tone”]

Exercise 8.9d:

In the following excerpt (J.S. Bach, English Suite no.2, in A minor, Sarabande, BWV 807, mm. 1-12), what type of nonharmonic tone is the red note?

[Answer: “suspension” or “4-3 suspension” or “decorated 4-3 suspension” or “decorated suspension”]

Exercise 8.9e:

In the following excerpt (J.S. Bach, English Suite no.2, in A minor, Sarabande, BWV 807, mm. 1-12), what type of nonharmonic tone is the red note?

[Answer: “anticipation”]

Conclusion:

There are four main categories of nonharmonic tones: passing tones, neighbor tones, suspensions, and anticipations. Passing and neighbor tones are melodically derived embellishments. They result from melodically filling in gaps between chord tones and from embellishing chord tones in order to create interesting melodic lines. They may be accented or unaccented. Suspensions and anticipations, on the other hand, are rhythmically derived embellishments. They result from rhythmic modifications (delays, accelerations) of melodic lines. Suspensions are accented, anticipations unaccented.

Nonharmonic tones are important features of tonal music. Composers use them to enrich and enliven their compositions. A firm understanding of the functions and peculiarities of nonharmonic tones is necessary for doing accurate harmonic analysis. Be aware that they can sometimes make it difficult to identify structural harmonies.

Lesson III – Auxiliary Sonorities

Introduction:

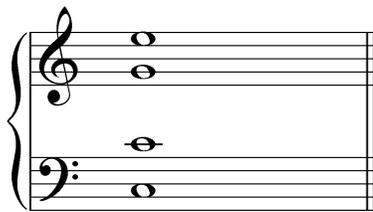
Techniques of harmonic expansion are among the most important to the tonal repertoire. By expanding harmonies over time, composers are able to build and sustain musical tension, and to expand musical works to large dimensions. We have already learned about melodic embellishment as a means of decorating individual tones. These techniques can be broadened, through combination with basic interval progressions, to embrace entire harmonies.

In this lesson you will apply your knowledge of basic interval progressions to expand a single harmony. We will begin by expanding a chord in root position with a *neighboring* auxiliary sonority. From there we will expand a harmony as it changes from root position to first inversion through a *passing* auxiliary sonority. In each case, the chord undergoing expansion will be called a *reference* sonority.

Neighboring auxiliary sonorities:

Let us begin by considering the expansion of a single triad:

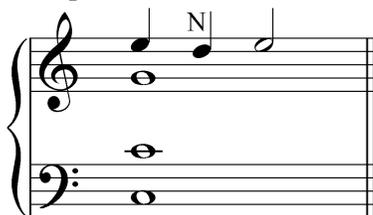
Example 1:



I

In this example, a root-position tonic triad will serve as the reference sonority. This soprano may be decorated through a simple melodic embellishment, a lower neighbor tone (N):

Example 2:



I _____

This neighbor note in the soprano can be accompanied in the bass, creating parallel thirds between the outer voices.

Example 3:

The above example may be left alone as a simple expansion of tonic harmony, with melodic embellishments in the outer voices. However, we can take the embellishments a step further. In the following example, the tenor is given an upper neighbor while the alto sustains a G:

Example 4:

Here we have the tenor moving away from C to its neighbor note, D, so that it is consonant with the neighbor notes in the soprano and bass. Both of the inner voices form valid interval progressions: the alto creates a “6 - 5 - 6” with the soprano and a “5 - 6 - 5” with the bass, while the tenor forms a “3 - 1 - 3” with the soprano and a “1 - 3 - 1” with the bass. We will refer to such four-part expansions as *auxiliary sonorities*. Coincidentally, the multiple neighbor notes in this auxiliary sonority produce the pitches of a first-inversion V chord.

A perfect fourth appears between the tenor and alto on the second beat. This fourth is a resultant interval and does not present a problem:

- because it is not formed with the bass and, additionally
- because the auxiliary (neighboring) sonority is merely transitory, subordinate to the tonic undergoing expansion.

Popup Box: You may have noticed that the pitches in the above auxiliary sonority form a valid triad on their own. The G, B, and two Ds of the auxiliary sonority constitute a V^6 chord. However, this sonority comes about through neighbor-note motions. Although the notes of a V^6 are undeniably present, the melodic origin of the sonority signals its subordinate function as a neighboring sonority tied to the tonic chord from which it arises. In order to indicate that subordinate function, the progression is labeled “I_____” or “I (V^6) I” to emphasize the expansionary process.

This type of expansion occurs frequently in tonal music. The following examples show excerpts from four-part chorales by J.S. Bach:

Example 5 (J.S. Bach, “Wie nach einer Wasserquelle,” BWV 32.6, m. 1):

I (V⁶) I

Example 6 (J.S. Bach, “Ach wie nichtig, ach wie flüchtig,” BWV 26.6, m. 1):

i (V⁶) i

Both of these examples show the expansion of the opening tonic triad with an auxiliary sonority. In each case, the bass is embellished with a lower neighbor tone while one of the upper voices is held and the other two are decorated with passing tones.

Activity 9.1:

In this activity you will complete an expansion of a tonic triad by providing the pitches of an auxiliary sonority whose bass is a lower neighbor tone. For now, use only passing, neighbor, and sustained tones and aim for smooth voice leading.

Exercise 9.1a:

Complete the following expansion of the D-major reference sonority with an auxiliary sonority whose bass is a lower neighbor tone. What pitch should appear in the bass?

I (V⁶) I

[Answer: C#. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, the bass of the auxiliary sonority should be the same as the bass of a V⁶ chord in D major. Try again.”]

[Follow-up question:

Now fill in the three upper voices.



[Answer: . Response if correct: “Correct!” Response if partially correct (one or two of S/A/T is incorrect): “That is partially correct, but your [S/A/T] needs adjusting. Remember to use only sustained, neighbor, and passing tones in the upper voices. Try again.” Response if entirely incorrect: “None of your voices are correct. Remember to use only sustained, neighbor, and passing tones in the upper voices and try again.”]

Exercise 9.1b:

Complete the following expansion of the F-major reference sonority with an auxiliary sonority whose bass is a lower neighbor tone. What pitch should appear in the bass?

I (V⁶) I

[Answer: E. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, the bass of the auxiliary sonority should be the same as the bass of a V⁶ chord in F major. Try again.”]

[Follow-up question:

Now fill in the three upper voices.

[Answer: . Response if correct: “Correct!” Response if partially correct (one or two of S/A/T is incorrect): “That is partially correct, but your [S/A/T] needs adjusting. Remember to use only sustained, neighbor, and passing tones in the upper voices. Try again.” Response if entirely incorrect: “None of your voices are correct. Remember to use only sustained, neighbor, and passing tones in the upper voices and try again.”]

Exercise 9.1c:

Complete the following expansion of the G-major reference sonority with an auxiliary sonority whose bass is a lower neighbor tone. What pitch should appear in the bass?

I (V⁶) I

[Answer: F. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, the bass of the auxiliary sonority should be the same as the bass of a V^6 chord in G major. Try again.”]

[Follow-up question:

Now fill in the three upper voices.

[Answer: . Response if correct: “Correct!” Response if partially correct (one or two of S/A/T is incorrect): “That is partially correct, but your [S/A/T] needs adjusting. Remember to use only sustained, neighbor, and passing tones in the upper voices. Try again.” Response if entirely incorrect: “None of your voices are correct. Remember to use only sustained, neighbor, and passing tones in the upper voices and try again.”]

Exercise 9.1d:

Complete the following expansion of the B^b -major reference sonority with an auxiliary sonority whose bass is a lower neighbor tone. What pitch should appear in the bass?

I (v^6) I

[Answer: A. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, the bass of the auxiliary sonority should be the same as the bass of a V^6 chord in B^b major. Try again.”]

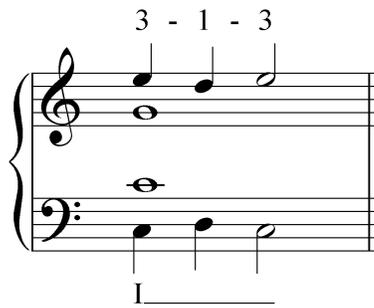
[Follow-up question:

Now fill in the three upper voices.

[Answer: . Response if correct: “Correct!” Response if partially correct (one or two of S/A/T is incorrect): “That is partially correct, but your [S/A/T] needs adjusting. Remember to use only sustained, neighbor, and passing tones in the upper voices. Try again.” Response if entirely incorrect: “None of your voices are correct. Remember to use only sustained, neighbor, and passing tones in the upper voices and try again.”]

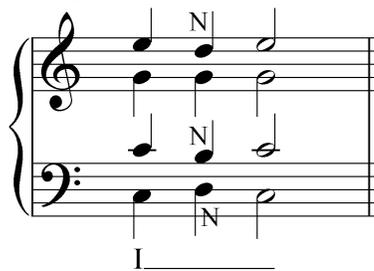
The above examples are by no means the only way to expand a chord. What if, for example, the bass were given an upper neighbor? The outer voices would form a “3 - 1 - 3” progression:

Example 7:



This expansion may be “filled out” in the same manner as above. Note that the tenor embellishment has been changed to a lower neighbor in order to avoid parallel octaves with the bass:

Example 8:



Here we have an interesting situation. In Lesson AAA, it was stated that perfect fourths are considered dissonant in two-voice textures. That rule was qualified to permit perfect fourths as resultant intervals for voice pairs not involving the bass. In this example, we see that the alto forms a perfect fourth with the bass. This type of situation requires a further qualification of the perfect-fourth rule.

Perfect fourths may occur with the bass when part of an auxiliary sonority associated with a reference sonority. In Example 8, the perfect fourth between the alto and the bass occurs during the expansion of a tonic triad in a sonority that coincidentally produces the pitches of a V_4^6 chord.

Popup Box: Perfect fourths are considered dissonant and must be treated as such. They are not permitted in two-voice textures. In textures with more than two voices, perfect fourths are permitted as resultant intervals between voice pairs not involving the bass. Perfect fourths may occur with the bass in an auxiliary sonority, such as a passing $\frac{6}{4}$ chord.

A similar type of neighboring auxiliary sonority occurs when the bass is held. Consider the following example where the soprano of the same reference chord is given an upper neighbor note.

Example 9:



This F in the soprano forms a dissonance (again, a perfect fourth) with the bass, but this is permissible since it is merely a melodic embellishment. The following example shows the alto accompanying the soprano in parallel sixths with an upper neighbor note of its own:

Example 10:

Musical notation for Example 10. The soprano line (treble clef) shows a sequence of notes: G4, A4, B4, A4, G4. The alto line (treble clef) shows a sequence of notes: E4, F4, G4, F4, E4. The bass line (bass clef) shows a sustained C3. The notes in the alto line are marked with 'N' above and below them, indicating they are neighbor notes. Below the staff is the label 'I _____'.

The tenor and bass may hold C throughout, as the following example indicates:

Example 11:

Musical notation for Example 11. The soprano line (treble clef) shows a sequence of notes: G4, A4, B4, A4, G4. The tenor line (treble clef) shows a sequence of notes: E4, F4, G4, F4, E4. The bass line (bass clef) shows a sustained C3. The notes in the tenor line are marked with 'N' above and below them, indicating they are neighbor notes. Below the staff is the label 'I _____'.

This example illustrates how an auxiliary sonority may coincidentally produce the pitches of an inverted chord, here a IV chord apparently in second inversion, similar to the coincidental V^6 we encountered earlier. As in that earlier case, the perfect fourth here between the bass and soprano is permissible because of the inherent instability of an auxiliary neighboring sonority.

The beginning of the third movement from Mozart's Piano Sonata in C major, K. 309 shows an example of this sort of neighboring auxiliary sonority (compare Examples 11 and 12):

Example 12 (W.A. Mozart, Piano Sonata in C Major, K. 309, mvt. iii, mm. 1-5):

Musical notation for Example 12. The piece is in 2/4 time. The right hand (treble clef) has a melody: G4 (quarter), A4-B4 (beamed eighth notes), C5 (quarter), B4-A4 (beamed eighth notes), G4 (quarter). The left hand (bass clef) has an arpeggiated accompaniment: C3-E3-G3 (quarter), C3-E3-G3 (quarter), C3-E3-G3 (quarter), C3-E3-G3 (quarter), C3-E3-G3 (quarter). Below the staff are figured bass notations: I_3^5 , $\frac{6}{4}$, and $\frac{5}{3}$.

Here, the neighboring motion is seen clearly in the arpeggios of the left hand. The Es and Gs of mm. 1-2 and 5 are embellished with the upper-neighbor Fs and As in mm. 3-4 above a sustained C. The figured bass ($I_3^5 - \frac{6}{4} - \frac{5}{3}$) illustrates the upper-neighbor motion of these voices.

Activity 9.2:

In the last activity you expanded a reference sonority with an auxiliary sonority whose bass is a lower neighbor tone. This time, expand the given chord with an auxiliary sonority that sustains the bass of the reference sonority. Again, remember to only use neighbor notes and hold the common tones.

Exercise 9.2a:

Complete the following expansion of the B-minor reference sonority with an auxiliary sonority that sustains the bass of the reference sonority. Fill in the upper voices:

i (iv⁶) i

[Answer: . Response if correct: “Correct!” Response if partially correct (one or two of S/A/T is incorrect): “That is partially correct, but your [S/A/T] needs adjusting. Remember to use only sustained, neighbor, and passing tones in the upper voices. Try again.” Response if entirely incorrect: “None of your voices are correct. Remember to use only sustained, neighbor, and passing tones in the upper voices and try again.”]

Exercise 9.2b:

Complete the following expansion of the A-major reference sonority with an auxiliary sonority that sustains the bass of the reference sonority. Fill in the upper voices:

I (IV⁶) I

[Answer: . Response if correct: “Correct!” Response if partially correct (one or two of S/A/T is incorrect): “That is partially correct, but your [S/A/T] needs adjusting. Remember to use only sustained, neighbor, and passing tones in the upper voices. Try again.” Response if entirely incorrect: “None of your voices are correct. Remember to use only sustained, neighbor, and passing tones in the upper voices and try again.”]

Exercise 9.2c:

Complete the following expansion of the G-minor reference sonority with an auxiliary sonority that sustains the bass of the reference sonority. Fill in the upper voices:

i (iv⁶) i

[Answer: . Response if correct: “Correct!” Response if partially correct (one or two of S/A/T is incorrect): “That is partially correct, but your [S/A/T] needs adjusting. Remember to use only sustained, neighbor, and passing tones in the upper voices. Try again.” Response if entirely incorrect: “None of your voices are correct. Remember to use only sustained, neighbor, and passing tones in the upper voices and try again.”]

Exercise 9.2d:

Complete the following expansion of the E^b-major reference sonority with an auxiliary sonority that sustains the bass of the reference sonority. Fill in the upper voices:

I (IV⁶) I

[Answer: . Response if correct: “Correct!” Response if partially correct (one or two of S/A/T is incorrect): “That is partially correct, but your [S/A/T] needs adjusting. Remember to use only sustained, neighbor, and passing tones in the upper voices. Try again.” Response if entirely incorrect: “None of your voices are correct. Remember to use only sustained, neighbor, and passing tones in the upper voices and try again.”]

Passing auxiliary sonorities:

Expansions with auxiliary sonorities are not limited to neighboring sonorities. Consider the following example of the common I - I⁶ progression:

Example 13:

Musical notation for Example 13. It shows two staves (treble and bass clef) with a grand brace on the left. The first measure is labeled 'I' and the second 'I⁶'. The soprano voice moves from E4 to C4, and the bass voice moves from C3 to E3. The inner voices (alto and tenor) remain stationary, forming a dyad of G4 and B4 in the first measure, and G4 and B4 in the second measure.

What do you notice about the outer voices? The soprano moves from E to C, while the bass does the opposite, moving from C to E. The outer voices participate in a voice exchange, creating a “10 - 6” interval progression:

Example 14:

Musical notation for Example 14. It shows two staves (treble and bass clef) with a grand brace on the left. The first measure is labeled 'I' and the second 'I⁶'. Above the first measure is the number '10' and above the second is '6', with a hyphen between them. The soprano voice moves from E4 to C4, and the bass voice moves from C3 to E3. The inner voices (alto and tenor) remain stationary, forming a dyad of G4 and B4 in the first measure, and G4 and B4 in the second measure.

Very frequently, skips in the outer voices are filled in with passing tones. These pitches are not consonant with the reference sonority (the I chord, in this case). They are understood as melodic embellishments of the outer voices:

Example 15:

Musical notation for Example 15. It shows two staves (treble and bass clef) with a grand brace on the left. The first measure is labeled 'I' and the second 'I⁶'. Above the first measure is the number '10', above the second is '8', and above the third is '6', with hyphens between them. The soprano voice moves from E4 to D4 (passing tone) to C4. The bass voice moves from C3 to D3 (passing tone) to E3. The inner voices (alto and tenor) remain stationary, forming a dyad of G4 and B4 in the first measure, and G4 and B4 in the second measure.

In the above example, the outer voices form a “10 - 8 - 6” progression. Just as before, we may enhance this expansion by embellishing the inner voices so that they harmonize the passing Ds:

Example 16:

Musical notation for Example 16. It shows two staves (treble and bass clef) with a grand brace on the left. The first measure is labeled 'I', the second '(vii^{o6})', and the third 'I⁶'. Above the first measure is the number '10', above the second is '8', and above the third is '6', with hyphens between them. The soprano voice moves from E4 to D4 (passing tone) to C4. The bass voice moves from C3 to D3 (passing tone) to E3. The inner voices (alto and tenor) move from G4 and B4 in the first measure to F#4 and A4 in the second measure, and then back to G4 and B4 in the third measure.

In this case, the sonority resulting from the multiple embellishments coincidentally produces the pitches of a $\text{vii}^{\circ 6}$ chord. In Lesson FFF, we discussed the special case of this diminished triad. The triad built on the seventh scale degree of the major scale will have a diminished fifth between the root and fifth. This highly dissonant interval is permitted only when treated in specific ways. By presenting the vii° chord in first inversion, all upper voices are consonant with the bass and the dissonant tritone is hidden in the inner voices. In Example 16, the diminished fifth appears between the tenor B and the alto F. The tritone is properly resolved here as both inner voices ascend by step to form a perfect fifth, the tenor creating the basic interval progression “6 - 6” with the bass, and the alto “10 - 10” with the bass, as illustrated in Lesson FFF on the $\text{vii}^{\circ 6}$ chord.

Activity 9.3:

In this activity you will expand a tonic reference sonority first by creating a voice exchange between the bass and one of the upper voices and then by including an auxiliary $\text{vii}^{\circ 6}$ chord.

Exercise 9.3a:

Expand the tonic chord on beat one to beat two by creating a voice exchange between the bass and the soprano while sustaining the other two voices:

I

I⁶

[Answer: I I⁶. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

Now embellish the expansion by incorporating an auxiliary $\text{vii}^{\circ 6}$ chord. What pitch should appear in the bass?

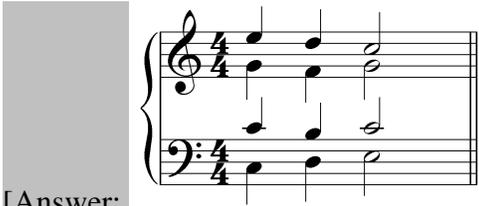
↓

I (vii⁶) I

[Answer: D. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, the bass of the auxiliary sonority should be the same as the bass of a $\text{vii}^{\circ 6}$ chord in C major. Try again.”]

[Follow-up question:]

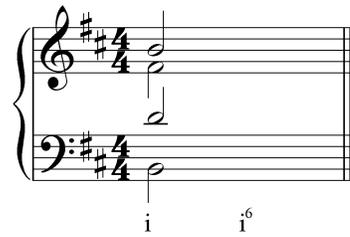
Now fill in the three upper voices.



[Answer: . Response if correct: “Correct!” Response if partially correct (one or two of S/A/T is incorrect): “That is partially correct, but your [S/A/T] needs adjusting. Remember to use passing tones in the voices participating in the voice exchange and lower neighbors in the remaining voices. Try again.” Response if entirely incorrect: “None of your voices are correct. Remember to use passing tones in the voices participating in the voice exchange and lower neighbors in the remaining voices. Try again.”]

Exercise 9.3b:

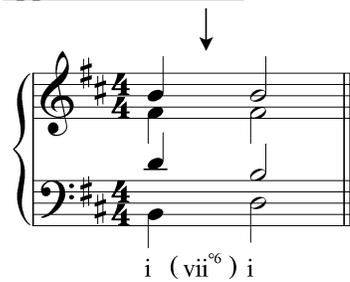
Expand the tonic chord on beat one to beat two by creating a voice exchange between the bass and the tenor while sustaining the other two voices:



[Answer: . Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

Now embellish the expansion by incorporating an auxiliary vii^{06} chord. What pitch should appear in the bass?



[Answer: C#. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, the bass of the auxiliary sonority should be the same as the bass of a vii^{06} chord in B minor. Try again.”]

[Follow-up question:]

Now fill in the three upper voices.

[Answer: . Response if correct: “Correct!” Response if partially correct (one or two of S/A/T is incorrect): “That is partially correct, but your [S/A/T] needs adjusting. Remember to use passing tones in the voices participating in the voice exchange and lower neighbors in the remaining voices. (Don’t forget to raise the leading tone!) Try again.” Response if entirely incorrect: “None of your voices are correct. Remember to use passing tones in the voices participating in the voice exchange and lower neighbors in the remaining voices. (Don’t forget to raise the leading tone!) Try again.”]

Exercise 9.3c:

Expand the tonic chord on beat one to beat two by creating a voice exchange between the bass and the soprano while sustaining the other two voices:

I⁶ I

I⁶ I

[Answer: . Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

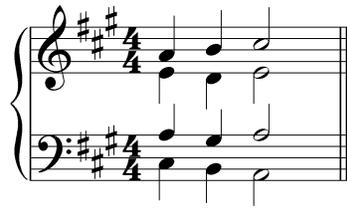
Now embellish the expansion by incorporating an auxiliary vii^{o6} chord. What pitch should appear in the bass?

I⁶ (vii^{o6}) I

[Answer: B. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, the bass of the auxiliary sonority should be the same as the bass of a vii^{o6} chord in A major. Try again.”]

[Follow-up question:]

Now fill in the three upper voices.



[Answer: . Response if correct: “Correct!” Response if partially correct (one or two of S/A/T is incorrect): “That is partially correct, but your [S/A/T] needs adjusting. Remember to use passing tones in the voices participating in the voice exchange and lower neighbors in the remaining voices. Try again.” Response if entirely incorrect: “None of your voices are correct. Remember to use passing tones in the voices participating in the voice exchange and lower neighbors in the remaining voices. Try again.”]

Exercise 9.3d:

Expand the tonic chord on beat one to beat two by creating a voice exchange between the bass and the alto while sustaining the other two voices:



i⁶ i



i⁶ i

[Answer: . Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

Now embellish the expansion by incorporating an auxiliary vii⁰⁶ chord. What pitch should appear in the bass?



i (vii⁰⁶) i

[Answer: F#. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, the bass of the auxiliary sonority should be the same as the bass of a vii⁰⁶ chord in E minor. Try again.”]

[Follow-up question:]

Now fill in the three upper voices.

[Answer: . Response if correct: “Correct!” Response if partially correct (one or two of S/A/T is incorrect): “That is partially correct, but your [S/A/T] needs adjusting. Remember to use passing tones in the voices participating in the voice exchange and lower neighbors in the remaining voices. (Don’t forget to raise the leading tone!) Try again.” Response if entirely incorrect: “None of your voices are correct. Remember to use passing tones in the voices participating in the voice exchange and lower neighbors in the remaining voices. (Don’t forget to raise the leading tone!) Try again.”]

This type of expansion, like the neighboring auxiliary sonorities outlined above, occurs frequently in tonal music. The following examples show excerpts from four-part chorales by J.S. Bach:

Example 17 (J.S. Bach, “Ach Gott, vom Himmel sieh' darein,” BWV 153.1, m. 1):

i (vii⁶) i⁶

Example 18 (J.S. Bach, “Vater unser im Himmelreich,” BWV 416, m. 1):

10 10 10

i (vii⁶) i⁶

Example 19 (reduction of J.S. Bach, “Aus meines Herzens Grunde,” BWV 269, m. 9):

10 10 10

I⁶ (vii⁶) I

Examples 17-19 each show the expansion of the reference tonic triad with a passing auxiliary harmony coincidentally producing the pitches of a vii^{06} chord. In each case, the bass moves stepwise through a third while the upper voices follow suit or decorate a single pitch with an upper neighbor tone. (The tenor voice on the fourth beat of Example 18 leaps up to a D because the G on the third beat is heard to resolve to the F in the bass.) Some common voice-leading patterns are worth highlighting. In Example 17 the outer voices participate in a voice exchange while in Example 18, the outer voices move in parallel tenths. Example 19 has both of these common patterns occurring simultaneously.

“Root position” auxiliary sonorities:

The auxiliary sonorities we have examined so far have been inverted triads. However, root-position triads may also serve as auxiliary sonorities to other root-position triads, or even to first-inversion triads. Consider the following excerpt from a four-part chorale by J.S. Bach (Example 21 shows a simplified reduction of Example 20):

Example 20 (J.S. Bach, “Nun danket alle Gott,” BWV 252, m. 1):

I (IV) I

Example 21 (reduction of J.S. Bach, “Nun danket alle Gott,” BWV 252, m. 1):

I (IV) I

The auxiliary sonority in Examples 20 and 21 is similar to the one in Example 11. In this case, however, the root of the IV chord (D) is in the bass. As you can see, the leaps down to D and then back up to A are more disjunct than the voice leading in the bass of Example 11. Nevertheless, the auxiliary function of the IV is clear from the surrounding reference sonority and the embellishing neighbor-note patterns in both the soprano and tenor voices. The following excerpt shows a similar situation:

Example 22 (J.S. Bach, “Ermuntre dich, mein schwacher Geist,” BWV 43.11, m. 5):

Like Example 20, Example 22 shows an expansion of a tonic harmony, as reference sonority, with a root-position auxiliary sonority on a strong beat. In this case, both leaps in the bass are descending and the alto line skips down from the root of the I chord to the upper neighbor E. Despite these minor alterations, the nature of the auxiliary sonority remains the same.

Similarly, a root-position dominant chord may serve as an auxiliary sonority to a surrounding tonic as reference sonority. Example 23 shows a tonic harmony being expanded with a root-position auxiliary dominant chord (Example 24 provides a reduction):

Example 23 (J.S. Bach, “Nun danket alle Gott,” BWV 252, m. 3):

Example 24 (reduction of J.S. Bach, “Nun danket alle Gott,” BWV 252, m. 3):

As in Example 21, note here the neighbor-note patterns, this time in the soprano and alto voices. It is important to remember that auxiliary sonorities serve a different purpose than the functional harmonies made up of the same pitches. In Examples 23 and 24, for instance, the auxiliary sonority does not act as a functional V chord; instead, it expands the tonic harmony. This particular pattern of root position sonorities commonly appears at the end of a piece, where tonic is strongly reinforced. In codas, for instance, after the cadential I chord has arrived, we encounter such expanded reinforcements of tonic harmony. In such concluding passages, where the music routinely alternates between tonic and dominant chords, the tonics are clearly primary, the dominants secondary. They are auxiliary sonorities used to expand the referential tonic.

Activity 9.4:

ii (I⁶) ii⁶

Here, an auxiliary sonority coincidentally containing the pitches of a I⁶ chord is used to expand a ii chord. Likewise, the model may be used to expand a dominant chord:

Example 28 (J.S. Bach, “Nun bitten wir den heiligen Geist,” BWV 385, mm. 3-4):

I V⁶ (IV⁶) V⁶ I

In Example 28, m. 3 is all tonic: beat 1 is a tonic chord that concludes the first phrase of the chorale and beat 4 continues that tonic. M. 4 begins with a V⁶ on beat 1. The second beat of m. 4 is a neighboring auxiliary IV⁶ which leads right back to V⁶, which in turn resolves to tonic.

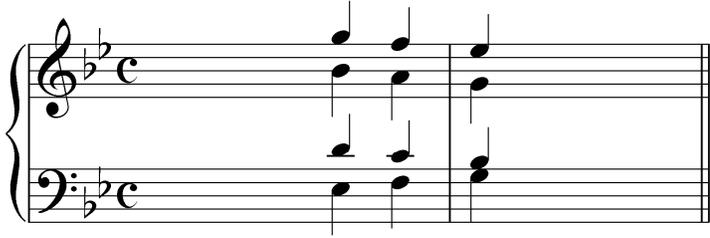
Popup Box: The motion from V to the auxiliary sonority IV⁶ in Example 28 resembles what some texts refer to as a “retrogression” implying that the dominant harmony has regressed to a pre-dominant harmony. It is important to realize that this is not the case here. The D-major chord in Example 28 is nothing more than an auxiliary sonority expanding the reference V chord. The V chord is prolonged throughout the example; the auxiliary IV⁶ chord is merely a coincidence of non-harmonic tones.

Similarly, an auxiliary V chord can be used to expand a reference IV chord. Consider the following example (Example 30 provides a reduction):

Example 29 (J.S. Bach, “Jesu, deine tiefen Wunden,” BWV 194.6, mm. 7-8):

IV (V) IV⁶

Example 30 (reduction of J.S. Bach, “Jesu, deine tiefen Wunden,” BWV 194.6, mm. 7-8):

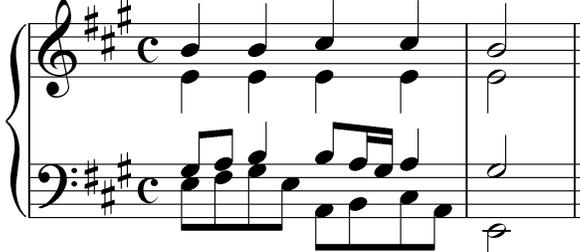


IV (V) IV⁶

In this example, the sonority on the last beat of m. 7 is not a functional dominant harmony. As Example 30 clearly shows, each member of this chord is the result of passing motion as IV is prolonged and becomes IV⁶ through a voice exchange in the outer voices. All three chords are part of a single pre-dominant area.

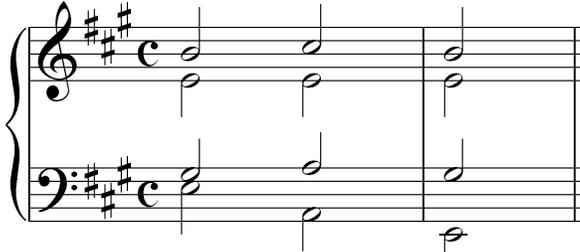
Root-position auxiliary sonorities may also be used to expand harmonies other than the tonic. In the following example, V is the reference harmony. It is expanded by a tonic.

Example 31 (J.S. Bach, “Nun danket alle Gott,” BWV 252, mm. 5-6):



V (I) V

Example 32 (reduction of J.S. Bach, “Nun danket alle Gott,” BWV 252, mm. 5-6):



V (I) V

Examples 32 may, at first glance, seem similar to Example 24. Both passages seem to consist of alternating I and V chords in root position. In this case, however, V is the reference sonority and I is the auxiliary. The following example shows another possibility for expanding a V chord. In this case a root-position vi chord serves as the auxiliary sonority:

Example 33 (J.S. Bach, “Ermuntre dich, mein schwacher Geist,” BWV 43.11, m. 7):

Musical notation for Example 33. The key signature is one sharp (F#) and the time signature is 3/4. The first measure shows a V chord (D major) with notes D4, F#4, and A4. The second measure shows a (vi) V chord (F# minor) with notes F#4, A4, and D5. The bass line consists of quarter notes: D3, F#3, A3, D4, F#4, A4, D5.

Example 34 shows another expansion with a root-position auxiliary sonority. This time, vi is expanded by a root-position iii chord:

Example 34:

Musical notation for Example 34. The key signature is one sharp (F#) and the time signature is 3/4. The first measure shows a vi chord (F# minor) with notes F#4, A4, and D5. The second measure shows a (iii) vi chord (D minor) with notes D4, F#4, and A4. The third measure shows a vi chord (F# minor) with notes F#4, A4, and D5. The bass line consists of quarter notes: F#3, A3, D4, F#4, A4, D5.

Activity 9.5:

Though not as common as in expansions of the tonic, auxiliary sonorities are often used to expand other chords. In this activity you will identify auxiliary-sonority expansions of non-tonic chords.

Exercise 9.5a:

In the following passage in A minor (J.S. Bach, “Es woll uns Gott genädig sein,” BWV 312, mm. 1-3), some non-tonic chord is expanded with an auxiliary sonority. Click on the initial reference sonority:

Musical notation for Exercise 9.5a. The key signature is one sharp (F#) and the time signature is common time (C). The passage consists of three measures. The first measure shows a D-minor chord (iv) with notes D4, F#4, and A4. The second measure shows a D-minor chord (iv) with notes D4, F#4, and A4. The third measure shows a D-minor chord (iv) with notes D4, F#4, and A4. The bass line consists of quarter notes: D3, F#3, A3, D4, F#4, A4, D5.

[Answer: the D-minor chord on the downbeat of m. 2. Response if correct: “Correct! The iv chord on the downbeat of m. 2 is expanded via an auxiliary sonority.” Response if incorrect: “Incorrect. Try again. (Hint: The initial reference harmony contains a “4 - 3” suspension above the bass.)”]

[Follow-up multiple choice question]

What type of auxiliary sonority expansion occurs in m. 2?

[Possible answers: “iv (V) iv,” “iv (vii⁰⁷/iv) iv,” “iv (i⁶) iv,” “iv (vii⁰⁶/₄) iv.” Correct answer: “iv (vii⁰⁷/iv) iv.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise 9.5b:

In the following passage in F major (J.S. Bach, “Gott lebet noch, Seele, was verzagst du doch?,” BWV 320, mm. 3-6), some non-tonic chord is expanded with an auxiliary sonority. Click on the initial reference sonority:

[Answer: the B^b-major chord on the downbeat of m. 4. Response if correct: “Correct! The IV chord on the downbeat of m. 4 is expanded via an auxiliary sonority.” Response if student clicks on the downbeat of m. 3: “While that is the initial reference sonority of an auxiliary chord expansion, the directions were to find an expansion of a *non-tonic* chord. Try again.” Response for all other incorrect answers: “Incorrect. Try again.”]

[Follow-up multiple choice question]

What type of auxiliary sonority expansion occurs in m. 4?

[Possible answers: “IV (III⁶) IV,” “IV (I⁶) IV,” “IV (I) IV,” “IV (V) IV.” Correct answer: “IV (I) IV.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise 9.5c:

In the following passage in A minor (J.S. Bach, “Heut' triumphieret Gottes Sohn,” BWV 342, mm. 5-8), some non-tonic chord is expanded with an auxiliary sonority. Click on the initial reference sonority:

[Answer: the F-major chord on the downbeat of m. 5. Response if correct: “Correct! The vi chord on the downbeat of m. 5 is expanded via an auxiliary sonority.” Response if incorrect: “Incorrect. Try again.”]

[Follow-up multiple choice question]

What type of auxiliary sonority expansion occurs in m. 5?

[Possible answers: “VI (III⁶) VI,” “VI (vii⁰⁷/VI) VI,” “VI (V) VI,” “VI (ii⁰⁶₄) VI.” Correct answer: “vi (III⁶) vi.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise 9.5d:

In the following passage in F major (J.S. Bach, “Ich dank dir, lieber Herre,” BWV 348, mm. 7-8), some non-tonic chord is expanded with an auxiliary sonority. Click on the initial reference sonority:

(IV V IV6)

[Answer: the B^b-major chord on the downbeat of m. 7. Response if correct: “Correct! The IV chord on the downbeat of m. 7 is expanded via an auxiliary sonority.” Response if incorrect: “Incorrect. Try again. (Hint: There is an extra passing tone in one of the voices of this expansion.)”]

[Follow-up multiple choice question]

What type of auxiliary sonority expansion occurs in m. 7?

[Possible answers: “IV (I₄) IV⁶,” “IV (I⁶) IV⁶,” “IV (vi) IV⁶,” “IV (V) IV⁶.” Correct answer: “IV (V) IV⁶.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

The cadential $\frac{6}{4}$ chord:

One final auxiliary sonority deserves special attention. This particular sonority appears primarily at cadences and coincidentally contains the pitches of I chord in second inversion. Consider the following example:

Example 35 (J.S. Bach, “Mach's mit mir, Gott, nach deiner Güt,” BWV 377, m. 11-12):

Following a IV⁶ chord at the end of m. 11, the chord on the downbeat of m. 12 contains the pitches D and F[#] above an A in the bass. Subdominant chords can and sometimes do move directly to tonic chords—as in a plagal cadence—so you may be tempted to label this sonority “I₄⁶.” To do so, however, would contradict the function of both chords. The IV⁶ is a pre-dominant chord leading to V. Therefore, the sonority on the downbeat of m. 12 is not a functional tonic chord, but rather an embellishment and intensification of the dominant.

Look again at the D and F[#]. Both are nonharmonic tones: the F[#] is an accented passing tone between scale degrees $\hat{4}$ and $\hat{2}$ while the D is a dissonant “4 - 3” suspension delaying the arrival of the leading tone. (See Lesson HHH for a review of nonharmonic tones.) Both pitches resolve on the following beat to a root position V chord and a perfect authentic cadence.

The sonority on the first beat of m. 12 is referred to as a *cadential $\frac{6}{4}$ chord*. The first two beats of the measure should be analyzed as V₄₋₃⁶⁻⁵ to reflect the underlying importance of the V chord in the cadential IV - V - I progression:

Example 36:

IV⁶ V₄⁶ - $\frac{5}{3}$ I

The following excerpt provides a clearer example of why a cadential $\frac{6}{4}$ is not a functional tonic chord:

Example 37 (W.A. Mozart, Piano Sonata in C Major, K. 309, mvt. iii, mm. 74-77):

IV vii^{o7}/V V₄⁸ V₃⁷ I

Measure 74 contains the pre-dominant progression “IV - vii^{o7}/V.” This is followed by a $\frac{6}{4}$ chord in m. 75 finally resolving to the dominant in m. 76. Labeling m. 75 as “I⁶” would not make sense since it contradicts the necessary resolution of vii^{o7}/V to V. “V₄⁶” is used instead to reflect the sonority’s function as an embellishment and intensification of the dominant.

Popup box: The cadential $\frac{6}{4}$ chord originated in the voice-leading practice of delaying the arrival of the leading tone in a cadence. This was usually done by suspending scale degree $\hat{1}$ from the preceding pre-dominant chord. Delaying the arrival of the fifth of the V chord (scale degree $\hat{2}$) as well completes the $\frac{6}{4}$ chord. Because the cadential $\frac{6}{4}$ chord consists primarily of accented, nonharmonic tones, it must always appear in a metrically strong position relative to the resolution. As you can see, this is the case in Example 35.

A cadential $\frac{6}{4}$ is a type of *accented* $\frac{6}{4}$ chord. An accented $\frac{6}{4}$ is a strong-beat chord, dominant or otherwise, that is delayed by a sixth and a fourth above the bass. These non-harmonic tones may be introduced as suspensions, accented passing notes, or appoggiaturas. The following excerpt from Mozart’s Piano Sonata, K. 330 contains two such sonorities:

Example 38 (W.A. Mozart, Piano Sonata in C Major, K. 330, mvt. ii, mm. 1-4):

V⁷ vii₄⁶ - $\frac{5}{3}$ vii^{o7}/V V₄⁶ - $\frac{5}{3}$

The V^7 chord at the end of m. 1 leads to a vi chord that is delayed until beat two with a fourth (G) and a sixth (B) suspended above the bass D. Even though the pitches on the downbeat of m. 2 seem to imply the presence of a ii^6_4 chord, the progression “ $V^7 - ii^6_4$ ” would be nonsensical. “ $V^7 - vi^6_4 - \frac{5}{3}$ ” is the correct way to analyze this progression.

Similarly, the arrival of the V chord in m. 4 is also delayed with an accented 6_4 chord. This is preceded by a vii^{06}/V at the end of m. 3. As was the case in Example 37, it would not make sense for vii^{06}/V to resolve to a tonic chord (“ $vii^{06}/V - I^6_4 - V$ ”). Instead, the progression should be analyzed as “ $vii^{06}/V - V^{\frac{6-5}{4-3}}$ ”

Activity 9.6:

Not all cadential 6_4 chords are as rhythmically straightforward as the one given in Example 35. In this activity you will be presented with the concluding phrases of several Bach chorales, each of which contains a cadential 6_4 chord. After identifying the nonharmonic tones (the fourth and the sixth above the bass), you will be asked how each is introduced.

Exercise 9.6a:

Identify the fourth above the bass in the cadential 6_4 chord in this excerpt (J.S. Bach, “Als der gütige Gott vollenden wollt sein Wort,” BWV 264, mm. 9-10):

[Answer: the G dotted quarter note in the alto starting on beat three of m. 9. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up multiple choice question:] What type of nonharmonic tone is this?

[Possible answers: “Anticipation,” “Appoggiatura,” “Suspension,” “Accented passing tone.”]

Answer: “Suspension.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:] Now identify the sixth above the bass in the cadential 6_4 chord.

[Answer: the B quarter note in the soprano on beat three of m. 9. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up multiple choice question:] What type of nonharmonic tone is this?

[Possible answers: “Anticipation,” “Appoggiatura,” “Suspension,” “Accented passing tone.”]

Answer: “Accented passing tone.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise 9.6b:

Identify the fourth above the bass in the cadential 6_4 chord in this excerpt (J.S. Bach, “Alles ist an Gottes Segen,” BWV 263, mm. 11-12):



[Answer: the G quarter note in the alto starting on the downbeat of m. 12. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up multiple choice question:] What type of nonharmonic tone is this?

[Possible answers: "Anticipation," "Appoggiatura," "Suspension," "Accented passing tone."]

Answer: "Suspension." Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up question:] Now identify the sixth above the bass in the cadential $\frac{6}{4}$ chord.

[Answer: the B quarter note in the soprano on the downbeat of m. 12. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

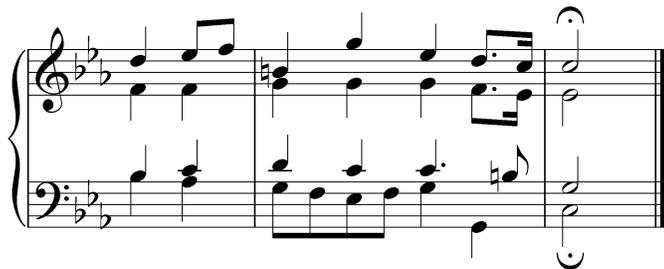
[Follow-up multiple choice question:] What type of nonharmonic tone is this?

[Possible answers: "Anticipation," "Appoggiatura," "Suspension," "Accented passing tone."]

Answer: "Accented passing tone." Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise 9.6c:

Identify the fourth above the bass in the cadential $\frac{6}{4}$ chord in this excerpt (J.S. Bach, "Nicht so traurig, nicht so sehr," BWV 384, mm. 11-12):



[Answer: the C dotted quarter note in the tenor starting on beat three of m. 11. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up multiple choice question:] What type of nonharmonic tone is this?

[Possible answers: "Anticipation," "Appoggiatura," "Suspension," "Accented passing tone."]

Answer: "Suspension." Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up question:] Now identify the sixth above the bass in the cadential $\frac{6}{4}$ chord.

[Answer: the E^b quarter note in the soprano on beat three of m. 11. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up multiple choice question:] What type of nonharmonic tone is this?

[Possible answers: “Anticipation,” “Appoggiatura,” “Suspension,” “Accented passing tone.”
 Answer: “Appoggiatura.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise 9.6d:

Identify the fourth above the bass in the cadential $\frac{6}{4}$ chord in this excerpt (J.S. Bach, “Es woll uns Gott genädig sein,” BWV 280, mm. 17-18):

The image shows a musical score for Exercise 9.6d. It consists of two staves: a treble clef staff and a bass clef staff. The key signature has one sharp (F#), and the time signature is common time (C). The bass clef staff shows a cadential $\frac{6}{4}$ chord in measure 18. The notes in the bass clef staff are: G2 (bass), A2 (quarter note), B2 (quarter note), C3 (quarter note), D3 (quarter note), E3 (quarter note), F#3 (quarter note), and G3 (quarter note). The treble clef staff shows a melodic line with notes: G4 (quarter), A4 (quarter), B4 (quarter), C5 (quarter), B4 (quarter), A4 (quarter), G4 (quarter), and F#4 (quarter).

[Answer: the A quarter note in the tenor starting on the downbeat of m. 18. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up multiple choice question:] What type of nonharmonic tone is this?

[Possible answers: “Anticipation,” “Appoggiatura,” “Suspension,” “Accented passing tone.”
 Answer: “Suspension.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:] Now identify the sixth above the bass in the cadential $\frac{6}{4}$ chord.

[Answer: the C quarter note in the soprano on the downbeat of m. 18. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up multiple choice question:] What type of nonharmonic tone is this?

[Possible answers: “Anticipation,” “Appoggiatura,” “Suspension,” “Accented passing tone.”
 Answer: “Accented passing tone.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Conclusion:

In this lesson we have seen how common interval progressions, coupled with melodic embellishments, may be used to expand harmonies. These individual embellishments combine to form full, four-voiced sonorities. Often, these sonorities coincidentally contain the pitches of familiar chords in first or second inversion. However, even though auxiliary sonorities may resemble those chords, it is important to remember that they do not have the *functional meaning* of those chords. Instead, we refer to them as auxiliary sonorities. In other words, the V in a “I - V⁶ - I” expansion does not have a dominant function (as it would in “I - IV - V - I”). Accordingly, we have either placed the auxiliary sonority in parentheses (i.e. “I - (vii⁶) - I⁶”) or refrained from labeling it altogether (i.e. “I_____”). Although root-position triads are permissible, most auxiliary sonorities appear as inverted triads for the sake of smooth voice leading.

Although the majority of this lesson demonstrated the expansion of a I chord, we also saw that similar examples are possible as models for expanding other reference harmonies. In other words, the “I - (vii⁶) - I⁶” expansion can be used as a model for expanding a ii harmony: “ii - (I⁶) - ii⁶.”

Auxiliary sonorities are an important tool in tonal music. It is important that you learn to recognize them and to distinguish them from functional harmonies.

Lesson JJJ – Applied Chords

Introduction:

Very frequently, when analyzing tonal music, you will encounter chords that include non-diatonic pitches. Some of them, like those discussed in Lesson III, arise from voice-leading procedures and expand a reference sonority. We will now look at another set of sonorities, known as *applied chords*, which also enrich the harmonic vocabulary by incorporating chromatically altered pitches.

Applied chords are ones modeled on familiar dominant-function chords (V, V⁷, vii^o, vii^{o7}, and vii^{ø7}) and suggest a momentary, pseudo-tonic function for a chord other than the global tonic¹. Momentarily highlighting such a pseudo-tonic by means of a pseudo-dominant chord is called *tonicization*.

In this lesson, we will first discuss the difference between modulation and tonicization. That distinction is essential for understanding how applied chords work. We will then look at several examples of applied dominant chords and applied leading-tone chords, and will discuss associated voice-leading issues.

Modulation vs. tonicization:

As mentioned above, tonicization occurs when a chord other than the global tonic is heard momentarily, or in passing, as a rival tonic. By contrast, a modulation establishes a new key more enduringly, generally as a sign of large-scale structural organization, sometimes even leading to a change in key signature. Tonicization and modulation are most clearly differentiated by duration and structural significance. A tonicization is brief, lasting from two or three chords to a phrase, and is *not* a factor in a work's overall structure. A modulation, on the other hand, takes hold for a longer period, usually prevailing for an entire section, and *is* a factor in a work's overall structure.

Because modulation entails a change of key, it almost always has one or more key-defining cadences, among them often a perfect authentic cadence. In the case of a tonicization, although the resolution of an applied chord sounds cadential, the tonicized chord soon loses its pseudo-tonic function and reverts to its diatonic function, with no change of key.

You may have come across such terms as “implied tonic” or “temporary tonic” to identify and describe the chord being tonicized. In these lessons we will use “pseudo-tonic.” This terminology reflects the fact that the chord being tonicized retains its function in terms of the global key. It is given tonic coloration, but never actually attains a tonic function.

As you will see in later lessons, applied chords can be used to initiate a modulation. For now, we will limit our discussion to tonicizations.

Activity 10.1:

Being able to distinguish tonicizations from modulations can be difficult. In this exercise, you will be given two hypothetical situations. One of them describes a tonicization, the other a modulation. It is up to you to decide which is which.

[Matching question:]

¹ Applied chords are also frequently referred to as *secondary dominants*. This reflects the fact that they have a dominant function, but in a key other than the global tonic.

Situation 1: “You are analyzing a song by Schubert. The song begins in G major and stays there for two whole stanzas. In the third stanza, however, you notice that the Ds have consistently become D[#]s. The third stanza ends with a perfect authentic cadence on an E-minor chord. The fourth stanza ends the same way. The D[#]s become absent for the fifth and final stanza which ends conclusively in G major.”

Situation 2: “You are analyzing a movement from a symphony by Haydn. The movement is in B^b major, but towards the end you come across a single C-major chord. This chord leads immediately to an F-major harmony, and for a moment, this pair of chords seems to imply an F-major tonality. This sense is fleeting, however, and the F-major chord moves to a B^b-major chord. The harmony then alternates several times between F-major and B^b-major chords, lending a strong sense of repose to end the movement.”

[Answer: Situation 1 = modulation, Situation 2 = tonicization. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, modulations tend to have several key-defining cadences while tonicizations are fleeting. Try again.”]

Applied dominant chords:

The pervasive dominant/tonic relationship is the most important, defining characteristic of tonal music. Precisely because that harmonic relationship is so common and characteristic, tonicization is possible. We immediately recognize the link between an applied dominant and the chord being tonicized.

In the following example, a V chord is tonicized by an applied dominant chord. We read the progression “one, five of five, five.”

Example 1:

Tonicization of
G major

I V/V V

/ \

pseudo-dominant pseudo-tonic

The dominant in C major is a G-major chord (the V on beat three). The applied chord is formed from the pitches of the key implied by the pseudo-tonic. Since a G-major chord is being tonicized, the applied dominant is built from the pitches of the dominant chord in G major, the pseudo-tonic key. (As mentioned above, the chord being tonicized is referred to as a pseudo-tonic because in the larger context, it does not have tonic function. In Example 1 the V chord is still the dominant.) The dominant of G major is a D major chord. Thus, the applied dominant to G major has the pitches D, F[#], and A. As you can see in Example 1, the applied chord resolves normatively as if in the key of the pseudo-tonic. Most importantly, the key-defining temporary leading tone, F[#], resolves up by semitone to the pseudo-tonic keynote, G.

The voice-leading from V/V to V in Example 1 can be explained using the same methods outlined in Lesson AAA (Basic Interval Progressions). The primary interval progression is formed by the bass and tenor: “5 - 8” as the bass leaps down from D to G and the tenor steps up from A to B. The alto harmonizes in parallel sixths with the tenor and the soprano forms an oblique “6 - 5” progression with the alto.

Applied chords are readily identifiable because they contain chromatic pitches. In Example 1, the V/V contains an F#. F# is the leading tone in G major and its presence in the applied dominant is indispensable for implying pseudo-tonic status for the G major chord. As with any chromatic pitch, temporary leading tones in applied dominants must be treated carefully. Ideally, the chromatic pitch should be approached by step, taking care to avoid linear augmented intervals (scale degree $\hat{3}$ to $\hat{\#4}$ in minor, for example), and to resolve dissonances according to established, conventional interval progressions.

The voice leading from V/V to V can be shown with the basic interval progressions from Lesson AAA: the bass and tenor form the familiar cadential “5 - 8” progression, the alto ascends in parallel sixths with the tenor, and the soprano harmonizes the alto with an oblique “6 - 5” progression. These patterns are shown in Example 2:

Example 2:

Example 2 illustrates the voice leading from the tonic (I) to the applied dominant (V/V) and then to the dominant (V). The interval progressions are labeled as follows:

- Soprano: 6 - 5
- Alto: 6 - 6
- Bass: 5 - 8

The chords are labeled I, V/V, and V.

Tonicization of the V chord with an applied dominant triad occurs very frequently in tonal music. The following four examples show similar applied chords drawn from Bach chorales.

Example 3 (J.S. Bach, “Ach Gott und Herr, wie groß und schwer midi,” BWV 255, m. 1):

Example 3 shows the voice leading from the applied dominant (V/V) to the dominant (V) in a Bach chorale. The interval progressions are labeled as follows:

- Alto: v/v
- Bass: v

Example 4 (J.S. Bach, “Wie schön leuchtet der Morgenstern,” BWV 36(2).4, m. 2):

v/v V

Example 5 (J.S. Bach, “Ermuntre dich, mein schwacher Geist,” BWV 43.11, mm. 3-4):

v/v V

Example 6 (J.S. Bach, “Kommt her, ihr lieben Schwesterlein,” BWV 151.5, mm. 3-4):

v/v V

It will help you in identifying tonicizations of V by noticing that in each of the above examples, scale degree $\hat{4}$ is raised (the F# in Example 3, the G# in Example 4, and so on). Scale degree $\hat{4}$ must be raised in an applied chord in order to function as the temporary leading tone to V.

Activity 10.2:

In this activity, you will be presented with a series of chorale excerpts, each containing a tonicization of the dominant. For each exercise, first identify the leading tone, then label the chord with the appropriate roman numeral (e.g., “V/V”).

Exercise 10.2a:

In the following excerpt (J.S. Bach, BWV 41.6s, “Jesu, nun sei gepreiset,” mm. 3-4), identify a temporary leading tone:

[Answer: F# in the pickup beat.]

[Follow-up question:] In the global key of C major, how should the chord containing the F# be labeled?

[Answer: “V/V”]

Exercise 10.2b:

In the following excerpt (J.S. Bach, BWV 318, “Menschenkind, merk eben,” mm. 3-6), identify a temporary leading tone:

[Answer: C# in the pickup beat.]

[Follow-up question:] In the global key of G major, how should the chord containing the F# be labeled?

[Answer: “V/V”]

Exercise 10.2c:

In the following excerpt (J.S. Bach, BWV 153.9, “Herr Jesu Christ, meins Lebens Licht,” mm. 13-16), identify a temporary leading tone:

[Answer: F# in bass, m. 15.]

[Follow-up question:] In the global key of C major, how should the chord containing the F# be labeled?

[Answer: “V/V”]

Exercise 10.2d:

In the following excerpt (J.S. Bach, BWV 43.11, “Ermuntre dich, mein schwacher Geist,” mm. 1-8), identify a temporary leading tone:

[Answer: C# in the pickup beat.]

[Follow-up question:] In the global key of G major, how should the chord containing the C# be labeled?

[Answer: “V/V”]

While the above examples illustrated applied dominant triads, applied chords can also contain a chordal seventh:

Example 7:

I V⁷/V V

The major-minor seventh sonority is used more often than the triad because it has an immediately and unmistakably recognizable dominant function. (As discussed in Lesson GGG, the dominant seventh chord is the only diatonic major-minor seventh chord.) In other words on hearing a major-minor seventh, we instinctively assign it a dominant function. That instinct is confirmed when the chord resolves—as it does from the second to the third beat in Example 7—to the pseudo-tonic. As in Example 1, the applied dominant seventh in Example 7 resolves as it would in the key of G major. Most importantly, the leading tone resolves up by step and the chordal seventh down. (Refer to Lesson EEE to review proper treatment of dominant seventh chords.)

Applied dominant seventh chords resolve according to the same conventions of basic interval progressions presented in Lessons AAA (basic interval progressions) and GGG (the dominant seventh chord). In Example 7, the diminished fifth (F# and C) formed by alto and soprano in the applied dominant contract to form a major third (d5 - M3). The soprano and tenor illustrate basic interval progression “3 - 3,” alto and tenor “6 - 8,” and tenor and bass the special cadential progression “5 - 8”.

Example 8:

d5 - M3

5 - 8

I V⁷/V V

Activity 10.3:

Applied dominant seventh chords resolve according to the same conventions as diatonic dominant seventh chords. In this activity, you will analyze the voice leading in a series of brief progressions, each containing an applied dominant seventh chord.

Exercise 10.3a:

Is the voice leading in the following example correct as V⁷/V resolves to V?

I V⁷/V V

[Answer: No. Response if correct: “Correct! One of the voices in the V^7/V chord does not resolve correctly.” Response if incorrect: “Incorrect. There is a problem with the voice leading.”]

[Follow-up activity:] Fix the voice-leading by adjusting one of the voices of the V chord.

[Answer: tenor should be D instead of G. Response if correct: “Correct! G does not actually belong to the V chord in G major. Resolving to D is a much better choice.” Response if answer moves another voice: “Incorrect. The voice leading in that voice is fine as is.” Response for any other answer: “Incorrect. Try again.”]

Exercise 10.3b:

Is the voice leading in the following example correct as V^7/V resolves to V?

The musical notation shows three chords in G major: I (G major), V^7/V (D7), and V (G major). The voice leading is as follows: Soprano (S) starts on G, moves to A, then to G; Alto (A) starts on B, moves to C, then to B; Tenor (T) starts on D, moves to E, then to D; Bass (B) starts on G, moves to F, then to G.

I V^7/V V

[Answer: No. Response if correct: “Correct! One of the voices in the V^7/V chord does not resolve correctly.” Response if incorrect: “Incorrect. There is a problem with the voice leading.”]

[Follow-up activity:] Fix the voice-leading by adjusting one of the voices of the V chord.

[Answer: alto should be A instead of C. Response if correct: “Correct! The seventh of the applied dominant seventh chord should resolve down by step.” Response if answer moves another voice: “Incorrect. The voice leading in that voice is fine as is.” Response for any other answer: “Incorrect. Try again.”]

Exercise 10.3c:

Is the voice leading in the following example correct as V^7/V resolves to V?

The musical notation shows three chords in D major: I (D major), V^7/V (A7), and V (D major). The voice leading is as follows: Soprano (S) starts on D, moves to E, then to D; Alto (A) starts on E, moves to F#, then to E; Tenor (T) starts on F#, moves to G, then to F#; Bass (B) starts on A, moves to G, then to A.

I V^7/V V

[Answer: Yes. Response if correct: “Correct! All of the voices in the V^7/V chord resolve correctly.” Response if incorrect: “Incorrect.”]

Exercise 10.3d:

Is the voice leading in the following example correct as V^7/V resolves to V?

The musical notation shows three chords in G major: I (G major), V^7/V (D7), and V (G major). The voice leading is as follows: Soprano (S) starts on G, moves to A, then to G; Alto (A) starts on B, moves to C, then to B; Tenor (T) starts on D, moves to E, then to D; Bass (B) starts on G, moves to F, then to G.

I V^7/V V

[Answer: No. Response if correct: “Correct! One of the voices in the V^7/V chord does not resolve correctly.” Response if incorrect: “Incorrect. There is a problem with the voice leading.”]

[Follow-up activity:] Fix the voice-leading by adjusting one of the voices of the V chord.

[Answer: soprano should be F instead of C. Response if correct: “Correct! The leading tone of applied dominant should resolve to the temporary tonic.” Response if answer moves another voice: “Incorrect. The voice leading in that voice is fine as is.” Response for any other answer: “Incorrect. Try again.”]

An applied chord itself may also be expanded. The following example shows a tonicization of V with a V/V preceded by a cadential $\frac{6}{4}$ chord:

Example 9:

The musical notation for Example 9 consists of a grand staff with two staves. The treble clef staff contains three chords: a triad of C4, E4, G4; a dyad of F#4, C5; and a triad of G4, B4, D5. The bass clef staff contains three chords: a triad of C4, E4, G4; a dyad of F4, C5; and a triad of G4, B4, D5. Below the staff, the chords are labeled as I, V $\frac{6}{4}$ /V, and V.

The sixth and fourth above the bass resolve downwards by step—just as they would in a typical cadential progression—creating the applied dominant harmony before resolving to the tonicized V.

Although other chords besides V may be tonicized (more on this below), tonicization of the dominant is a special case. The following example shows a common progression from the tonic to the dominant through a pre-dominant ii chord:

Example 10:

The musical notation for Example 10 consists of a grand staff with two staves. The treble clef staff contains three chords: a triad of C4, E4, G4; a dyad of F4, A4; and a triad of G4, B4, D5. The bass clef staff contains three chords: a triad of C4, E4, G4; a dyad of F4, C5; and a triad of G4, B4, D5. Below the staff, the chords are labeled as I, ii, and V.

Compare Examples 1 and 10. As you can see, the only difference is the alto’s second note (F in Example 10 instead of F#). Because the applied dominant to V is a chromatically modified ii chord, V/V can replace ii in harmonic progressions. In other words, in their tonicizing function applied dominants may serve as pre-dominants.

An applied dominant can also enhance the pre-dominant function, as it does in the following two examples, where the diatonic pre-dominant function is subsequently intensified when one of its members is chromatically altered to create a tonicizing applied dominant.

Example 11:

I ii V^7/V V

Example 12:

I IV V_5^6/V V

Activity 10.4:

As you saw in Examples 11 and 12, applied chords are closely related to pre-dominant chords and can enhance the pre-dominant function. In each of the following examples, alter one of the pitches of the pre-dominant chord to create an applied dominant or leading-tone chord.

Exercise 10.4a:

In the following example, change one of the notes in the pre-dominant chord on beat three to create a V_5^6/V :

F: I ii^6 V

[Answer:

F: I ii^6 V_5^6/V V

. Response if correct: “Correct! Raising the bass to B natural changes the ii_5^6 chord into a V_5^6/V .” Response if incorrect: “Incorrect. Try again.”]

Exercise 10.4b:

In the following example, change one of the notes in the pre-dominant chord on beat three to create a vii^0/V :

G: I IV V

[Answer:

G: I IV vii^o/V V . Response if correct: “Correct! Raising the bass to C[#] natural changes the IV chord into a vii^o/V.” Response if incorrect: “Incorrect. Try again.”]

Exercise 10.4c:

In the following example, change one of the notes in the pre-dominant chord on beat three to create a V⁷/V:

Bb: I ii⁷ V

[Answer:

Bb: I ii⁷ V⁷/V V . Response if correct: “Correct! Raising the soprano to E natural changes the ii⁷ chord into a V⁷/V.” Response if incorrect: “Incorrect. Try again.”]

Exercise 10.4d:

In the following example, change one of the notes in the pre-dominant chord on beat three to create a vii^{o6}/V:

D: I IV⁶ V

[Answer:

D: I IV⁶ vii⁰/V V . Response if correct: “Correct! Raising the soprano to G[#] changes the IV⁶ chord into vii⁰/V.” Response if incorrect: “Incorrect. Try again.”]

Applied leading-tone chords:

In addition to applied dominant chords, applied leading-tone chords are also common. The following example is similar to Example 1, but this time the leading-tone triad borrowed from the dominant key tonicizes the V chord.

Example 13:

Again, the leading-tone chord resolves normatively, as it would in the key of G major. (Refer to Lesson FFF for a discussion of the leading-tone chord.) Most importantly, the leading tone (F[#]) steps up to the pseudo-tonic (G). The voice leading from vii⁰⁶/V to V⁶ adheres to the basic intervals progressions from Lesson AAA. The tenor and alto ascend with the bass, respectively forming parallel “6 - 6” and “3 - 3” progressions, while the octave formed by the bass and soprano resolves inwards to a minor sixth (“8 - 6”).

As with any vii⁰⁶ chord, a tritone occurs in vii⁰⁶/V as a resultant interval formed by voices that are consonant with the bass. In Example 8, the tritone formed by the tenor and alto (F[#] and C respectively) resolves in similar motion to a perfect fifth (G and D). Lesson FFF, on the vii⁰ chord, illustrates the guiding “3 - 3” progression between the bass and an upper voice.

Example 14:

In this case, the tritone could not resolve to a major third (G and B), because to do so would be to double the leading tone of C major in the V⁶ chord, resulting in forbidden parallel octaves when both leading tones ($\hat{7}$) resolve to $\hat{8}$.

Applied leading-tone triads are also abundant in the tonal repertoire. The following examples show tonicizations of V via $\text{vii}^{\circ 6}/\text{V}$ chords:

Example 15 (J.S. Bach, “Gott lebet noch, Seele, was verzagst du doch?,” BWV 320, mm. 1-2):

Musical notation for Example 15, showing a tonicization of V via a $\text{vii}^{\circ 6}/\text{V}$ chord. The notation is in 3/4 time, with a treble clef and a bass clef. The key signature has one flat (B-flat). The first measure shows a $\text{vii}^{\circ 6}/\text{V}$ chord (F, A-flat, C) in the bass and a V chord (B-flat, D, F) in the treble. The second measure shows a V chord (B-flat, D, F) in the bass and a V chord (B-flat, D, F) in the treble. The notes are: Bass: F, A-flat, C; Treble: B-flat, D, F.

Example 16 (J.S. Bach, “Wie nach einer Wasserquelle,” BWV 39.7, m. 2):

Musical notation for Example 16, showing tonicizations of V via $\text{vii}^{\circ 6}/\text{V}$, V, V^7/V , and V chords. The notation is in common time (C), with a treble clef and a bass clef. The key signature has one sharp (F-sharp). The first measure shows a $\text{vii}^{\circ 6}/\text{V}$ chord (F, A, C) in the bass and a V chord (F, A, C) in the treble. The second measure shows a V chord (F, A, C) in the bass and a V chord (F, A, C) in the treble. The third measure shows a V^7/V chord (F, A, C, E) in the bass and a V chord (F, A, C) in the treble. The fourth measure shows a V chord (F, A, C) in the bass and a V chord (F, A, C) in the treble. The notes are: Bass: F, A, C; Treble: F, A, C.

In Example 15, the tritone occurs between the soprano and the alto as an augmented fourth. It resolves properly by ascending to a perfect fourth. In Example 16, the C# in the alto creates a tritone with both the tenor (an augmented fourth) and the soprano (a diminished fifth). Both tritones resolve normatively (to a perfect fourth and major third respectively). Bach continues to tonicize V with the V^7/V chord on beat three.

Like the related applied dominant chord, applied leading-tone chords may also include a chordal seventh. Fully-diminished applied leading-tone chords are common even when tonicizing major triads because of their immediately recognizable sonority. (Half-diminished seventh chords are less common and can only be used to tonicize major triads.) The following example tonicizes the V chord with a fully-diminished leading-tone chord:

Example 17:

Musical notation for Example 17, showing tonicization of V via a fully-diminished leading-tone chord. The notation is in common time (C), with a treble clef and a bass clef. The key signature has one sharp (F-sharp). The first measure shows a I chord (F, A, C) in the bass and a I chord (F, A, C) in the treble. The second measure shows a $\text{vii}^{\circ 7}/\text{V}$ chord (F, A, C, E) in the bass and a V chord (F, A, C) in the treble. The third measure shows a V chord (F, A, C) in the bass and a V chord (F, A, C) in the treble. The notes are: Bass: F, A, C; Treble: F, A, C.

The rules for resolving diatonic leading-tone seventh chords also hold for resolving applied leading-tone sevenths. (Refer to Lesson GGG for discussion of leading-tone seventh chord treatment.) Both tritones must resolve properly according to the basic interval progressions involving a tritone, as outlined in Lesson FFF. In this case, the bass and tenor (F# and C respectively) form a diminished fifth. This tritone is resolved normatively to a major third. The alto and soprano meanwhile (Eb and A

respectively) form a diminished fourth. This tritone also resolves normatively, in similar motion to a perfect fourth:

Example 18:

A4 - P4

d5 - M3

I vii^o/V V

Note the adherence to basic interval progressions between the other voice pairs. The bass and soprano follow a “10 - 8” progression while the tenor moves in parallel thirds and sixths with the alto and soprano respectively. As in Example 14, care must be taken to avoid doubling the leading tone in the V chord. Here, the A steps down to G instead of resolving up to B.

Activity 10.5:

Applied leading-tone chords resolve according to the same conventions as diatonic leading-tone chords. In this activity, you will analyze the voice leading in a series of brief progressions, each containing an applied leading-tone chord.

Exercise 10.5a:

Is the voice leading in the following example correct as vii^o/V resolves to V?

G: I vii^o/V V

[Answer: Yes. Response if correct: “Correct! All of the voices in the vii^o/V resolve properly.” Response if incorrect: “Incorrect. All of the voices in the vii^o/V resolve properly.”]

Exercise 10.5b:

Is the voice leading in the following example correct as vii^o/V resolves to V?

e: I vii^o/V V

[Answer: No. Response if correct: “Correct! One of the voices in the vii^o/V chord does not resolve correctly.” Response if incorrect: “Incorrect. There is a problem with the voice leading.”]

[Follow-up activity:] Fix the voice-leading by adjusting one of the voices of the V chord.

[Answer: alto should be F[#] instead of B. Response if correct: “Correct! The alto must resolve down by step to F[#] (resolving the tritone formed by C[#] and G to a perfect fifth).” Response if

answer moves another voice: “Incorrect. The voice leading in that voice is fine as is.” Response for any other answer: “Incorrect. Try again.”]

Exercise 10.5c:

Is the voice leading in the following example correct as $\text{vii}^{\text{o7}}/\text{V}$ resolves to V ?

The musical notation shows two staves. The top staff is in treble clef and the bottom in bass clef. The key signature has one flat (B-flat). The first measure is F major (F, A, C). The second measure is the diminished seventh chord of F (F, A-flat, B-flat, D-flat). The third measure is C major (C, E, G). The voice leading is: Soprano (F, A-flat, E), Alto (A, B-flat, E), Tenor (C, B-flat, E), Bass (F, D-flat, G).

[Answer: No. Response if correct: “Correct! One of the voices in the $\text{vii}^{\text{o7}}/\text{V}$ chord does not resolve correctly.” Response if incorrect: “Incorrect. There is a problem with the voice leading. (Hint: You should avoid doubling the leading tone in the V chord.)”]

[Follow-up activity:] Fix the voice-leading by adjusting one of the voices of the V chord.

[Answer: soprano should be C instead of E. Response if correct: “Correct! Although the tritone formed by A^{\flat} and D would resolve to a major sixth, the soprano cannot move to E because to do so would double the leading tone in the V chord. Resolving to C is a much better choice.”]

Response if answer moves another voice: “Incorrect. The voice leading in that voice is fine as is. Try again. (Hint: You should avoid doubling the leading tone in the V chord.)” Response for any other answer: “Incorrect. Try again.”]

Exercise 10.5d:

Is the voice leading in the following example correct as $\text{vii}^{\text{o7}}/\text{V}$ resolves to V ?

The musical notation shows two staves. The top staff is in treble clef and the bottom in bass clef. The key signature has two flats (B-flat, E-flat). The first measure is D major (D, F, A). The second measure is the diminished seventh chord of D (D, F, A-flat, B-flat). The third measure is D major (D, F, A). The voice leading is: Soprano (D, F, A), Alto (F, A-flat, A), Tenor (A, B-flat, A), Bass (D, B-flat, A).

[Answer: Yes. Response if correct: “Correct! All of the voices in the $\text{vii}^{\text{o7}}/\text{V}$ resolve properly.” Response if incorrect: “Incorrect. All of the voices in the $\text{vii}^{\text{o7}}/\text{V}$ resolve properly.”]

Other chords that may be tonicized:

For the sake of clarity—and because V is the most commonly tonicized triad—all of the examples in this lesson so far have tonicized the dominant chord. However, applied dominants can be introduced to tonicize any diatonic major or minor triad. Thus in major keys ii , iii , IV , V , and vi can be tonicized, and in minor III , iv , v , VI , and VII .

Popup Box: Diminished triads cannot represent or imply a key. For example, in A minor, one cannot tonicize the ii^{o} chord because there is no B-diminished key. It is for this reason that only major or minor triads can be tonicized.

The following example shows the tonicization of a ii chord:

Example 19:

I V^6_5/ii ii V^7

Such tonicizations of chords other than V are common in tonal music. The following two examples show Bach choral excerpts with tonicizations of the ii chord (first with an applied V^6_5 chord and then with an applied vii^{o6} chord):

Example 20 (J.S. Bach, “Kommt her, ihr lieben Schwesterlein,” BWV 376, mm. 8-9):

V^6_5/ii ii

Example 21 (J.S. Bach, “Wie schön leuchtet der Morgenstern,” BWV 36(2).4, mm. 10-11):

vii^o/ii ii

The vi chord can also be tonicized with applied chords. The following three examples show chorale excerpts with tonicizations of vi:

Example 22 (J.S. Bach, “O Ewigkeit, du Donnerwort,” BWV 20.7, mm. 4-5):

V/vi vi

Example 23 (J.S. Bach, “Nun freut euch, lieben Christen, g'mein,” BWV 307, mm. 5-6):

vii^o/vi vi

Example 24 (J.S. Bach, “Kommt her, ihr lieben Schwesterlein,” BWV 151.5, mm. 7-8):

vii^o/vi vi

Example 22 tonicizes vi with an applied V⁶ while Examples 23 and 24 each use applied chords built on the temporary leading tone.

Activity 10.6:

In this activity you will analyze the voice leading of Example 23 and 24 to see if they conform to the voice leading rules outlined in previous lessons:

Exercise 10.6a:

Identify the tritone in the vii^{o6}/vi following excerpt (J.S. Bach, “Nun freut euch, lieben Christen, g'mein,” BWV 307, mm. 5-6):

vii^o/vi vi

[Possible pitches: A in the bass, C in the tenor, F[#] in the alto, G in the alto, A in the soprano. Answer: C in the tenor and F[#] in the alto. Response if correct: “Correct! C and F[#] form an augmented fourth.” Response if G is included: “Incorrect. G is a suspension in the alto voice. F[#] is the chord tone. Try again.” Response if incorrect: “Incorrect. Those two pitches do not form a tritone.”]

[Follow-up question 1:] To what interval does the augmented fourth resolve?

[Answer: perfect fourth (P4). Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question 2:] Does the vi chord on the downbeat of m. 6 provide a valid resolution of the vii^{o6}/vi?

[Answer: Yes. Response if correct: “Correct! All of the voice leading from vii^{o6}/vi to vi in this case is valid.” Response if incorrect: “Incorrect. All of the voice leading from vii^{o6}/vi to vi in this case is valid.”]

Exercise 10.6b:

Identify one of the tritones in the $vii^{\circ 7}/vi$ following excerpt (J.S. Bach, “Kommt her, ihr lieben Schwesterlein,” BWV 151.5, mm. 7-8):

$vii^{\circ 7}/vi$ vi

[Possible pitches: D# in the bass, C in the tenor, F# in the alto, A in the alto, A in the soprano.

Answers: D#/A or C/F#. Response if D#/A: “Correct! D# and A form a diminished fifth.”

Response if C/F#: “Correct! C and F# form an augmented fourth.” Response if incorrect:

“Incorrect. Those two pitches do not form a tritone.”]

[Follow-up question 1:] Now identify the other tritone.

[SAME AS ABOVE: Possible pitches: D# in the bass, C in the tenor, F# in the alto, A in the alto, A in the soprano. Answers: D#/A or C/F#. Response if D#/A: “Correct! D# and A form a

diminished fifth.” Response if C/F#: “Correct! C and F# form an augmented fourth.” Response if incorrect: “Incorrect. Those two pitches do not form a tritone.”]

[Follow-up question 2:] To what interval does the diminished fifth formed by D# and A resolve?

[Answer: minor third (m3). Response if correct: “Correct!” Response if incorrect: “Incorrect.

Try again.”]

[Follow-up question 3:] To what interval does the augmented fourth formed by C and F# resolve?

[Answer: minor sixth (m6). Response if correct: “Correct!” Response if incorrect: “Incorrect.

Try again.”]

[Follow-up question 4:] Does the vi chord on the downbeat of m. 6 provide a valid resolution of the $vii^{\circ 7}/vi$?

[Answer: Yes. Response if correct: “Correct! All of the voice leading from $vii^{\circ 7}/vi$ to vi in this case is valid.” Response if incorrect: “Incorrect. All of the voice leading from $vii^{\circ 7}/vi$ to vi in

this case is valid.”]

As mentioned above, for a sonority to be an applied chord it must have some kind chromatic alteration. Some progressions may at first resemble a tonicization. Consider the progression of a C-major triad to an F-major triad in a piece in C-major. One might be tempted to analyze this as “V/IV - IV,” implying that the F-major triad is being tonicized. To do so, however, would throw into question and compromise the functional centrality of the tonic.

Example 25:

incorrect: V/IV IV

correct: I IV

Progressions such as these are not tonicizations, but rather represent inherent characteristics of the diatonic scale. To analyze this C-major chord as anything other than “I” would obscure its fundamental role as tonic. If, on the other hand, the sonority on beat one were a major-minor (dominant) seventh chord, a chromatic alteration would be required and the progression would be analyzed as follows:

Example 26:

correct: V^7/IV IV

In Example 26, the V^7/IV resolves properly to the IV chord. The chordal seventh (B \flat in the tenor) resolves down to A, forming “6 - 6” with the alto and an expanding tritone, A4-6, with the soprano, while the alto forms “6 - 8” with the soprano.

The following example shows an excerpt from a chorale with a tonicization of IV, similar to example 26. The E \flat in the bass on beat three is essential for hearing the chord as an applied dominant seventh.

Example 27 (J.S. Bach, “Christus, der ist mein Leben,” BWV 281, m. 1):

V V^2/IV IV 6

Popup Box: Examples 25 and 26 make clear why it is important to distinguish between diatonic major chords and applied dominants. By definition, applied chords must contain chromatic alterations (leading tones borrowed from related keys). Analyzing the C-major triad in Example 25 as an applied dominant, for instance (V/IV), undermines the identity of a fundamental harmonic function: the tonic!

The VII chord in a minor key is a special case. When VII, a diatonic major chord, leads to III, as it routinely does, VII sounds like an applied dominant leading to a pseudo-tonic. That sense is especially strong because III is the tonic of the relative major, which in a minor key is a prominent rival tonic, and, unlike other pseudo-tonics, requires no chromatically-altered chords (i.e. no borrowed leading tones) in order to establish itself. VII thus sounds like a V/III , and VII 7 like a V^7/III . Further, depending on musical context, the diatonic ii $^{\circ}$ and ii $^{\circ 7}$ in a minor key may sound, respectively, like the vii $^{\circ}/III$ and vii $^{\circ 7}/III$.

The strength of the III chord in minor keys as a rival tonic results in the possibility of diatonic chords—VII and VII 7 , ii $^{\circ}$ and ii $^{\circ 7}$ —functioning as applied chords tonicizing III, even though they lack chromatic alterations. This is especially true of VII 7 because it is immediately recognizable as a dominant seventh chord. Composers exploit this particular overlap between diatonic and applied chords in order to make smooth modulations from a minor key to its relative major. (See Lesson KKK for more on modulation to the relative major.) For the sake of clarity and uniformity, we will always label diatonic chords as such.

We will therefore use VII, VII⁷, ii^o, and ii^{ø7} instead of V/III, V⁷/III, vii^o/III, and vii^{ø7}/III, despite tonicizing characteristics these chords may have.

Activity 10.7:

In this activity you will be asked to give the pitches for a variety of applied chords in various keys. You will then be asked to insert these chords into a SATB setting.

Exercise 10.7a:

What pitch is in the bass of V₅⁶/V in A major?

[Answer: D[#]. Response if correct: “Correct! D[#] is the bass of a V₅⁶/V in A major.” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question 1:] What pitches are in the upper voices of V₅⁶/V in A major?

[Answers: B, F[#] and A. Response if correct: “Correct!” Response if some of the pitches are correct: “That is partially correct. [X] would be found in the upper voices of V₅⁶/V in A major, but not [Y].” Response if completely incorrect: “Incorrect. None of those pitches are in the upper voices of V₅⁶/V in A major.”]

[Follow-up question 2:] Complete the progression below by inserting the pitches of V₅⁶/V in A major into the most logical voices:

A: I IV V₅⁶/V V

[Answer:

A: I IV V₅⁶/V V

. Response if student's answer matches: “Correct!” Response if student's answer does not match: “Incorrect. Try again. (Remember to use accidentals for any chromatically-altered pitches.)”]

Exercise 10.7b:

What pitch is in the bass of V₅⁶/ii in B^b major?

[Answer: B (natural). Response if correct: “Correct! B natural is the bass of a V₅⁶/ii in B^b major.” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question 1:] What pitches are in the upper voices of V₅⁶/ii in B^b major?

[Answers: G, D and F. Response if correct: “Correct!” Response if some of the pitches are correct: “That is partially correct. [X] would be found in the upper voices of V₅⁶/ii in B^b major, but not [Y].” Response if completely incorrect: “Incorrect. None of those pitches are in the upper voices of V₅⁶/ii in B^b major.”]

[Follow-up question 2:] Complete the progression below by inserting the pitches of V₅⁶/ii in B^b major into the most logical voices:



B \flat : I V \flat /ii ii

[Answer:



B \flat : I V \flat /ii ii

. Response if student's answer matches: "Correct!" Response if student's answer does not match: "Incorrect. Try again. (Remember to use accidentals for any chromatically-altered pitches.)"]

Exercise 10.7c:

What pitch is in the bass of vii^{o6}/vi in G major?

[Answer: F \sharp . Response if correct: "Correct! F \sharp is the bass of a vii^{o6}/vi in G major." Response if incorrect: "Incorrect. Try again."]

[Follow-up question 1:] What pitches are in the upper voices of vii^{o6}/vi in G major?

[Answers: D \sharp and A. Response if correct: "Correct!" Response if some of the pitches are correct: "That is partially correct. [X] would be found in the upper voices of vii^{o6}/vi in G major but not [Y]." Response if completely incorrect: "Incorrect. None of those pitches are in the upper voices of vii^{o6}/vi in G major."]

[Follow-up question 2:] Complete the progression below by inserting the pitches of vii^{o6}/vi in G major into the most logical voices:



G: I vii^{o6}/vi vi

[Answer:



G: I vii^{o6}/vi vi

. Response if student's answer matches: "Correct!" Response if student's answer does not match: "Incorrect. Try again. (Remember to use accidentals for any chromatically-altered pitches.)"]

Exercise 10.7d:

What pitch is in the bass of V $\frac{4}{2}$ /V in A \flat major?

[Answer: A. Response if correct: "Correct! A is the bass of a V $\frac{4}{2}$ /V in A \flat major." Response if incorrect: "Incorrect. Try again."]

[Follow-up question 1:] What pitches are in the upper voices of V_2^4/V in A^b major?

[Answers: B^b , D (natural) and F. Response if correct: "Correct!" Response if some of the pitches are correct: "That is partially correct. [X] would be found in the upper voices of V_2^4/V in A^b major, but not [Y]." Response if completely incorrect: "Incorrect. None of those pitches are in the upper voices of V_2^4/V in A^b major."]

[Follow-up question 2:] Complete the progression below by inserting the pitches of V_2^4/V in A^b major into the most logical voices:

A^b : IV V_2^4/V V^6 I

[Answer:

A^b : IV V_2^4/V V^6 I

. Response if student's answer matches: "Correct!" Response if student's answer does not match: "Incorrect. Try again. (Remember to use accidentals for any chromatically-altered pitches.)"]

Applied chords as auxiliary sonorities:

Applied chords may also appear as auxiliary sonorities used to expand a reference sonority. Consider the following example from the lesson on auxiliary sonorities (Lesson III):

Example 28:

In Example 28, an auxiliary sonority coincidentally containing the pitches of a V^6 chord is used to expand a vi chord. If tenor were to include a chromatic lower neighbor note ($A - G^\# - A$), the following expansion would result:

Example 29:

The image shows a musical score for three chords in A minor. The first chord is vi (F-A-C), the second is (vii°/vi) (G-B-A), and the third is vi6 (F-A-C). The notation is in treble and bass clefs, with the bass clef notes being an octave lower than the treble clef notes. The chords are labeled below the staff as vi, (vii[°]/vi), and vi⁶.

In the above example, the auxiliary sonority coincidentally produces the pitches of the $\text{vii}^{\circ 6}$ of A minor, tonicizing the reference chord, vi. This same type of expansion could be used on a V chord (“V - $(\text{vii}^{\circ 6}/\text{V}) - \text{V}^6$ ”), and so on.

Conclusion:

Applied chords highlight the arrival of diatonic chords by tonicizing them. They do this by simulating the readily recognizable and pervasive dominant-tonic relationship in tonal music, thereby imparting a pseudo-tonic meaning to diatonic chords other than the reigning tonic. When a tonicized triad leads to the subsequent chord, its native diatonic function emerges clearly. Ultimately, therefore, despite chromatic alterations applied chords actually strengthen the reigning tonality rather than weaken it.

Applied chords may be built on a root either a fifth above or semitone below the chord being tonicized, and may include a chordal seventh. They should resolve according to voice leading modeled in the basic interval progressions.

It is essential to remember the difference between tonicization and modulation when dealing with applied chords. Tonicization is a local-level procedure, modulation a global-level one, with large-scale structural significance for a work. The difference is evident both from the comparatively brief influence of pseudo-tonics, and from the quick reversion of tonicized chords to their expected diatonic functions.

Lesson KKK – Modulation

Introduction:

Until now, these lessons have focused on relatively small-scale musical events. Our discussion has focused on topics such as voice leading and the relationships between individual chords. In this lesson, we will broaden the scope by looking at larger contexts in order to address the topic of modulation.

Almost inevitably, a piece of tonal music explores one or more key areas besides the global tonic. Composers incorporate non-tonic key areas to provide contrast and to create anticipation for a return to the global tonic. In some pieces these non-tonic keys are more structurally significant than others. Furthermore, certain key relationships are more prevalent than others—the relationship between the tonic and the key of the dominant, for instance, being by far the most common.

In the lesson on applied chords (Lesson JJJ) we discussed the difference between tonicization and modulation. This lesson will begin with a similar discussion highlighting certain characteristics of modulation. From there we will move to a generic discussion of the technique of modulation. Finally, we will discuss a number of common modulations in both major and minor keys.

Tonicization vs. Modulation:

Applied chords, as we saw in Lesson JJJ, emphasize diatonic chords by momentarily giving them tonic color. However, the diatonic function of the tonicized chord does not change. A ii chord, for example, retains its pre-dominant function even when tonicized by a V^7/ii . The progression “ $V^7/ii - ii$ ” reminds us of the ubiquitous “ $V^7 - I$ ”, but the ii chord remains a pseudo-tonic—it never actually attains tonic function. In a modulation, by contrast, we do hear a new tonic.

One must keep in mind, however, that even a modulation is a temporary change of key because the vast majority of tonal music eventually returns to the global tonic key. The important distinction between tonicization and modulation has to do with structural significance. First, non-tonic keys last longer; unlike a tonicized chord, which retains its diatonic function, non-tonic keys remain in effect long enough to allow listeners to adjust to hearing them as new tonics. Further, they have greater weight because they include one or more decisive cadential progressions.

There are a number of clues that will help you identify modulations. Since a modulation will explore a new key area, accidentals will appear and remain present for a prolonged period of time. Sometimes, for lengthier non-tonic key areas, the composer may temporarily change the key signature. As mentioned above, strong cadential progressions are particularly effective in confirming a modulation. The presence of a cadence (or several) with a pre-dominant – dominant – tonic progression in a key other than the global tonic is a strong indication that the music has modulated. Tonicizations, on the other hand, are often limited to a single applied chord and its resolution.

Techniques of Modulation:

One of the most interesting aspects of the topic of modulation has to do with how composers manage to move from one key area to another. Several techniques are common. The simplest one is known as direct modulation.

In a direct modulation the composer ends a section in one key (typically with a cadence) and simply begins the next section in another. This technique is a useful way to modulate to the dominant: a

composer can end a phrase with a half cadence (on the dominant chord) and then simply begin the next phrase in the dominant key. The following excerpt illustrates this method:

Example 1 (J.C. Bach, Op. 5, No. 2, 2nd movement (1765), mm. 1-23):

G: I V₄ D: I

This excerpt begins in the key of G major, which is confirmed by the imperfect authentic cadence in m. 4. In m. 8 we arrive at a half cadence: a D-major chord with a $\frac{6}{4}$ suspension in the right hand. After this moment of repose, the music continues in D major, with C[#]s instead of C-naturals, eventually leading to a perfect authentic cadence in m. 23. The cadence in m. 8 terminates G major, and D major begins directly in m. 9.

Example 2 shows another direct modulation:

Example 2 (J.S. Bach, BWV 244.54, “Herzlich tut mich verlangen,” mm. 1-4):

F: V I d: V⁶ i V V' i

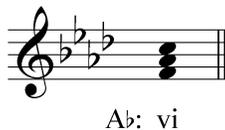
The first phrase in Example ends very clearly in the key of F major with an imperfect authentic cadence. On the fourth beat of m. 2, however, a C[#] is introduced in the bass. As the rest of the second phrase confirms, Bach has modulated to the D minor (the relative minor) and C[#] is the new leading tone. The modulation is immediate. The second phrase begins immediately after the fermata in the new key.

Although direct modulations are common in tonal music, they are not always appropriate because of the jarring effect of the abrupt change from one key to another. Composers often strive for harmonic smoothness, which a direct modulation disrupts.

Another method of modulation makes use of an applied chord. In this case, the modulation begins as a tonicization but continues in the tonicized key. Taking our example from above, a “V⁷/ii - ii” progression, though by itself a momentary tonicization, may initiate a modulation if a pre-dominant – dominant – tonic progression in the key of the supertonic were to follow. Hearing the modulation initially as a tonicization helps smooth over the abruptness of the key change. (An example of this type of modulation appears below in Example 7.)

The most common technique of modulation is with a pivot chord. A chord that occurs diatonically in both keys can serve as a pivot between them. The best choice of pivot chord is one that functions as a pre-dominant chord in the goal key. Consider the following chord in the key of A^b major:

Example 3:



In A^b major, vi is an F-minor chord. That chord can function as a pivot to the dominant key (E^b major) because it is ii in the key of E^b:

Example 4:



It is an effective pivot because it functions as a pre-dominant chord in the key of E^b, and can lead directly to the dominant which, in turn, resolves to the new tonic.

In the context of a modulation from A^b major to E^b major, the F-minor chord would initially be heard as the vi chord in A^b major. As the music continues in the new key, the F-minor chord is heard retroactively and every more strongly as the ii chord in E^b major. This change in function is confirmed by a strong cadence in the new key. The listener reinterprets the chord retroactively.

Consider the following example of a pivot-chord modulation. (Pivot chords are indicated with two lines of Roman numerals: the original key on top and the new key just below it.)

Example 5 (Beethoven, Piano Sonata, Op. 13 (“Pathétique”), 2nd Movement, mm. 13-23):

13

17

21

Ab: I

vi
Eb: ii

V⁷/ii ii V⁷/ii ii⁶ V⁷ vii⁷/vi

vi ii⁷ V⁶ V⁷ I

The beginning of this movement establishes the global tonic of A^b major and arrives at a perfect authentic cadence in m. 16. In m. 17 we encounter an F-minor chord which is prolonged through m. 19 with auxiliary applied dominant seventh chords. Initially, we hear F-minor as vi in A^b major. The music that follows, however, indicates a modulation to E^b major. The first sign is the dominant seventh chord in m. 20 (V⁷ of E^b major) which resolves deceptively to a C-minor chord in m. 21. The following measures present a perfect authentic cadence complete with pre-dominant chord (ii⁷) and cadential $\frac{6}{4}$ chord. In retrospect, the prolonged F-minor chord in mm. 17-19 is reinterpreted as a ii chord in E^b major.

As mentioned above, pivot chords are most effective when they function as pre-dominant chords in the goal key. In Example 5 above, the vi chord becomes a ii chord in the dominant key. This ii chord functions as a pre-dominant leading to a key-affirming V-I cadence.

Common Modulations:

Modulation is technically possible between any two keys. As the tonal practice evolved in the nineteenth century, composers explored more and more distantly related keys for their expressive effects. For now, we will limit our discussion to modulations between closely related keys.

A closely related key is one whose tonic chord is diatonic in the global tonic key. Example 5 contained a modulation to a closely related key: A^b major modulated to its dominant, E^b major. The key of E^b major is considered closely related to A^b major because its tonic triad is a diatonic chord in A^b major (the V chord). If the tonic of the new key is a diatonic member of the old key, the two keys are closely related.

For any given key there are five closely related keys. For a major key, closely related keys include those whose tonics are the ii, iii, IV, V, and vi chords. (vii^o is not included because no key has a diminished triad as its tonic and I has been left out because to modulate to the tonic key would not be a modulation at all!) Closely related keys to a minor key include those that have III, iv, v, VI, or VII as their tonic. These keys are considered closely related because they share so many pitches with the primary key. For example, C major differs from the closely-related key of G major by only one pitch: F[#]. All of the other pitches are common to both keys. As you may have noticed, the tonics of all the closely related keys are the same chords that can be tonicized with applied chords.

Activity 11.1:

In tonal music, most modulations move to closely related keys (keys whose tonic triad is a diatonic chord in the original key). Name the five keys that are closely related to G major. [Answers: A minor, B minor, C major, D major, and E minor. Response for each correct answer: “Correct!” Response for any incorrect answer [X]: “Incorrect. [X] is not a diatonic chord in G major and is therefore not a closely related key. Try again.”]

In the remaining sections, we will look at specific modulatory goals and discuss the potential pivot chords for reaching them. The examples discussed below are by no means the only possible modulations. As mentioned above, over the course of the nineteenth century composers became more adventurous in their modulations for expressive purposes. It became acceptable for pieces to modulate to increasingly distant keys. Accompanying this were several modulatory techniques other than by diatonic pivot. For the purposes of these lessons, our discussion will stick to closely related keys.

Modulations from Major Keys:

By far, the most common modulatory goal for a major key is the key of the dominant. Because of the close relationship between these two keys, modulation to the dominant provides contrast while maintaining unity in a piece. As mentioned above, one method of modulating to the dominant key consists of ending a phrase with a half cadence and simply continuing with the dominant harmony treated as the new tonic. That method (direct modulation) can also be understood as a pivot-chord modulation. As the dominant chord arrives, it functions as the dominant of the primary key. As the music continues, the chord becomes tonic of the new key.

There are four possible pivot chords between a major key and its dominant. The following table uses C major and G major as examples:

Table 1:

C major (the primary key)		G major (the dominant key)
I	=	IV
iii	=	vi
V	=	I
vi	=	ii

Each row of Table 1 shows a possible pivot chord. For example, the second row shows that the iii chord in C major (an E-minor triad) can be reinterpreted as a vi chord in G major (also an E-minor triad). Other chords in the key of C major (ii, IV, and vii^o) cannot be used as pivot chords because the quality of the analogous chord in G major is different (the chord built on D in C major is minor while the chord built on D in G major is major, and so forth).

Of the four possible pivot chords outlined in Table 1, “vi = ii” is the most common (see Example 5). The “I = IV” pivot, though certainly possible, is less common because it is difficult to hear the tonic triad as anything other than I once the key has been established. The same is true for “V = I.” It is difficult to hear the dominant of a key as anything else without a chord coming before it (in which case, “V = I” is no longer the pivot chord). The “iii = vi” pivot is less commonly used because the mediant harmony is relatively infrequent in tonal music.

Activity 11.2:

What is the dominant key in F major?

[Answer: C major. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up activity:]

Name three pivot chords that might be used in a modulation from F major to C major (remember to use uppercase roman numerals for major chords and lowercase roman numerals for minor chords):

F major C major

=

=

=

[Possible answers: “I = IV,” “iii = vi,” “V = I,” and “vi = ii.” Feedback for each correct answer: “Correct!” Feedback for incorrect answer if first roman numeral [X] is I, iii, V, or vi: “That is incorrect. Although [X] is a potential pivot chord in a modulation from F major to C major, your equivalent roman numeral in C major is incorrect. Try again.” Feedback for all other incorrect answers: “That is incorrect. [X] is not a potential pivot chord in F major for a modulation to C major. Try again.”]

The following example shows a modulation to the dominant key via a “I = IV” pivot chord:

Example 6 (J.S. Bach, BWV 153.9, “Herr Jesu Christ, meins Lebens Licht,” mm. 1-8):

C: I IV V² I⁶ V

G: IV⁶ V⁶ I V V I

The excerpt in Example 6 begins very clearly in the key of C major (the entire first measure is devoted to tonic harmony). The first phrase ends, however, with a half cadence in G major, the key of the dominant. The modulation to G major is confirmed by the second phrase which ends with a conclusive perfect authentic cadence in m. 8. This particular modulation is achieved via a pivot chord at the end of m. 2. After the hearing the material in measures 3 and following, the C-major harmony on beat three of

m. 2 is retrospectively reinterpreted as IV⁶ in G major. As mentioned above, the “I = IV” pivot chord is not used very frequently because it is difficult to reinterpret the tonic harmony as anything but. In this case, the inverted position of the C major chord helps to weaken its authority as tonic while the F# resolving to G in the following measure is heard very clearly as $\hat{7}$ to $\hat{1}$ in the new key.

(Some of the excerpts in this lesson, including the Bach chorale given in Example 6, are notably short and the modulations that take place therein do not last very long. One might argue that some of these modulations are in fact tonicizations due to their brevity. Nonetheless, the same modulatory procedures are present even at this small scale, and the examples will still be useful for demonstration.)

While modulation to the dominant key is the most common, the submediant is another frequent goal. The key of the submediant is the relative minor. As such, it shares all of its pitches with the primary major key and allows for smooth modulations. Because the pitch content of the two keys is exactly the same, any chord can be used as a pivot chord:

Table 2:

C major (the primary key)		A minor (the submediant key)
I	=	III
ii	=	iv
iii	=	v
IV	=	VI
V	=	VII
vi	=	i
vii ^o	=	ii ^o

As mentioned above, pivot-chord modulations are most effective when both interpretations of the pivot chord have pre-dominant function. For this reason, “ii = iv” and “IV = VI” are common pivot chords between a major key and its relative minor.

Activity 11.3:

What is the relative minor key in A major?

[Answer: F# minor. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up activity:]

For each of the following chords, give the roman numeral in A major and in F# minor (remember to use uppercase roman numerals for major chords and lowercase roman numerals for minor chords).

Exercise 11.3a:

Triad A major F# minor

B minor: =

[Answers: ii/iv. Response if correct: “Correct! B minor is ii in A major and iv in F# minor.” Response if first box is incorrect [X]: “That is partially correct. B minor is iv in F# minor, but not [X] in A major. Try again.” Response if second box is incorrect [Y]: “That is partially correct. B minor is ii in A major, but not [Y] in F# minor. Try again.”]

Exercise 11.3b:

Triad A major F[#] minor

D major: =

[Answers: IV/VI. Response if correct: “Correct! D major is IV in A major and VI in F[#] minor.” Response if first box is incorrect [X]: “That is partially correct. D major is VI in F[#] minor, but not [X] in A major. Try again.” Response if second box is incorrect [Y]: “That is partially correct. D major is IV in A major, but not [Y] in F[#] minor. Try again.”]

Exercise 11.3c:

Triad A major F[#] minor

E major: =

[Answers: V/VII. Response if correct: “Correct! E major is V in A major and VII in F[#] minor.” Response if first box is incorrect [X]: “That is partially correct. E major is VII in F[#] minor, but not [X] in A major. Try again.” Response if second box is incorrect [Y]: “That is partially correct. E major is V in A major, but not [Y] in F[#] minor. Try again.”]

Modulation to the supertonic (ii) is also possible:

Table 3:

C major (the primary key)	=	D minor (the supertonic key)
I	=	VII
ii	=	i
IV	=	III
vi	=	v

However, in a modulation to the key of the supertonic, all of the possible pivot chords are problematic because they are the tonic, mediant, or dominant chord in the goal key. For this reason, modulation to the key of the supertonic usually occurs through the applied chord method. In other words, the new key is introduced with an applied dominant or leading-tone chord and simply continues the tonicization. The following excerpt shows an example of this type of modulation:

Example 7 (J.S. Bach, BWV 104.6, “Allein Gott in der Höh sei Ehr,” mm. 3-8):

G: V⁷ I I V vii°/ii ii
a: vii° i V iv V⁷ i

Here, following a perfect authentic cadence in the tonic key, the phrase beginning with the pickup to m. 5 appears to be in the tonic key of G major. Following the D major harmony on the downbeat of m. 5, we come across a diminished triad built on G[#] (the C in the bass is an accented passing tone). This sonority is an applied leading-tone chord tonicizing ii, which appears in root position on beat three. Following this tonicization, we consistently find F-naturals and G[#]s leading to a perfect authentic

cadence in A minor in m. 6. The modulation to A minor (the supertonic of G major) was achieved with the applied chord in m. 5 (though we might think of the D-major chord on the downbeat of m. 5 as an altered iv, with raised third, in A minor, in which case D major would be the pivot: V becoming iv[#].)

Activity 11.4:

What is the supertonic key in B^b major?

[Answer: C minor. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up activity:]

Name three pivot chords that might be used in a modulation from B^b major to C minor (remember to use uppercase roman numerals for major chords and lowercase roman numerals for minor chords):

B^b major C minor

=

=

=

[Possible answers: “I = VII,” “ii = i,” “IV = III,” and “vi = v.” Feedback for each correct answer: “Correct!” Feedback for incorrect answer if first roman numeral [X] is I, ii, IV, or vi: “That is incorrect. Although [X] is a potential pivot chord in a modulation from B^b major to C minor, your equivalent roman numeral in C minor is incorrect. Try again.” Feedback for all other incorrect answers: “That is incorrect. [X] is not a potential pivot chord in B^b major for a modulation to C minor. Try again.”]

Occasionally, a piece will modulate to the key of its subdominant (IV). This modulation is less common and for good reason. In modulating to the subdominant, the tonic of the primary key must be heard as the new dominant. This change in function can be disruptive to the listener because of the special relationship between tonic and dominant in tonal music. Modulating to IV too early in a piece can cause the listener to lose track of the home key. (This is not an issue in minor keys, because i cannot sound like V/IV because it is minor.) Nonetheless, modulations to the subdominant do occur. The possible pivot chords are as follows:

Table 4:

C major (the primary key)		F major (the subdominant key)
I	=	V
ii	=	vi
IV	=	I
vi	=	iii

Example 8 (J.S. Bach, BWV 117.4, “Es ist das Heil uns kommen her,” mm. 1-2):

G: V⁶ I V I
C: V IV⁶ I V I

The excerpt above shows an example of modulation to the subdominant. The first phrase of this chorale begins in G major but has modulated to C major by the end of the first phrase. In this case, the modulation occurs via a pivot chord on beat three of the first full measure. This G-major chord is retroauditively reinterpreted as V in C major.

Example 8 also demonstrates the problematic nature of modulations to the subdominant. The G-major chord on beat three of m. 1 (I in G major) is preceded by a D-major chord (V in G major). The “V - I” progressions that open the piece are intended to firmly establish the tonic key of G major. In other words, retroauditive reinterpretation will require considerably more effort to hear a G major chord as V in C major.

Activity 11.5:

What is the subdominant key in F major?

[Answer: B^b major. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up activity:]

Name three pivot chords that might be used in a modulation from F major to B^b major (remember to use uppercase roman numerals for major chords and lowercase roman numerals for minor chords):

F major B^b major

=

=

=

[Possible answers: “I = V,” “ii = vi,” “IV = I,” and “vi = iii.” Feedback for each correct answer: “Correct!” Feedback for incorrect answer if first roman numeral [X] is I, ii, IV, or vi: “That is incorrect. Although [X] is a potential pivot chord in a modulation from F major to B^b major, your equivalent roman numeral in B^b major is incorrect. Try again.” Feedback for all other incorrect answers: “That is incorrect. [X] is not a potential pivot chord in F major for a modulation to B^b major. Try again.”]

Modulations from Minor Keys:

Because of a strong tendency to gravitate toward the relative major, minor keys frequently modulate to the mediant. (You may wish to review Lesson CCC for more information regarding the structural

characteristics of the minor scale and the privileged status of the relative major.) As with major keys modulating to their relative minors, every chord is a potential pivot:

Table 5:

A minor (the primary key)		C major (the relative major)
i	=	vi
ii ^o	=	vii ^o
III	=	I
iv	=	ii
v	=	iii
VI	=	IV
VII	=	V

Of these possibilities, the most frequently used are “i = vi,” “III = I,” “iv = ii,” and “VI = IV.”

Activity 11.6:

What is the relative major key in D minor?

[Answer: F major. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up activity:]

For each of the following chords, give the roman numeral in D minor and in F major (remember to use uppercase roman numerals for major chords and lowercase roman numerals for minor chords).

Exercise 11.6a:

Triad D minor F major

G minor: =

[Answers: iv/ii. Response if correct: “Correct! G minor is iv in D minor and ii in F major.” Response if first box is incorrect [X]: “That is partially correct. G minor is ii in F major, but not [X] in D minor. Try again.” Response if second box is incorrect [Y]: “That is partially correct. G minor is iv in D minor, but not [Y] in F major. Try again.”]

Exercise 11.6b:

Triad D minor F major

D minor: =

[Answers: i/vi. Response if correct: “Correct! D minor is the tonic in D minor and vi in F major.” Response if first box is incorrect [X]: “That is partially correct. D minor is vi in F major, but not [X] in D minor. Try again.” Response if second box is incorrect [Y]: “That is partially correct. D minor is the tonic in D minor, but not [Y] in F major. Try again.”]

Exercise 11.6c:

Triad D minor F major

B^b major: =

[Answers: VI/IV. Response if correct: “Correct! B^b major is VI in D minor and IV in F major.” Response if first box is incorrect [X]: “That is partially correct. B^b major is IV in F major, but not [X] in D minor. Try again.” Response if second box is incorrect [Y]: “That is partially correct. B^b major is VI in D minor, but not [Y] in F major. Try again.”]

The following examples show two modulations to the relative major, the first via a “VI = IV” pivot chord and the second with a “iv = ii”:

Example 9 (Mozart, Piano Sonata, K.330, mvt. II, mm. 21-28):

Chord symbols for Example 9:

System 1 (mm. 21-24): f: i, i, V⁷, i

System 2 (mm. 25-28): VI (Ab: IV), V⁷, I, ii⁶, V⁴, V⁷, I

Example 10 (Handel, Keyboard Suite No. 16 in G minor (HWV 542), Sarabande, mm. 1-6):

Chord symbols for Example 10:

g: i, vii⁶, i⁶, i, iv, B^b: ii, V⁷, I, V, F⁷, V/ii, ii, V, I

In both Examples 9 and 10, the pivot chord is followed by a dominant seventh chord in the new key. As mentioned elsewhere (see Lesson EEE on the dominant seventh chord and Lesson JJJ on applied chords), the dominant seventh sonority is unique among diatonic seventh chords, and as such immediately implies a specific key. In both of the above two examples, the pivot chord functions as a pre-dominant harmony. When it is followed by a dominant seventh chord, there is already a strong implication of the new key. In both cases, the modulation is confirmed with a perfect authentic cadence in the new key.

Minor keys also modulate to the minor dominant (v). It is important to remember that the major dominant of a minor key (V) is not a closely related key. In A minor, for example, the major dominant would be the key of E major. Compare the key signatures of A minor and E major. They differ by four accidentals (the diatonic pitches of the A minor scale are all natural while E major contains four sharps). When a minor key modulates to the dominant key, it modulates to the diatonic chord built on scale degree 5. In the key of A minor, this would be E minor. The possible pivot chords for modulating to the minor dominant are as follows:

Table 6:

A minor (the primary key)	=	E minor (the minor subdominant key)
i	=	iv
III	=	VI
v	=	i
VII	=	III

It is also common for a piece in a minor key to modulate to the relative major temporarily on the way to the minor dominant. Consider the following example:

Example 11 (J.S. Bach, BWV 227.1, “Jesu, meine Freude,” mm. 1-13):

e: V⁷ i

7

i III VII⁶
G: vi I V⁷ I ii⁶ V⁷ I I
b: VI III⁶ VI iv i ii⁶ V⁷ I
e: V i v iv⁶ ii⁶ ii⁶ V⁷ I

In Example 11, the first three phrases prolong the tonic key of E minor. The phrase beginning in m. 7 sounds at first like E minor as well. Despite the lack of accidentals in m. 7, it makes more sense to interpret beats two through four as an expansion of G major with an auxiliary dominant seventh chord than to hear m. 7 as though still in E minor. The cadence in the following measure supports that interpretation.

In the next phrase, the tonic harmony of G major is reinterpreted as the VI chord of B minor (the minor dominant). This modulation is also confirmed with a perfect authentic cadence. (Do not be fooled by the D[#] on the downbeat of m. 11. The momentarily raised third scale degree in a minor key is a stylistic convention known as a Picardy third, and does not indicate a modulation to the parallel major key.) The brief modulation to the key of the relative major in mm. 7-8 acts as a stepping stone to the broader modulatory goal of the minor dominant. (Note that the modulatory goals outline a large-scale arpeggiation of the tonic triad: E – G – B!)

Activity 11.7:

In this activity you will track several modulations in a row. The example below shows the final five phrases of a chorale by J.S. Bach (BWV 315, "Gib dich zufrieden und sei stille," mm. 6-17).

Exercise 11.7a:

In what key does this piece begin?

[Answer: E minor. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise 11.7b:

[Multiple choice question:] Does the first phrase modulate or remain in the same key?

The musical score is for a piano piece in E minor, 3/4 time. It consists of three systems of music. The first system (measures 1-4) begins with a treble clef and a key signature of one sharp (F#). The melody in the right hand features eighth-note patterns and quarter notes, while the left hand provides a steady accompaniment of eighth notes. The second system (measures 5-8) continues the melodic and harmonic development. The third system (measures 9-14) concludes the piece with a final cadence in measure 10, marked by a double bar line and repeat dots.

[Possible answers: “The first phrase modulates.” or “The first phrase does not modulate.”
 Answer: “The first phrase does not modulate.” Response if correct: “Correct, the first phrase remains in the key of E minor.” Response if incorrect: “Incorrect. Try again.”]

Exercise 11.7c:

The second phrase ends with a perfect authentic cadence in m. 10. In what key is this cadence?

The musical score is for a piano piece in G major, 2/4 time. It consists of three systems of music. The first system (measures 1-4) begins with a treble clef and a key signature of one sharp (F#). The melody in the treble clef starts with a half note G4, followed by quarter notes A4, B4, and C5. The bass line starts with a half note G3, followed by quarter notes A3, B3, and C4. The second system (measures 5-8) continues the melody and bass line. The third system (measures 9-14) concludes the piece with a perfect authentic cadence in G major, ending on a half note G4 in the treble and a half note G3 in the bass.

[Answer: G major (III). Response if correct: “Correct! The second phrase modulates to G major.” Response if incorrect: “Incorrect. Try again.”]

[Follow-up multiple choice question:]

What key is G major in relation to the global key of E minor?

[Possible answers: “tonic,” “supertonic,” “mediant / relative major,” “subdominant,” “dominant,” “submediant,” and “subtonic.” Answer: “mediant / relative major.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise 11.7d:

The third phrase ends with a perfect authentic cadence in m. 12. In what key is this cadence?

[Answer: A minor (iv). Response if correct: "Correct! The third phrase modulates to A minor."
Response if incorrect: "Incorrect. Try again."]

[Follow-up multiple choice question:]

What key is A minor in relation to the global key of E minor?

[Possible answers: "tonic," "supertonic," "mediant / relative major," "subdominant,"
"dominant," "submediant," and "subtonic." Answer: "subdominant." Response if correct:
"Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise 11.7e:

The piece ends with a perfect authentic cadence in m. 17. In what key is this cadence?

[Answer: E minor (iv). Response if correct: “Correct! The final two phrases modulate back to E minor.” Response if incorrect: “Incorrect. Try again.”]

Conclusion:

Tonal pieces routinely explore key areas other than the initial one. The process of changing keys is known as modulation. Modulation differs from tonicization both in length and in structural significance. A tonicization temporarily lends tonic color to some chord other than the tonic, while a modulation creates the sense of a new tonal center.

There are several methods of modulation and several common modulatory goals. The methods include direct modulation, extended tonicization, and pivot-chord modulation, among which the latter is the most common. In major keys, the most common modulatory destination is the key of the dominant; other possible destinations are the submediant, supertonic and subdominant. Minor keys typically modulate to their relative majors or minor dominants. Other modulations are of course possible, but are beyond the scope of this lesson.

Lesson LLL: Mixture

Introduction:

In Lessons 8 and 10, we discussed various sorts of chromatic pitches. As we saw, non-diatonic tones may arise as a result of melodic or harmonic embellishment, or as part of an applied chord. This is not the case, however, in the following example:

Example 1 (F. Schubert, *Die Schöne Müllerin*, No. 6: “Der Neugierige,” mm. 23-28):

23
Bäch - lein mei - ner Lie - be, wie bist du heut' so
26
stumm! Will ja nur Ei - nes wis - sen, ein
B: I i

In m. 25, notice that scale degree 3 has been lowered from D^\sharp to $D\flat$. Instead of a I chord (B major), a i chord (B minor) appears there. The effect is striking. Why would Schubert make such an alteration at this point? Looking at the text of the song, we find the narrator speaking to a brook that led him to a miller’s beautiful daughter. At m. 25, having just asked the brook to tell him whether his heart has mistakenly led him to believe that the maid loves him, he remarks (to the brook), “wie bist du heut’ so stumm!” (“how quiet you are today!”) The observation marks a moment of doubt; a subtle change in mood that Schubert intensifies by presenting a minor form of the tonic triad.

This musical phenomenon is referred to as mixture, for it mixes elements of both the major and minor modes of a particular key. In other words, mixture in a major key consists of borrowing chords or tones from the parallel minor, and vice versa. As can be seen in Example 1, mixture is particularly effective in music with text. The changes in color, brought about by the borrowed tones, can highlight and intensify certain words or passages. But this is not to say that words are a necessary component. Mixture is equally effective at lending drama to instrumental music.

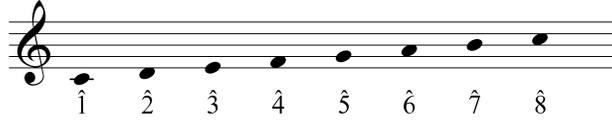
In this lesson we will first examine the nature and mechanics of mixture. Turning to several examples from the tonal repertoire, we will look at common types of mixture. Finally, we will conclude with a discussion of the large-scale, structural uses of mixture.

The nature of mixture:

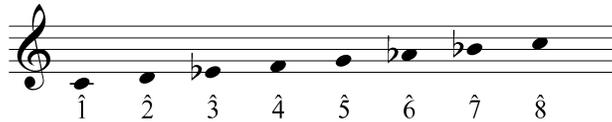
To understand mixture, we must consider the differences and similarities between parallel keys. (Refer to Lesson 3 for a more detailed discussion of the minor scale.) As Example 2 demonstrates, parallel keys differ at scale degrees $\hat{3}$, $\hat{6}$, and $\hat{7}$:

Example 2:

a. C major scale



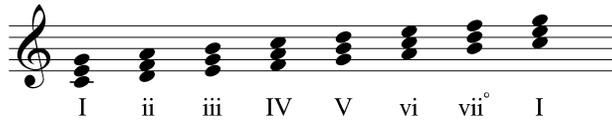
b. C minor scale (diatonic)



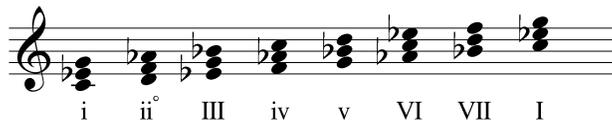
In a minor key, scale degrees $\hat{3}$, $\hat{6}$, and $\hat{7}$ are a semitone lower than their parallel major counterparts. Because they constitute the difference between the major and minor modes, these are sometimes referred to as the *modal scale degrees*. This variation is responsible for the differing qualities of the diatonic chords built on each scale degree:

Example 3:

a. natural triads in C major



b. natural triads in C minor



As you can see, the difference in scale degrees $\hat{3}$, $\hat{6}$, and $\hat{7}$ affects the quality of each diatonic chord. (Note that the leading tone has not been adjusted for the chords built on scale degrees $\hat{5}$ and $\hat{7}$ in Example 3b. This will be addressed momentarily.)

Instances of mixture—often referred to as *borrowed* tones or chords—include one or more of the modal scale degrees from the parallel key. In other words, mixture in a major key will lower scale degrees $\hat{3}$, $\hat{6}$, or $\hat{7}$, while mixture in a minor key will raise them. These non-diatonic pitches bring with them all the expressive capabilities of the opposite mode. By incorporating elements of the parallel key in this manner, composers can expand and enhance their creative musical palette.

Activity LLL.01:

For each of the following keys, indicate the three tones that may be borrowed from the parallel major or minor.

Exercise LLL.01a:

In the key of A major, what three tones may be borrowed from the parallel minor?

[Answers: C (natural), F (natural), and G (natural). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Remember, the modal scale degrees are $\hat{3}$, $\hat{6}$, and $\hat{7}$.)”]

Exercise LLL.01b:

In the key of C minor, what three tones may be borrowed from the parallel major?

[Answers: E (natural), A (natural), and B (natural). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Remember, the modal scale degrees are $\hat{3}$, $\hat{6}$, and $\hat{7}$.)”]

Exercise LLL.01c:

In the key of F major, what three tones may be borrowed from the parallel minor?

[Answers: $A\flat$, $D\flat$, and $E\flat$. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Remember, the modal scale degrees are $\hat{3}$, $\hat{6}$, and $\hat{7}$.)”]

Exercise LLL.01d:

In the key of B minor, what three tones may be borrowed from the parallel major?

[Answers: $D\sharp$, $G\sharp$, and $A\sharp$. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Remember, the modal scale degrees are $\hat{3}$, $\hat{6}$, and $\hat{7}$.)”]

Labeling instances of mixture:

Because mixture alters the members and qualities of the affected harmonies, we must address the conventions for labeling borrowed chords. As you know, the case of a Roman numeral indicates the quality of the chord: uppercase for major chords and lowercase for minor. This should remain consistent in cases of mixture.

Example 4 (J.S. Bach, BWV 248(3).33, “Warum sollt ich mich denn grämen,” mm. 1-3):

C vi iv^6 $V_4^6 - \frac{5}{3}$

The progression in Example 4 uses $\flat\hat{6}$ (a lowered scale degree $\hat{6}$; $A\flat$ in this case), resulting in a minor triad on beat two of the second measure. The Roman numerals are consistent with this change in quality, using “iv” instead of “IV.”

Note: You may have previously encountered a different method of labeling with Roman numerals that uses only capital letters. In this system, accidentals appearing after the Roman numeral indicate alterations made to the third of the chord. According to this system, the mixture chord in Example 4 would be labeled $IV^{\flat 6}$, the “ \flat ” indicating the lowered third of the chord. Though this method has merits, it will not be used here. Please refer to Lesson QQQ for a more detailed discussion of advanced Roman numeral usage.

To further accommodate the changes brought about by borrowing from the parallel mode, accidentals are also used in conjunction with Roman numerals. An accidental before a Roman numeral indicates an altered root:

Example 5 (J.S. Bach, BWV 90.5, “Vater unser im Himmelreich,” mm. 9-10):

F: V \flat VI

In the example above, the final chord is built on the lowered sixth scale degree ($D\flat$). The altered root is indicated by the accidental: \flat VI.

As usual, accidentals next to figured bass numerals affect the indicated pitches.

Note: Occasionally, a borrowed scale degree will negate one of the sharps or flats in the key signature, as in the following example:

Example 6 (J.S. Bach, BWV 90.5, “Vater unser im Himmelreich,” mm. 9-10; transposed to A major):

A: V \flat VI

Example 6 ends with a VI chord whose root, F natural, negates the $F\sharp$ in the key signature.

Nonetheless, it has still been labeled “ \flat VI.” You may occasionally encounter books that would label this chord “ \natural VI.” For the sake of clarity and consistency, we will follow this convention: use a flat for a lowered root and a sharp for a raised root, regardless of the key signature.

Activity LLL.02:

Each of the following exercises shows a chord in a given key with at least one borrowed tone. Label each of the chords according to the conventions outlined above. Be sure to use capital letters for major chords, lowercase for minor, and so on. (Note: All of the chords are in root position, so there is no need to indicate the position.)

Exercise LLL.02a



E major:

How should this chord be labeled in the key of E major?

[Answer: \flat VI. Response if correct: "Correct!" Response if incorrect: "Incorrect. Remember to use the correct case for indicating the quality of the chord and to place an accidental before the Roman numeral if the root is altered."]

Exercise LLL.02b



F minor:

How should this chord be labeled in the key of F minor?

[Answer: I. Response if correct: "Correct!" Response if incorrect: "Incorrect. Remember to use the correct case for indicating the quality of the chord and to place an accidental before the Roman numeral if the root is altered."]

Exercise LLL.02c



B minor:

How should this chord be labeled in the key of B minor?

[Answer: IV. Response if correct: "Correct!" Response if incorrect: "Incorrect. Remember to use the correct case for indicating the quality of the chord and to place an accidental before the Roman numeral if the root is altered."]

Exercise LLL.02d



B \flat major:

How should this chord be labeled in the key of B \flat major?

[Answer: vii^{o7}. Response if correct: "Correct!" Response if incorrect: "Incorrect. Remember to use the correct case for indicating the quality of the chord and to place an accidental before the Roman numeral if the root is altered."]

Mixture in major keys:

In major keys, instances of mixture usually incorporate $b\hat{3}$, $b\hat{6}$, or both. ($b\hat{7}$ is generally avoided because its presence would subvert the important dominant function of the V and vii^o chords.)

A lowered scale degree $\hat{6}$ is used to color and intensify chords built on $\hat{2}$ or $\hat{4}$. The presence of $b\hat{6}$ will make a ii chord diminished (ii^o) and a IV chord minor (iv) as in the following examples:

Example 7 (J.S. Bach, BWV 281, “Christus, der ist mein Leben,” mm. 7-8):

F: I⁶ ii^o₅ V

In Example 7, the third beat of m. 7 has a $b\hat{6}$ ($D\flat$), making the first-inversion ii chord diminished. In this case—and in many similar cases—mixture chords retain the harmonic functions of their unaltered forms. In other words, the adjusted chord in Example 7 has the same pre-dominant function it would have without $b\hat{6}$.

Example 8 (F. Chopin, Prelude, Op. 28, no. 9, m. 9):

E: I V I iv

In Example 8, the fourth beat of m. 9 has C naturals in the upper voices, changing the quality of the subdominant chord to minor. Mixture of this sort is abundant in the music of Chopin and other Romantic composers. Though not typical to Bach chorales, it does appear from time to time. Consider the following example where a chromatic passing tone in the bass briefly produces a minor iv chord:

Example 9 (J.S. Bach, BWV 248(3).33, “Warum sollt ich mich denn grämen,” mm. 1-3):

C: vi iv⁶ V⁶₄ - ⁵/₃

Seventh chords can likewise be affected by mixture. A ii⁷ chord, for example, would become ii^{o7} with the addition of $b\hat{6}$. Borrowing $b\hat{6}$ in a seventh chord built on scale degree $\hat{7}$ will change a half-

diminished seventh chord to fully-diminished. The following example, from Bach's *Well-Tempered Klavier*, borrows an $A\flat$ from C minor in m. 14:

Example 10 (J.S. Bach, Prelude and Fugue 1 in C major, BWV 846, mm. 13-15):

13

C: ii^6 $vii^{\flat 4}_3$ I^6

The $A\flat$ in m. 14 changes the quality of the leading-tone seventh chord from half- to fully-diminished. (Refer to Lesson PPP for a lengthier discussion of fully-diminished seventh chords.)

A lowered scale degree $\hat{3}$ is sometimes used to produce a minor tonic where one would normally expect a major harmony:

Example 11:

C: I IV V i

In this example, the concluding tonic harmony is made minor by the presence of $E\flat$, borrowed from the parallel minor. The presence of $\flat 3$ in a tonic harmony can have a surprising and dramatic effect! Consider the following example:

Example 12 (F. Schubert, *Die Schöne Müllerin*, No. 4: “Danksagung an den Bach,” mm. 16-24):

16

zur_Mül - le-rin hin, zur_Mül - le-rin hin!

17 G: V I

21

Hat sie dich ge-schickt, o-der hast mich be-rückt? das möcht' ich noch wis - sen, ob

i

25

sie dich ge-schickt, ob sie dich ge-schickt. Nun wie'sauch mag sein, ich

I

Like Example 1, this Schubert song uses a minor tonic to reflect a change in mood in the song's text. Following a strong cadence in the key of G major in mm. 17-18, we encounter a minor tonic (i) in m. 22. Again, the effect is startling and intensifies the emotional tension of the moment.

Combining $b\hat{3}$ and $b\hat{6}$ will result in the bVI chord mentioned above. The bVI chord is one of the most commonly borrowed chords in a major key. When used in a deceptive cadence it increases the dramatic effect by thwarting to an even greater degree the listener's expectation of tonic harmony. The following example does just this:

Example 13 (J.S. Bach, BWV 90.5, “Vater unser im Himmelreich,” mm. 9-10):

F: V \flat VI

Activity LLL.03:

The ability to recognize and identify instances of mixture is an important skill. In what key is the following excerpt from a Chopin nocturne (Op. 32, no. 2, mm. 1-2)?

[Answer: $A\flat$ major. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: What chord does the excerpt begin and end with?)”]

[Follow-up question:]

What Roman numeral should appear at beat four in the first measure (before the $B\flat$ in the uppermost voice)?

[Answer: iv. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Identify the root of the chord to determine the Roman numeral, then adjust the case accordingly to match the quality.)”]

Mixture in minor keys:

Lesson 3 introduced the concepts of the harmonic and melodic minor composites which feature raised scale degrees $\hat{6}$ and $\hat{7}$. These adjustments can be seen as examples of mixture, where elements of the parallel major are borrowed to suit certain harmonic and melodic contexts. Other than the ubiquitous raising of the leading tone and submediant, mixture is far less common in minor keys than it is in major keys.

Occasionally, composers will incorporate $\sharp\hat{3}$ or $\sharp\hat{6}$ to lend color to i and iv chords (i becomes I and iv becomes IV with the raising, respectively, of scale degrees $\hat{3}$ and $\hat{6}$). The following example incorporates one such borrowed scale degree in m. 3:

Example 14 (J.S. Bach, BWV 87.7, “Jesu, meine Freude,” mm. 3-4):

d: i i⁶ IV vii^{o6} i⁶

In this example, the chord on the third beat has a B natural in the soprano and then in the tenor. This raised third (scale degree $\hat{6}$) changes the quality of the chord to major (IV). (The C \sharp in the following vii^{o6} chord is an example of mixture via the harmonic minor composite.)

The following example uses a borrowed scale degree in the final chord:

Example 15 (J.S. Bach, BWV 81.7, “Jesu, meine Freude,” mm. 12-13):

e V⁷ I

The G \sharp in the final chord of this example makes the tonic major. The raised third of a tonic chord in a minor key is usually referred to as a *Picardy third*. Composers will commonly employ a Picardy third at the end of a piece in minor, coloring the conclusion with character of a major tonic.

Activity LLL.04:

In what key is the following excerpt from a Bach chorale (BWV 352, „Wachet doch, erwacht, ihr Schläfer,” mm. 15-16)?

[Answer: A minor. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

What Roman numeral should appear under the final harmony (the chord with the fermata)?

[Answer: I. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Identify the root of the chord to determine the Roman numeral, then adjust the case accordingly to match the quality.)”]

[Follow-up question:]

What is the common name for this particular kind of mixture?

[Answer: “Picardy third” or “Picardy 3rd” or “Picardy.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Mixture and basic interval progressions:

Instances of mixture are often the result of adjustments made to the basic interval progressions outlined in Lesson 1. In all of the harmonic progressions considered in this lesson, the voiceleading is governed by the same basic interval progressions whether mixture is present or not. In some cases, however, mixture strengthens the underlying interval progressions.

The motion from a major third to a unison is intensified by altering one of the voices to introduce semitone motion:

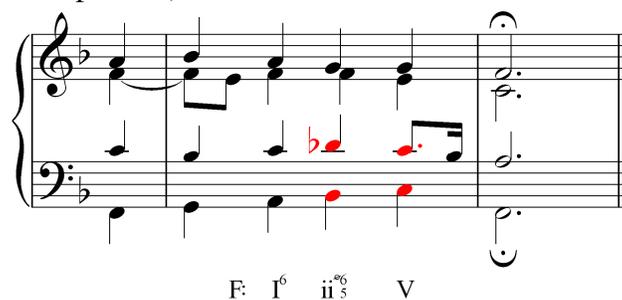
Example 16:

a.  M3 P1

b.  m3 P1

The following example puts this into context in a Bach chorale:

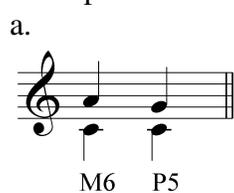
Example 17 (J.S. Bach, BWV 281, “Christus, der ist mein Leben,” mm. 7-8):

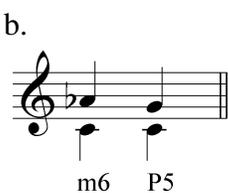


F: I⁶ ii⁶₅ V

Whereas typically the motion from a major third to a unison consists of both voices moving by wholetones, moving from a minor third to a unison reduces one voice’s movement to a semitone. The result is similar to the strong semitone/wholetone motion of a major sixth to an octave. Similarly, the motion from a major sixth to a perfect fifth is made stronger by contracting the upper-voice motion to a semitone:

Example 18:

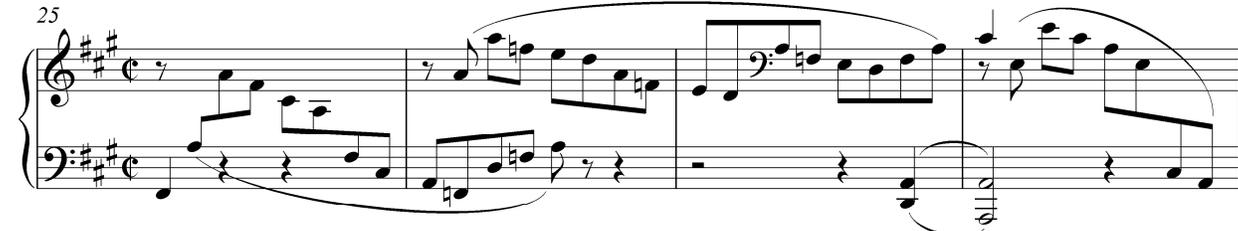
a.  M6 P5

b.  m6 P5

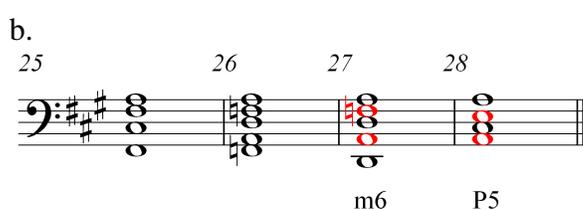
The following example puts this adjustment into context (Example 19b provides a reduction of Example 19a to clarify the voiceleading):

Example 19 (J. Brahms, “Wie Melodien Zieht es mir,” Op. 105, no. 1, mm 25-28):

a.



b.



By lowering the F \sharp to F natural, Brahms strengthens the motion to the tonic triad from m. 26 to m. 28.

Activity LLL.05:

Instances of mixture are often the result of adjustments made to underlying basic interval progressions. In the following excerpt from a Bach chorale (BWV 281, “Christus, der ist mein Leben,” mm.7-8), fill in the blanks for the *intervals* found between the tenor and bass (be sure to specify the quality of the intervals):



[Answers: m3, m3, P1 (P8). Response for each correct answer: “Correct!” Response for each incorrect answer: “Incorrect. Try again.”]

[Follow-up question:]

By lowering scale degree 6, Bach intensifies the voiceleading. The lowered scale degree also affects the quality of the chord. What Roman numeral should appear at beat three in m. 7?

[Answer: ii \flat 65. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

While mixture often results from such voiceleading, it need not always. Sometimes, mixture is used strictly for purposes of coloration. Consider the following example from Mozart:

Example 20 (W.A. Mozart, Piano Sonata in F, K. 332/ii, mm. 1-8):

Chord symbols for measures 1-8:

1: B \flat : I 2: V⁶ 3: IV⁶ 4: IV 5: I⁶ 6: etc...

7: b \flat : i 8: v⁶ 9: iv⁶ 10: iv 11: i⁶ 12: etc...

In this beginning to a piano sonata movement, Mozart first presents a melody in B \flat major. He then repeats the melody in mm. 5-8, this time in B \flat minor to heighten the expressiveness of the music.

Secondary mixture, double mixture, and other chromatic chords:

All of the examples of mixture presented so far have been relatively straightforward. In each case, one or two tones are borrowed from the parallel key to emphasize or intensify certain harmonies. Occasionally, however, you will encounter instances of mixture that cannot be explained in such simple terms.

Example 21 (F. Schubert, Piano Sonata in D major, D. 850, Trio, mm. 53-61):

G: I III⁴ I

The major III chord in m. 57 is not a case of simple mixture since D[#] ([#]5), as well as the associated triad, B major, is not drawn from the parallel minor key (G minor). This type of alteration, where a chord's third is modified by an accidental that is *not* borrowed from the parallel key, is sometimes referred to as *secondary mixture*. Like regular mixture, the quality of the chord in question is changed, but not through borrowing of tones from the parallel key. In Example 21, scale degree 5 soon reverts back to D natural (m. 59). Similar alterations of chords built on scale degree 6 also appear from time to time and become common in late nineteenth-century music.

Now consider the following example from a Schubert song:

Example 22 (F. Schubert, "Die Liebe hat gelogen" D. 751, mm 3-6):

c: i ii⁵ V I #VI IV V⁴ ⁵/₃ I

This passage begins in C minor. At the beginning of m. 5 we find a clear-cut case of mixture: the E naturals in both the voice and the piano change the quality of the tonic triad from minor to major, and C major is then tonicized with an authentic cadence in m. 6. However, in the second half of m. 5, we find an A major triad ([#]VI). With respect to C minor, all three members of that triad have been raised. This is not a case of simple mixture because C major, the parallel to C minor, does not include C[#]. Rather, this is a case of *double mixture*. Double mixture involves changing the quality of a chord derived from simple mixture. In the key of C minor, simple mixture allows for an A-minor triad ([#]vi). Instead we encounter A major ([#]VI): a case of secondary mixture upon simple mixture, hence double mixture.

Activity LLL.06:

The following triads exhibit various types of mixture: simple (borrows tones from the parallel key), secondary (alters the quality with pitches not from the parallel key), or double (secondary mixture applied to chords derived through simple mixture). For each exercise, label the triad with the appropriate Roman numeral and identify the type of mixture present:

Exercise LLL.06a

Provide a Roman numeral for the following triad in G major:



G major:

[Answer: VI. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember to match the case of the Roman numerals with the quality of the triad and indicate altered roots with accidentals.”]

[Follow-up multiple-choice question:]

What type of mixture is exhibited by this triad?

[Choices: “simple”, “secondary”, “double”.]

[Answer: secondary. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise LLL.06b

Provide a Roman numeral for the following triad in D minor:



D minor:

[Answer: IV. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember to match the case of the Roman numerals with the quality of the triad and indicate altered roots with accidentals.”]

[Follow-up multiple-choice question:]

What type of mixture is exhibited by this triad?

[Choices: “simple”, “secondary”, “double”.]

[Answer: simple. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise LLL.06c

Provide a Roman numeral for the following triad in B minor:



B minor:

[Answer: #VI. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember to match the case of the Roman numerals with the quality of the triad and indicate altered roots with accidentals.”]

[Follow-up multiple-choice question:]

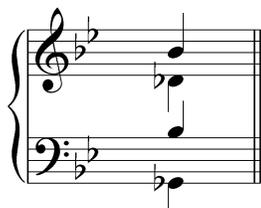
What type of mixture is exhibited by this triad?

[Choices: “simple”, “secondary”, “double”.]

[Answer: double. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise LLL.06d

Provide a Roman numeral for the following triad in B \flat major:



B \flat major:

[Answer: bVI. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember to match the case of the Roman numerals with the quality of the triad and indicate altered roots with accidentals.”]

[Follow-up multiple-choice question:]

What type of mixture is exhibited by this triad?

[Choices: “simple”, “secondary”, “double”.]

[Answer: simple. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise LLL.06e

Provide a Roman numeral for the following triad in A major:



A major:

[Answer: biii. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember to match the case of the Roman numerals with the quality of the triad and indicate altered roots with accidentals.”]

[Follow-up multiple-choice question:]

What type of mixture is exhibited by this triad?

[Choices: “simple”, “secondary”, “double”.]

[Answer: double. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise LLL.06f

Provide a Roman numeral for the following triad E \flat major:



E \flat major:

[Answer: III. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember to match the case of the Roman numerals with the quality of the triad and indicate altered roots with accidentals.”]

[Follow-up multiple-choice question:]

What type of mixture is exhibited by this triad?

[Choices: “simple”, “secondary”, “double”.]

[Answer: secondary. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

A different type of chromatic chord can be seen in Example 23:

Example 23 (L. Beethoven, Sonata in C[#] minor (“Moonlight”), Op. 27, no. 2, mm. 1-5):

The musical score for Example 23 consists of two systems of music. The first system shows measures 1-3, and the second system shows measures 4-5. The key signature is C# minor (three sharps: F#, C#, G#) and the time signature is common time (C). The first measure (m. 1) features a prolonged tonic chord (c# i) with a passing B in the bass. The second measure (m. 2) features a chord with a lowered scale degree 2 (labeled N⁶). The third measure (m. 3) features a dominant chord (VI) and a Neapolitan chord (N⁶). The fourth measure (m. 4) features a dominant chord (V⁷) and a tonic chord (i). The fifth measure (m. 5) features a tonic chord (i).

Following a prolonged tonic chord (with passing Bs in the bass), the harmony moves to VI and then a chord with a lowered scale degree $\hat{2}$ (labeled “N⁶”) before moving to the dominant. Obviously, this is not a typical case of a borrowed chord since D natural appears in neither C[#] major nor C[#] minor. Furthermore, there is no such thing as a major diatonic II chord.

This particular sonority nonetheless appears quite frequently. It is commonly referred to as a *Neapolitan* chord and typically appears with scale degree $\hat{4}$ in the bass. It is a derived chord that can arise in different ways, so we label it “N⁶” to avoid the confusion of Roman numerals. Though not a case of mixture in the purest sense of the word, Neapolitan chords are often grouped with borrowed chords for this similarity in behavior. (A more detailed discussion of the Neapolitan chord can be found in Lesson MMM.)

Mixture and modulation:

Most of the examples we have looked at so far are relatively small in scale. Composers borrow specific tones from the parallel key to color a chord here or there and thus dramatize the passage. But mixture can affect larger areas of music as well, particularly with regards to modulation. This is evident in Example 12, where an abrupt minor i chord is tonicized for several measures.

Mixture can also initiate a modulation directly, as it does in the following example:

Example 24 (W.A. Mozart, Piano Sonata in C, K. 330/ii, mm. 1-28):

Measures 1-4 of Example 24. The key signature is one flat (F major). The time signature is 3/4. The right hand begins with a melodic phrase, and the left hand provides harmonic support.

F:

Measures 5-8 of Example 24. The key signature changes to two flats (B-flat major) at measure 5. The right hand continues with a melodic line, and the left hand features a more active bass line.

Measures 9-15 of Example 24. The key signature changes to three flats (E-flat major) at measure 9. The right hand continues with a melodic line, and the left hand features a more active bass line.

Measures 16-20 of Example 24. The key signature changes to four flats (D-flat major) at measure 16. The right hand continues with a melodic line, and the left hand features a more active bass line.

Measures 21-23 of Example 24. The key signature changes to five flats (C minor) at measure 21. The right hand continues with a melodic line, and the left hand features a more active bass line.

f:

Measures 24-28 of Example 24. The key signature changes to six flats (B-flat minor) at measure 24. The right hand continues with a melodic line, and the left hand features a more active bass line.

In this beginning to a piano sonata movement, the entire opening A section (mm. 1-20) is in the key of F major. For the B section (beginning with the pickup to m. 21), however, Mozart moves directly to F minor, key signature and all. Rather than inflect the quality of the tonic by lowering scale degree 3, Mozart simply shifts to the parallel minor key.

Modulations via mixture are not limited only to the parallel key of the global tonic. The following example in F major modulates to the key of C minor:

Example 25 (W.A. Mozart, Piano Sonata in F, K. 332/iii, mm. 47-57):

The musical score for Example 25 is presented in three systems. The first system (measures 47-50) begins in F major and modulates to C minor by measure 50. The second system (measures 51-54) continues in C minor. The third system (measures 55-57) concludes the passage in C minor. A 'c' time signature change is indicated at the end of the first system.

In sonatas such as this one, it is quite common to encounter modulations to the key of the dominant. After a transition section ending in m. 49, we expect just that: a theme in C major. Instead, the melody beginning in m. 50 is clearly in *C minor*. The result is a remarkable instance of mixture. Mozart has moved to the rather distantly-related key of C minor through a mixture shift.

Activity LLL.07:

The following excerpt from a Mozart piano sonata (K. 331/iii, mm. 1-33) begins in A minor but modulates in m. 24. To which key does it modulate?

[Answer: A major. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: The excerpt modulates to the parallel major.)”]

[Follow-up question:]

The excerpt modulates to A major, the parallel major. In the tonic key of A minor, what Roman numeral would be used to represent an A major triad?

[Answer: I. Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: The root of an A major triad is the same as the root of the tonic triad in A minor.)"]

Conclusion:

Mixture consists of the incorporation of elements from the parallel key. Parallel keys differ at scale degrees $\hat{3}$, $\hat{6}$, and $\hat{7}$, so it is at these points that mixture will occur. In both major and minor keys, chords borrowed from the parallel key can intensify the drama of a musical texture.

Some instances of mixture can be seen as a result of strengthening the basic interval progressions governing the voiceleading of harmonic progression. This is not always the case, however, since some cases of mixture are employed strictly for color, variation, and drama. The term mixture is also expanded to include similar instances of chromatic pitches including those in double mixture chords and the Neapolitan.

Mixture can have an effect on larger spans of music as well. It can initiate modulation to foreign keys via a tonicization of a borrowed chord or by moving directly to a mixture-related key area.

By incorporating chromatic pitches in this manner, composers are able to expand and enrich their options for musical expression. Though common in pieces from across the tonal repertoire, mixture is especially prevalent in music from the Romantic era. Composers in that style period were particularly concerned with the emotional impact of their music and mixture provided an effective means of heightening the level of expression.

With C[#] sustained through m. 142, the resultant sonority would be a iv chord in root position. Like a root-position iv chord, the Neapolitan usually appears with scale degree $\hat{4}$ in the bass (see also Example 26).

Activity MMM.01:

The Neapolitan can also be thought of as an embellishment of a minor subdominant triad. Each of the following examples shows an unaltered iv chord. Make the necessary adjustments to create Neapolitan chords.

Exercise MMM.01a

Adjust the necessary pitch in the following iv chord to create a Neapolitan in B minor:

b: iv

[Answer: B → C natural. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: In order to make a Neapolitan out of a iv chord, you need to replace the fifth with its chromatic upper neighbor.)”]

Exercise MMM.01b

Adjust the necessary pitch in the following iv chord to create a Neapolitan in E minor:

e: iv

[Answer: E → F natural. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: In order to make a Neapolitan out of a iv chord, you need to replace the fifth with its chromatic upper neighbor.)”]

Exercise MMM.01c

Adjust the necessary pitch in the following iv chord to create a Neapolitan in G minor:

g: iv

[Answer: G → A^b. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: In order to make a Neapolitan out of a iv chord, you need to replace the fifth with its chromatic upper neighbor.)”]

Exercise MMM.01d

Adjust the necessary pitch in the following iv chord to create a Neapolitan in D minor:



d: iv

[Answer: D → E \flat . Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: In order to make a Neapolitan out of a iv chord, you need to replace the fifth with its chromatic upper neighbor.)”]

Note: The name of the Neapolitan chord links it to the so-called “Neapolitan school”—a group of composers active in and around Naples, Italy in the 18th century. However, there is little historical justification for this as the chord was certainly used earlier and by composers as far away as England.

You might also see the chord labeled “Phrygian II,” referring to Phrygian scale which differs from major and minor scales by beginning with a minor second between the first and second scale degrees. (This name should not be taken to imply that the music has shifted to Phrygian, but rather that the chord has some similarity in sound with the scale.) Other texts use the abbreviation $\flat II^6$, since the chord can also be thought of as a major triad built on $\flat \hat{2}$. For our purposes, we will label the chord N^6 and will refer to it as the Neapolitan.

The Neapolitan chord can also be thought of as a chromatic alteration of the diatonic ii chord. Example 30 shows how Neapolitan chords can be derived this way in both major (a) and minor (b) keys:

Example 30

a.



C: ii⁶

becomes...



C: N⁶

b.



c: ii⁶

becomes...



c: N⁶

In both cases, the resultant chord consists of the same three tones. Note that in major keys, however, the Neapolitan requires two accidentals: $\flat \hat{2}$ (D \flat in this case) and $\flat \hat{6}$ (A \flat). Though not rare in major keys, Neapolitan chords more commonly in minor. The major quality of the Neapolitan differs dramatically from the diminished diatonic ii^o chord and provides an effective means of stabilizing it by eliminating the tritone between its root and fifth (minor scale degrees $\hat{2}$ and $\hat{6}$).

The following example, from a well known passage in Beethoven's Seventh Symphony, shows a Neapolitan derived from an altered ii chord (Example 32 provides a reduction of Example 31):

Example 31 (L. Beethoven, Symphony No. 7, Mvt. I, mm. 364-370):

Example 32 (reduction of L. Beethoven, Symphony No. 7, Mvt. I, mm. 364-370):

A: I ii⁶ N⁶ V I

The ii⁶₅ chord in m. 366 leads to a Neapolitan in m. 368. Following the voiceleading in the upper parts, we can see that the B \flat of the Neapolitan comes directly from the root of the ii⁶₅ chord (B natural). Though it has the same construction as a Neapolitan derived by embellishing iv, this Neapolitan is clearly an altered ii chord. Nonetheless, scale degree $\hat{4}$ in the bass once again supports the Neapolitan.

Activity MMM.02:

The Neapolitan chord can be derived by altering a ii chord (ii^o in minor) to make a major triad built on the lowered second scale degree. Each of the following examples shows an unaltered supertonic chord. Make the necessary adjustments to create Neapolitan chords.

Exercise MMM.02a

Adjust the necessary pitch or pitches in the following ii⁶ chord to create a Neapolitan in G major:

G: ii⁶

[Answer: A \rightarrow A \flat and E \rightarrow E \flat . Response if correct: "Correct!" Response if partially correct: "Almost... Remember, in a major key, the root and fifth of the ii⁶ chord need to be lowered." Response if incorrect: "Incorrect. Try again."]

Exercise MMM.02b

Adjust the necessary pitch or pitches in the following $ii^{\circ 6}$ chord to create a Neapolitan in C minor:



c: $ii^{\circ 6}$

[Answer: D → D \flat . Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise MMM.02c

Adjust the necessary pitch or pitches in the following $ii^{\circ 6}$ chord to create a Neapolitan in F \sharp minor:



f \sharp : $ii^{\circ 6}$

[Answer: G \sharp → G natural. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise MMM.02d

Adjust the necessary pitch or pitches in the following $ii^{\circ 6}$ chord to create a Neapolitan in F major:



F: $ii^{\circ 6}$

[Answer: G → G \flat and D → D \flat . Response if correct: “Correct!” Response if partially correct: “Almost... Remember, in a major key, the root and fifth of the $ii^{\circ 6}$ chord need to be lowered.” Response if incorrect: “Incorrect. Try again.”]

To summarize, the Neapolitan can be thought of in two ways. In the first, the fifth of a subdominant triad is replaced by its chromatic upper neighbor. The resultant sonority is a major triad: N^6 . (Note that in this case, “ 6 ” does not indicate an inversion, since scale degree $\hat{4}$ is still the foundation. Rather, it is a bass figure and indicates that a sixth appears above the lowest note.) In the second conception, the Neapolitan is derived by chromatically lowering the root of a diatonic ii° chord. (In major keys, scale degree $\hat{6}$ must also be lowered.) These dual derivations are why we label the Neapolitan generically, using “ N^6 ” instead of a Roman numeral.

Of the two, the latter is more common today since the usual notation of the Neapolitan more readily resembles a $\flat\text{II}^6$ chord than a iv chord with an altered fifth. Nonetheless, it is important for analysis that you be able to conceive of the Neapolitan in both ways. Consider the following example:

Example 33 (F. Chopin, Nocturne, Op. 55, no. 1, mm. 5-8):

5

f: i VII⁶ III N⁶ V₄⁶ = ₃⁵ i

In this excerpt from a Chopin Nocturne, we find a Neapolitan following a root position III chord. In this case, the Neapolitan must be considered an embellished iv . To view this Neapolitan as $\flat\text{II}^6$ would be counterintuitive and would contradict the norms of harmonic root movement. The Neapolitan is a passing chord from III to V. In other words, the progression $\text{III} - \text{iv}^{\flat 6} - \text{V}_4^6$ makes much more sense than $\text{III} - \flat\text{II}^6 - \text{V}_4^6$.

Now consider the following example (Example 35 provides a reduction):

Example 34 (F. Schubert, String Quartet no. 12, D 703, mm. 7-19):

7

Violin I

Violin II

Viola

Violoncello

13

Vln. I

Vln. II

Vla.

Vc.

Example 35 (reduction of F. Schubert, String Quartet no. 12, D 703, mm. 7-19):

7

13

c: i iv⁶ (i⁴)⁶ N⁶ V i

i i iv⁶ ii⁶ V⁷ i

This passage consists of two parallel phrases. The first of these (mm. 7-13) includes a Neapolitan chord as an extension of iv through an auxiliary passing $\frac{6}{4}$ chord: i – iv⁶ – (i⁴)⁶ – N⁶ – V – i. (Refer to Lesson 09 for more information about auxiliary sonorities.) A parallel phrase follows in mm. 15-19. This time, however, the Neapolitan has been replaced by ii⁶. By presenting these two chords—N⁶ with its $b\hat{2}$ and then ii⁶ with its diatonic $\hat{2}$ —within parallel phrases in close proximity, Schubert highlights the contrast between different versions of the ii chord. As you can see, it is important that you be able to conceptualize the Neapolitan in both ways.

Activity MMM.03:

Write Neapolitan chords as indicated.

Exercise MMM.03a

Write a Neapolitan chord with scale degree $\hat{4}$ in the bass in C minor:

c: N⁶

[Answer: c: N⁶ (answers may vary as long as F is the lowest pitch and the upper voices consist of D \flat , F and A \flat). Response if correct: “Correct!” Response if partially correct: “Almost! Remember, a Neapolitan resembles a major triad built on $b\hat{2}$ with $\hat{4}$ in the bass.”]

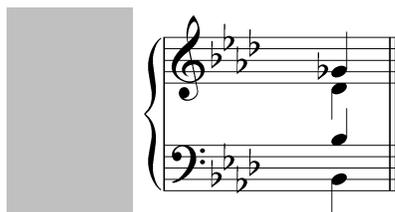
Response if incorrect: “Incorrect. Remember, a Neapolitan resembles a major triad built on $\flat 2$ with $\hat{4}$ in the bass.”]

Exercise MMM.03b

Write a Neapolitan chord with scale degree $\hat{4}$ in the bass in F minor:



f: N^6



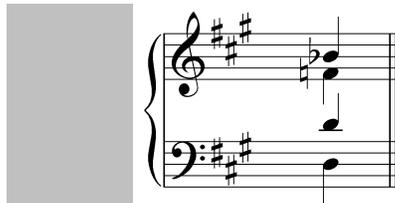
[Answer: f: N^6 (answers may vary as long as $B\flat$ is the lowest pitch and the upper voices consist of $G\flat$, $B\flat$ and $D\flat$). Response if correct: “Correct!” Response if partially correct: “Almost! Remember, a Neapolitan resembles a major triad built on $\flat 2$ with $\hat{4}$ in the bass.” Response if incorrect: “Incorrect. Remember, a Neapolitan resembles a major triad built on $\flat 2$ with $\hat{4}$ in the bass.”]

Exercise MMM.03c

Write a Neapolitan chord with scale degree $\hat{4}$ in the bass in A major:



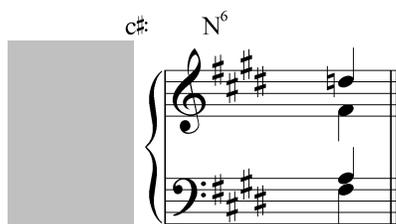
A: N^6



[Answer: A: N^6 (answers may vary as long as D is the lowest pitch and the upper voices consist of $B\flat$, D and F natural). Response if correct: “Correct!” Response if partially correct: “Almost! Remember, a Neapolitan resembles a major triad built on $\flat 2$ with $\hat{4}$ in the bass.” Response if incorrect: “Incorrect. Remember, a Neapolitan resembles a major triad built on $\flat 2$ with $\hat{4}$ in the bass.”]

Exercise MMM.03d

Write a Neapolitan chord with scale degree $\hat{4}$ in the bass in C^\sharp minor:



[Answer: $c^\sharp: N^6$ (answers may vary as long as F^\sharp is the lowest pitch and the upper voices consist of D natural, F^\sharp and A). Response if correct: “Correct!” Response if partially correct: “Almost! Remember, a Neapolitan resembles a major triad built on $b\hat{2}$ with $\hat{4}$ in the bass.” Response if incorrect: “Incorrect. Remember, a Neapolitan resembles a major triad built on $b\hat{2}$ with $\hat{4}$ in the bass.”]

Other positions of the Neapolitan:

Although the Neapolitan usually appears with scale degree $\hat{4}$ in the bass, other positions are possible. The following example shows one such instance:

Example 36 (F. Chopin, Prelude, Op. 28, no. 20, mm. 11-13):

On the second beat of m. 12, Chopin uses a Neapolitan chord with the chromatic pitch ($b\hat{2}$) in the bass. (Note that instead of N^6 , the chord is labeled N^5_3 indicating the third and fifth that appear above the bass.) In doing so, he brings out the chord's startling, dramatic effect by dramatizing the tritone in the low register when the bass, reinforced by octaves, leaps from D^b to G . Cases of $b\hat{2}$ in the bass supporting a Neapolitan are far less frequent than those with $\hat{4}$ in the bass.

Function and context:

Regardless of how you think of the Neapolitan chord—as a “frozen” neighbor-note embellishment of iv (IV in major) or as a chromatic root-alteration of ii^0 (ii in major)—it retains the pre-dominant function of its origin. In other words, the Neapolitan chord routinely signals and leads to some form of dominant. It

frequently moves directly to the dominant (V or V⁷), as in the following excerpt from a song by Schubert:

Example 37 (F. Schubert, “Der Müller und der Bach,” from *Die Schöne Müllerin*, mm. 6-10):

6

geht, da wel - ken die Li - lien auf je - dem_ Beet; da

g: i N⁶ V i

Here the Neapolitan chord appears in m. 8 after two full measures of tonic harmony. It then moves directly to a V chord in the following measure which in turn resolves to i at the end of the phrase.

Note that in Example 37, $\flat\hat{2}$ ($A\flat$) is emphasized as the highest note in the piano part and leaps down a diminished third to the leading tone ($F\sharp$). While a diminished melodic interval would typically be avoided, composers tend to highlight it in the case of the Neapolitan by putting it in the soprano. Like the leading tone, $\flat\hat{2}$ is only a semitone away from the tonic and as such has a strong tendency to resolve to $\hat{1}$. However, because the Neapolitan is a pre-dominant chord, the dominant chord further delays the resolution to $\hat{1}$. The heightened harmonic tension brought on by this delay makes the Neapolitan chord a potent dramatic tool.

The lowered second scale degree can also lead to the diatonic second scale degree. This tends to be restricted to inner voices, however, since the upward motion contradicts the tendency for $\flat\hat{2}$ to resolve down to $\hat{1}$. In Example 37, $A\flat$ moves to A natural in an inner voice.

Activity MMM.04:

When analyzing Neapolitan chords, it is essential that you be able to recognize the altered pitch or pitches and trace the voiceleading from one chord to the next.

Exercise MMM.04

Identify the Neapolitan chord in the following excerpt from Beethoven's "Moonlight" sonata (Op. 27, no. 2/i, mm. 1-5):

The image displays two systems of musical notation in G major, 3/4 time. The first system consists of three measures. The first measure has a treble clef with a melody of quarter notes G4, A4, B4, C5. The bass clef has a whole note chord G4-B4-D5. The second measure has a treble clef with a melody of quarter notes G4, A4, B4, C5. The bass clef has a whole note chord F#4-A4-B4-C5 (Neapolitan). The third measure has a treble clef with a melody of quarter notes G4, A4, B4, C5. The bass clef has a whole note chord G4-B4-D5. The second system starts with a measure number '4' and shows a continuation of the melody and bass line.

[Answer: students should click on the second half of m. 3. Response if correct: “Correct!”
Response if incorrect: “Incorrect. Try again.”]

[Follow-up multiple-choice question:]

The second half of m. 3 has a Neapolitan chord. Does the $b\hat{2}$ of the Neapolitan move to the leading tone or diatonic $\hat{2}$?

[Choices: “leading tone”, “diatonic $\hat{2}$ ”.]

[Answer: leading tone. Response if correct: “Correct! $b\hat{2}$ leaps down a diminished third to the leading tone.” Response if incorrect: “Incorrect. Try again.”]

In other cases, the Neapolitan does not move directly to the dominant. Instead, an intervening chord may delay the dominant. Consider the following examples:

Example 38 (F. Schubert, “Erlkönig,” mm. 140-148):

140

Kind, er - reicht den Hof mit Müh und

g: iv N⁵ vii⁷/N

145 iv

Not; in sei-nen Ar - men das Kind war tot.

N⁵ N⁶ vii⁷/V V i

Example 39 (J.S. Bach, BWV 2.6, “Ach Gott, vom Himmel sieh’ darein,” mm. 1-4):

g: V⁶ i V N⁶ vii⁷/V V

The Neapolitan chord in Example 38—itsself embellished with an auxiliary sonority in m. 144—leads to an applied vii⁷/V in m. 147 before moving to the cadential V chord. Bach found use for this same technique a century earlier, as shown in Example 39. Here, an unprepared Neapolitan is used to begin a phrase following a half cadence. A vii⁷/V delays the dominant, which arrives one beat later. (Note that despite the key signature of a single flat, this excerpt is in G minor. In Bach’s time, it was common for minor key signatures to be written with one less accidental, owing to remnants of the modal system.)

Example 40 shows a similar situation in which the Neapolitan leads to a cadential $\frac{6}{4}$ chord:

Example 40 (F. Mendelssohn, Song Without Words, Op. 102, no. 4, mm. 3-7):

g: VI N⁶ V⁶ $\frac{6}{4}$ i

Note that in this example, the VI chord preceding the Neapolitan can also be interpreted as an applied dominant (continuing falling fifth pattern from the previous measures). If the first half of m. 5 is regarded as V/N, then the Neapolitan in this case has loosened its ties to the original iv chord with 5-6 motion over the bass ($\hat{4}$). The Neapolitan has taken on a harmonic identity of its own, by virtue of the preceding applied dominant. We will return to this topic momentarily in the section on tonicizing the Neapolitan.

Whether the Neapolitan proceeds to an applied diminished seventh chord (as in Examples 38 and 39) or to a cadential $\frac{6}{4}$ (Example 40), $b\hat{2}$ may at first appear to resolve melodically directly to $\hat{1}$. But that $\hat{1}$ is a false resolution and is not heard as a true arrival since it is not supported by consonance with the bass. It acts instead as a passing tone—a dissonant diminished fifth or perfect fourth above the bass—on the way to the leading tone. The melodic resolution of $b\hat{2}$ occurs with the arrival of the leading tone over V, and the harmonic resolution occurs when that V resolves to I.

Activity MMM.05:

As a pre-dominant chord, the Neapolitan leads to dominant harmony. Sometimes, however, another pre-dominant chord intervenes. Recognizing this delay in the arrival of the dominant is an important part of analysis.

Exercise MMM.05

Identify the first appearance of the Neapolitan chord in the following excerpt from a Haydn piano sonata (Hob. 37/i, mm. 28-35). (Note that despite the key signature, this passage is in the key of A major.):

[Answer: students should click on m. 30 (specifically beat one). Response if correct: “Correct! The Neapolitan chord first appears on the downbeat of m. 30.” Response for m. 31: “Almost. M. 31 does contain Neapolitan harmony, but the chord appears earlier.” Response if incorrect: “Incorrect. (Hint: A good way to identify Neapolitan chords is to look for the expected chromatic alterations. In a major key, these are the lowered scale degrees $\hat{2}$ and $\hat{6}$.)”]

[Follow-up question:]

In this case, the Neapolitan does not move directly to the dominant. In what measure does the true dominant harmony arrive?

[Answer: m. 34. Response if correct: “Correct! M. 34 contains a dominant seventh chord.” Response for m. 33: “Almost. M. 33 does have the bass note of a dominant chord, but the upper voices are nonharmonic tones.” Response if incorrect: “Incorrect. (Hint: Look for a chord that measure whose pitches are that of a dominant seventh chord.)”]

[Two follow-up multiple-choice questions:]

The Neapolitan chord in mm. 30-31 eventually leads to a dominant seventh chord in m 34. What two other pre-dominant chords intervene?

Measure 32: [Choices: “vii^{o7}/V”, “iv”, “cadential $\frac{6}{4}$ ”, “ii⁶”]

[Answer: “vii^{o7}/V”. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

M. 33: [Choices: “iv⁶”, “V⁷/V”, “ii⁶₅”, “cadential $\frac{6}{4}$ ”]

[Answer: “cadential $\frac{6}{4}$ ”. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

The same chords that are typically used to approach ii^{(o)6} are also used to approach the Neapolitan. Example 36 and Example 40 show Neapolitan chords following VI. Example 38 has a Neapolitan following iv—the A^bs beginning in m. 143 act initially as chromatic upper neighbors to the fifth of the iv chord. Example 31 has a Neapolitan following ii⁶₅. Example 26 and Example 28 approach the Neapolitan with tonic triads in first inversion, allowing for a stepwise ascent in the bass: $\hat{3} - \hat{4} - \hat{5}$.

Tonicizing the Neapolitan:

Composers frequently tonicize the Neapolitan. The structure of the minor scale makes this particularly convenient since the diatonic VI chord is equivalent to the dominant of the Neapolitan. In other words, the progression VI – N⁶ can sound like a tonicization of the Neapolitan since the root motion is the same as V – I. Consider the following example:

Example 41 (F. Chopin, Mazurka, Op. 7, no. 2, mm. 12-16):

a: VI V⁷/N N³ V⁷ i

In this excerpt from a Chopin Mazurka, the Neapolitan is tonicized with an applied dominant seventh chord in m. 13. This applied chord is derived by adding a minor seventh above the root of the preceding VI chord (E^b). Composers will occasionally expand this sort of tonicization by modulating to the key of the Neapolitan for extended passages. Tonicizations of—and modulations to—the Neapolitan in a minor key are possible because, as pointed out earlier, chromatically altering $\hat{2}$ to become $b\hat{2}$ stabilizes the unstable, diminished ii^o triad into a major triad, bII .

The following excerpt provides another example of a tonicized Neapolitan

Example 42 (J.S. Bach, Trio Sonata for Organ no. 4 in E minor, Mvt. ii, mm. 1-3):

b: i iv⁶ V/III III⁶ V/N N⁶ V⁷ i

This passage from a Bach trio sonata for organ includes a Neapolitan chord in the opening phrase. On the second beat of m. 2, we see an E in the bass with G and C natural in the upper voice—a textbook example of a Neapolitan chord. Preceding this, we find a VI chord consisting of G in the bass with B and D in the upper voice. This chord can also be interpreted as an applied dominant to the Neapolitan. (It is labeled “V/N” in Example 42.) As an applied dominant, this tonicization of the Neapolitan continues a falling fifth progression begun in the previous measure. By moving to the Neapolitan, Bach avoids the tritone root motion that would have resulted from progression VI – ii^o. (For more information on applied chords, see Lesson 10.)

No matter what the length—single chords, tonicizations, modulations—appearances of the Neapolitan soon lead to the dominant. Emphasizing the Neapolitan in this manner dramatizes the arrival of the dominant.

Activity MMM.06:

For each of the following exercises, identify the pitches of an applied dominant seventh chord on the Neapolitan of the specified key.

Exercise MMM.06a

In the key of D minor, what would be the root of V⁷/N?

[Answer: B^b. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: The root of V⁷/N is the fifth of the Neapolitan chord.)”]

[Follow-up question:]

What are the three remaining pitches of the dominant seventh chord whose root is B^b?

[Answers: D, F, A^b. Response if correct: “Correct!” Response if partially correct: “That is partially correct.” Response if incorrect: “Incorrect. Try again.”]

Exercise MMM.06b

In the key of A minor, what would be the root of V⁷/N?

[Answer: F. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: The root of V⁷/N is the fifth of the Neapolitan chord.)”]

[Follow-up question:]

What are the three remaining pitches of the dominant seventh chord whose root is F?

[Answers: A, C, E^b. Response if correct: “Correct!” Response if partially correct: “That is partially correct.” Response if incorrect: “Incorrect. Try again.”]

Exercise MMM.06c

In the key of D major, what would be the root of V⁷/N?

[Answer: B^b. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: The root of V⁷/N is the fifth of the Neapolitan chord.)”]

[Follow-up question:]

What are the three remaining pitches of the dominant seventh chord whose root is $B\flat$?

[Answers: D, F, $A\flat$. Response if correct: “Correct!” Response if partially correct: “That is partially correct.” Response if incorrect: “Incorrect. Try again.”]

Exercise MMM.06d

In the key of $F\sharp$ minor, what would be the root of V^7/N ?

[Answer: D natural. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: The root of V^7/N is the fifth of the Neapolitan chord.)”]

[Follow-up question:]

What are the three remaining pitches of the dominant seventh chord whose root is D natural?

[Answers: $F\sharp$, A, C natural. Response if correct: “Correct!” Response if partially correct: “That is partially correct.” Response if incorrect: “Incorrect. Try again.”]

Conclusion:

The Neapolitan chord (sometimes referred to as Phrygian II) is notated as a major triad built on $\flat\hat{2}$, but can be conceptualized in different ways. It can also be thought of as a melodically embellished subdominant chord whose fifth has been replaced by its chromatic upper neighbor—an explanation that accounts for the tendency of the Neapolitan to appear with $\hat{4}$ in the bass, and for the bass, as root, to be doubled. It can also be thought of as a chromatically altered $ii^{(o)}$ chord, in which the root has been lowered by a semitone.

The respective Neapolitan chords of parallel keys contain the same tones, though two accidentals are required in major as opposed to the single accidental required in minor. Neapolitan chords appear more frequently in minor keys, in part because they avoid the tritone between $\hat{2}$ and $\hat{6}$ in the ii^o chord.

As a pre-dominant chord, the Neapolitan’s function is to lead to the dominant. It often does this directly—moving to V or V^7 without delay—though frequently an applied chord or cadential $\frac{6}{4}$ intervenes. Any chord used to approach $ii^{(o)}$ can also precede a Neapolitan: i, i^{\flat} , VI, or iv among others. Composers also tonicize it or modulate to that key. In any case, the Neapolitan eventually leads to some form of dominant harmony.

All in all, the Neapolitan is generally used as an expressive device. The chromatic alteration is striking in any context and is often used to heighten the dramatic tension of important passages.

Lesson NNN: Augmented Sixth Sonorities

Introduction:

The following excerpt from a Beethoven string quartet includes an intriguing chromatic sonority in m. 5:

Example 43 (L. Beethoven, String Quartet in G major, Op. 18, no. 2, Mvt. III, Trio, mm 1-8):

C: IV⁶ A6 V

Following a IV⁶ chord in m. 4, the bass and treble expand outward to form an augmented sixth (A^b in the bass with F[#] in the treble). As the sonority moves to V in the following measure, we see that the outer voices both resolve outward by semitone to G.

A^b and F[#] natural can be thought of as dual leading tones, approaching scale degree $\hat{5}$ by semitone from above and below. Of course, this type of sonority could never occur diatonically. No two diatonic pitches will produce an augmented sixth. Nevertheless, chromatic sonorities containing an augmented sixth appear quite frequently.

As you will see in this lesson, there are several chromatic sonorities characterized by the presence of an augmented sixth, appropriately referred to as *augmented sixth sonorities*. As seen in Example 43, augmented sixth sonorities characteristically function as pre-dominant chords and usually lead to dominant harmony. Like other chromatic sonorities, augmented sixths can have a striking effect that composers exploit in order to heighten dramatic tension or highlight important structural moments.

After discussing the general structure and derivation of augmented sixth sonorities, we will look at the three common types and their function in tonal music. We will then examine several complex uses of this type of sonority.

Structure and derivation:

Augmented sixth sonorities are derived by chromatically altering a common basic interval progression. (See Lesson 01 for more on how basic interval progressions lie at the base of all voice leading.)

Example 44:

a.
 M6 P8
(a: iv⁶ V)

b.
 A6 P8
(a: Aug.⁶ V)

c.
 A6 P8
(a: Aug.⁶ V)

Example 44a shows the familiar basic interval progression of a major sixth expanding to an octave, as it might appear in the common progression $iv^6 - V$ (in this case, in A minor). Here, the lower voice descends to $\hat{5}$ by semitone while the upper voice ascends by wholetone to the same scale degree. Raising scale degree $\hat{4}$, as in Example 44b, will produce the characteristic augmented sixth. Now both voices are only a semitone away from their respective destinations. Example 44c fills out the sonority with an inner voice. Augmented sixth sonorities invariably include scale degree $\hat{1}$ —a major third above the bass—which moves to the leading tone in the ensuing dominant harmony.

Note: Augmented sixth chords can also precede *applied* dominant chords. In such cases, the scale degrees mentioned in this lesson are those of the tonicized key, not the home key.

As Example 44 demonstrates, augmented sixth sonorities arise from chromatic alterations of pre-dominant chords. They retain that function and most commonly lead to the dominant. In Example 44, for instance, we see that raising the root of a iv^6 chord creates an augmented sixth with the bass. The tritone between $\hat{1}$ and $\sharp\hat{4}$ is another characteristic dissonance of all augmented sixth sonorities. Rather than undermine the function of the iv chord, the chromatic pitch in fact intensifies the pre-dominant function. The dual contrary-motion voiceleading by semitone to $\hat{5}$, combined with the dual contrary-motion resolution of the tritone between $\hat{1}$ and $\sharp\hat{4}$, also by semitone, drives augmented sixth sonorities powerfully to V .

Augmented sixth sonorities also occur in major contexts. There, they require an extra accidental to lower scale degree $\hat{6}$, moving it to within a semitone of $\hat{5}$. Example 45 reproduces Example 44b in A major. As you can see, the augmented sixth requires an accidental to lower the $F\sharp$ ($\hat{6}$ in A major) to F natural, a semitone above $\hat{5}$:

Example 45:

A6 P8

(A: Aug.⁶ V)

(For the sake of consistency, we will here use “ $\flat\hat{6}$ ” to generically refer to the pitch a semitone above $\hat{5}$, even though minor keys require no additional accidental and sometimes a natural sign is used in major keys.)

Activity NNN.01:

Augmented sixth sonorities arise from chromatic alterations of predominant chords. Alter one of the pitches in each of the following progressions to change the sub-dominant chord to an augmented sixth sonority. (Remember, two accidentals are needed for augmented sixths in major keys.)

Exercise NNN.01a

Alter the pitches as necessary in the following “ $iv^6 - V$ ” progression in D minor to transform the predominant chord into an augmented sixth sonority.

d: iv⁶ V

[Answer: G → G#. Response if correct: “Correct! G# forms an augmented sixth above the bass.” Response if incorrect: “Incorrect. (Hint: Scale degree $\hat{4}$ needs to be raised to form an augmented sixth with the bass.)”]

Exercise NNN.01b

Alter the pitches as necessary in the following “iv⁶ – V” progression in B minor to transform the predominant chord into an augmented sixth sonority.

b: iv⁶ V

[Answer: E → E#. Response if correct: “Correct! E# forms an augmented sixth above the bass.” Response if incorrect: “Incorrect. (Hint: Scale degree $\hat{4}$ needs to be raised to form an augmented sixth with the bass.)”]

Exercise NNN.01c

Alter the pitches as necessary in the following “iv⁶ – V” progression in E \flat major to transform the predominant chord into an augmented sixth sonority.

E \flat : iv⁶ V

[Answer: A \flat → A natural and C → C \flat . Response if correct: “Correct! An augmented sixth in a major key requires that $\hat{6}$ be lowered and $\hat{4}$ be raised.” Response if partially correct: “That’s partially correct. Remember, augmented sixths in major keys require two accidentals.” Response if incorrect: “Incorrect. (Hint: Scale degrees $\hat{4}$ and $\hat{6}$ need to be adjusted to form the augmented sixth.)”]

Exercise NNN.01d

Alter the pitches as necessary in the following “iv⁶ – V” progression in A major to transform the predominant chord into an augmented sixth sonority.



A: iv⁶ V

[Answer: F# → F natural and D → D#. Response if correct: “Correct! An augmented sixth in a major key requires that $\hat{6}$ be lowered and $\hat{4}$ be raised.” Response if partially correct: “That’s partially correct. Remember, augmented sixths in major keys require two accidentals.” Response if incorrect: “Incorrect. (Hint: Scale degrees $\hat{4}$ and $\hat{6}$ need to be adjusted to form the augmented sixth.)”]

Raised scale degree $\hat{4}$ ($\#4$) appears in other chromatic harmonies as well, most notably in applied chords. (See Lesson 10 for more on applied chords.) In V^7/V , for example, $\#4$ acts as a temporary leading tone to $\hat{5}$. But $\#4$ never appears in conjunction with $b\hat{6}$ in an applied chord to V, nor should you interpret the presence of $\#4$ in an augmented sixth as tonicizing V. Augmented sixth sonorities, as chromatic pre-dominants, emphasize the arrival of the dominant but do not tonicize it.

Augmented sixth sonorities usually appear with $b\hat{6}$ in the bass, often with $\#4$ in the treble to emphasize the chromatic expansion to the octave. Other positions are possible, but occur less frequently. That said, augmented sixth sonorities with other scale degrees in the bass should not be considered “inversions” since $b\hat{6}$ is not a “root” in the same sense as the root of a triad or seventh chord.

Activity NNN.02:

In each of the following progressions, identify the pre-dominant chord as either an augmented sixth sonority or an applied chord.

Exercise NNN.02a

In the following progression in D minor, is the chord marked with a question mark an augmented sixth sonority or an applied chord?



d: ? V

[Answer: augmented sixth sonority. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, the presence of an augmented sixth indicates an augmented sixth sonority.”]

Exercise NNN.02b

In the following progression in D minor, is the chord marked with a question mark an augmented sixth sonority or an applied chord?

G: ? V

[Answer: applied chord. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Does the chord in question include an augmented sixth? What does that tell you?)”]

Exercise NNN.02c

In the following progression in D minor, is the chord marked with a question mark an augmented sixth sonority or an applied chord?

f# ? V

[Answer: applied chord. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Does the chord in question include an augmented sixth? What does that tell you?)”]

Exercise NNN.02d

In the following progression in D minor, is the chord marked with a question mark an augmented sixth sonority or an applied chord?

Bb: ? V

[Answer: augmented sixth sonority. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember, the presence of an augmented sixth indicates an augmented sixth sonority.”]

Types of augmented sixth sonorities:

There are three varieties of augmented sixth sonorities, each containing a different “filling,” so to speak, within the framework of the augmented sixth. These varieties are identified with geographical names—Italian, French, and German—none of which is historically or geographically justifiable. The names are widely used, however, and we will use them here since they permit easy identification.

It is important to remember that augmented sixths are embellishing sonorities, not structural chords. They cannot be constructed purely from diatonic notes and therefore cannot be goals of modulation. Like auxiliary sonorities—another type of chord arising from voiceleading procedures—augmented sixths are a combination of simultaneous melodic embellishments. The different types listed below occur with enough frequency to merit discussion, but their differences arise from combinations of nonharmonic tones. Though the inner-voice filling may vary, it is the augmented sixth between $b6$ and $\#4$ that gives the sonority its aural signature and requires the most attention.

Italian augmented sixths:

The simplest type of augmented sixth sonority is the Italian. In addition to $\sharp\hat{4}$ and $\flat\hat{6}$ forming the augmented sixth framework, this sonority contains one other pitch a diatonic major third above the bass (scale degree $\hat{1}$), as seen in Example 44c. The Italian augmented sixth sonority is sometimes referred to as the augmented $\frac{6}{3}$. This does not imply that the chord is a triad in first inversion. Rather, it simply indicates the presence of a third and a sixth above the bass.

Note: You may occasionally see augmented sixths indicated by a bass figure six with a slash through it:

Example 46:

a: $\frac{6}{3}$ V

This is a common figured bass convention. The slash indicates that the sixth above the bass should be raised by a semitone: in this case requiring F \sharp instead of F natural.

The following example shows an Italian augmented sixth sonority in musical context:

Example 47 (F. Mendelssohn, Song Without Words, Op. 30, no. 4, mm. 55-60):

b: i VI It^6 V

In this excerpt from Mendelssohn, we find an arpeggiation of a VI chord in mm. 56-58. We expect this pattern to continue in m. 59, but encounter there an E \sharp where the arpeggiation of G-major harmony in mm. 56-58 points toward a G. The substitution of E \sharp (scale degree $\sharp\hat{4}$) for G creates a dissonant augmented sixth with the bass G (scale degree $\hat{6}$). The sonority is filled in with a B in the tenor (a major third above the bass) and all three voices resolve, as expected, to a dominant in m. 60: $\flat\hat{6}$ and $\sharp\hat{4}$ move to $\hat{5}$ while the tritone formed by $\hat{1}$ and $\sharp\hat{4}$ resolves outward to a minor sixth. The harmonic effect, though brief, is striking and emphasizes the arrival of the dominant in a way that a diatonic chord cannot.

Now consider the following example:

Example 48 (W. Mozart, Piano Sonata, K 332, Mvt. I, mm. 119-126):

119

d: i^6 V_6^+ i It^6

123

V

Here, the Italian sixth appears directly after a root-position tonic. The inner-voice D in the tonic remains stationary while the outer voices expand to form the augmented sixth, B \flat -G \sharp . All three voices move as expected to the V chord at the beginning of m. 123.

Textures with four or more voices always double the third above the bass (scale degree $\hat{1}$). Note that the inner voices move in contrary motion to one another, and also in contrary motion to their registral companions:

Example 49:

a: It^6 V

As you can see in Example 49, the doubled scale degree $\hat{1}$ moves to both the leading tone and to scale degree $\hat{2}$ in the ensuing V chord. $\sharp\hat{4}$ and $\flat\hat{6}$ are never doubled since doing so would lead to parallel octaves as a result of their strong tendency to resolve to $\hat{5}$. The following excerpt from a Bach chorale shows an Italian sixth in four voices (note that, despite the key signature, this passage begins in G minor):

Example 50 (J.S. Bach, BWV 351, “Ich hab mein Sach Gott heimgestellt,” mm. 1-2):

g i It⁶ V i⁶

On the second beat of the first full measure, we find an Italian sixth: $b\hat{6}$ in the bass, $\hat{1}$ in the soprano and tenor, and $\#4$ as a chromatic lower neighbor to the D from the preceding i chord. Again, all four voices resolve as expected to the pitches of the V chord.

Activity NNN.03:

Create Italian augmented sixths and resolve them in various keys.

Exercise NNN.03a

Write a four-voiced Italian augmented sixth sonority in D minor.

[Answer: d: It⁶ (answers may vary, provided B \flat is in the bass and G \sharp and two Ds appear in the upper voices). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: In a minor key, an Italian augmented sixth will have $\hat{6}$ in the bass with $\#4$ and two $\hat{1}$ s in the upper voices.)”]

[Follow-up exercise:]

Resolve this Italian sixth to a dominant triad using proper voiceleading.

[Answer: d: It⁶ V (answers may vary, provided B \flat and G \sharp both move to A and the two Ds move to C \sharp and E). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Remember, the voices forming the augmented sixth will expand outward to octave $\hat{5}$ s and the two $\hat{1}$ s will move to the leading tone and $\hat{2}$.)”]

Exercise NNN.03b

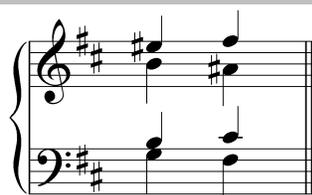
Write a four-voiced Italian augmented sixth sonority in B minor.



[Answer: $b: It^6$ (answers may vary, provided G is in the bass and E^\sharp and two Bs appear in the upper voices). Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: In a minor key, an Italian augmented sixth will have $\hat{6}$ in the bass with $\hat{\#4}$ and two $\hat{1}$ s in the upper voices.)"]

[Follow-up exercise:]

Resolve this Italian sixth to a dominant triad using proper voiceleading.



[Answer: $b: It^6 V$ (answers may vary, provided G and E^\sharp both move to F^\sharp and the two Bs move to A^\sharp and C^\sharp). Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: Remember, the voices forming the augmented sixth will expand outward to octave $\hat{5}$ s and the two $\hat{1}$ s will move to the leading tone and $\hat{2}$.)"]

Exercise NNN.03c

Write a four-voiced Italian augmented sixth sonority in E^b major.



[Answer: $E^b: It^6$ (answers may vary, provided C^b is in the bass and A natural and two E^b s appear in the upper voices). Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: In a major key, an Italian augmented sixth will have $b\hat{6}$ in the bass with $\hat{\#4}$ and two $\hat{1}$ s in the upper voices.)"]

[Follow-up exercise:]

Resolve this Italian sixth to a dominant triad using proper voiceleading.

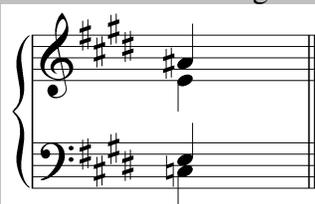


[Answer: $E^b: It^6 V$ (answers may vary, provided C^b and A natural both move to B^b and the two E^b s move to D and F). Response if correct: "Correct!" Response if incorrect:

“Incorrect. (Hint: Remember, the voices forming the augmented sixth will expand outward to octave $\hat{5}$ s and the two $\hat{1}$ s will move to the leading tone and $\hat{2}$.)”]

Exercise NNN.03d

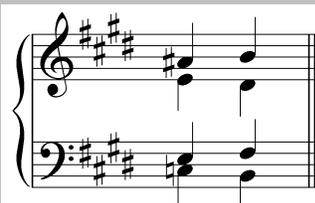
Write a four-voiced Italian augmented sixth sonority in E major.



[Answer: E: It^6 (answers may vary, provided C natural is in the bass and A# and two Es appear in the upper voices). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: In a major key, an Italian augmented sixth will have $b\hat{6}$ in the bass with $\#4$ and two $\hat{1}$ s in the upper voices.)”]

[Follow-up exercise:]

Resolve this Italian sixth to a dominant triad using proper voiceleading.



[Answer: E: It^6 V (answers may vary, provided C natural and A# both move to B and the two Es move to D# and F#). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Remember, the voices forming the augmented sixth will expand outward to octave $\hat{5}$ s and the two $\hat{1}$ s will move to the leading tone and $\hat{2}$.)”]

French augmented sixths:

The Italian sixth is relatively thin in texture, containing only three unique members. The French sixth, by contrast, adds an augmented fourth above the bass (scale degree $\hat{2}$) and produces significantly more dissonance among the voices. It is sometimes referred to as an augmented $\frac{4}{3}$ chord, though again this is not to imply that it is a seventh chord in second inversion. Example 51 illustrates:

Example 51:



a: Fr^6 V

We can see the voiceleading already familiar to us from the Italian sixth: $\#4$ and $b\hat{6}$ resolve outward by semitone to $\hat{5}$, and the third above the bass (scale degree $\hat{1}$) steps down to the leading tone. Instead of doubling $\hat{1}$, as in the Italian sixth, we've added a fourth voice: B ($\hat{2}$). Since scale degree $\hat{2}$ is also the fifth of the dominant chord, it is commonly retained when the French sixth resolves to V.

The incorporation of $\hat{2}$ into the French sixth leads to yet another tritone, this time with the bass. The presence of two tritones ($\hat{1}-\#\hat{4}$ and $\flat\hat{6}-\hat{2}$) gives the French sixth its characteristically piercing sound. The added dissonance adds an even greater urgency to the sonority, further activating its tendency to resolve to V.

Observe the voiceleading in the following example:

Example 52 (L. Beethoven, Piano Sonata No. 8, Op. 13 (“Pathétique”), Mvt. III, mm. 44-47):

The musical score for Example 52 shows measures 44 to 47. Measure 44 starts with a half note Eb in the bass and a half note G in the treble. Measure 45 features a French augmented sixth chord with notes Eb, G, Ab, and Bb. Measure 46 shows the resolution of this chord to a V chord (G, B, D, F). Measure 47 continues with the V chord. Chord symbols below the staff are: Eb, V², I⁶, IV⁶, Fr⁶, and V.

In the second half of m. 46 we find a clear example of a French augmented sixth. As you can see, the outer voices come about as chromatic passing tones: $\flat\hat{6}$ (Cb) steps down to $\hat{5}$ (Bb) and $\#\hat{4}$ (A-natural) steps up to $\hat{5}$. Scale degree $\hat{1}$ is held over from the preceding IV⁶ chord while $\hat{2}$, completing the two-tritone make-up of the French sixth, is introduced in anticipation of the V chord.

Example 53 shows another instance of a French augmented sixth in a Beethoven sonata:

Example 53 (L. Beethoven, Piano Sonata No. 4, Op. 7, mm. 72-74):

The musical score for Example 53 shows measures 72 to 74. Measure 72 starts with a half note C in the bass and a half note E in the treble. Measure 73 features a French augmented sixth chord with notes C, E, F#, and Ab. Measure 74 shows the resolution of this chord to a V chord (C, E, G, B). Chord symbols below the staff are: C, I, IV (I⁴), vii^{o6}/V, Fr⁶, V⁴, V⁷, and I.

Here, the dissonant augmented sixth is introduced gradually. An applied vii^{o6}/V chord follows an auxiliary passing $\frac{6}{4}$ chord in m. 73, introducing the temporary leading tone F# ($\#\hat{4}$). (Were the F left natural, the harmony would have followed the common IV – (I⁴) – IV⁶ progression.) The bass then steps down chromatically to Ab, forming an augmented sixth with $\#\hat{4}$. The tonic pitch is sustained throughout, and in the highest voice we find $\hat{2}$, completing the French sixth sonority.

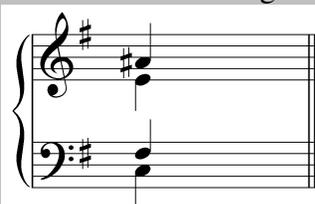
In this case, the augmented sixth sonority does not resolve directly to the dominant. Instead it introduces a cadential $\frac{6}{4}$ chord. (Note: The doubling of $\flat 6$ in Example 53 appears to lead to parallel octaves as the French sixth moves to the cadential $\frac{6}{4}$. This is the result of Beethoven’s doubling of the bass line at the octave. True parallel octaves occur between two independent voices. These octaves simply arise from doubling, which Beethoven uses here to create a thick texture.)

Activity NNN.04:

Create French augmented sixths and resolve them in various keys.

Exercise NNN.04a

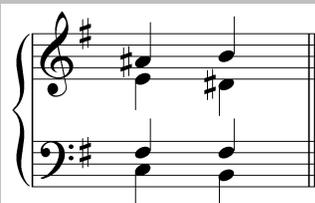
Write a four-voiced French augmented sixth sonority in E minor.



[Answer: e Fr⁶ (answers may vary, provided C is in the bass and F#, E, and A# appear in the upper voices). Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: In a minor key, a French augmented sixth will have $\hat{6}$ in the bass with $\hat{\#4}$, $\hat{1}$, and $\hat{2}$ in the upper voices.)"]

[Follow-up exercise:]

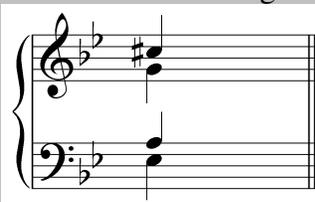
Resolve this French sixth to a dominant triad using proper voiceleading.



[Answer: e Fr⁶ V (answers may vary, provided C moves to B, E moves to D#, A# moves to B and F is sustained). Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: Remember, the voices forming the augmented sixth will expand outward to octave $\hat{5}$ s, while $\hat{1}$ moves to the leading tone and $\hat{2}$ is sustained.)"]

Exercise NNN.04b

Write a four-voiced French augmented sixth sonority in G minor.



[Answer: g Fr⁶ (answers may vary, provided Eb is in the bass and A, G, and C# appear in the upper voices). Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: In a minor key, a French augmented sixth will have $\hat{6}$ in the bass with $\hat{\#4}$, $\hat{1}$, and $\hat{2}$ in the upper voices.)"]

[Follow-up exercise:]

Resolve this French sixth to a dominant triad using proper voiceleading.

[Answer: $g: Fr^6 V$ (answers may vary, provided E^b moves to D, G moves to F^\sharp , C^\sharp moves to D and A is sustained). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Remember, the voices forming the augmented sixth will expand outward to octave $\hat{5}$ s, while $\hat{1}$ moves to the leading tone and $\hat{2}$ is sustained.)”]

Exercise NNN.04c

Write a four-voiced French augmented sixth sonority in A major.

[Answer: $A: Fr^6$ (answers may vary, provided F natural is in the bass and B, A, and D^\sharp appear in the upper voices). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: In a major key, a French augmented sixth will have $b\hat{6}$ in the bass with $\sharp\hat{4}$, $\hat{1}$, and $\hat{2}$ in the upper voices.)”]

[Follow-up exercise:]

Resolve this French sixth to a dominant triad using proper voiceleading.

[Answer: $A: Fr^6 V$ (answers may vary, provided F natural moves to E, A moves to G^\sharp , D^\sharp moves to E and B is sustained). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Remember, the voices forming the augmented sixth will expand outward to octave $\hat{5}$ s, while $\hat{1}$ moves to the leading tone and $\hat{2}$ is sustained.)”]

Exercise NNN.04d

Write a four-voiced French augmented sixth sonority in E minor.

[Answer: $A^b: Fr^6$ (answers may vary, provided F^b is in the bass and B^b , A^b , and D natural appear in the upper voices). Response if correct: “Correct!” Response if incorrect:

“Incorrect. “Incorrect. (Hint: In a major key, a French augmented sixth will have $b\hat{6}$ in the bass with $\#\hat{4}$, $\hat{1}$, and $\hat{2}$ in the upper voices.)”]

[Follow-up exercise:]

Resolve this French sixth to a dominant triad using proper voiceleading.

[Answer: $A\flat$ Fr^6 V (answers may vary, provided $F\flat$ moves to $E\flat$, $A\flat$ moves to G , D natural moves to $E\flat$ and $B\flat$ is sustained). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Remember, the voices forming the augmented sixth will expand outward to octave $\hat{5}$ s, while $\hat{1}$ moves to the leading tone and $\hat{2}$ is sustained.)”]

German augmented sixths:

German augmented sixth sonorities—the most commonly used variety—consist of the same augmented sixth filled in with a major third (scale degree $\hat{1}$) and, instead of an augmented fourth, now with a perfect fifth ($b\hat{3}$ in major, $\hat{3}$ in minor). It is sometimes referred to as an augmented $\hat{6}_3$ chord. Because $b\hat{3}$ forms a perfect fifth above $b\hat{6}$, the resolution of the German sixth can lead to parallel fifths:

Example 54:

a: Gr^6 V
(parallel fifths)

Example 55:

a: Gr^6 V_4^6 V

Example 54 shows the parallel fifths that arise when moving from a German sixth directly to V .

Composers generally avoid this by including an intervening $\hat{6}_4$ chord before the V . The $\hat{6}_4$ is shown in Example 55 where the perfect fifth in the left hand (F and C) is mediated obliquely by a minor sixth (E and C) before arriving at the perfect fifth of the V chord (E and B):

Another interesting property of the German sixth is that the sonority is enharmonically equivalent to a dominant seventh chord. If the D^\sharp in Example 54 were respelled as E^\flat , the chord (F, A, C, and E^\flat) could be interpreted as V^7 in the key of B^\flat . Composers often take advantage of that enharmonic equivalence as a modulatory device. We will return to that device momentarily.

The following excerpt provides a clear example of the German augmented sixth:

Example 56 (L. Beethoven, Piano Sonata No. 8, Op. 13 (“Pathétique”), Mvt. III, mm. 5-8):

c: i^6 Gr^6 V^6 $\frac{6}{4}$ i

In m. 6, the presence of F^\sharp makes a German augmented sixth out of what would otherwise be heard as VI. As expected, the resolution of the augmented sixth is delayed by a cadential $\frac{6}{4}$ chord, offsetting the parallel fifths from A^\flat and E^\flat to G and D.

Example 56 illustrates a very common treatment of the German sixth, but there are other treatments. The following example shows an alternative:

Example 57 (W. Mozart, Piano Sonata, K. 284, Mvt. I, mm. 15-17):

D: IV^6 Gr^6 V

In this excerpt from a Mozart sonata the German sixth resolves directly to V in m. 17. The parallel fifths are concealed since F natural does not move directly to E. Instead, E appears in an upper voice, coming out of D in the alto voice.

As we've seen, there are a variety of ways to approach an augmented sixth sonority. Augmented sixths are often prepared by a subdominant chord in first inversion (IV^6 ; iv^6 in minor), as seen in Examples **Error! Reference source not found.**, 52, and 57. This approach is widely used since the bass note ($\hat{6}$) is already in place. In these cases, $\hat{\#4}$ arises as a chromatic passing tone, making the augmented sixth a chromatic elaboration of subdominant harmony. The submediant (VI) is another common approach (Example 47), as is the tonic triad—either in root position (Examples 48 and 50) or in first inversion (Example 56).

Activity NNN.05:

Create German augmented sixths and resolve them in various keys.

Exercise NNN.05a

Write a four-voiced German augmented sixth sonority in G major.

[Answer: G: Gr⁶ (answers may vary, provided Eb is in the bass and Bb, G, and C# appear in the upper voices). Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: In a major key, a German augmented sixth will have b6 in the bass with #4, 1, and b3 in the upper voices.)"]

[Follow-up exercise:]

Resolve this German sixth to a cadential $\frac{6}{4}$ chord using proper voiceleading.

[Answer: G: Gr⁶ V₄⁶ (answers may vary, provided Eb moves to D, C# moves to D, and Bb and G are sustained). Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: Remember, the voices forming the augmented sixth will expand outward to octave 5s, while 1 and b3 are sustained.)"]

Exercise NNN.05b

Write a four-voiced German augmented sixth sonority in Bb major.

[Answer: Bb: Gr⁶ (answers may vary, provided Gb is in the bass and Db, Bb, and E natural appear in the upper voices). Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: In a major key, a German augmented sixth will have b6 in the bass with #4, 1, and b3 in the upper voices.)"]

[Follow-up exercise:]

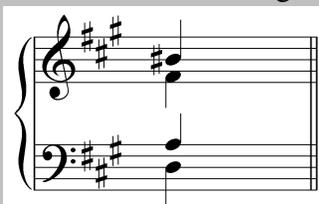
Resolve this German sixth to a cadential $\frac{6}{4}$ chord using proper voiceleading.

[Answer: Bb: Gr⁶ V₄⁶ (answers may vary, provided Gb moves to F, E natural moves to F, and Db and Bb are sustained). Response if correct: "Correct!" Response if incorrect:

“Incorrect. (Hint: Remember, the voices forming the augmented sixth will expand outward to octave $\hat{5}_s$, while $\hat{1}$ and $\flat\hat{3}$ are sustained.)”]

Exercise NNN.05c

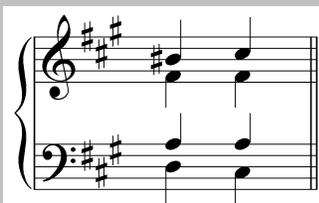
Write a four-voiced German augmented sixth sonority in $F\sharp$ minor.



[Answer: $f\sharp$ Gr^6 (answers may vary, provided D is in the bass and A, $F\sharp$, and $B\sharp$ appear in the upper voices). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: In a minor key, a German augmented sixth will have $\hat{6}$ in the bass with $\sharp\hat{4}$, $\hat{1}$, and $\hat{3}$ in the upper voices.)”]

[Follow-up exercise:]

Resolve this German sixth to a cadential $\frac{6}{4}$ chord using proper voiceleading.



[Answer: $f\sharp$ Gr^6 V_4^6 (answers may vary, provided $E\flat$ moves to D, $C\sharp$ moves to D, and $B\flat$ and G are sustained). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Remember, the voices forming the augmented sixth will expand outward to octave $\hat{5}_s$, while $\hat{1}$ and $\hat{3}$ are sustained.)”]

Exercise NNN.05d

Write a four-voiced German augmented sixth sonority in F minor.



[Answer: f Gr^6 (answers may vary, provided $D\flat$ is in the bass and $A\flat$, F, and B natural appear in the upper voices). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: In a minor key, a German augmented sixth will have $\hat{6}$ in the bass with $\sharp\hat{4}$, $\hat{1}$, and $\hat{3}$ in the upper voices.)”]

[Follow-up exercise:]

Resolve this German sixth to a cadential $\frac{6}{4}$ chord using proper voiceleading.

[Answer: f: Gr⁶ V₄⁶ (answers may vary, provided D^b moves to C, B natural moves to C, and A^b and F are sustained). Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Remember, the voices forming the augmented sixth will expand outward to octave $\hat{5}$ s, while $\hat{1}$ and $\hat{3}$ are sustained.)”]

Other uses of augmented sixth sonorities:

So far, the augmented sixth sonorities we have examined have been relatively straightforward. In each case the augmented sixth acted as a simple pre-dominant chord that added dramatic tension to a cadential phrase. Augmented sixth sonorities can function in other ways as well. We will now look at how they can be used to prolong harmonies, and how they can act as agents of modulation.

Consider the following example:

Example 58 (F. Mendelssohn, Song Without Words, Op. 102, no. 3, mm. 22-28):

This excerpt is comprised of an extended prolongation of dominant harmony in E minor. In mm. 22-24, the dominant alternates with the cadential $\frac{6}{4}$ chord. In m. 25, the bass moves to its upper neighbor (C) while the treble steps down to $\hat{\#4}$ (A \sharp). This forms an Italian augmented sixth with the alto (E). (Note that the melodically embellished bass of the Italian sixth is motivically connected to the treble in m. 24.) The sonority resolves as expected in m. 26 and the progression repeats. In this context, the augmented sixth adds chromatic flavor to an otherwise routine dominant prolongation.

You may encounter other types of auxiliary sonorities that contain an augmented sixth, as in the opening measures of Schubert’s “Am Meer”:

Example 59 (F. Schubert, “Am Meer” from *Schwanengesang*, D. 957, mm. 1-3):

The musical score for Example 59 consists of a vocal line and a piano accompaniment. The vocal line is in treble clef with a common time signature. The piano accompaniment is in bass clef with a common time signature. The key signature has one sharp (F#). The lyrics are "Das Meer er-glänz-te". The piano accompaniment features a sustained bass note (C) and a moving upper line that forms an augmented sixth chord. Below the piano part, the chord symbols are: C: $\begin{smallmatrix} \flat 6 \\ \sharp 4 \\ \sharp 2 \end{smallmatrix}$ I $\begin{smallmatrix} \flat 6 \\ \sharp 4 \\ \sharp 2 \end{smallmatrix}$ I.

Like the augmented sixths in Example 58, the sonority that opens this piece expands a functional reference harmony. In this case, however, a I chord is prolonged: $A\flat$, $D\sharp$, and $F\sharp$ are neighbors to members of the tonic triad while C is sustained in the bass. $A\flat$ and $F\sharp$ —the pitches forming the augmented sixth—both resolve normatively to G, the fifth of the tonic. The result resembles a German augmented sixth— $\flat\hat{3}$ appears here as $\sharp\hat{2}$ ($D\sharp$), underscoring the neighbor function—but the chord does not have the usual pre-dominant function. Auxiliary sonorities of this sort are generally referred to as common-tone augmented sixth chords.

Example 60 contains another common-tone augmented sixth:

Example 60 (H. Wolf, “In der Frühe,” mm. 1-2):

The musical score for Example 60 consists of a vocal line and a piano accompaniment. The vocal line is in treble clef with a common time signature. The piano accompaniment is in bass clef with a common time signature. The key signature has two flats (Bb). The lyrics are "Kein Schlaf noch kühlt das Au - ge mir,". The piano accompaniment features a sustained bass note (D) and a moving upper line that forms an augmented sixth chord. Below the piano part, the chord symbols are: d: i $\begin{smallmatrix} \flat 6 \\ \sharp 4 \\ \sharp 2 \end{smallmatrix}$ i $\begin{smallmatrix} \flat 6 \\ \sharp 4 \\ \sharp 2 \end{smallmatrix}$ $\text{vii}^{\text{qd}}_3/\text{V}$ V i.

In this song from Hugo Wolf, the chord on the second half of beat two prolongs the initial tonic harmony. $B\flat$, E, and $G\sharp$ are neighbors to members of the initial tonic while D is sustained in the bass. Just as before, the augmented sixth resolves outward to an octave on the fifth of the tonic triad. Here, the result resembles a French augmented sixth, but like Example 59, the function is prolongational, not pre-dominant.

Augmented sixths are also used to facilitate modulations. Consider the following excerpt from the same piece where Mendelssohn modulates from A minor to E minor, the minor dominant:

Example 61 (F. Mendelssohn, Song Without Words, Op. 102, no. 3, mm. 11-17):

11

a: i Gr⁶ V

15

i i⁶
e: iv iv⁶ Gr⁶ V

In mm. 11-12 we find a typical progression with a German sixth resolving to the dominant. The same progression is heard in m. 16, transposed down by a perfect fourth to the key of E minor. The unique sound of an augmented sixth resolving is still fresh in our ears from m. 12. Because the German sixth in m. 16 is so closely associated with the dominant, it invites us to retroactively reinterpret the tonic triad in m. 15 as a pivot chord, where “i = iv,” effecting a modulation to E minor.

Beethoven does something similar thing in the following example.

Example 62 (L. Beethoven, Piano Sonata No. 21 (“Waldstein”), Op. 53, mm. 20-23):

20

C: vi⁶ vi⁶
e: iv⁶

22

It⁶ V

[Answer: $A\flat$. Response if correct: “Correct! A German sixth in G major is enharmonically equivalent to V^7 of $A\flat$.” Response if incorrect: “Incorrect. (Hint: if $E\flat$ is $\hat{5}$, what is $\hat{1}$?)”]

Exercise NNN.06b

Respell one of the pitches in the following German augmented sixth to create a dominant seventh chord:



[Answer: $A\sharp \rightarrow B\flat$. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

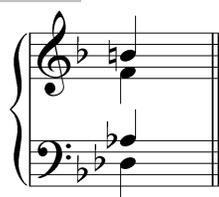
[Follow-up question:]

To which key does this dominant seventh belong?

[Answer: F. Response if correct: “Correct! A German sixth in E minor is enharmonically equivalent to V^7 of F.” Response if incorrect: “Incorrect. (Hint: if C is $\hat{5}$, what is $\hat{1}$?)”]

Exercise NNN.06c

Respell one of the pitches in the following German augmented sixth to create a dominant seventh chord:



[Answer: B natural $\rightarrow C\flat$. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

To which key does this dominant seventh belong?

[Answer: $G\flat$. Response if correct: “Correct! A German sixth in F major is enharmonically equivalent to V^7 of $G\flat$.” Response if incorrect: “Incorrect. (Hint: if $D\flat$ is $\hat{5}$, what is $\hat{1}$?)”]

Exercise NNN.06d

Respell one of the pitches in the following German augmented sixth to create a dominant seventh chord:



d: Gr^6

[Answer: $G^\sharp \rightarrow A^\flat$. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

To which key does this dominant seventh belong?

[Answer: E^\flat . Response if correct: “Correct! A German sixth in D minor is enharmonically equivalent to V^7 of E^\flat .” Response if incorrect: “Incorrect. (Hint: if B^\flat is $\hat{5}$, what is $\hat{1}$?)”]

Conclusion:

Augmented sixth sonorities feature a dissonant, augmented interval between $\flat\hat{6}$ ($\hat{6}$ in minor) and $\sharp\hat{4}$. Those scale degrees act as dual leading tones that expand outward, wedge-like, and resolve by semitone to $\hat{5}$. In doing so, augmented sixths function as chromatic pre-dominant chords and thus fall into the same category as the Neapolitan (see Lesson MMM), which also involves chromatic alterations. The presence of $\sharp\hat{4}$ links them to dominant harmonies, but should not be considered as a tonicization of V . Because of their unique, striking quality, they are often used to signal important structural cadences.

The interval formed by $\flat\hat{6}$ and $\sharp\hat{4}$ is the defining trait of these sonorities, but they usually occur with one of three combinations of other notes. The Italian augmented sixth includes a major third above the bass (scale degree $\hat{1}$, routinely doubled), while the French sixth includes a major third and augmented fourth above the bass (scale degrees $\hat{1}$ and $\hat{2}$). The German sixth, the most common of the three varieties, includes a major third and perfect fifth above the bass (scale degrees $\hat{1}$ and $\flat\hat{3}$, $\hat{3}$ in minor) and has the richest texture.

Augmented sixths can also be useful in prolongations and modulations. Because they are closely tied to V , they can be used to efficiently mark the new dominant of a modulatory destination. Furthermore, the enharmonic equivalence between a German sixth and a dominant seventh chord make the German sixth a handy means of modulating to distantly-related keys.

Lesson 000: Other Chromatic Harmonies

Introduction:

Lesson LLL, on mixture, explained how and why the diatonic third of a chord is sometimes chromatically altered to switch the mode from major to minor or vice versa. Alternatively, composers sometimes chromatically alter the *fifth* of a major triad or seventh chord, which retains the modal identity of the chord while heightening its urgency for continuation. Such altered fifths are frequently introduced as chromatic passing tones, leading the listener to interpret them as elements of chromatic voice leading that drive the harmony forward.

In this lesson we will first discuss augmented triads: triads with a major third and augmented fifth above the root. We will go on to look at how an augmented fifth can also be introduced in a dominant seventh chord and from there examine dominant seventh chords with lowered fifths.

Augmented triads:

Though often listed as one of the four varieties of triads—the others being major, minor, and diminished—augmented triads as independent chords are rather rare in tonal music up through the 1820s. One reason for this is that, in contrast to other chromatic chords, the augmented chord alters the framing interval of the triad, the perfect fifth, which stabilizes the triad. The defining characteristic of an augmented triad, the dissonant augmented fifth, has a peculiarly unstable quality. Composers tended to use it sparingly before the Romantic era.

Augmented triads are not functional chords in their own right, but rather chromatic representatives of diatonic harmonies: the raised fifth is usually introduced as a chromatic passing tone. The following example illustrates:

Example 64:

a.

C: V_3^6 I

b.

C: V_3^6 $\sharp 5$ I

c.

C: V_3^6 $V_3^{\sharp 5}$ I

In Example 64a we see the common progression from V^6 to I. Example 64b fills in the upper voice with a chromatic passing tone (D^\sharp). In Example 1c, that D^\sharp is incorporated into the V triad. Just as a Neapolitan chord results when a chromatic upper neighbor note is absorbed into a minor triad (a iv, as shown in Lesson MMM), so an augmented triad results here (1c) when a chromatic passing tone is

absorbed into a major triad. The resolution of an augmented triad to another chord whose root is a fifth below—as in Example 64c—is common.

In Example 64, the augmented quality is indicated by the accidental in the figured bass ($V_{\#3}^6$). Augmented triads are sometimes indicated by a superscript plus sign: $V - V^+ - I$.

Now consider the following example:

Example 65 (L. Beethoven, Piano Sonata No. 5 in C minor, Op. 10, mm. 78-82):

Ab: I^6 $V_{\#3}^6/IV$ IV

In this example, the fifth of a tonic triad (E^b) leads to a chromatic passing tone (E natural) on its way to F, creating an augmented triad with the other voices. It might at first seem appropriate to label such a chord " $I_{\#3}^6$." But you'll notice in Example 65 that the chord on the second beat of m. 79 is labeled " $V_{\#3}^6/IV$." The integration of the chromatic passing tone undermines the identity of the tonic, a place of stability and repose. The E natural—now functioning as a leading tone to F—activates harmonic motion and drives the altered tonic to the subdominant. In other words, A^b , C, E-natural no longer functions as tonic but rather strives towards IV in the manner of an applied dominant. For this reason, we have labeled the sonority as an applied dominant.

The following example from Schumann's *Album for the Young* has two augmented triads in close proximity:

Example 66 (R. Schumann, "Kleine Studie," No. 14 from *Album for the Young*, mm. 5-17):

G: I $V_{\#3}^6/IV$ IV

ii_s^6 V^7 $V^{\#5}$ I

In mm. 5-7 we see the progression already familiar from Example 65. Then, following a brief tonicization of ii in mm. 9-13, a similar procedure is applied to a V chord. In m. 16 the seventh from the

preceding V^7 chord is omitted while the fifth is raised to A^\sharp . Just as in Example 64, the raised fifth acts as a chromatic passing tone to B as the chord resolves to I, with root a fifth below.

Now consider the following example:

Example 67 (L. Beethoven, Bagatelle No. 8 in C major, Op. 119, mm. 1-3):

C: I $V_{F^\sharp}^6/IV$ IV $V_{D^\sharp}^6/V$ V

Here we find two augmented applied dominants in a row. In m. 1, the G in the upper voice steps up to G^\sharp on its way to A. Then, in m. 2, that A steps up to A^\sharp on its way to B while the bass moves to F^\sharp and the middle voice to D. As with Example 65, the augmented chord in m. 1 might have been analyzed as an augmented tonic triad. The presence of G^\sharp , however, undermines the identity of the chord as tonic and activates a brief tonicization of IV. Analyzing the chord as an applied dominant also brings out the parallelism with the second measure. Regardless, the entire passage should be understood as a chromatic filling in of the common $\hat{5} - \hat{6} - \hat{7}$ motion in the upper voice:

Example 68 (reduction of L. Beethoven, Bagatelle No. 8 in C major, Op. 119, mm. 1-3):

I IV V

Activity 000.01:

In each of the following exercises create an augmented triad by raising the fifth of the initial chord.

Exercise 000.01a:

Raise the fifth of the V^6 chord in G major to create an augmented triad on the second beat of the first measure:

G: V^6 I

[Answer: the middle voice A should be raised to A^\sharp on the second beat. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

What Roman numeral should appear under the altered chord?

[Answer: $V_{\#3}^6$ or V^{+6} . Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise OOO.01b:

Raise the fifth of the I^6 chord in D major to create an augmented triad on the second beat of the first measure:

D: I^6 IV

[Answer: the middle voice A should be raised to A^\sharp on the second beat. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

What Roman numeral should appear under the altered chord?

[Answer: $V_{\#3}^6/IV$ or V^{+6}/IV . Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: Tonic triads resolving by root motion of a falling fifth in which the fifth has been raised should be interpreted as applied dominants.)"]

Exercise OOO.01c:

Raise the fifth of the V^6 chord in F major to create an augmented triad on the second beat of the first measure:

F: V^6 I

[Answer: the upper voice G should be raised to G^\sharp on the second beat. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

What Roman numeral should appear under the altered chord?

[Answer: $V_{\#3}^6$ or V^{+6} . Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise OOO.01d:

Raise the fifth of the I^6 chord in B^\flat major to create an augmented triad on the second beat of the first measure:

B^\flat : I^6 IV

[Answer: the upper voice F should be raised to F \sharp on the second beat. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

What Roman numeral should appear under the altered chord?

[Answer: V \sharp_3^6 /IV or V $^{+6}$ /IV. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Tonic triads resolving by root motion of a falling fifth in which the fifth has been raised should be interpreted as applied dominants.)”]

Augmented triads also appear as auxiliary sonorities. In the following example from a song by Hugo Wolf, a tonic triad is prolonged with a chord resembling an augmented dominant triad in first inversion.

Example 69 (H. Wolf, “Das verlassene Mäglein” from *Mörike-Lieder*, mm. 27-29):

27

Plötz-lich, da kommt es mir, treu-lo-ser

B \flat : I (V \sharp_3^6) I

The augmented triad is presented all at once here: the augmented fifth has been absorbed into the chord and is not introduced here as a chromatic passing tone. This dissonant chord lends an aurally striking quality to this prolongation of I in a way that a diatonic auxiliary sonority could not.

The following example shows another augmented auxiliary sonority, though here arising in a different manner.

Example 70 (F. Schubert, “Der Atlas,” No. 8 from *Schwanengesang*, D. 957, mm. 1-4):

Ich

g: i (III \sharp_4^5) i (III \sharp_4^5) i

(#5) (#5)

Whereas in previous examples the chromatic pitch of an augmented triad was introduced as an ascending chromatic passing tone from the fifth of a major reference sonority, here it appears as a chromatic *lower* neighbor to the *root* of a minor triad. (**Note:** Normal figured bass conventions are incapable of showing this alteration since the chromatic pitch appears in the bass. The parenthetical

“(♯5)” under the Roman numeral indicates the raised fifth.) The result, in this case, is a neighboring auxiliary sonority that resembles a III chord with a raised fifth in second inversion.

Note: In the lesson on the minor scale (Lesson 03), it was mentioned that the ubiquitous raised leading tone of minor keys does not apply to chords built on scale degree $\hat{3}$. As Example 70 shows, the presence of $\sharp\hat{7}$ in a III chord creates an augmented fifth with the root. The triad built on scale degree $\hat{3}$ is the tonic of the relative major. Having an augmented triad here would subvert this important relationship and is therefore not permitted. Unlike, say, V^6 , which can serve as either a functional dominant or an auxiliary sonority, the parenthetical chords in Example 70 can never stand on their own as independent harmonies.

That said, you may occasionally encounter other sources that treat $III^{\sharp 5}$ as a rare but normal chord. We disagree with that view for the reasons listed above and hold that the diatonic mediant chord is major in a minor key.

With the increasingly adventurous chromaticism of the nineteenth century, the treatment of augmented triads slowly relaxed. Rather than simply serving as chromatic representatives of diatonic harmonies, augmented triads began taking on more structural roles. Consider the key structure of the following excerpt from a Chopin etude, composed around 1840:

Example 71 (F. Chopin, posthumous Etude No. 2, mm. 1-30):

Ab:

E:

C:

Ab: I ^{#5} - I ^{#5} - iii
 [A: V^{#5} I ^{#5}]
 [Bb: V^{#5} I ^{#5}]
 [B#: V^{#5} I ^{#5}]

Example 72 (J. Brahms, Intermezzo No. 7 in A Minor, Op. 76, mm. 12-16):

C: $V_4^6 - \overset{7}{\underset{5}{\#}} I$

At the end of m. 15 in this example from Brahms, the fifth of the dominant seventh chord (D) is raised one semitone to D^\sharp . The resultant $V \overset{7}{\#}_5$ consists of an augmented triad (G, B, D^\sharp) with a minor seventh above the root (F). This chord resolves very similarly to the augmented triads mentioned above in Examples 64 through 69: the augmented fifth resolves upward by semitone to the third of the chord whose root is a fifth below.

Applied dominant sevenths also appear with raised fifths:

Example 73 (piano reduction of R. Strauss, *Till Eulenspiegel's Merry Pranks*, Op. 28, mm. 1-3):

F: I V^\sharp_2/IV IV

Scale degree $\hat{5}$ steps up to C^\sharp at the end of m. 1 in example above. Because of its rhythmic placement—occurring with the E^b , A and Fs of the bass and inner voices—we hear C^\sharp as belonging to the chord on the final eighth note. The chord, an applied dominant seventh with raised fifth, resolves to IV on the downbeat of the following measure. Again, the chromatic pitch is accentuated by its placement in the soprano and root motion of the resolution is a falling fifth.

Activity OOO.03:

The following excerpt (J. Brahms, “Wie Melodien zieht es Mir,” Op. 105, No. 1, mm. 7-12) contains two chords with raised fifths, one in m. 8 and one in mm. 9-10.

Exercise OOO.03a

Ignoring, for the moment, the raised fifth, what Roman numeral should appear under mm. 9-10?

7

blüht es und schwebt wie Duft da - hin,

A: I⁶

10

und schwebt wie Duft da - hin.

I

[Answer: V. Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: The chord is in root position.)"]

[Follow-up question:]

Identify the raised fifth of the dominant chord in mm. 9-10.

[Answer: any of the three B[#]s in mm. 9-10. Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: First identify the root of the chord, then determine which voice or voices are sounding an augmented fifth above the root.)"]

Exercise OOO.03b

Ignoring, for the moment, the raised fifth, what Roman numeral should appear under m. 8?

7

blüht es und schwebt wie Duft da - hin,

A: I⁶

10

und schwebt wie Duft da - hin.

I

[Answer: V⁷/V. Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: The D# on the downbeat of this measure indicates that this is not a diatonic chord in A major.)"]

[Follow-up question:]

Identify the raised fifth of the applied dominant seventh chord in m. 8.

[Answer: either F* on the second half of beat four. Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: First identify the root of the chord, then determine which voice or voices are sounding an augmented fifth above the root.)"]

Dominant seventh chords with lowered fifths ($b\hat{2}$ instead of $\hat{2}$) recall the characteristic sound of the Phrygian mode, which features a semitone between its first and second degrees. Consider the following excerpt from Grieg:

Example 74 (E. Grieg, Lyric Piece, Op. 47, No. 3, mm. 37-42):

37

a: VI⁶ V₃⁴ V₃⁴ (b5) I⁶

As you can see from Example 76, the fifth of the V₃⁴ chord in m. 39 steps down to B \flat in the following measure. B \flat resolves by semitone down to $\hat{1}$. This motion, combined with the leading tone approaching the tonic from below, bears significant resemblance to the resolution of an augmented sixth chord. In an

augmented sixth chord, the arrival of the dominant chord is emphasized by the dual “leading tones” $\sharp\hat{4}$ and $\flat\hat{6}$ resolving to $\hat{5}$. (See Lesson NNN for more on augmented sixths.) Here, the dual semitone motion leads from $\flat\hat{2}$ and $(\sharp)\hat{7}$ to $\hat{1}$.

As it turns out, the structure of a dominant seventh chord with a lowered fifth is enharmonically identical to French augmented sixth:

Example 75:

a: V_3^4 I d: Fr^6 V
($\flat 5$)

The first half of Example 75 provides a simplified version of the progression in mm. 40-41 of Example 74. As you can see and hear, the voiceleading is the same as the resolution of a French sixth to a dominant triad. Dominant seventh chords with lowered fifths usually appear in second inversion, highlighting the semitone motion from $\flat\hat{2}$ to $\hat{1}$ by placing it in the bass.

The following reduction of Brahms' fourth symphony shows a dramatic dominant seventh with lowered fifth in m. 7:

Example 76 (piano reduction of J. Brahms, Symphony No. 4, Mvt. IV, mm. 1-9):

e: i^6 V_3^4 I
($\flat 5$)

The V_3^4 chord in m. 7 contains a lowered fifth (F natural, $\flat\hat{2}$). In this case, the lowered fifth is introduced immediately and not as a chromatic passing tone in the bass. Like Example 74, the chord behaves like a French augmented sixth resolving to I instead of V. (**Note:** The chord of resolution here, the tonic triad in m. 8, contains a Picardy third.)

The conclusion of Schubert's String Quintet (D. 956) provides a particularly dramatic dominant seventh with lowered fifth:

Example 77 (F. Schubert, String Quintet in C major, D.956, mm. 400-405):

C: I V_3^4 I
(b5)

In Example 77 the lowered fifth (D^b) of the final dominant harmony appears as a chromatic upper neighbor to 1. The altered chord is preceded by a dramatic ascending scale and arpeggiation in m. 400 and is then sustained for a full two bars before resolving to the final tonic in m. 403. The effect is striking, making this a particularly poignant example of the dramatic capabilities of an altered dominant seventh chord.

Now consider the following example:

Example 78 (F. Chopin, Nocturne in C^\sharp minor, Op. 27, no. 1, mm. 11-18):

c^\sharp i V^7 i V^7 i V_{b5}^7 i V^7

i V^7 i V^7 i N^6 V_{b5}^7 i

In this Chopin Nocturne, we find a dominant seventh chord with a lowered fifth in root position. After a series of alternating tonic and dominant seventh chords in mm. 11-12, the fifth of the V^7 chord (D^\sharp) is lowered to D natural in m. 13, emphasizing the cadence at the end of the phrase. The phrase repeats nearly verbatim in mm. 15-17, though here the cadence is further emphasized by a preceding Neapolitan—which shares the lowered second scale degree with the altered dominant—on the third beat of m. 17.

Conclusion:

Augmented triads typically function as chromatic representatives of diatonic chords. They are usually derived by replacing the fifth of a major triad with the pitch a semitone above it, though minor triads can

become augmented as well by lowering the root. In some cases, the chromatic pitch is introduced as an embellishing tone while elsewhere it is simply absorbed into the chord. Augmented triads typically resolve to a chord whose root is a fifth below. Because the raised fifth of a major tonic triad undermines the function of the original chord, we typically interpret such occurrences of augmented triads as chromatically altered applied dominants when the root motion descends by fifth. Tonic and dominant triads are the most common locations for these procedures, but augmented triads also appear as applied chords and auxiliary sonorities.

Before the Romantic Era, augmented triads were used sparingly and seldom as functional harmonies on their own. With the increasing chromaticism of the nineteenth century, however, they eventually gained greater structural significance, both in the chord-to-chord action and in the large-scale relationships among keys in a piece (e.g., in the music of Chopin, Liszt, and other late 19th-century composers).

Dominant seventh chords can also feature raised fifths. Since the root, third, and fifth of a dominant seventh chord form a major triad, raising the fifth will result in an augmented triad with a minor seventh above the root. As with the augmented triad, the raised fifth is typically introduced as an ascending chromatic passing tone.

Occasionally, a dominant seventh will feature a *lowered* fifth. Such chords are enharmonically equivalent to French augmented sixths, but normatively resolve to the tonic instead of the dominant. They generally appear in second inversion, with $b\hat{2}$ in the bass to highlight the semitone motion to $\hat{1}$.

Lesson PPP: Fully-Diminished Seventh Chords

Introduction:

In Lesson 6 we looked at the diminished leading-tone triad: vii° . There, we discussed why the tritone between the root and fifth of the chord requires special attention. The chord usually appears in first inversion precisely to avoid that dissonant interval sounding against the bass when vii° is in root position.

Example 79:

c: vii°

As Example 79 demonstrates, placing the chord in first inversion ensures that the upper voices are consonant with the bass. The diminished fifth is between the alto and soprano, concealed within the upper voices. In this case, it is best understood as a resultant interval formed as a result of avoiding dissonances involving the bass.

Adding a diatonic seventh to a diminished leading-tone triad in minor will result in the following sonority:

Example 80:

c: vii° becomes c: $\text{vii}^{\circ 7}$

This chord consists of a diminished triad with a diminished seventh added above the root. It is therefore referred to as a fully-diminished seventh chord.

In this lesson, we will discuss the construction of fully-diminished seventh chords in major and minor keys. As you will see, the chord consists of two interlocking tritones, which require particularly careful treatment because of their strong voice-leading tendencies. We will consider its various common functions and will touch on several advanced uses of the chord as well.

Construction:

Fully-diminished leading-tone seventh chords can be built in major or minor keys. In Roman numeral analyses, they are indicated with a degree sign followed by seventh-chord figured bass numerals, depending on inversion ($^{\circ 7}$, $^{\circ 6}_5$, $^{\circ 4}_3$, or $^{\circ 4}_2$). The following example shows the construction of the chord in C major and in C minor:

Example 81:

C: vii^{o7}c: vii^{o7}

Fully-diminished seventh chords cannot be constructed from only diatonic notes. In other words—as Example 81 demonstrates—a mixture tone is always required. Fully-diminished seventh chords in major borrow $b\hat{6}$ from the parallel minor, while those in minor borrow the leading tone from the parallel major.

Activity PPP.01:

Build fully-diminished seventh chords on the leading tone of each of the following keys. (Remember to use $b\hat{6}$ in major keys and to raise the leading tone in minor.)

Exercise PPP.01a

Build a root position fully-diminished leading tone seventh chord in D minor.



[Answer: (answers may vary, provided C# is in the bass with E, G, B \flat in the upper voices). Response if correct: “Correct!” Response if C instead of C# but otherwise correct: “Almost. Remember to raise the leading tone in minor.” Response if incorrect: “Incorrect. Try again.”]

Exercise PPP.01b

Build a root position fully-diminished leading tone seventh chord in F major.



[Answer: (answers may vary, provided E is in the bass with G, B \flat , D \flat in the upper voices). Response if correct: “Correct!” Response if D instead of D \flat but otherwise correct: “Almost. Remember that vii^{o7} uses $b\hat{6}$ in major keys.” Response if incorrect: “Incorrect. Try again.”]

Exercise PPP.01c

Build a root position fully-diminished leading tone seventh chord in E minor.



[Answer: (answers may vary, provided D# is in the bass with F#, A, C in the upper voices). Response if correct: “Correct!” Response if D instead of D# but otherwise correct:

“Almost. Remember to raise the leading tone in minor.” Response if incorrect: “Incorrect. Try again.”]

Exercise PPP.01d

Build a root position fully-diminished leading tone seventh chord in G major.



[Answer: (answers may vary, provided F# is in the bass with A, C, Eb in the upper voices). Response if correct: “Correct!” Response if E instead of Eb but otherwise correct: “Almost. Remember that vii^{o7} uses b $\hat{6}$ in major keys.” Response if incorrect: “Incorrect. Try again.”]

The dissonant sound of a fully-diminished seventh chord is striking. The combination of a diminished triad with a diminished seventh above the root yields two interlocking tritones. The brackets in the following example indicate the two inherent tritones of a fully-diminished seventh chord:

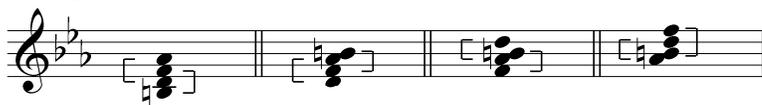
Example 82:



c: vii^{o7}

As you can see, every member of the chord forms a tritone with some other member. (Note: Historically, “tritone” describes augmented fourths, which are composed of three whole tones. Here, we will use the term generically to refer to augmented fourths *and* diminished fifths, their enharmonic equivalent.) The result is that the bass is always in a tritone-forming relationship with some other voice (unlike the vii^{o6} chord, where the single tritone can be hidden between upper voices).

Example 83:



c: vii^{o7}

vii^{o6}₅

vii^{o4}₃

vii^{o4}₂

Note: The prefix “fully-” in the name “fully-diminished seventh chord” refers to the fact that the chord is constructed of a diminished triad *and* a diminished seventh. But consider the diatonic leading-tone seventh chord in major:

Example 84:



C: vii^{o7}

Without $b\hat{6}$, as in Example 81, the chord contains a minor seventh above the root instead of a diminished seventh. This sonority is referred to as a *half-diminished seventh chord* and is indicated in Roman numeral analyses by a degree sign with a slash through it ($vii^{\circ 7}$). Half-diminished seventh chords occur somewhat less frequently than their fully-diminished counterparts, and rarely in minor keys. They are typically found as neighboring auxiliary sonorities expanding a I chord.

Fully-diminished seventh chords have a unique effect that composers exploit in a number of ways. Primarily, however, they function as dominant substitutes.

Activity PPP.02:

Identify the diminished fifths and augmented fourths in the following inverted fully-diminished seventh chords.

Exercise PPP.02a

Identify the diminished fifth between the root and fifth of the following fully-diminished seventh chord (keep in mind it may appear in inversion as an augmented fourth):



a: $vii_5^{\circ 7}$

[Answer: G \sharp and D. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

Now identify the remaining diminished fifth between the third and seventh of the chord.

[Answer: B and F. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise PPP.02b

Identify the diminished fifth between the root and fifth of the following fully-diminished seventh chord (keep in mind it may appear in inversion as an augmented fourth):



B: $vii_3^{\circ 7}$

[Answer: A \sharp and E. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

Now identify the remaining diminished fifth between the third and seventh of the chord.

[Answer: C \sharp and G. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise PPP.02c

Identify the diminished fifth between the root and fifth of the following fully-diminished seventh chord (keep in mind it may appear in inversion as an augmented fourth):



c: vii^{o4}₃

[Answer: B natural and F. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

Now identify the remaining diminished fifth between the third and seventh of the chord.

[Answer: D and Ab. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise PPP.02d

Identify the diminished fifth between the root and fifth of the following fully-diminished seventh chord (keep in mind it may appear in inversion as an augmented fourth):



D: vii^{o6}₅

[Answer: C# and G. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

Now identify the remaining diminished fifth between the third and seventh of the chord.

[Answer: E and Bb. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Function and resolution:

Consider the following comparison of dominant seventh chords and leading-tone seventh chords:

Example 85:



C: V⁷ vii^{o7} c: V⁷ vii^{o7}

As you can see from Example 85, fully-diminished seventh chords built on the leading tone have three pitches in common with dominant seventh chords (scale degrees $\hat{7}$, $\hat{2}$, and $\hat{4}$). The only difference is that they include $b\hat{6}$ (diatonic $\hat{6}$ in minor) instead of scale degree $\hat{5}$. Because they share three chord members, fully-diminished leading-tone seventh chords typically function as dominant substitutes.

Resolving a fully-diminished seventh chord requires careful handling of the tritones. As mentioned above, one of them inevitably involves the bass. As such, it tends to stand out and must be treated with care.

In Lesson 6 we expanded the list of basic interval progressions (see Lesson 1) to accommodate chords that include a tritone. There, we discussed several possible resolutions. Example 86 summarizes:

Example 86:

A4 m6 A4 P4 d5 M3 d5 P5

Typically, the tritones in fully-diminished seventh chords resolve by contrary or similar motion: augmented fourths resolve outward to sixths or in similar motion up to perfect fourths while diminished fifths resolve inward to thirds or in similar motion up to a perfect fifth.

Consider the following example where vii^{07} resolves to i in C minor:

Example 87:

c: vii^{07} i

In Example 87, the bass (B natural) forms a diminished fifth with the tenor (F). As vii^{07} resolves to I , we can see this tritone contracting to a minor third (C and Eb). Likewise, the augmented fourth between the alto and soprano (Ab and D) expands to form a minor sixth (G and Eb). Note the resulting doubled third in the tonic chord, which is common after fully-diminished leading tone chords. Typically, contrary motion of this sort is the favored method of resolving tritones. Composer will occasionally resolve a tritone using similar motion, but will frequently restrict such an interval progression to the upper voices.

Most of the tones in a fully-diminished leading tone chord have a strong tendency to resolve to the pitches of a tonic triad. The leading tone is pulled towards the tonic. The seventh of the chord, $\text{b}\hat{6}$, resolves like any other seventh: down by step (in this case to $\hat{5}$). (Refer to Lesson 7 for more information on seventh chords.) And finally, $\hat{4}$ is drawn downward to $\hat{3}$. For these reasons, it may be helpful to think about the resolution of a fully-diminished seventh chord in terms of its tendency tones.

Look again at Example 87. Each of the tendency tones resolves as expected: the leading tone steps up to the tonic in the bass while $\hat{6}$ steps down to $\hat{5}$ in the alto and $\hat{4}$ steps down to $\hat{3}$ in the tenor. The remaining voice, scale degree $\hat{2}$, can move to either $\hat{3}$ —as it does in Example 87—or to the tonic, as in the following example:

Example 88:

Musical notation for Example 88: A C major triad (C-E-G) in the treble clef and a C major triad (C-E-G) in the bass clef. The notes are: Treble (C4, E4, G4), Bass (C3, E3, G3).

c: vii^{o7} i

Note that in Example 88 the augmented fourth formed by the alto and soprano now resolves with similar motion to a perfect fourth.

Fully-diminished seventh chords can appear in any position:

Example 89:

Musical notation for Example 89: A sequence of chords in C major. It starts with a C major triad (C-E-G) in the treble and bass. This is followed by a fully-diminished seventh chord in three different positions: first inversion (F-A-C-E), second inversion (A-C-E-F), and third inversion (C-E-F-A). The sequence ends with a C major triad (C-E-G) in the treble and bass.

c: vii^{o7} i vii^{o6}₅ i⁶ vii^{o4}₃ i⁶ vii^{o4}₂ V⁶₄ - ⁵₃

Third-inversion fully-diminished seventh chords are less common than the other positions. With scale degree $\hat{6}$ in the bass ($b\hat{6}$ in major), the chord tends to resolve to a cadential $\hat{6}_4$ chord or an auxiliary $I\hat{6}_4$. Note that in the resolution of vii^{o4}_2 in Example 89 scale degree $\hat{4}$ in the alto voice steps up to $\hat{5}$, resolving the augmented fourth in similar motion to a perfect fourth.

Note: Half-diminished seventh chords contain only one tritone. The fifth between scale degrees $\hat{2}$ and $\hat{6}$ in major is perfect. The resolution of a half-diminished seventh chord requires extra attention to avoid parallel fifths:

Example 90:

Musical notation for Example 90: A half-diminished seventh chord (C-Eb-Gb-Bb) in the treble clef and a C major triad (C-E-G) in the bass clef. The notes are: Treble (C4, Eb4, Gb4, Bb4), Bass (C3, E3, G3).

C: vii^{o7} I

Example 91:

Musical notation for Example 91: A half-diminished seventh chord (C-Eb-Gb-Bb) in the treble clef and a C major triad (C-E-G) in the bass clef. The notes are: Treble (C4, Eb4, Gb4, Bb4), Bass (C3, E3, G3).

C: vii^{o7} I

In Example 90, the alto and soprano form parallel fifths. This can be avoided by doubling the third of the resolution chord, as in Example 91.

Now consider the following example from Beethoven's famous "Pathétique" sonata (Example 93 provides a reduction of mm. 5-6):

Example 92 (L. Beethoven, Sonata no. 8 ("Pathétique"), Op. 13, Mvt. I, mm. 1-8):

c: V

vii^{o4}₃

i⁶

Example 93:

c: vii^{o4}₃ i⁶

In m. 5 we encounter a fully-diminished seventh chord in second inversion. Looking at the left-hand part, we see that all of the voices resolve as expected. Both of the tritones appear as augmented fourths and expand outward by contrary motion to sixths: F and B natural move in contrary motion to E^b and C while A^b and D do the same, to G and E^b.

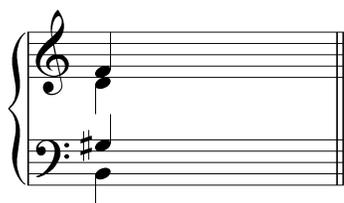
Activity PPP.03:

Resolve the following fully-diminished seventh chords according to the voiceleading procedures outlined above.

Exercise PPP.03a

[Multiple choice question:]

To what chord would the following fully-diminished seventh in first inversion normally resolve to?



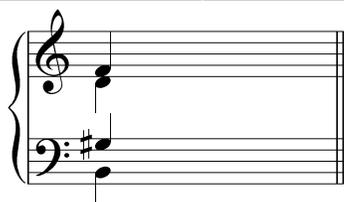
a: $\text{vii}_5^{\circ 6}$?

[Options: “i,” “ i^6 ,” “cadential $\frac{6}{4}$ ” or auxiliary $\frac{6}{4}$ ”]

[Answer: i^6 . Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Which chord member is in the bass? To where does this pitch normally resolve?)”]

[Follow-up question:]

Resolve the fully-diminished seventh chord:



a: $\text{vii}_5^{\circ 6}$ i^6



[Answer: a: $\text{vii}_5^{\circ 6}$ i^6 . Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember to resolve all tendency tones in the usual manner.”]

Exercise PPP.03b

[Multiple choice question:]

To what chord would the following fully-diminished seventh in second inversion normally resolve to?



B: $\text{vii}_3^{\circ 4}$?

[Options: “i,” “ i^6 ,” “cadential $\frac{6}{4}$ ” or auxiliary $\frac{6}{4}$ ”]

[Answer: i^6 . Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Which chord member is in the bass? To where does this pitch normally resolve?)”]

[Follow-up question:]

Resolve the fully-diminished seventh chord:

B: $\text{vii}_3^{\circ 4}$ I^6

[Answer: B: $\text{vii}_3^{\circ 4}$ I^6 (alternatively, C# in the alto may resolve to B). Response if correct: "Correct!" Response if incorrect: "Incorrect. Remember to resolve all tendency tones in the usual manner."]

Exercise PPP.03c

[Multiple choice question:]

To what chord would the following fully-diminished seventh in third inversion normally resolve to?

c: $\text{vii}_2^{\circ 4}$?

[Options: "i," "i⁶," "cadential $\frac{6}{4}$ or auxiliary $\frac{6}{4}$ "]

[Answer: cadential $\frac{6}{4}$ or auxiliary $\frac{6}{4}$. Response if correct: "Correct!" Response if incorrect: "Incorrect. (Hint: Which chord member is in the bass? To where does this pitch normally resolve?)"

[Follow-up question:]

Resolve the fully-diminished seventh chord:

c: $\text{vii}_2^{\circ 4}$ V_4^6
or i_4^6

c: $\text{vii}^{\text{♭4}}_2$ V^6_4
or i^6_4

[Answer: (alternatively, D in the alto may resolve to C). Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember to resolve all tendency tones in the usual manner.”]

Exercise PPP.03d

[Multiple choice question:]

To what chord would the following fully-diminished seventh in root position normally resolve to?

D: $\text{vii}^{\text{♭7}}$?

[Options: “i,” “i⁶,” “cadential $\frac{6}{4}$ or auxiliary $\frac{6}{4}$ ”]

[Answer: i. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Which chord member is in the bass? To where does this pitch normally resolve?)”]

[Follow-up question:]

Resolve the fully-diminished seventh chord:

D: $\text{vii}^{\text{♭7}}$ I

[Answer: D: $\text{vii}^{\text{♭7}}$ I (alternatively, E in the alto may resolve to D). Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember to resolve all tendency tones in the usual manner.”]

As applied or pivot chords:

In Lesson 10, we looked at applied chords. We discussed how fully-diminished leading tone seventh chords, like dominant seventh chords, can be used to tonicize triads other than the tonic. The following example shows a tonicization of V with an applied fully-diminished chord:

Example 94:

I vii[°]/V V

Note that while it would typically be permissible for the augmented fourth between the alto and soprano to resolve outward to a major sixth, here the soprano must step down in order to avoid doubling the leading tone in V.

Now consider the following example:

Example 95 (F. Schubert, “Erlkönig,” D 328, mm. 12-15):

g: i ii^{°6} vii[°]/V V

In m. 14 of this Schubert song we find an applied fully-diminished chord tonicizing V. As you can see, all of the usual considerations for resolving a fully-diminished chord remain the same. The diminished fifth formed by C[#] and G contracts inward to a major third, while the augmented fourth between B^b and E natural moves in similar motion to a perfect fourth.

Other chords can be tonicized in this way as well. In the following example, ii is tonicized with a fully-diminished chord in mm. 12-13:

Example 96 (R. Schumann, Album for the Young, No. 14: “Kleine Studie,” mm. 8-15):

G: V⁶

vii[°]/ii ii ii⁶ V

Activity PPP.04:

Identify the applied fully-diminished seventh chords in each of the following excerpts and indicate the chords they are tonicizing.

Exercise PPP.04a

The following excerpt in C major (J.S. Bach, Prelude and Fugue 1 in C major (from *The Well-Tempered Clavier*, Book I), mm. 11-16) contains an applied fully-diminished seventh chord.

Click on it:

[Answer: all of m. 12. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Look for a temporary leading tone.)

[Follow-up question:]

What chord does the applied fully-diminished seventh tonicize?

[Answer: ii. Response if correct: “Correct! The ii chord in m. 13 is tonicized.” Response if incorrect: “Incorrect. (Hint: To which scale degree does the temporary leading tone—the root of the vii^{o7} chord—resolve?)”]

Exercise PPP.04b

The following excerpt in B \flat major (W.A. Mozart, Fantasia in C minor, K. 475, mm. 119-122) contains an applied fully-diminished seventh chord. Click on it:

[Answer: first beat of m. 122. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Look for a temporary leading tone.)

[Follow-up question:]

What chord does the applied fully-diminished seventh tonicize?

[Answer: vi. Response if correct: “Correct! The applied chord tonicizes vi, emphasizing the deceptive cadence.” Response if incorrect: “Incorrect. (Hint: To which scale degree does the temporary leading tone—the root of the vii^{o7} chord—resolve?)”]

Exercise PPP.04c

The following excerpt in G minor (J.S. Bach, “Was betrübst du dich, mein Herze” (BWV 423), mm. 15-16) contains an applied fully-diminished seventh chord. Click on it:

15

[Answer: fourth beat of m. 15. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Look for a temporary leading tone.)

[Follow-up question:]

What chord does the applied fully-diminished seventh tonicize?

[Answer: V. Response if correct: “Correct! The applied diminished seventh tonicizes the dominant harmony of m. 16.” Response if incorrect: “Incorrect. (Hint: To which scale degree does the temporary leading tone—the root of the $\text{vii}^{\text{o}7}$ chord—resolve?)”]

Exercise PPP.04d

The following excerpt in C major (F. Schubert, “Horch, horch! Die Lerch,” D. 889, mm. 34-38) contains an applied fully-diminished seventh chord. Click on it:

34

[Answer: all of m. 36. Response if correct: “Correct!” Response if student clicks on the third eighth note of m. 37: “Almost. That chord is an applied leading-tone chord, but is half-diminished.” Response if incorrect: “Incorrect. (Hint: Look for a temporary leading tone.)

[Follow-up question:]

What chord does the applied fully-diminished seventh tonicize?

[Answer: ii. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: To which scale degree does the temporary leading tone—the root of the $\text{vii}^{\text{o}7}$ chord—resolve?)”]

Fully-diminished seventh-chords can also be used as pivot chords in modulations. They are particularly useful in this regard when modulating to distant keys.

Consider the structure of a fully diminished seventh chord. Above, we described the sonority as a diminished triad with a diminished seventh added above the root. You can also think of it as a stack of minor thirds:

Example 97:

c: $\text{vii}^{\text{o}7}$

Stacking another minor third on top of this would result in the enharmonic equivalent of the root—in this case C^b , the enharmonic equivalent of B natural. The implication of this unique property is that any of the four pitches can be interpreted and heard as the root of an applied fully-diminished chord. The following example shows how the same chord can be enharmonically interpreted as vii^{o7} in four different keys:

Example 98:

$f: vii_5^{o6}$ $d: vii_3^{o4}$ $b: vii_2^{o4}$ $g\#: vii_2^{o4}$

Each of the chords in Example 98 sounds exactly the same. Because of its special construction, a fully-diminished seventh chord can be heard in four different ways.

In both Examples 95 and 96, the unique, immediately, aurally identifiable quality of the fully-diminished chord facilitates tonicizations. Composers exploit this recognizable chord and its potential for enharmonic reinterpretation in chromatic modulations. Consider the following example:

Example 99 (L. Beethoven, Sonata no. 8 (“Pathétique”), Op. 13, Mvt. I, mm. 133-137):

$g: vii_3^{o4}$ i^6

$vii_3^{o4}/\#vi$
 $e: vii_3^{o4}$ V_4^6 $\bar{\quad}$ $\frac{7}{5/3}$

In Example 99, we first encounter a fully-diminished seventh chord in m. 134: vii_3^{o4} resolves to i^6 in G minor. In the next measure, however, E^b (the seventh of vii_3^{o7}) is respelled as D^\sharp . The altered notation signals a change in function. Instead of leading to the tonic, the fully-diminished chord now functions as an applied leading-tone chord to E minor ($\#vi$ in G minor). By reinterpreting the seventh of the original chord as the root, Beethoven modulates smoothly from G minor to the distant key of E minor.

As auxiliary sonorities:

Fully-diminished seventh chords also appear as auxiliary sonorities, as in the following example:

Example 100 (F. Mendelssohn, Rondo Capriccioso, Op.14, mm 1-8):

E: I (°) I

In m. 5 of this piece by Mendelssohn, we find a chromatic sonority consisting of F^\times , A^\sharp , C^\sharp , and E. At first, this fully-diminished seventh may appear to be an applied chord.

Activity PPP.05:

If this fully-diminished chord *were* an applied chord ($vii^{o7}/?$), what is the Roman numeral of the chord it would be tonicizing?

[Answer: iii. Response if correct: “Correct! This sonority resembles an applied chord tonicizing iii, but moves to I instead.” Response if incorrect: “Incorrect. (Hint: What is the root of the chord as notated? That pitch could serve as the temporary leading tone to which scale degree?)”]

The chord is flanked on either side by tonic triads, indicating that it is not an applied chord, but a neighboring auxiliary sonority. E is sustained throughout, while $\sharp\hat{2}$ (F^\times) and $\sharp\hat{4}$ (A^\sharp) are chromatic neighbors to $\hat{3}$ and $\hat{5}$, and $\hat{6}$ (C^\sharp) is a diatonic neighbor of $\hat{5}$. Because it shares a pitch with the reference chord, this type of auxiliary sonority is widely referred to as a common-tone diminished seventh.

Activity PPP.06:

The following excerpt (F. Schubert, Moment Musical no. 6, Op. 94, D. 780, mm. 29-36) contains an auxiliary fully-diminished seventh. Click on it:

[Answer: all of m. 34. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

This fully-diminished seventh is a neighboring auxiliary sonority. What harmony does it expand? (Note, that the excerpt is in E major.)

[Answer: I. Response if correct: “Correct! The sonority expands the phrase-ending tonic harmony.” Response if incorrect: “Incorrect. (Hint: What harmonies appear before and after the fully-diminished seventh?)”]

Conclusion:

Fully-diminished seventh chords are built by adding a diminished seventh to a diminished triad. They inherently contain two interlocking tritones (which may appear as diminished fifths or augmented fourths) which must be resolved carefully, particularly since one of them is inevitably emphasized by the bass. Typically, composers resolve the tritones by contrary motion: augmented fourths expanding outward to sixths, diminished fifths contracting inward to thirds. Occasionally, one of the tritones will resolve in similar motion to a perfect fourth or fifth, but that voiceleading is usually restricted to upper voices.

These chords, when built on the leading tone, include three strong tendency tones leading to pitches of the tonic triad. $\hat{7}$ is pulled upward to $\hat{1}$ while $\hat{4}$ and $\hat{6}$ are pulled down to $\hat{3}$ and $\hat{5}$, respectively. $\hat{2}$ resolves either to $\hat{1}$ or $\hat{3}$ depending on context.

While the chord can appear in any position, third-inversion fully-diminished chords are rare. With $b\hat{6}$ in the bass, they tend to resolve to an auxiliary I_4^6 or a cadential 6_4 chord.

In addition to being used as auxiliary sonorities, fully-diminished seventh chords also appear as applied chords or as pivots in chromatic modulations. Their structure—evenly dividing the octave into minor thirds—makes it possible to interpret them enharmonically in four different keys: any of the four members can be heard as the root. That special property makes them particularly useful in modulations to distantly related keys.

Lesson QQQ – Advanced Roman Numeral Usage

Introduction:

Roman numerals are a useful, shorthand way of naming and analyzing chords, and of showing their relationships to a tonic. Conventional Roman numerals are adjusted to indicate chromaticism when harmonic practice becomes more advanced. Being able to recognize and use such adjustments is essential for analyzing a wide spectrum of music. This brief lesson will quickly review the fundamentals of Roman numeral analysis and then discuss how those fundamentals are adjusted to deal with chromatic elements in cases of mixture.

Simple Roman numeral usage:

Roman numerals are a popular means of harmonic analysis for tonal music because they convey two vital pieces of information in a single symbol. They indicate (a) the root and (b) the quality of a chord. The number symbolized by the Roman numeral corresponds to the scale degree serving as the root of the chord. The quality is indicated by the case of the Roman numeral: upper case indicates major triads, lower case minor triads. A raised degree sign (^o) attached to lower-case Roman numerals indicates diminished triads. A raised plus sign (⁺) attached to upper-case Roman numerals indicates augmented triads.

It is imperative that you familiarize yourself with the qualities of diatonic triads in both major and minor keys. The following example shows the pattern of major, minor, and diminished triads in a major key:

Example 101:

C I ii iii IV V vi vii^o

As you can see, the triads built on scale degrees $\hat{1}$, $\hat{4}$, and $\hat{5}$ are major (I, IV, and V), while the triads built on scale degrees $\hat{2}$, $\hat{3}$, and $\hat{6}$ are minor (ii, iii, and vi). Notice that the triad built on scale degree $\hat{7}$ (vii^o) is the only diminished triad of the group. For easy demonstration, **Error! Reference source not found.** is in C major, but the pattern of triad qualities is identical for all major keys.

As Example 102 demonstrates, minor keys have their own pattern of major, minor, and diminished triads:

Example 102:

c: i ii^o III iv v VI VII

Note: You may have noticed that with regard to the qualities of the triads, the pattern in minor is the same as major, but begins in a different place. (Beginning with III in minor, you'll find the same pattern of qualities as begins on I in major.) This similarity is a result of the relationship between relative keys.

As we learned in the lesson on the minor scale, scale degree $\hat{7}$ is routinely raised in minor keys for the triads built on $\hat{5}$ and $\hat{7}$. The following example shows the qualities of triads according to the harmonic minor composite (for more on that subject, refer to Lesson 3):

Example 103:

c: i ii[°] III iv V VI vii[°]

As with **Error! Reference source not found.**, it is imperative that you memorize this pattern of triad qualities for minor keys. Doing so for major and minor keys will allow you to recognize changes in quality when chromatic alterations occur.

Seventh chords are also labeled with Roman numerals:

Example 104

a.

C: I⁷ ii⁷ iii⁷ IV⁷ V⁷ vi⁷ vii⁷

b.

c: i⁷ ii⁷ III⁷ iv⁷ V⁷ VI⁷ vii⁷

Seventh chords retain the case of the triads on which they are based. (Seventh chords with “^o” are fully diminished; seventh chords with “⁷” are half diminished.)

As we have seen, Roman numerals are informative in themselves: they indicate both the root and quality of harmonies. They can provide further information when combined with figured bass numerals. Refer to Lesson 4 for more information on how figured bass numbers supplement and refine Roman numeral analysis.

Roman numerals and mixture:

Because Roman numerals indicate the quality of a chord, they are especially useful for analyzing instances of mixture, where triads change quality by incorporating scale degrees from the parallel mode. Look again at the triads built on $\hat{5}$ and $\hat{7}$ in Examples 102 and 103. As discussed in Lessons 3 and LLL, those two chords borrow the leading tone from the parallel major. The resulting difference in quality is reflected in the Roman numerals: v becomes V and VII becomes vii^o.

The following example shows several other examples of how Roman numerals indicate mixture:

Example 105:

Example 105 shows a sequence of chords in C major on a treble clef staff. The chords are: C major (I), C minor (i), C minor 7 (ii), C minor 7 flat 9 (ii°), F major (IV), F minor (iv), C minor 6 (vi), and C minor 6 flat 9 (bVI). Below the staff, the Roman numerals and their quality are listed: C: I (diatonic), i (simple mixture), ii (diatonic), ii° (simple mixture), IV (diatonic), iv (simple mixture), vi (diatonic), and bVI (simple mixture).

In a major key, the triad built on scale degree $\hat{1}$ is naturally major (“I”). When mixture is applied to the chord—lowering the third to E^b , in this case—the Roman numeral is correspondingly changed to “i” to signal the minor quality. Example 105 also demonstrates how through mixture ii (minor) becomes ii° (diminished) and IV (major) becomes iv (minor).

The final case in Example 105 shows simple mixture applied to a vi chord in a major key. The root of the chord (A) is affected (lowered to A^b). When the root of a chord is altered, we put an appropriate accidental *before* the Roman numeral. The chord is labeled bVI : “b” indicates that the root—scale degree $\hat{6}$, as shown by “VI”—has been lowered. The case of the Roman numeral also tells us that the chord is major, and requires E^b instead of E (with E the chord would have been augmented).

Note: In Example 105, the altered sub-median chord was labeled bVI in C major. This same alteration in E major would require a natural sign instead of a flat in front of scale degree $\hat{6}$:

Example 106:

Example 106 shows two sets of chords. The first set is in C major: C minor 6 (vi) and C minor 6 flat 9 (bVI). The second set is in E major: E minor 6 (vi) and E minor 6 flat 9 (bVI). Below the staff, the Roman numerals and their quality are listed: C: vi (diatonic) and bVI (simple mixture); E: vi (diatonic) and bVI (simple mixture).

Note, however, that the lowered submedian in E major is still labeled bVI . This brings up an important idiosyncrasy about using accidentals with Roman numerals. A lowered root is always indicated by “b” and a raised root is always indicated by “#,” even in cases like Example 106 where it may not correspond with the accidentals in the music. (Because it is so commonly used, the chord built on $\#7$ in minor is simply labeled vii° instead of $\#vii^\circ$.)

You should become familiar enough with the qualities of diatonic chords so that you can immediately recognize Roman numerals that indicate chromatic alterations. In the context of a major key, for instance, chords such as “i” and “ ii° ” should instantly alert you to chromatic alterations.

Roman numerals also signal secondary and double mixture. The following example illustrates:

Example 107:

C: ii II iii III vi VI
 diatonic secondary mixture diatonic secondary mixture diatonic secondary mixture

In instances of secondary mixture the quality of the chord in question is changed, but not through borrowing of tones from the parallel key. (For more on this and other topics relating to mixture, refer to Lesson LLL.) The minor quality of the diatonic ii chord becomes major (II) through secondary mixture. Likewise, iii and vi become III and VI. In each case, the alteration is indicated by a change in case of the Roman numeral.

The same holds true for minor keys:

Example 108:

c: III iii VI vi VII vii
 diatonic secondary mixture diatonic secondary mixture diatonic secondary mixture

As shown by Example 108, III, VI, and VII in a minor key become minor as a result of secondary mixture. They are respectively labeled iii, vi, and vii.

Roman numerals also show cases of double mixture—where secondary mixture is applied to chords already altered by simple mixture. Consider the following cases of double mixture in a major key:

Example 109:

C: \flat III \flat iii \flat VI \flat vi
 simple mixture double mixture simple mixture double mixture

In a major key, \flat III and \flat VI are both examples of simple mixture because they are derived through borrowing tones from the parallel minor. When their chord quality is changed by lowering their thirds, they become instances of double mixture. Again the Roman numeral analysis indicates the root and

quality of the triad. The chord labeled “ $\flat iii$ ” is a minor triad built on $\flat 3$ while “ $\flat vi$ ” is a minor triad built on $\flat 6$.

Example 110 shows two examples of Roman numeral labeling for double mixture in a minor key:

Example 110:



c:	$\sharp iii$	$\sharp III$	$\sharp vi$	$\sharp VI$
	simple mixture	double mixture	simple mixture	double mixture

Note again that despite the natural signs altering the roots of these chords, the Roman numerals are preceded by \sharp signs.

Activity QQQ.1:

Identify each of the following chords in various keys with a roman numeral. (Note: Each chord is in root position.)

Exercise QQQ.1a

Identify the following chord in $E\flat$ major with a Roman numeral:



$E\flat$:

[Answer: i. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember to use accidentals to indicate altered roots and that the case of the Roman numeral should correspond with the quality of the triad.”]

[Follow-up multiple choice question:]

Is this a case of simple, secondary, or double mixture?

[Answer: simple. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise QQQ.1b

Identify the following chord in A major with a Roman numeral:



A:

[Answer: \flat VI. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember to use accidentals to indicate altered roots and that the case of the Roman numeral should correspond with the quality of the triad.”]

[Follow-up multiple choice question:]

Is this a case of simple, secondary, or double mixture?

[Answer: simple. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise QQQ.1c

Identify the following chord in F minor with a Roman numeral:

[Answer: \sharp III. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember to use accidentals to indicate altered roots and that the case of the Roman numeral should correspond with the quality of the triad.”]

[Follow-up multiple choice question:]

Is this a case of simple, secondary, or double mixture?

[Answer: double. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise QQQ.1d

Identify the following chord in C \sharp minor with a Roman numeral:

[Answer: vi. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember to use accidentals to indicate altered roots and that the case of the Roman numeral should correspond with the quality of the triad.”]

[Follow-up multiple choice question:]

Is this a case of simple, secondary, or double mixture?

[Answer: secondary. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Conclusion:

Roman numerals are a convenient means of naming and analyzing chords. They concisely convey important information. The numbers symbolized by Roman numerals indicate the scale degrees on which chords are built. “I” indicates a chord built on $\hat{1}$, “ii” a chord built on $\hat{2}$, and so on. Furthermore, the case of the Roman numeral indicates the quality of the chord. For triads, uppercase indicates a major triad, lowercase a minor triad, and lowercase with a supplementary degree sign (“ $^{\circ}$ ”), a diminished triad. Seventh chords are also analyzed with Roman numerals. Their case, upper or lower, indicates the

quality of the triad on which they are built. Figured bass numerals can be added to indicate inversions of chords, or part movement above a sustained bass (for example: 4-3, 7-6, 5-6, $\frac{6}{4} - \frac{5}{3}$, etc.).

Because Roman numerals are able to express such things, they are also useful for indicating the three types of mixture. As always, the case of the Roman numerals indicates chord quality. You should become familiar enough with the qualities of diatonic triads so that by looking at a Roman numeral you are immediately able to recognize the presence of chromatic alterations. Accidentals preceding a Roman numeral signal an altered root: a prefix “b” indicates a lowered root while “#” indicates a raised root.

Lesson RRR: Dominant Preparation

Introduction:

Composers tend to put considerable emphasis on harmonies leading to the dominant, and to apply noteworthy creativity in shaping and modifying those harmonies as a way of highlighting the arrival of the dominant, after which the tonic follows soon as a foregone conclusion. In addition to diatonic pre-dominant harmonies such as ii and IV (ii^o and iv in minor), applied chords can appear before the dominant, emphasizing it through tonicization (see Lesson 10). Other harmonies, like the Neapolitan sixth (Lesson MMM) and augmented sixth chords (Lesson NNN), dramatize the arrival of the dominant with chromaticism.

All of these chords and sonorities have a similar function in that they typically introduce and raise anticipation for dominant harmony. Though they share certain characteristics in makeup and purpose, each has a unique identity. The subtle differences between these chords allow for a wide variety of expression and individuality in works with fundamentally similar harmonic structure.

In this lesson, we will summarize the various pre-dominant chords discussed so far. We will compare them and track elements that regularly appear in pre-dominants, while making note of the characteristics that make each unique.

The dominant preparation function:

Example 111:

I V I

We might think of the succession of chords in Example 111 as the most basic tonal progression: it begins with the tonic, a point of initial repose; moves to the dominant, a moment of poised contrast; and then resolves back to the tonic, confirming its function as goal. Indeed, this very progression is at the root of all tonal harmony. But for such a foundational progression, by itself, it isn't very exciting! The beauty of tonal music lies in how composers adjust, embellish, and—most importantly—expand this progression.

One of the fundamental ways in which composers expand this basic progression is by delaying the arrival of the dominant, thereby heightening the contrasting tension. One way to do that would be to complete an arpeggiation of the tonic triad in the bass with I⁶ or III:

Example 112:

C: I I⁶ V I or C: I III V I

Both of these progressions delay the arrival of the dominant, but are heard as expansions of the initial tonic harmony rather than as mediations between tonic and dominant. Chords built on scale degrees $\hat{2}$ or $\hat{4}$ are more effective in that regard since they contain active scalar elements. Each of those chords—ii and IV—contains scale degrees with strong tendencies to lead to pitches of a dominant chord. Chords that introduce dominant harmony in this manner are collectively known as pre-dominant chords.

Note: We refer to the subjects of this lesson as pre-dominant chords. You may occasionally encounter other terminology as well. Some teachers and texts refer to such chords as intermediate harmonies or dominant preparation chords. Others, noting that occasionally several different pre-dominant chords may appear alongside one another, refer to a subdominant *area*. All of these terms are valid and you should recognize their interchangeability.

In discussing the commonalities and differences between various pre-dominant chords, it is useful to divide the list into diatonic chords—those built exclusively of pitches native to the key—and chromatic chords—those that contain pitches foreign to the key, whether through mixture or other sources. Among the scale degrees comprising various pre-dominant chords, $\hat{4}$ is central. In the following sections we will take a more nuanced approach to classifying pre-dominants. We will first discuss those pre-dominants that use diatonic $\hat{4}$, and then those that replace $\hat{4}$ with $\#\hat{4}$.

Pre-dominant chords with diatonic $\hat{4}$:

The most common pre-dominant chords are those composed of diatonic pitches: ii⁽⁷⁾ and IV⁽⁷⁾ in major, ii^{o(7)} and iv⁽⁷⁾ in minor. These chords are particularly useful as pre-dominants since each of their scale degrees leads smoothly to the pitches of a dominant chord.

Example 113:

C: I IV V I

Example 114:

C: I ii⁶ V I

Note the resemblance of these two progressions. The IV chord has C in the soprano while the ii chord has D, but otherwise the two examples are identical. This similarity in makeup explains the interchangeability of ii and IV as pre-dominant functions.

Keep in mind, however, that not all ii and IV chords function as pre-dominants. They frequently appear in various other capacities—as auxiliary sonorities, for example:

Example 115 (J.S. Bach, “Herzlich tut mich verlangen,” BWV 244.44, mm. 1-2):

D: I (IV) I⁶ (IV⁶) I ii⁵⁶ V I

At first glance, it may appear that the excerpt shown in Example 115 has three pre-dominant chords: two IV chords in m. 1 and a ii⁵⁶ in m. 2. Of these, only the third has a pre-dominant function. The chords on beats one and three of the first full measure are auxiliary sonorities expanding the initial tonic. It is essential that you be able to distinguish such functional differences between similar chords.

As discussed in Lesson LLL, mixture chords retain the harmonic functions of their unaltered forms. In other words, a pre-dominant harmony that incorporates tones borrowed from the parallel key will still be pre-dominant. The following example alters the IV chord of Example 113: Example 116:

Example 116:

C: I iv V I

Despite the inclusion of A^b, the iv chord is still a pre-dominant.

The Neapolitan chord also has a pre-dominant function. Like ii or IV, it too has diatonic $\hat{4}$ (usually in the bass). As discussed in Lesson MMM, the Neapolitan can be derived in two ways: by substituting the fifth of a iv chord with a chromatic upper neighbor or by lowering the root of a ii^o chord. The following example replaces the pre-dominant chords of Examples 113 and 114 with a Neapolitan:

Example 117:

C: I N⁶ V I

Compare Example 117 with Examples 113 and 114. As you can see, the Neapolitan is closely related to diatonic ii and IV chords. Regardless of how it is derived—whether by embellishing a iv chord, or by altering a ii^o chord—the Neapolitan retains pre-dominant function.

Pre-dominant chords with $\#4$:

Other pre-dominant chords feature $\#4$: applied chords and the special case of augmented sixths. As discussed elsewhere, $\#4$ functions as a temporary leading tone and urges strongly toward $\hat{5}$. The presence of $\#4$ in a predominant chord makes it less stable and drives it toward the dominant.

As discussed in Lesson 10, applied chords that tonicize the dominant can be thought of as chromatically altered ii or IV chords. The following example demonstrates:

Example 118:

C: I ii V/V V

Here we see a diatonic pre-dominant (ii) leading to an applied chord (V/V). The only difference between these chords is at scale degree $\hat{4}$: raising F to F \sharp makes an applied dominant out of the ii chord. (Note that the same progression in minor would require two accidentals to make an applied dominant out of the diminished ii^o chord.) Any applied chord tonicizing V—V⁷/V, vii^o/V, vii^{o7}/V, and so on—can be derived in this manner. Again, the similarity in makeup is responsible for the similar function.

Augmented sixth chords, as discussed in Lesson NNN, are defined by the “dual leading tones” surrounding scale degree $\hat{5}$: $\#4$ and $b\hat{6}$. Like applied dominants, they feature leading-tone chromaticism ($\#4$ invariably resolves to $\hat{5}$). But the presence of $b\hat{6}$ (a semitone above the dominant) prevents them from being heard as applied dominants. Augmented sixth sonorities, as chromatic pre-dominants, highlight the arrival of the dominant but do not tonicize it.

In this sense, augmented sixths may be regarded as further alterations of diatonic pre-dominants. Applied chords add $\sharp 4$ and augmented sixths add $b\hat{6}$ in addition. The increased chromaticism enhances the pre-dominant function rather than undermining or changing it.

Activity RRR.01:

It is essential that you be able to distinguish true pre-dominant chords from other sonorities that appear very similar. In each of the following excerpts, identify whether or not the boxed chord is a pre-dominant. (Hint: Always look to the following chord or chords to see where the harmony is headed.)

Exercise RRR.01a

Is the boxed chord in the following excerpt from a Bach chorale (BWV 271, “Herzlich tut mich verlangen,” mm. 1-2) a pre-dominant?

[Answer: yes. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: What harmony follows the boxed chord?)”]

[Follow-up question:]

What type of pre-dominant chord is it? (Provide your answer as a Roman numeral.)

[Answer: ii_5^6 . Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise RRR.01b

Is the boxed chord in the following excerpt from a Bach chorale (BWV 271, “Herzlich tut mich verlangen,” mm. 1-2) a pre-dominant?

[Answer: no. Response if correct: “Correct! The boxed chord is a passing auxiliary sonority.” Response if incorrect: “Incorrect. (Hint: What harmony follows the boxed chord?)”]

Exercise RRR.01c

Is the boxed chord in the following excerpt from Schubert (Moment Musical No. 6, Op. 94, D. 780, mm. 78-93) a pre-dominant?

[Answer: yes. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: What harmony follows the boxed chord?)”]

[Follow-up question:]

What type of pre-dominant chord is it? (Provide your answer as a Roman numeral.)

[Answer: V_5^6/V . Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise RRR.01d

Is the boxed chord in the following excerpt from Schubert (Moment Musical No. 6, Op. 94, D. 780, mm. 78-93) a pre-dominant?

[Answer: no. Response if correct: “Correct! The boxed chord is a neighboring auxiliary sonority.” Response if incorrect: “Incorrect. (Hint: What harmony follows the boxed chord?)”]

Exercise RRR.01e

Is the boxed chord in the following excerpt from Mozart (Theme with Variations from Piano Sonata in D Major, K. 284, mm. 1-8) a pre-dominant?

(Note: The harmony in question is a pivot chord which initiates a modulation to the key of A major. Analyze the second half of m. 4 through the cadence in m. 8 as A major.)

[Answer: yes. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: What harmony follows the boxed chord?)”]

[Follow-up question:]

What type of pre-dominant chord is it? (Provide your answer as a Roman numeral.)

[Answer: ii^6 . Response if correct: “Correct! Although the chord is initially heard as vi^6 in D major, the subsequent modulation to A major causes us to retroactively reinterpret the chord as ii^6 . As discussed in the lesson on modulation (Lesson 11), this sort of pivot chord (vi^6 becoming ii^6) is a very common method for modulating to the dominant.” Response if incorrect: “Incorrect. Remember to analyze the chord in the key of A major.”]

Exercise RRR.01f

Is the boxed chord in the following excerpt from Mozart (Theme with Variations from Piano Sonata in D Major, K. 284, mm. 1-8) a pre-dominant?

[Answer: yes. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: What harmony follows the boxed chord?)”]

[Follow-up question:]

What type of pre-dominant chord is it? (Provide your answer as a Roman numeral.)

[Answer: ii^6 . Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Conclusion:

One of the most common ways that composers expand the I-V-I progression is through the use of pre-dominant harmonies. These chords mediate between the initial tonic and the dominant, thereby building dramatic tension. Chords built on $\hat{2}$ or $\hat{4}$ are particularly useful in this regard since they contain active scalar elements that lead smoothly to the pitches of the dominant.

Diatonic ii (ii^0) and IV (iv) chords (and their respective seventh-chord versions) are the most common pre-dominant harmonies. Neapolitan chords can be thought of as chromatic alterations of ii or IV chords. They also contain $\hat{4}$ and retain pre-dominant function.

Other pre-dominants use $\#\hat{4}$ instead of $\hat{4}$. Chords applied to the dominant— V/V , V^7/V , vii^0/V , vii^{07}/V —are derived by chromatically altering ii or IV chords, but have a noticeably different effect than their diatonic forebears. Augmented sixths go one step further by adding further chromaticism with $b\hat{6}$. Augmented-sixths as pre-dominants are similar to tonicizing applied chords (V/V , V^7/V , vii^0/V , vii^{07}/V) in that they contain $\#\hat{4}$, but differ from them in that they are not agents of tonicization. Augmented-sixths highlight the arrival of the dominant but do not tonicize it.

Lesson SSS: Diatonic Descending-Fifth Sequences

Introduction:

Very frequently in tonal music, you will encounter passages where a harmonic pattern coupled with a melodic one repeats at different pitch levels. An example of this appears in the following excerpt by Bach:

Example 119 (J.S. Bach, Organ Concerto in A minor, BWV 593, mm. 5-9):

The musical score for Example 119 consists of three systems of staves. The first system (measures 5-7) shows the beginning of the sequence. The second system (measures 8-9) shows the continuation and resolution of the sequence. The notation includes treble and bass clefs, a common time signature, and various rhythmic values such as eighth and sixteenth notes, as well as rests. The sequence is characterized by a descending fifth interval between the bass and treble parts of the chords.

Following an authentic cadence in m. 5, we find a series of chords descending by fifths. Comparing m. 6 with mm. 7-8, we find a repeated pattern in each measure, the only differences being the pitch level of each repetition. In the highest voice, the pattern begins on F in m. 6, and then repeats on E in m. 7 and D in m. 8 before landing on C in m. 9. In the bass, the repeated pattern begins on D in m. 6 and steps down through C (m. 7) and B (m. 8) before arriving on the tonic (A) in m. 9. Harmonically, the pattern ends right where it began: with a I chord. With that in mind, we can consider the entire passage from the second half of m. 5 to the downbeat of m. 9 to expand tonic harmony.

When successive repetitions occur at different but predictable pitch levels, as in Example 119, the patterning is called a sequence. Sequences appear with greatest frequency in music from the Baroque, but were used in every era of the common practice period. As we will discuss in this lesson, sequences function in a number of ways, but always derive from a handful of basic interval progressions. (See Lesson 1 for review of basic interval progressions.)

We will begin with a brief discussion of the general nature of sequences and will then proceed with an examination of some common variations on the basic principles. This lesson focuses on the most common type of sequence and is accompanied by a follow-up lesson (Lesson TTT) that considers several less common varieties.

The nature of sequences:

Composers generally employ sequences either to expand a single harmony—as we saw in Example 119—or as a transitional device from one framing harmony to another, sometimes from one key to another. In all cases, identifying the function of a sequence depends on a listener’s ability to recognize the repeated pattern in context. Generally, we first hear the repetition in the contour of the leading melodic voice. But these repeated lines or motives are always linked to strong harmonic progressions, which in turn derive from basic interval progressions.

Sequences are based on the same harmonic progressions that appear everywhere in tonal music. Progressions in which the chord roots descend by fifth are by far the strongest and most frequent, but ascending-fifth and descending- and ascending-third progressions are also quite common (see Lesson TTT). In this sense, sequences are an extension of basic tonal practices expressed in a unique way.

Let’s take another look at the Bach excerpt from above.

Activity SSS.01:

Identify each of the harmonies indicated by the blank lines in the following sequence in A minor (J.S. Bach, Organ Concerto in A minor, BWV 593):

[Answers: m. 5 = i; m. 6 = iv and VII; m. 7 = III and VI; m. 8 = ii^o and V; m. 9 = i. (case indicates chord quality). Response for each correct answer: “Correct!” Response for each incorrect answer: “Incorrect. (Remember to use uppercase letters for major chords and lowercase for minor.)”]

The following example shows the harmonic progression of the excerpt from above:

Example 120 (J.S. Bach, Organ Concerto in A minor, BWV 593, mm. 5-9):

The musical score consists of three systems of staves. The first system (measures 5-6) shows a descending fifth sequence of triads: V, i, iv⁷, VII⁷, III⁷, VI⁷. The second system (measures 7-8) continues the sequence: ii⁷, V⁷, i. The notation includes treble and bass clefs, a common time signature, and various rhythmic values such as eighth and sixteenth notes.

The root of each successive triad, starting with the tonic chord on the third beat of m. 5, is a fifth lower than the previous one: i – iv – VII – III – VI – ii^o – V – i. (Some of these descending fifths are expressed as ascending fourths. This is done to avoid too low of a register.) Here, the sequence traverses an entire cycle of descending fifths, from tonic back to tonic. This is common—particularly with descending-fifth sequences—but most sequences consist of only three to five repetitions since completing an entire cycle can become tedious.

Note: This sequence and the others considered in this lesson are diatonic: all of the chords are native to a single key. Because the repetitions are not literal, you will find some variation in quality. In Example 120, the chords in m. 6 are minor and major, while those in m. 7 are both major. Regardless of the changes in quality, the similarity of the melodic contour is explicit enough for the listener to recognize the repeated pattern.

In addition to considering the repeated material—melodic and harmonic—it is essential that you be able to recognize the underlying interval patterns that form the basic structure of sequences. In multi-voiced settings, look to the outer voices for these governing progressions. The following example provides a reduction of the sequence in Example 119, showing the successive intervals formed by the highest and lowest voices:

by fourth) through a VII⁷ chord in m. 62 and a III⁷ chord in m. 63. Starting in m. 64, the sequence speeds up. Each successive harmony lasts only two quarter notes instead of three: VI⁷ – ii^{o7} – V⁷ in mm. 64-65. Finally, the VI chord in m. 66 breaks the pattern and ends the sequence with a deceptive cadence.

Now consider the interval progression formed by the outer voices. Example 123 provides a reduction:

Example 123 (reduction of W.A. Mozart, Piano Sonata No. 12 in F major, K. 332, Mvt. I, mm. 58-67):

60

5 10 7 10 7 10 7 5

i iv⁷ VII⁷ III⁷ VI⁷ ii^{o7} V⁷ VI

i iv⁷ ----- ii^{o7} V⁷ VI

On the downbeat of m. 61, the highest voice (A^b) forms a tenth above the bass (F). That A^b is suspended into the next measure where it forms a seventh above the new bass note (B^b). This pattern repeats twice more in mm. 63-65. The sequence, therefore, follows the same LIP that we saw in Example 121. The “10-7” pattern is the most common voiceleading structure for descending-fifth sequences. The final dissonant seventh (the G and F of the V⁷ chord in m. 65) resolves inward to a perfect fifth with the deceptive cadence that ends the sequence. Like the one in Example 120, this sequence prolongs the subdominant section of the basic phrase (iv to ii^o).

Note: Another consequence of using only diatonic chords is the inevitable inclusion of diminished and augmented intervals. Composers negotiate these dissonant sonorities in several ways, as you’ll see from the various examples in this lesson. In this excerpt, for example, the tritone that arises between the roots of the VI and ii^o (A^b and D) chords is obscured by the weak (and unexpected) metric placement of the diminished chord.

The following excerpt from a Schubert impromptu includes a complete cycle of descending fifths, this time in a minor key:

Example 124 (F. Schubert, Impromptu in E-flat, D. 899, No. 2, mm. 23-35):

The image displays three systems of musical notation for Example 124. Each system consists of a grand staff (treble and bass clefs) with a key signature of two flats (B-flat and E-flat) and a 3/4 time signature. The first system (mm. 23-27) features a descending-fifth sequence of chords: Eb: V⁷, I, eb: i, iv⁸, VII⁷. The second system (mm. 28-31) continues the sequence: III⁸, VI⁷, ii⁸, V⁷. The third system (mm. 32-35) concludes the sequence: i⁸, iv⁸, V⁷, i. The melodic line in the upper voice is characterized by a descending-fifth sequence, with triplets in measures 23, 24, 28, and 29.

Following a cadence in m. 24, E \flat major becomes E \flat minor with the addition of G \flat (and, subsequently, D \flat and C \flat). The descending-fifth sequence that follows, beginning with iv in m. 26, completes the cycle from the initial i chord to the tonic in m. 32. Harmonically, the iv chord in m. 33 continues the descending-fifth series, but by then, the melodic pattern in the upper voice is broken.

Sequences in minor keys, in addition to the extra tritone between scale degrees $\hat{2}$ and $\hat{6}$, bear the added complication of the harmonic and melodic composites of the scale. (See Lesson 3 for more information on the harmonic and melodic minor composites.) Typically, in a minor-key sequence, scale degrees $\hat{6}$ and $\hat{7}$ are left in their diatonic form, appearing in their raised form only at sequence-ending cadences. Notice that in mm. 25-30, every instance of scale degrees $\hat{6}$ and $\hat{7}$ is diatonic (C \flat and D \flat , respectively). Using diatonic $\hat{7}$ avoids the diminished triad built on the leading tone. It is only with the V chord towards the end of the sequence (m. 31) that we find the raised leading tone, effectively signaling the end of the sequence.

Now, let's look at the outer-voice interval progression:

Example 125 (reduction of F. Schubert, Impromptu in E-flat, D. 899, No. 2, mm. 25-32):

25

10 10 7 10 7 10 7 10

eb: i iv⁷ VII⁷ III⁷ VI⁷ ii⁷ V⁷ i

i iv⁷-----ii⁷ V⁷ i

As Example 125 shows, this excerpt is based on the same interval progression already familiar from Examples 119 and 122: tenths becoming suspended sevenths. After the initial G \flat is heard in m. 25 as the third of the now minor tonic, the upper voice leaps up to C \flat in m. 26. That C \flat is heard again in m. 27, though there it appears as a seventh above the new bass (D \flat). (This suspension is indicated with a tie in the reduction.) The pattern is then repeated in mm. 28-29, and again 30-31, leading back to G \flat and the minor tonic in m. 32.

Other outer-voice interval progressions are possible as well. The progression that defines a sequence depends on whether or not the harmonies appear in inversion and, in large part, on which chord members appears in the treble. Below are the “10-7” LIP already discussed and the resultant “10-5” pattern that would arise by alternating between root position and first inversion chords.

Example 126:

a.

10 7 10 7 10 7 10 7

C: I IV vii[°] iii vi ii V I

b.

10 5 10 5 10 5 10 5

C: I IV⁶ vii[°] iii⁶ vi ii⁶ V I⁶

As you can see from Example 126, alternating between root position and first inversion chords creates a smoother bass line and alters the LIP. Such altered sequences are quite common., as the following excerpt from a Mozart piano sonata demonstrates (Example 128 provides a reduction):

Identify the LIPs between the outer voices of the following sequence. (Example: Enter “10-7” for a LIP that alternates between tenths and sevenths, beginning with a tenth.)

C: I⁶ IV vii⁶ iii vi⁶ ii V⁶ I

Exercise SSS.03a:

What is the LIP between the outer voices?

[Answer: 6-10 or 6-3. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[First follow-up questions:]

As written, the outer-voice LIP of this sequence alternates between sixths and tenths. But any of the upper voices could have been written on top. It is important that you be aware of LIPs between inner voices as well for this very reason.

Exercise SSS.03b:

What is the LIP between the alto and bass?

[Answer: 10-8 or 3-8 or 3-1. Response if correct: “Correct! The alto and bass alternate between tenths (compound thirds) and octaves via a series of suspensions.” Response if incorrect: “Incorrect. Try again.”]

Exercise SSS.03c:

What is the LIP between the tenor and bass?

[Answer: 6-5. Response if correct: “Correct! The tenor and bass alternate between sixths and fifths via a series of suspensions.” Response if incorrect: “Incorrect. Try again.”]

In Example 129, successive harmonies alternate between first inversion and root position. The soprano voice yields a “6 – 10” pattern with the bass, while the alto and tenor yield “10 – 8” and “6 – 5” patterns with the bass respectively. Again, the LIP will vary depending on which chord member the composer places in the soprano. The sequence could, of course, also begin with a root-position chord: I – IV⁶ – vii⁰ – iii⁶ – etc., which would likewise affect the outer-voice intervals of the LIP.

Other outer-voice progressions are made possible by adding sevenths to each chord or by arranging them all in root position. In all cases, however, the underlying harmonic foundation remains intact.

Descending-fifth sequences are particularly prevalent in music of the Baroque era. The following excerpt from a harpsichord suite by Handel makes great use of this device:

Example 130 (G.F. Handel, Harpsichord Suite no. 12, Gigue, mm. 13-16):

13

G: I vi ii⁶ V I⁶ IV vii⁵ iii vi⁶ ii

15

V⁶ I IV⁶ ii⁶ V I⁶

Beginning with the vi chord on the anacrusis to m. 14, a series of arpeggios in the left hand outline a descending fifth sequence through the remainder of that measure. In m. 15, the descending-fifth harmonic pattern set into motion by the sequence continues through V, I, and IV, despite the altered melodic pattern in the bass. At this point, the sequence is broken off, leading to an authentic cadence. Sequences such as this—which complete an entire lap around the circle of fifths and then some—are commonplace in Baroque music but were generally considered monotonous by later composers.

Activity SSS.03:

The out-voice interval progression is particularly clear in this sequence. Beginning with the vi chord in m. 13 and going through the IV⁶ in m. 15, what is the LIP between the outer voices?

13

G: I vi ii⁶ V I⁶ IV vii⁵ iii vi⁶ ii

15

V⁶ I IV⁶ ii⁶ V I⁶

[Answer: 3-5 or 5-3 or 10-5 or 5-10. Response if student enters “3-5” or “10-5”: “Correct!” Response if student enters “5-3” or “5-10”: “Good! The outer voices alternate between thirds and fifths. (Keep in mind that in this case, the sequence begins with a third between E and G.)” Response if incorrect: “Incorrect. (Hint: Look at the lowest note in each arpeggiation in the left hand.)”]

The outer-voice interval progression is particularly clear in this example. A series of suspensions in the upper voice create a pattern of alternating thirds and fifths with the bass:

Example 131 (reduction of G.F. Handel, Harpsichord Suite no. 12, Gigue, mm. 14-15):

G: I vi ii⁶ V I⁶ IV vii^o iii vi⁶ ii V⁶ I IV⁶
I ----- I IV⁶

As the second level of Roman numeral analysis shows, this sequence prolongs the tonic for nearly one and a half measures before continuing on to the predominant chords and the ensuing cadence.

Activity SSS.04:

The following excerpt from a harpsichord suite by Handel (Suite No. 1 in A, HWV 426, mm. 39-41) has a descending-fifth sequence in mm. 39-40. In the key of A major, identify each of the harmonies indicated by the blank lines:

[Answers: m. 39 = ii – V – I – IV; m. 40 = vii^o – iii – vi – ii (case indicates chord quality). Response for each correct answer: “Correct!” Response for each incorrect answer: “Incorrect. (Hint: The chords on beats one and three of each measure are missing their fifths. Also, the second of each group of three eighth notes is a nonharmonic tone.)”]

[Followup-question:]

Now that you’ve identified the progression as a descending-fifth sequence with root position harmonies, identify the LIP between the outer voices.

[Answer: 10-7. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: In this case, the upper voice consists of dotted quarter notes suspended into the next beat.)”]

Conclusion:

Sequences consist of melodic and harmonic patterns repeated at different pitch levels, which, after a few repetitions, become predictable. Diatonic sequences rely on the listener’s ability to recognize the basic design of the patterns, since the qualities may change from step to step in conforming to the key. Composers use sequences in a number of ways, primarily to prolong a specific harmony or to move from one harmony to another. This lesson focused on non-modulatory sequences, but sequences can also be designed for modulating.

Each step of a sequence—that is, each cycle of the pattern—is successively transposed at a specific interval until the harmonic goal (or key) is reached. The root movement in a majority of sequences is by

descending fifths (or ascending fourths), which reflects the general prominence of descending-fifth root motion in tonal music.

Significantly, the voiceleading of sequences follows the same basic interval progressions that govern all tonal music. Being able to recognize these patterns in a sequence is an important part of understanding how they work. (It is not important to memorize all of the possible interval patterns that form the skeleton of the various sequence types.) These outer-voice intervallic patterns (LIPs) are determined partly by which chord member appears on top, and partly by whether all chords appear in root position or alternate between root-position and first-inversion.

Lesson TTT – Other Diatonic Sequences

Introduction:

In Lesson SSS we discussed the fundamentals of diatonic sequences and examined the most common type: those in which the harmonies descend by root motion of a fifth. In this lesson, we will discuss several other varieties of diatonic sequences.

Descending- and ascending-“5 – 6” sequences (sequences based on thirds and seconds):

Sequences in which the harmonic units move by seconds or thirds run a greater risk of creating parallel fifths and octaves than those that move by fifths. For this reason, composers often include intervening chords to break up the parallel motion.

The following excerpt from Beethoven sonata shows a descending-third sequence in which intervening chords appear in first inversion:

Example 132 (L. Beethoven, Piano Sonata in E Major, Op. 109, Mvt. I, mm. 1-3):

E: I V⁶ vi iii⁶ IV I⁶ V⁷

Each step in the chain of descending thirds appears on the second beat of its measure: I – vi – IV. Between each step, however, the chord roots move down by fifth: V⁶ is inserted between I and vi, iii⁶ between vi and IV. These secondary chords—along with the weak metric placement and melodic figuration—obscure the parallel fifths between each step in the sequence. We will refer to such sequences as “↓4th↑2nd” sequences to reflect the root motion from one chord to the next, but it is important to remember that bass will not reflect this if some chords appear in inversion.

Note: The labeling system used here shows the root motion from one chord in a sequence to the next. The arrows indicate the direction. That is, in a “↓4th↑2nd” sequence, the root motion first descends by a fourth (as in I to V or V⁶) and then ascends by a second (as in V to vi). Keep in mind that the overall root motion of a “↓4th↑2nd” sequence, for example, is by descending third. Each step simply contains an intervening chord. (This system, while not commonly used, does provide a common-sense way of describing the harmonic action of a sequence.)

Example 133 (reduction of L. Beethoven, Piano Sonata in E Major, Op. 109, Mvt. I, mm. 1-3):

E: I V⁶ vi iii⁶ IV I⁶

I ----- I⁶

As this reduction shows, alternating between root position and first inversion produces a desirable effect: a stepwise descending bassline. The intervening chords (V⁶ and iii⁶) break up the parallel fifths

that would normally result from successive descending third root motions. The result is a series of fifths suspended to become sixths as the bass steps down on the downbeat of each measure. As the second level of Roman numeral analysis shows, this sequence prolongs the initial tonic as I moves to I⁶. The descending “5 – 6” technique was a popular contrapuntal strategy in the Renaissance and was continually used in later music.

In the following excerpt, the order of harmonies (I – V – vi – iii – IV – I) is virtually identical to Example 132, though here they all appear in root position:

Example 134 (J. Pachelbel, Canon in D, mm. 1-2):

D: I V vi iii IV I ii⁶ V

Johann Pachelbel’s famous Canon in D is built entirely around the sequence presented in the first two measures. Beginning with the initial tonic chord, this descending-third sequence continues until the next I chord on beat two of the second measure. Each step in the chain of descending thirds appears on a metrically strong beat (I – vi – IV), with intervening chords on the weak beats. Because each of the chords appears in root position, it is very easy to see the “↓4th↑2nd” root motion.

The following reduction removes the inner voices to clarify the voiceleading:

Example 135 (reduction of J. Pachelbel, Canon in D, mm. 1-2):

D: I V vi iii IV I ii⁶ V
I ----- I ii⁶ V

Between the outer voices we find tenths on the strong beats alternating with fifths on the weak beats. The intervening tenths obscure the parallel fifths. Like Example 132, this sequence prolongs the initial tonic harmony (as shown by the second level of Roman numeral analysis).

Activity TTT.01:

As we saw in Example 135, Pachelbel’s Canon in D finds the outer voices alternating between tenths and fifths. But take note of the inner voices reintroduced below (arranged in SATB for ease of reading). What LIP is formed by the “tenor” and “alto” of this reduction?

D: I V vi iii IV I ii⁶ V
I ----- I ii⁶ V

[Answer: 5-6. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Example 136 (four-voice reduction of J. Pachelbel, Canon in D, mm. 1-2):

D: I V vi iii IV I ii⁶ V
I ----- I ii⁶ V

Note of the LIP appearing between the “tenor” and “alto.” On the first downbeat, the alto (A) forms a fifth above the tenor (D). The A is held as the tenor steps down to C, forming an oblique “5 – 6” interval progression. This pattern then repeats twice more. This inner-voice interval progression is the same one we saw in Example 133: a descending “5 – 6” pattern. Because this pattern is so recognizable, sequences such as the one found in Example 136 are often referred to as *root-position variants* of the descending “5 – 6” technique.

In the following excerpt from the fourth of Vivaldi’s *Four Seasons* concertos, first-inversion chords mediate between each step of an ascending-second sequence:

Example 137 (A. Vivaldi, Violin Concerto in F Minor, Op. 8, no. 4 (“Winter”), Mvt. II, mm 11-13):

E \flat : I IV ii⁶ V iii⁶ vi IV⁶ V

Like sequences based on thirds, ascending-second sequences often make use of intervening chords to break up parallel fifths and octaves. The IV chord on the downbeat of m. 12 initiates the sequence (IV – V – vi) with intervening chords on the weak beats. The intervening chords appear in first inversion, preserving the stepwise motion of the bass. Despite the stepwise bass line, we refer to sequences of this sort as “ $\downarrow 3^{\text{rd}} \uparrow 4^{\text{th}}$ ” (read: down a third, up a fourth), summarizing the root motion from one chord to the

next. The following reduction reveals the outer-voice interval progression and how the intervening chords obscure the parallel fifths:

Example 138 (reduction of A. Vivaldi, Violin Concerto in F Minor, Op. 8, no. 4 (“Winter”), Mvt. II, mm 11-13):

12

5 6 5 6 5 6

E \flat : IV ii⁶ V iii⁶ vi IV⁶
IV -----IV⁶

The ascending “5 – 6” motion seen in this reduction is remarkably similar to what we saw in Example 133. The only difference is that here the voices ascend instead of descend. (In this case, the sequence prolongs the predominant harmony.) Once again, the intervening sixths obscure the parallel fifths by approaching them through oblique motion. Such interval progressions are often referred to as *ascending* “5 – 6” LIPs.

The following excerpt begins with an ascending-third sequence starting with the V⁷ chord in the first measure:

Example 139 (A. Corelli, Sonata no. 11 from Sonate da Camera a Tre, Op. 4, Allemanda, mm. 1-5):

Example 140 (reduction of A. Corelli, Sonata no. 11 from Sonate da Camera a Tre, Op. 4, Allemanda, mm. 2-4):

c: V⁷ i VII⁷ III ii⁷ V⁷
 V⁷ i----- ii⁷ V⁷

Instead of moving directly from one fifth to the next on the second beat of each measure, thirds intervene on the downbeats, changing the parallel motion to contrary motion. This results in the ascending stepwise motion of the entire upper line. If we consider the partially concealed inner voice, however, we find a familiar pattern:

Example 141 (reduction of A. Corelli, Sonata no. 11 from Sonate da Camera a Tre, Op. 4, Allemanda, mm. 2-4):

c: V⁷ i VII⁷ III ii⁷ V⁷
 V⁷ i----- ii⁷ V⁷

Consider the interval progression formed by the inner voice and the upper voice. On the anacrusis to m. 2, we find the upper voice (D) a fifth above the inner voice (G). The G is held into m. 2 while the upper voice steps up to E^b forming a sixth with the inner voice. The pattern then repeats. This is the same LIP we saw in Example 138! In this case, however, each of the harmonies appears in root position. You can think of this pattern as a root-position variant of the ascending “5 – 6” technique.

Note as well that in this case, instead of prolonging a single harmony, this sequence prolongs the progression from i to ii⁷.

Ascending-fifth sequences:

Ascending-fifth sequences are far less common than their descending-fifth counterparts. Nonetheless, they do appear with some frequency and have a decidedly different effect. Consider the following example:

Example 142 (A. Corelli, Sonata no. 11 from Sonate da Camera a Tre, Op. 4, Corrente, mm. 18-27):

18

E♭: V I V⁶ ii

23

g: iv⁶ V/iv iv ii^o V⁶ i

The melodic figure in m. 20 is passed back and forth between the bass and uppermost voice with every change in harmony. Starting with the tonic chord in m. 20, the harmonic progression ascends by fifth in each subsequent measure: I – V – ii – vi. In m. 24, the root of the chord is again a fifth higher, but the pattern is broken by the altered melodic line in the upper voice.

Note as well that m. 24 introduces B natural. That chord, initially heard as V/vi in E♭ major, turns out to be an auxiliary sonority prolonging the C-minor chord of m. 23, which in light of the ensuing cadence in G minor is retroactively interpreted as iv in that key.

Activity TTT.02:

Beginning with the I chord in m. 20 and going through the vi⁶ chord in m. 23, what is the LIP between the outer voices? (Hint: Look at the notes on the downbeat of each measure, ignoring, for the moment, the decorations that appear above and below.)

18

23

E♭: V I V⁶ ii

vi⁶
g iv⁶ V/iv iv ii[°] V⁶ i

[Answer: 3-6. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: The primary notes of this LIP are found on the downbeats of each measure. Don’t be distracted by the decorative eighth notes that appear above and below later on in each measure.)”]

Looking at the outer-voiceleading reduction, we again see a familiar interval progression:

Example 143 (reduction of A. Corelli, Sonata no. 11 from Sonate da Camera a Tre, Op. 4, Corrente, mm. 20-23):

20

3 6 3 6

E♭: I V⁶ ii vi⁶

Here, the root-position chords have a third above the bass while the first-inversion chords have a sixth. “3 – 6” interval progressions are also very common. Note that in contrast to descending-fifth sequences, in which the overall motion descends, here the overall motion *ascends*.

The beginning of Bach’s Little Prelude in C Major, BWV 924, begins with a “↑5” sequence (Example 145 provides a reduction):

Example 144 (J.S. Bach, Little Prelude in C Major, BWV 924, mm. 1-3):

I V ii vi iii

Example 145 (reduction of J.S. Bach, Little Prelude in C Major, BWV 924, mm. 1-3):

C: I V ii vi iii

Throughout the passage, Bach uses suspensions and other techniques to smooth out the ascending-fifth progressions. In m. 1, the V chord is introduced as the continuation of a bass arpeggiation of I. The suspended fourth (C on beat 3) resolves on the fourth beat as the upper voice makes a consonant skip up to the root of the triad. That voice is then suspended as a dissonant fourth into the next measure before resolving to the tenth above the bass and repeating the pattern. The basic framework of this sequence, then, is a series of alternating tenths and fifths.

Note: Neither of the ascending-fifth sequences discussed above run past the fifth chord in the sequence—to do so would introduce a tritone in the bass as vii^o moved to IV. Sometimes composers will skip entire steps of a sequence to avoid this situation. Consider the following example:

Example 146 (L. Beethoven, Piano Sonata No.21 (“Waldstein”), Op.53, mm. 446-450):

C: I V ii vi IV I V

This ascending-fifth sequence begins normally, but breaks the pattern in mm. 449 to avoid the tritone bass motion: I – V – ii – vi – [missing: iii – vii^o] – IV – I.

Other interval patterns are possible (e.g. “10 – 5” and “10 – 10”) with ascending-fifth sequences, depending on which chords are inverted, and on what chord member appears in the uppermost voice.

Conclusion:

While the majority of sequences move by descending-fifth root motion, you will also encounter sequences that move by seconds or thirds. Many of these are structured by a “5-6” interval pattern and include intervening chords that offset the parallel fifths that inevitably arise. In a descending “5-6” sequence, each repetition descends by a third but, typically, intervening chords lead to a “↓4th↑2nd” root motion within each step. Ascending “5-6” sequences, on the other hand, typically follow “↓3rd↑4th” root

motion from one chord to the next. Ascending-fifth sequences have a unique effect, but occur much less frequently than their descending-fifth counterparts.

Lesson UUU: The Major Scale

Introduction:

The major scale is a cornerstone of pitch organization and structure in tonal music. It consists of an ordered collection of seven pitch classes. (A *pitch class* is the group of all pitches sharing the same note name—for example, all Cs or all B^bs.) The sound of a major scale is one with which you are no doubt familiar:

Example 147 (C-major scale):



Example 147 shows a C-major scale, so-named because it begins and ends on C. The beginning (and end) of such a scale is referred to as the *tonic* or *keynote*. All of the other notes in the scale are organized around this note.

The high C that ends the major scale in Example 147 can also act as the beginning of its own major scale. The following example demonstrates:

Example 148 (two octaves of C-major scale):



Here we see a C-major scale beginning on middle C and continuing upwards for two full octaves. Likewise, middle C could act as the high end of a C-major scale an octave below. The major scale (and other scales) can therefore continue indefinitely in both directions.

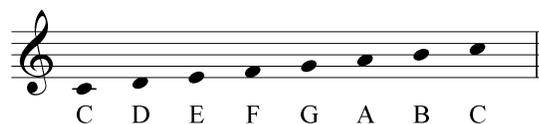
In this lesson, we will begin by examining how a major scale is organized and how to construct one. We will then go on to look at the relationships between its various members and how to refer to them individually.

Spelling a major scale:

For study, scales are typically written in ascending order, spanning a single octave. When notating a scale, we begin with the keynote and use each of the seven note letter names (A, B, C, D, E, F, and G) until we return to the keynote. This is referred to as the *spelling* of the scale and is demonstrated in the following example:

Example 149 (spelling a C-major scale):

a. Correct:



b. Incorrect:



As you can see from Example 149a, the only repeated note letter name is the keynote (in this case, C) for a single octave of a major scale. To repeat any other note letter name would be incorrect, as in Example 149b which uses the letter E twice.

Note: At this point, the specific spelling of a scale may seem arbitrary. After all, E[#] and F are enharmonically equivalent, and the two scales shown in Example 149 sound identical. However, the specific spelling of an individual pitch has a direct effect on the implied musical meaning of that note—a concept that will become clearer in later lessons.

Activity UUU.1:

[multiple choice question]

Which of the following scales is spelled incorrectly?



b.



d.



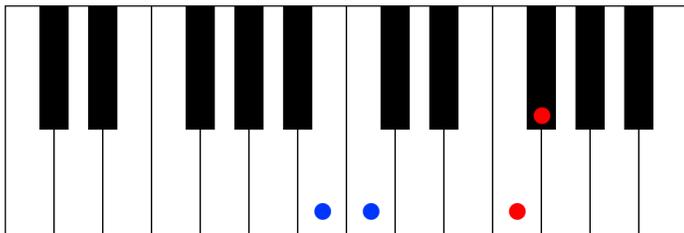
[Answer: C. Response if correct: “Correct! This scale is spelled incorrectly. Although this scale is spelled in ascending order and begins and ends on the keynote, the letter G is used twice (G and G[#]).” Response if incorrect: “Incorrect. This scale is spelled correctly: it begins and ends on the keynote and uses each intervening letter name once and only once. Try again.”]

Pitch relations in the major scale:

Major scales—and minor scales, as we’ll discuss shortly—are named after their keynotes: C-major scales have C as their keynote, A^b-major scales have A^b as their keynote, and so on. While the keynote may be the most important and defining pitch of any given scale, it is the organization of the notes in between—the other six *scale degrees*—that give each scale its unique identity.

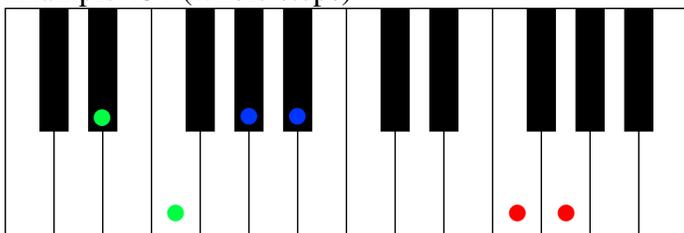
The distance from one scale degree to an adjacent scale degree is referred to as a *step*. As you may have already noticed, there are two sizes of steps: *half steps (semitones)* and *whole steps (tones)*. You will find that it is very useful to visualize steps (and scales) as they would be played on a piano keyboard. Half steps are represented by adjacent keys on the piano keyboard:

Example 150 (half steps):



Example 150 shows that half steps can be formed between two white keys (blue dots) or between a white key and a black key (red dots). In either case, the two pitches are right next to each other (there is no pitch in between). Whole steps, on the other hand, are as big as two half steps:

Example 151 (whole steps)

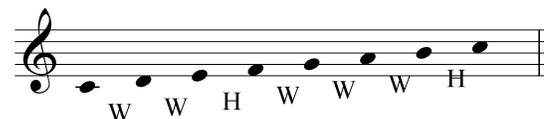


Every whole step—three of which are represented by the pairs of colored dots in Example 151—has exactly one pitch class in the middle. Notice that a whole step can occur between two black keys (blue dots), two red keys (red dots), or a black and a white key (green dots).

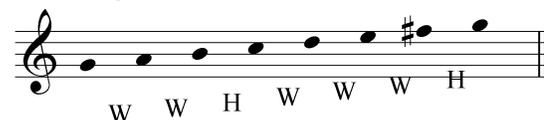
Every major scale features the same pattern of whole steps (tones) and half steps (semitones): W-W-H-W-W-W-H.

Example 152 (whole steps and half steps in major scales):

a. (C major)



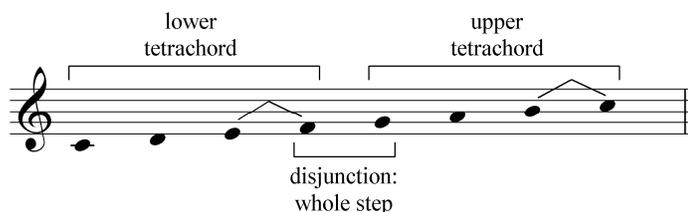
b. (G major)



Play or listen to the two scales in Example 152. Notice how similar they sound even though they begin on different pitches and contain different pitch classes (C major has F, while G major uses F[#]). It is because both scales follow the same pattern of whole steps and half steps that they sound so similar.

If we divide the major scale into two *tetrachords* (groups of four consecutive notes), we find that each tetrachord follows the same pattern of whole steps and half steps:

Example 153:



As Example 153 demonstrates, the major scale can be divided into two tetrachords, each of which follows the W-W-H pattern. The two tetrachords are themselves separated by a whole step. In C major, the lower tetrachord contains C, D, E, and F, while the upper contains G, A, B, and C. (The triangular brackets in Example 153 are a common shorthand way of indicating half-steps.)

Activity UUU.2:

The exercises below refer to the following tetrachord:



Exercise UUU.2a

For which major scale would these four notes form the lower tetrachord.

[Answer: F or F major. Response if correct: "Correct! F-G-A-B^b form the lower tetrachord of an F-major scale." Response if incorrect: "Incorrect: Try again. (Hint: The lower tetrachord of any major scale has the keynote as its lowest pitch.)"]

[Follow-up exercise:]

Complete the F-major scale by adding the upper tetrachord:



[Answer: . Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again. (Remember to follow the correct pattern of whole steps and half steps starting with the keynote.)"]

Exercise UUU.2b

For which major scale would these four notes form the upper tetrachord.

[Answer: B^b or B^b major. Response if correct: "Correct! F-G-A-B^b form the upper tetrachord of a B^b-major scale." Response if incorrect: "Incorrect: Try again. (Hint: The upper tetrachord of any major has the keynote as its highest pitch.)"]

[Follow-up exercise:]

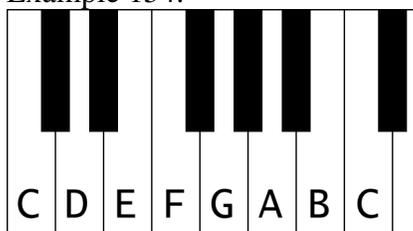
Complete the B^b-major scale by adding the lower tetrachord:



[Answer: . Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again. (Remember to follow the correct pattern of whole steps and half steps starting with the keynote.)"]

The half steps in a major scale are always found in the same place. One is found between the third and fourth scale degrees and the other between the seventh and eighth scale degrees. The following example shows a C-major scale on the piano keyboard:

Example 154:



Visualizing C major is particularly useful as it uses only white keys. This makes the two half-steps very easy to see. Notice that on the piano keyboard, the keys E and F (the third and fourth white keys) have no black key in between them. The same is true for B and C. These two pairs of notes correspond to the half steps shown in Example 152.

Activity UUU.3:

Every major scale has two half steps. Identify the half steps in the following G-major scale:



Exercise UUU.3a

Name one pair of consecutive notes that form a half step in a G-major scale.

[Answer: B/C or F#/G. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise UUU.3b

Now identify *the other* pair of consecutive notes that form a half step in the G-major scale.

[Answer: B/C or F#/G (the other answer from Exercise UUU.3a). Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Building a major scale:

There are several ways of building a major scale like those we've discussed so far. One way is to take advantage of the fact that every major scale follows the same pattern of whole steps and half steps.

Let's say you were asked to build an A^b-major scale (a major scale beginning on A^b). A good place to start would be to write A^b on the staff:

Example 155:



Note: When writing music on a staff, accidentals are always placed to the left of the note they're applied to, as in Example 155. When referring to them in written prose—as in the text of this lesson—they are written as you would say them out loud, with the accidental coming just after the pitch-letter name: “A^b major.”

Since the major scale uses each of the pitch-letter names only once before reaching the tonic note again, we can fill in the rest of the noteheads to help ensure that we're spelling the scale correctly. Don't worry about accidentals yet—those will come in the next step.

Example 156:



As we've seen, every major scale follows the same pattern of whole steps and half steps. You may find it helpful at first to write the pattern above or below your scale:

Example 157:



Once the noteheads are in place, completing the major scale is simply a matter of working from left to right and making sure each note conforms to the pattern. The step from A^b to B is larger than it should be: A^b to B is three semitones instead of two. Since we can't change the initial A^b, our only alternative is to lower the B to B^b. A^b to B^b—a whole step—is the first step of the A^b-major scale. Moving from B^b to C is already a whole step, so C needs no accidental. Then we see that C to D is a semitone larger than the half step we need it to be. Lowering D to D^b will solve this problem. And so on, until we arrive back at the keynote (if your scale began with an accidental, don't forget to put one on the ending keynote as well!):

Example 158:



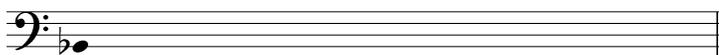
As Example 158 shows, the A^b-major scale requires four flats (B^b, E^b, A^b, and D^b) to conform to the pattern of whole steps and half steps. Other scales will require sharps to maintain the pattern, but major scales will never use both sharps and flats in the same scale.

Activity UUU.4:

In each of the following exercises, you will be given the keynote of a major scale. Fill in the remaining seven scale degrees (2̂ through 8̂).

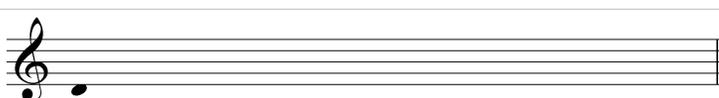
Exercise UUU.4a

Build a B^b-major scale:



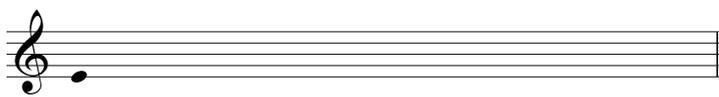
[Answer: . Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again. (Hint: Use the pattern of whole steps and half steps to determine each consecutive step of the scale.)"]

Exercise UUU.4b
Build a D-major scale:



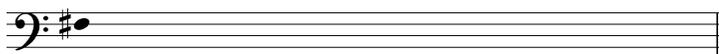
[Answer: . Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again. (Hint: Use the pattern of whole steps and half steps to determine each consecutive step of the scale.)"]

Exercise UUU.4c
Build an E-major scale:



[Answer: . Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again. (Hint: Use the pattern of whole steps and half steps to determine each consecutive step of the scale.)"]

Exercise UUU.4d
Build an F#-major scale:

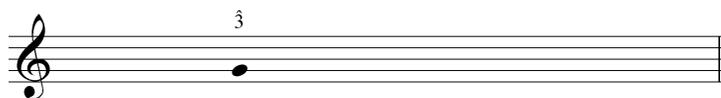


[Answer: . Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again. (Hint: Use the pattern of whole steps and half steps to determine each consecutive step of the scale.)"]

Activity UUU.5:

For each of the following exercises you will be given a pitch and told what major scale degree it represents. It is up to you to fill in the remainder of the scale. The keynote of the scale may or may not have an accidental.

Exercise UUU.5a

Build a major scale in which G is $\hat{3}$:

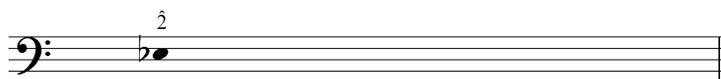
[Answer: . Response if correct: "Correct! G is the third degree of an E^b-major scale." Response if incorrect: "Incorrect. Try again. (Keep in mind that the keynote of the scale may or may not have an accidental.)"]

Exercise UUU.5b

Build a major scale in which G is $\hat{4}$:

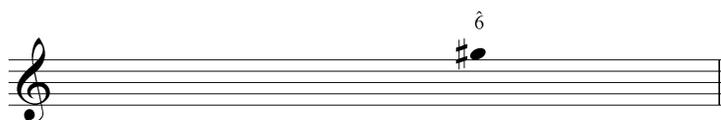
[Answer: . Response if correct: "Correct! G is the fourth degree of a D-major scale." Response if incorrect: "Incorrect. Try again. (Keep in mind that the keynote of the scale may or may not have an accidental.)"]

Exercise UUU.5c

Build a major scale in which E^b is $\hat{2}$:

[Answer: . Response if correct: "Correct! E^b is the second degree of a D-major scale." Response if incorrect: "Incorrect. Try again. (Keep in mind that the keynote of the scale may or may not have an accidental.)"]

Exercise UUU.5d

Build a major scale in which G[#] is $\hat{6}$:

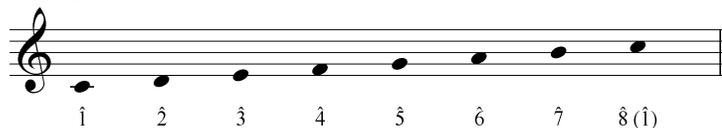
[Answer:  Response if correct: "Correct! G# is the sixth degree of a D-major scale." Response if incorrect: "Incorrect. Try again. (Keep in mind that the keynote of the scale may or may not have an accidental.)"]

Scale degree labels:

Because the pattern of whole steps and half steps discussed above is the same for every major scale, we can use labels for each scale degree with respect to a given keynote. The three main types of labels that we will give scale degrees in this lesson are *scale-degree numbers*, *solfège syllables*, and *scale-degree names*.

Labeling with scale-degree numbers is the most straightforward systems: each scale degree is given a number 1 through 8. Scale degree numbers are distinguished from other types of numbers by the caret (^) that appears above each digit: $\hat{1}$, $\hat{2}$, $\hat{3}$, $\hat{4}$, $\hat{5}$, $\hat{6}$, $\hat{7}$, and $\hat{8}$. The following example demonstrates:

Example 159 (major scale with scale-degree numbers):

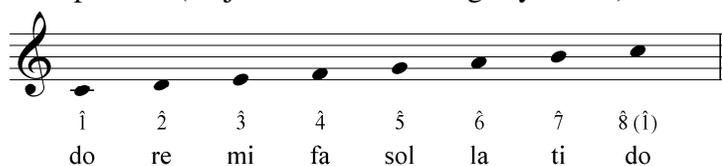


$\hat{1}$ $\hat{2}$ $\hat{3}$ $\hat{4}$ $\hat{5}$ $\hat{6}$ $\hat{7}$ $\hat{8}(\hat{1})$

As we saw earlier, the keynote can function as the beginning of a scale or the end. Hence, $\hat{8}$ and $\hat{1}$ are used interchangeably, depending on the context.

When singing, it is convenient to give each scale degree a single-syllable name. *Solfège syllables*, as they are commonly called, are most often used when practicing vocal performance, but can also be used to refer to scale degrees in general.

Example 160 (major scale with solfège syllables):

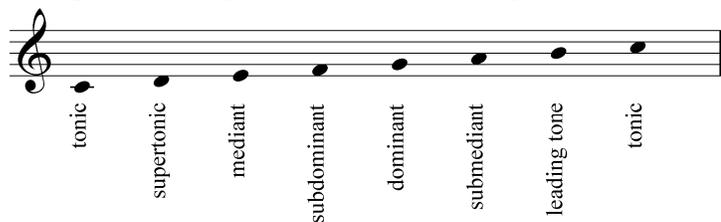


$\hat{1}$ $\hat{2}$ $\hat{3}$ $\hat{4}$ $\hat{5}$ $\hat{6}$ $\hat{7}$ $\hat{8}(\hat{1})$
do re mi fa sol la ti do

As popularized by the Broadway musical *The Sound of Music*, solfège syllables are particularly useful for how they help familiarize us with the relationships between various scale degrees. Becoming acquainted with solfège syllables will be a tremendous help in memorizing and performing music.

Our final system for labeling scale degrees gives each a name according to its position relative to the keynote and its function within the scale:

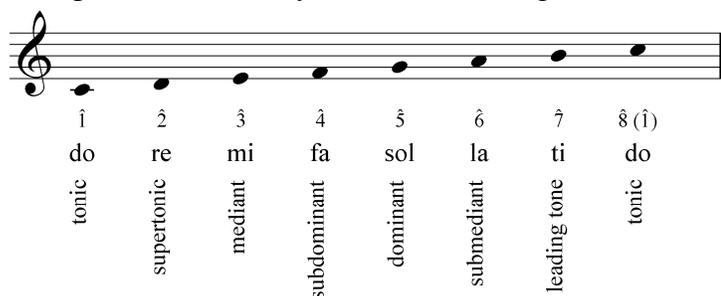
Example 161 (major scale with scale degree names):



The tonic—another, common name for the keynote—is central to this system. In other words, all of the other labels indicate the position of the scale degrees relative to the tonic. The dominant is four steps above the tonic, the subdominant is four steps below the (upper) tonic. The mediant is two steps above the tonic, the submediant is two steps below the (upper) tonic. The supertonic, as the name implies, is just above the tonic, while the leading tone is a semitone below. These names will be particularly useful when it comes to discussing functional harmony.

It may seem redundant to have three labeling systems for the scale degrees, but each has a different and useful purpose. It is essential that you familiarize yourself with all three and be able to use them interchangeably.

Example 162 (three ways to label scale degrees):



Activity UUU.6:

Identify the solège syllable, scale-degree number, or scale degree name as specified for each of the following scales:

Exercise UUU.6a

What is the scale-degree number for the note indicated by the arrow in the following Eb-major scale?



[Answer: "7." Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise UUU.6b

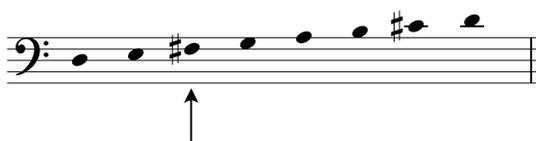
What is the solfège syllable for the note indicated by the arrow in the following A-major scale?



[Answer: "re." Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise UUU.6c

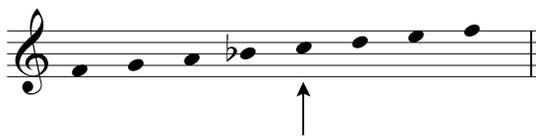
What is the solfège syllable for the note indicated by the arrow in the following D-major scale?



[Answer: “mi.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise UUU.6d

What is the scale-degree name for the note indicated by the arrow in the following F-major scale?



[Answer: “dominant.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Conclusion:

The major scale, one of the most important building blocks of tonal music, consists of seven distinct pitch classes called scale degrees arranged in a specific pattern. It begins and ends with the most important pitch, the keynote (or tonic), by which we name the scale. Each pitch letter name is used only once (except for the keynote, which is typically repeated at the end of the scale).

Every major scale is built of two tetrachords separated by a whole step, each of which follows the same pattern of whole steps and half steps internally: W-W-H. The overall pattern of a major scale, therefore, is: W-W-H-W-W-W-H. Every major scale follows this same pattern and it is this specific pattern that gives the major scale its unique sound.

There are three common systems for labeling scale degrees: scale-degree numbers ($\hat{1}$, $\hat{2}$, $\hat{3}$, etc.), solfège syllables (*do*, *re*, *mi*, etc.), and scale-degree names (tonic, supertonic, mediant, etc.). Each system has a different purpose and you should be able to use all three interchangeably.

Lesson VVV: Major Keys and Key Signatures

Introduction:

In tonal music, when a piece tends to use primarily the pitches of a single major or minor scale, it is said to be in that major or minor *key*. Such pieces typically have groups of accidentals called *key signatures*. The following excerpt from a Mozart sonata has a B^b-major key signature. It appears just after the clef at the beginning of each line:

Example 163 (W.A. Mozart, Sonata in B^b major, K. 281, mm. 1-8):

These key signatures provide a convenient way of saving time instead of writing out all of the necessary accidentals for a given key. Instead of writing a “b” before every B and E (as necessitated by the B^b-major scale), the key signature instructs the performer that every B and E are to be played as B^b and E^b respectively unless otherwise noted. Compare Example 163 with the following, which writes out the required accidentals instead of using a key signature. Note how cluttered the score appears compared to Example 163:

Example 164 (no key signature):

In this lesson, we will discuss how a key is established using the pitches of a major scale, how to determine a major key from a given key signature, and how to write key signatures on bass and treble clefs. We will also look at relationships between major scales and how to organize them with regards to one another.

Major keys:

Lesson UUU discusses the role of the tonic (the keynote) as the most prominent note of a major scale. When a piece is in a major key it takes the pitches from that major scale and gives the tonic a position of primary importance. The remaining scale degrees are treated according to a hierarchy relative to the tonic.

Consider the following familiar melody:

Example 165:

As you can see, this melody uses the pitches C, D, E, F, G, and A. All of these pitches belong to the C major scale (C, D, E, F, G, A, and B). This is a very good indication that this melody is in the key of C major. But all of these pitches also belong to the F major scale (F, G, A, B \flat , C, D, and E). To determine the key of this melody—C major or F major—we need to decide which note sounds most like the tonic. Listen to the melody again and consider which pitch, C or F, sounds more stable to your ear.

It is likely that you heard the pitch C as having greater stability. Simply looking at the melody, we can see that C occupies a more stable position than the pitch class F. The excerpt begins and ends on C, and C holds a prominent position at the end of m. 2 and the beginning of m. 5. Whenever F appears, on the other hand, it is given a shorter note-value, and is always within a descending stepwise passage toward C. Since the pitch class C is the most stable-sounding pitch in the melody, Example 165 is in the key of C major.

The melody from Example 165 can be written in any major key. The following example transposes it (rewrites it at a different pitch level) to E major by raising each note up two whole steps, putting E in the most stable position. The melody sounds the same, only higher:

Example 166:



Activity VVV.1:

Identify the key of each of the following melodies by considering which scale is represented by the present pitches and by looking for points of stability that might be the tonic note.

Exercise: VVV.1a

In what key is the following melody (“Ah! Vous dirai-je, Maman?” better known as “Twinkle, Twinkle, Little Star.”)?



[Answer: “B^b” or “B^b major.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Hint: Look for stable pitches that might be the tonic.)”]

Exercise VVV.1b

In what key is the following melody (J.S. Bach, “Aus meines Herzens Grunde,” BWV 269, mm. 1-7)?



[Answer: “A” or “A major.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Hint: Look for stable pitches that might be the tonic.)”]

Key signatures:

Each major scale contains a distinct set of seven pitch classes. (Again, see Lesson UUU for a lengthier discussion of the major scale.) One major scale may share as many as six pitches with another, as we saw in Example 165, but not all. (Two major scales that share seven pitch classes in common are considered to be the same scale.) Since each major scale is unique in this way, a piece in a major key will draw from the same pitches as its corresponding major scale. These sharps and flats used in the corresponding major scale are usually written at the beginning of each line in a *key signature*.

The *key signature* is a collection of sharps or flats that indicates which notes should be raised or lowered so that they belong to the key. In C major, there are no sharps or flats in the key signature, just as there are no sharps or flats in the C major scale. In keys other than C major, the key signature is written to the right of the clef, just before the time signature, at the beginning of each line of music. In Example 166 we transposed “Twinkle, Twinkle, Little Star” to the key of E major. The following example shows the same melody in E major but here makes use of a key signature instead of writing out all the accidentals:

Example 167:

a. (without key signature):

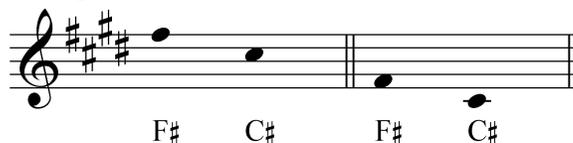


b. (with key signature)



E major has four sharps (F#, C#, G#, and D#), all of which appear in the key signature. (Even though D# is not used in this melody, the accidental is left in the key signature. Doing so makes it clear that this excerpt is in E major.) Sharps or flats in the key signature affect more than just the notes whose line or space they share:

Example 168:



The sharps in the key signature are centered on the line or space of the note to which they apply. (As you'll see momentarily, the same is true of key signatures using flats. The head of the flat accidental is centered on the line or space of the note it affects.) The first sharp of the key signature in Example 168 (centered on the top line of the staff) applies to the note on the same line, making it F#. Likewise, the second sharp of the key signature (centered on the third space on the staff) applies to the note on the same space, making it C#. The accidentals appearing in the key signature apply to *every* instance of that pitch class. The F and C in the second half of Example 168 are both sharp even though the key signature does not include an accidental on their respective space and line.

Activity VVV.2:

Identify the major key represented by each of the following key signatures:

Exercise VVV.2a

Which major key does the following key signature represent?



[Answer: "D" or "D major." Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again. (Hint: Which major scale has two sharps?)"]

Exercise VVV.2b

Which major key does the following key signature represent?



[Answer: "B" or "Bb major." Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again. (Hint: Which major scale has two flats?)"]

Exercise VVV.2c

Which major key does the following key signature represent?



[Answer: “A” or “A major.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Hint: Which major scale has three sharps?)”]

Exercise VVV.2d

Which major key does the following key signature represent?



[Answer: “E^b” or “E^b major.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Hint: Which major scale has three flats?)”]

Pitches specified by the key signature can be canceled out by an accidental next to a note, as in the following example:

Example 169 (W.A. Mozart, Piano Sonata in E^b major, K. 282, mm. 1-4):

This piece is in E^b major, which has three flats (B^b, E^b, and A^b) as specified by the key signature. The natural sign (♮) next to the A on the last eighth note of the first measure cancels out the A^b of the key signature. This cancelling out of A^b lasts only as long as the measure the accidental appears in. By the second measure, all As should again be flatted according to the key signature.

Note: You will frequently come across accidentals that may seem unnecessary. The flat next to the A on the fourth beat of m. 2, for instance seems superfluous, given the A^b in the key signature. Such accidentals are referred to as “courtesy accidentals.” They occur after a previous accidental altered a given pitch (in this case, the A natural at the end of the first measure) to remind the performer that a scale degree has gone back to normal as specified by the key signature.

Writing key signatures:

In Lesson UUU we discussed how one octave of a major scale can be divided into two tetrachords, an upper and a lower, each of which follows the same a W-W-H step pattern. In C major, for example, the lower tetrachord would be (C, D, E, F) and the upper (G, A, B, C). Since the pattern of whole steps and half steps is identical in each major tetrachord, they can both be used interchangeably as either the upper *or* lower tetrachord of a major scale. The upper tetrachord of a C-major scale (G, A, B, C) could, for example, also serve as the lower tetrachord of a G-major scale:

Example 170:

G major:

C major:

Notice how similar these two scales are. They have six pitch classes in common (G, A, B, C, D, and E), differing in only one note: C major has F, while G major has F \sharp . Scales like these that share six out of their seven pitch classes are referred to as *closely related*. Their key signatures, therefore, will differ by only one accidental. (C major has no sharps, G major has one sharp.)

The following example shows the key signatures for C and G major, and takes the process one step further, using the upper tetrachord of G major (D, E, F \sharp , G) as the lower tetrachord of D-major. Each subsequent scale, in other words, begins on the fifth degree of the scale before it (as shown by the arrows):

Example 171 (sharp keys):

a. key signatures:

D major:

G major:

C major:

b. scales:

D major:

G major:

C major:

We can see a pattern beginning to emerge. G major is built on scale degree $\hat{5}$ of C major and has one sharp (F \sharp). D major is built on scale degree $\hat{5}$ of G major and has *two* sharps (F \sharp and C \sharp). We could continue the pattern by building a major scale on scale degree $\hat{5}$ of D major (A) and would arrive at A major, which has *three* sharps (F \sharp , C \sharp , and G \sharp). And so on...

The following example shows all of the sharp key signatures up through seven sharps—from C major, in which none of the notes require an accidental, to C \sharp major, in which every note is sharped:

Example 172 (sharp key signatures):

C major (0 sharps) G major (1 sharp) D major (2 sharps) A major (3 sharps) E major (4 sharps) B major (5 sharps) F# major (6 sharps) C# major (7 sharps)

The sharps or flats in a key signature must be written in a particular order and position on the staff. Notice how none of the sharps are written on ledger lines and that the key signatures are adjusted depending on which clef is assigned to the staff. It is important that you memorize not only the order in which particular sharps are added to the key signature (F#, C#, G#, D#, A#, E#, B#), but also the pattern in which they are added on the staff.

Note: You may find it helpful to come up with mnemonic devices to help remember these patterns. The order of sharps as they are added to a key signature, for example, can be remembered by the sentence: “**F**ather **C**harles **G**oes **D**own **A**nd **E**nds **B**attle.”

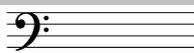
There is also a useful, quite easy trick for determining the tonic of a sharp key. In every sharp key, the right-most accidental of the key signature is the leading tone of the key. Say the key signature has five sharps: F#, C#, G#, D#, A#. A# is the leading tone for the B major scale. Therefore, the key is B major.

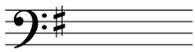
Activity VVV.3:

Write out each of the following sharp key signatures. Be sure to write each sharp on the appropriate line and in the correct order.

Exercise VVV.3a

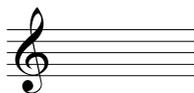
Write out a G-major key signature on the staff provided:



[Answer: . Response if correct: “Correct! G major has one sharp.” Response if incorrect: “Incorrect. Try again.”]

Exercise VVV.3b

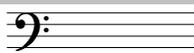
Write out an F#-major key signature on the staff provided:

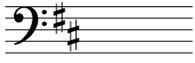


[Answer: . Response if correct: “Correct! F# major has six sharps.” Response if incorrect: “Incorrect. Try again.”]

Exercise VVV.3c

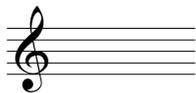
Write out an D-major key signature on the staff provided:



[Answer: . Response if correct: “Correct! D major has two sharps.” Response if incorrect: “Incorrect. Try again.”]

Exercise VVV.3d

Write out an E-major key signature on the staff provided:



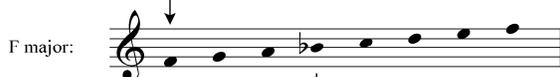
[Answer: . Response if correct: “Correct! E major has four sharps.” Response if incorrect: “Incorrect. Try again.”]

Flat key signatures can be determined similarly, though here, the *lower* tetrachord of each scale becomes the *upper* tetrachord of the next closely-related key. Instead of going up four steps from the tonic to begin each subsequent key on scale degree $\hat{5}$, we must go *down* four steps from the tonic and start on scale degree $\hat{4}$. F major, for example, begins on scale degree $\hat{4}$ of C major and has one flat (B^b):

Example 173 (flat keys):

a. key signatures:

b. scales:



B^b major begins on scale degree $\hat{4}$ of F major and has two flats (B^b and E^b). If we were to continue, the next key would be E^b major which would have three flats (B^b , E^b , and A^b). And so on...

The following example shows all of the flat key signatures up to seven flats:

Example 174 (flat key signatures):

The image shows a musical staff with two systems of notes. The first system shows the notes for C major (0 flats), F major (1 flat), Bb major (2 flats), Eb major (3 flats), Ab major (4 flats), Db major (5 flats), Gb major (6 flats), and Cb major (7 flats). The second system shows the same notes with their respective flat symbols added to the staff.

Again, it is essential that you remember the order in which flats are added to key signatures and the pattern in which they are notated on the staff.

Note: The order of flats as they are added to a key signature can be reversing the mnemonic for sharp keys: “**B**attle **E**nds **A**nd **D**own **G**oes **C**harles’ **F**ather.”

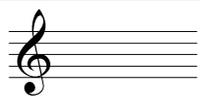
The second to last accidental in a flat key signature will tell you the key. E^b major, for example, has three flats: B^b, E^b, and A^b. The second to last (E^b) is the tonic of the key!

Activity VVV.4:

Write out each of the following flat key signatures. Be sure to write each flat on the appropriate line and in the correct order.

Exercise VVV.4a

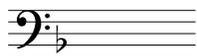
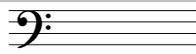
Write out an A^b-major key signature on the staff provided:

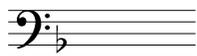


[Answer: . Response if correct: “Correct! A^b major has four flats.” Response if incorrect: “Incorrect. Try again.”]

Exercise VVV.4b

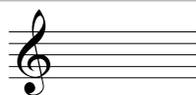
Write out an F-major key signature on the staff provided:



[Answer: . Response if correct: “Correct! F major has one flat.” Response if incorrect: “Incorrect. Try again.”]

Exercise VVV.4c

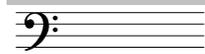
Write out an D^b-major key signature on the staff provided:



[Answer: . Response if correct: “Correct! D^b major has five flats.” Response if incorrect: “Incorrect. Try again.”]

Exercise VVV.4d

Write out an E^b-major key signature on the staff provided:



[Answer: . Response if correct: “Correct! E^b major has three flats.” Response if incorrect: “Incorrect. Try again.”]

As you can see from Examples 172 and 174, we typically divide keys into two categories: “sharp keys” (those whose key signatures consist of sharps) and “flat keys” (those whose key signatures consist of flats). In tonal music, you will never see a key signature with a mixture of sharps and flats. You may, however, encounter natural signs in a key signature when the accidentals of a previous key signature must be canceled out as in the following excerpt where the key changes to E major in m. 17:

Example 175 (F. Chopin, Etude No. 10, Op. 10, mm. 16-17):

Conclusion:

A piece that draws primarily from the pitches of a single major scale is said to be in that major key. Within a key, pitch classes are organized hierarchically—primarily around the tonic which is heard as the most stable and grounding degree of the scale. A piece in G major, for example, will use pitch classes from the G major scale and will treat the pitch class G as the most important. Other scale degrees will be treated accordingly, relative to the tonic.

A key signature is a symbol—a collection of sharps or flats—that indicates the key of a particular piece or passage. Key signatures are written just to the right of the clef and appear at the beginning of each line of music. A sharp or flat indicated by the key signature applies to every instance of that pitch-letter name, not just those on the line or space on which it is written. They remain in effect throughout the entire piece unless they are cancelled out by another accidental or a new key signature. Key signatures are always written in a particular pattern on the staff and must be adjusted to match the clef.

Lesson WWW: Minor Keys and Key Signatures

Introduction:

Lesson VVV discusses how pieces that draw primarily from the pitches of a major scale are said to be in that major key. Similarly, pieces that draw primarily from the pitches of a *minor* scale—a scale based on the W-H-W-W-H-W-W pattern of whole steps and half steps—are said to be in that *minor* key. Minor key signatures can likewise be derived from the accidentals of the corresponding minor scale. It is important, however, to keep in mind that minor key signatures reflect the *diatonic* (or, *natural*) form of the minor scale, not the harmonic or melodic composites.

In this lesson we will discuss how a minor key is constructed and established as well as how minor key signatures are written and used.

Minor keys:

Lesson UUU discusses the construction of major scales and the various names given to each scale degree. All of the degrees of a minor scale have names as well. For the most part, these names are the same as those of major keys. The few differences are due to the lower scale degrees $\hat{3}$, $\hat{6}$, and $\hat{7}$. The following example shows the three systems used to label and refer to minor scale degrees:

Example 176:

The image shows a musical staff in treble clef with a key signature of two flats (B-flat and E-flat). The notes of the A minor scale are written from left to right: A (do), B-flat (re), C (me), D (fa), E (sol), F (le), G (te), and A (do). Below each note are three labels: a scale degree number with a hat (1, 2, 3, 4, 5, 6, 7, 8 with a hat and 1 in parentheses), a solfège syllable (do, re, me, fa, sol, le, te, do), and a descriptive name (tonic, supertonic, mediant, subdominant, dominant, submediant, subtonic, tonic).

$\hat{1}$	$\hat{2}$	$\hat{3}$	$\hat{4}$	$\hat{5}$	$\hat{6}$	$\hat{7}$	$\hat{8}(\hat{1})$
do	re	me	fa	sol	le	te	do
tonic	supertonic	mediant	subdominant	dominant	submediant	subtonic	tonic

The scale degree numbers, of course, remain the same. The solfège syllables *mi*, *la*, and *ti* are changed to *me*, *re*, and *te* to reflect the lowering of those scale degrees. The only difference in the scale degree names is that scale degree $\hat{7}$, in its lowered form, is now referred to as the *subtonic*. (The names for the raised scale degrees $\hat{6}$ and $\hat{7}$ —which, in fact, are borrowed from the parallel major—use already familiar the major-key names: *la* and *ti*, or *submediant* and *leading tone*.)

The following melody, “Greensleeves,” is in a minor key:

Example 177:

The image shows two staves of musical notation for the melody of 'Greensleeves'. The first staff is in 6/8 time and starts with a treble clef and a key signature of two flats. The second staff continues the melody and includes a fermata over the final note. The melody begins on the tonic (A) and follows the A minor scale.

As with major keys, a melody or piece is said to be in a minor key if it uses primarily the pitches of a minor scale and gives the tonic a position of primary importance. This melody is in A minor: it begins

and ends on A and, for the most part, uses the pitches of the diatonic A-minor scale (A, B, C, D, E, F, and G). Notice, however, that G[#] and F[#] appear in mm. 3, 4, and 7. As discussed in Lesson 3, there are two common variations of the minor scale which intensify the tonic by borrowing the leading tone from the major mode: the harmonic minor composite (in which scale degree $\hat{7}$ is raised) and the melodic minor composite (which raises $\hat{6}$ and $\hat{7}$). G[#] and F[#] the sub^bmediant and leading tone respectively are the result of these varied forms of the scale.

The tonic, A, is the most important pitch in this melody. It serves as a stable starting point and brings a sense of closure when it returns at the end. All of the other pitches are organized hierarchically around A and have varying levels of stability. The E in m. 4, for example, is somewhat stable and brings a sense of arrival, but is not as stable as the final A. Were the melody to be transposed to a different minor key, the new tonic would be heard in the same way even though the pitch level would be different:

Example 178 (“Greensleeves” in G minor):

Example 178 transposes the melody to G minor. It now has a new set of pitches (those of the G-minor scale) and G is heard as the new tonic.

Activity WWW.1:

Identify the key of each of the following melodies in minor:

Exercise WWW.1a

To which minor key has “Greensleeves” been transposed below?

[Answer: “E” or “E minor.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Hint: Look to the beginning and end of the melody for important stable notes that might represent the tonic.)”]

Exercise WWW.1b

The following melody (F. Schubert, “Der Greise Kopf,” No. 14 from *Winterreise*, D. 911, mm. 4-8) is in which minor key?

[Answer: “C” or “C minor.” Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Hint: Look to the beginning and end of the melody for important stable notes that might represent the tonic.)”]

Minor key signatures:

Like major keys, minor keys are represented with key signatures. These contain the same sharps and flats as the diatonic minor scale. The following example adds a key signature to the transposed “Greensleeves” from Example 178:

Example 179:

Like the diatonic G-minor scale, the G-minor key signature includes two flats: B^b and E^b. Scale degrees $\hat{6}$ and $\hat{7}$ may be raised by an accidental within the music—as they are in mm. 3, 4, and 7 of Example 179—but these alterations are not represented by the key signature.

Minor key signatures also come in two varieties: sharp and flat. The following examples show all of the minor key signatures up to seven sharps or flats:

Example 180:

A minor (0 sharps)	E minor (1 sharp)	B minor (2 sharps)	F# minor (3 sharps)	C# minor (4 sharps)	G# minor (5 sharps)	D# minor (6 sharps)	A# minor (7 sharps)
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Example 181:

A minor (0 flats)	D minor (1 flat)	G minor (2 flats)	C minor (3 flats)	F minor (4 flats)	B ^b minor (5 flats)	E ^b minor (6 flats)	A ^b minor (7 flats)
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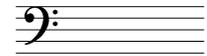
As you can see, minor key signatures look just like major key signatures. The accidentals are written in the same order and pattern on the staff.

Activity WWW.2:

Write each of the following minor key signatures as requested on the staff provided.

Exercise WWW.2a

Write a D-minor key signature on the staff provided:



[Answer: . Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise WWW.2b

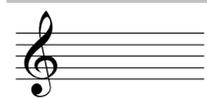
Write a B-minor key signature on the staff provided:



[Answer: . Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise WWW.2c

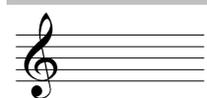
Write a B^b-minor key signature on the staff provided:



[Answer: . Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise WWW.2d

Write a C[#]-minor key signature on the staff provided:



[Answer: . Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Parallel and relative keys:

Minor keys can be closely related to major keys in two different ways: *parallel* or *relative* key relations. Parallel keys, as discussed in Lesson 3, are keys that share the same tonic—C major and C minor, for example:

Example 182:



C minor is the *parallel minor* of C major, and vice versa. As you can see from Example 182, a diatonic minor scale can be derived from a major scale by lowering scale degrees $\hat{3}$, $\hat{6}$, and $\hat{7}$ by a semitone each (to E^b , A^b , and B^b , respectively). Parallel keys share the same tonic (and scale degrees $\hat{2}$, $\hat{4}$, and $\hat{5}$), but have different key signatures. C major, to use this example, has no sharps or flats while C minor requires three flats.

Activity WWW.3:

Answer the following questions regarding parallel keys and their key signatures.

Exercise WWW.3a

How many sharps or flats does the key signature for A major have?

[Answer: 3 sharps. Response if correct: "Correct! A major has three sharps in its key signature."]

Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

What is the parallel minor of A major?

[Answer: A minor. Response if correct: "Correct! A major and A minor are parallel keys."]

Response if incorrect: "Incorrect. Try again. (Remember, parallel keys have the same tonic.)"]

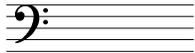
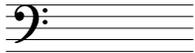
[Follow-up question:]

How many sharps or flats does the key signature for A minor have?

[Answer: "0 sharps" or "0 flats." Response if correct: "Correct! A minor does not have any sharps or flats in its key signature." Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

Write out the key signatures for A major and A minor on the staves provided:

A major:  A minor: 

[Answers:  and . Response for each correct answer: "Correct!" Response for each incorrect answer: "Incorrect. Try again."]

Exercise WWW.3b

How many sharps or flats does the key signature for E major have?

[Answer: 4 sharps. Response if correct: "Correct! E major has four sharps in its key signature."]

Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

What is the parallel minor of E major?

[Answer: E minor. Response if correct: "Correct! E major and E minor are parallel keys."]

Response if incorrect: "Incorrect. Try again. (Remember, parallel keys have the same tonic.)"]

[Follow-up question:]

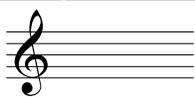
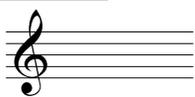
How many sharps or flats does the key signature for E minor have?

[Answer: "1 sharp." Response if correct: "Correct! E minor has one sharp in its key signature."]

Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

Write out the key signatures for E major and E minor on the staves provided:

E major:  E minor: 

[Answers:  and . Response for each correct answer: "Correct!"
Response for each incorrect answer: "Incorrect. Try again."]

Relative keys, on the other hand, do share the same key signature. E^b major and C minor both have three flats in their key signature:

Example 183:

E^b major: 

C minor: 

C minor is the *relative minor* of E^b major and E^b major is the *relative major* of C minor. They share all of the same pitch classes, but emphasize different notes as the tonic. The tonic of any minor key is always a minor third below its relative major: in this case, C is a minor third below E^b. Another way to think of this is that the relative minor begins on scale degree $\hat{6}$ of a major key (or, the relative major begins on scale degree $\hat{3}$ of a minor key).

Activity WWW.4:

Answer the following questions regarding relative keys and their key signatures.

Exercise WWW.4a

What is the relative major of G minor?

[Answer: B^b major. Response if correct: "Correct! B^b major is the relative major of G minor."]

Response if incorrect: "Incorrect. Try again. (Remember, the tonic of the relative major is a minor third above the tonic of a minor key.)"]

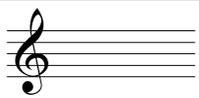
[Follow-up question:]

How many sharps or flats does their shared key signature have?

[Answer: 2. Response if correct: "Correct! G minor and B^b major have two flats in their shared key signature." Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

Write out the key signature for G minor / B^b major on the staff provided:



[Answer: . Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise WWW.4b

What is the relative major of B minor?

[Answer: D major. Response if correct: “Correct! D major is the relative major of B minor.” Response if incorrect: “Incorrect. Try again. (Remember, the tonic of the relative major is a minor third above the tonic of a minor key.)”]

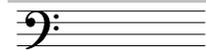
[Follow-up question:]

How many sharps or flats does their shared key signature have?

[Answer: 2. Response if correct: “Correct! B minor and D major have two flats in their shared key signature.” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

Write out the key signature for B minor / D major on the staff provided:



[Answer: . Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Conclusion:

Minor scales are created by the following ascending pattern of intervals from the tonic: W-H-W-W-H-W-W. They can also be created by lowering scale degrees $\hat{3}$, $\hat{6}$ and $\hat{7}$ of a major scale by one half step each. As with major keys, minor keys are based on the pitches of the corresponding scale and are indicated by key signatures at the beginning of each new line of music. Minor key signatures are derived from the diatonic (natural) version of the minor scale. The alterations of the composite variations of the minor scale (the harmonic and melodic) are indicated with accidentals in the music itself, not in the key signature. Minor key signatures look just like major key signatures and following the same pattern and placement on the staff.

Minor keys can be closely-related to major keys in several different ways. Parallel keys—C major and C minor, for example—share the same tonic. Relative keys—C minor and E^b major, for example—have different tonics but share the same key signature. Every key signature, then, can be used to represent two different (relative) keys.

The first system of music consists of four measures. The treble clef staff begins with a dotted quarter note, followed by an eighth note, and then a quarter note. The bass clef staff starts with a quarter rest, followed by a quarter note, and then a half note. The key signature has two flats, and the time signature is common time.

The second system of music consists of four measures. Measure 5 starts with a triplet of eighth notes in the treble clef. The bass clef continues with a quarter note, a quarter note, and a half note. Measure 6 features a quarter note in the treble and a quarter note in the bass. Measure 7 has a quarter note in the treble and a quarter note in the bass. Measure 8 has a quarter note in the treble and a quarter note in the bass.

The third system of music consists of four measures. Measure 9 has a dotted quarter note in the treble and a quarter note in the bass. Measure 10 has a quarter note in the treble and a quarter note in the bass. Measure 11 has a quarter note in the treble and a quarter note in the bass. Measure 12 has a quarter note in the treble and a quarter note in the bass.

The fourth system of music consists of four measures. Measure 13 starts with a triplet of eighth notes in the treble. The bass clef has a quarter note, a quarter note, and a half note. Measure 14 has a quarter note in the treble and a quarter note in the bass. Measure 15 has a quarter note in the treble and a quarter note in the bass. Measure 16 has a quarter note in the treble and a quarter note in the bass.

If you were unable to pick out a steady beat while listening to this example, try listening to it again. Being familiar with a piece of music helps a great deal in analyzing it, particularly with regards to rhythm and meter. You may find that even with just two listenings, you will be quite familiar with this excerpt.

If you were able to recognize a steady beat, chances are you noticed several things. For one, certain beats seem stronger than others. In this case, the beats alternate between strong beats and weak beats. For another, the actual music only rarely just follows the beat. There are many different note durations—some are equal to the beat while others are shorter or longer—that make up this excerpt. These

observations form the basis for distinguishing between rhythm and meter, though it is important to keep in mind that both of these concepts are closely interrelated.

Note: You may have found that as you were tapping along to the example above, you found that there were several different pulses happening at once. Not to worry! As we'll discuss in a moment, meter consists of a hierarchical set of pulses. In other words, if you heard a pulse that was rather quick, it's likely that you were tuned into a division of the beat instead of the beat itself. Generally speaking, the beat of a piece of music occurs at a moderate pace: not too fast, not too slow.

Rhythm and meter:

When we talk about meter, we refer to how the basic beats are *grouped*. In Example 186, we saw and heard how every other beat was emphasized: strong – weak – strong – weak – strong, etc. We refer to this type of beat grouping as a *duple meter* because the beats are grouped in twos: one strong and one weak. The following example shows the strong and weak beats in the first four measures of the Mozart example:

Example 187 (W.A. Mozart, Piano Sonata in B \flat major, K. 333, Mvt. II, mm. 1-4):

As you can see in the notation, the strong-weak groups are separated with vertical lines. Each group is referred to as a *measure* (or, *bar*) and the vertical lines as *measure lines* (or, *bar lines*).

Listening to a different piece of music, we may find that every third beat is emphasized: strong – weak – weak – strong – weak – weak – strong, etc. This type of beat grouping would be referred to as a *triple meter*. The following excerpt is in a triple meter:

Example 188 (W.A. Mozart, Piano Sonata in E \flat major, K. 282, Mvt. III, mm. 1-16):

Compare Examples 187 and 188. Can you hear the difference in meter? Example 187 has the beats in groups of two while Example 188 has the beats in groups of three.

Quadruple meters, those that organize the beats into groups of four, are also quite common. In fact, in Western music quadruple meter is the most common way of organizing the beat. The first beat of each group is generally the strongest. The third is also strong, but not quite as strong as the first. (Beats two and four are relatively weak.) The following example clarifies:

Example 189:

Quadruple meter, because it sorts the beat into groups of four, can easily be mistaken for duple meter. Hearing the difference between the two, in other words, can be difficult. (In some cases, the difference is one of personal opinion based on how the listener experiences a particular piece of music.)

Being able to hear and distinguish between these three common meter types—duple, triple, and quadruple—is essential to your understanding of how music works in time. Lessons *YYY* and *ZZZ* discuss meter in greater depth.

Note: Besides duple, triple, and quadruple meters, you will occasionally come across other, more complex meters. With these meters, you may find the beats organized into groups of five, seven, or more pulses per measure. For our intents and purposes, however, we will focus on meters that group beats into sets of two, three, or four.

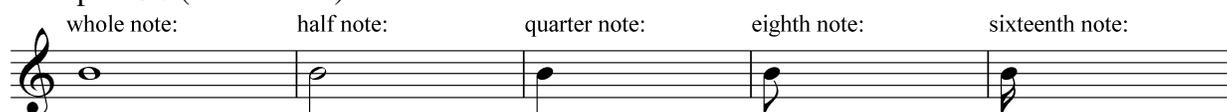
Rhythm, on the other hand, refers to the variety of note and rest durations that appear in the context of the meter. Notes can last for any length of time: a note can last for an entire beat or even multiple beats. Notes can be shorter than a beat as well. Most of the notes in the excerpts above, for example, don't last an entire beat. The remainder of this lesson will be devoted to rhythmic durations and how to notate them.

Note and rest durations:

The rhythm of a piece of music specifies how long each note or pause between notes should last. This is not to be confused with *tempo*, which refers to the rate of the underlying beat. Rhythm typically occurs in the context of a specific meter and either conforms to or works against the underlying pulse of the meter.

In written music, we use a number of different symbols to represent various note durations:

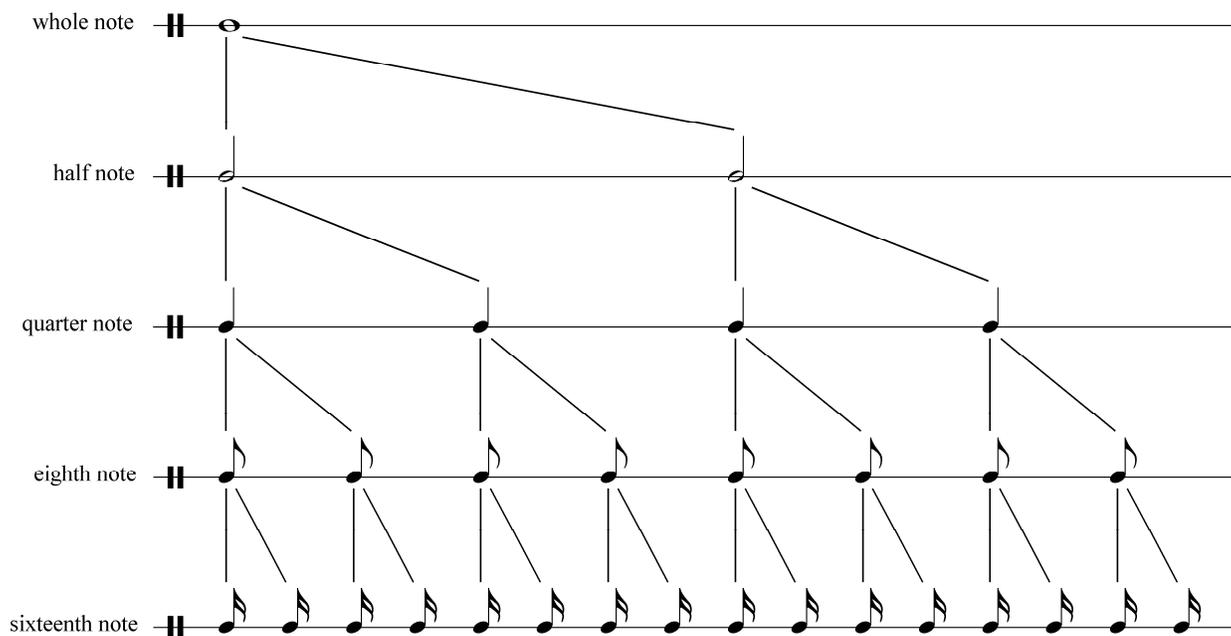
Example 190 (note values):



Any of the note values in Example 190 can represent the beat. A triple meter, for example, could consist of three quarter notes per measure just as easily as three eighth notes. This is discussed in greater detail in Lessons *YYY* and *ZZZ*.

As their names imply, the durations of all of these note values are proportional to one another. The following chart shows these relationships more clearly:

Example 191 (proportional note durations):



As you can see, one whole note lasts as long as two half notes, one half note lasts as long as two quarter notes, eight sixteenth notes last as long as two quarter notes, and so on. Listen to the following example to hear the relationship between quarter notes and half notes. For every half note, we hear two evenly-spaced quarter notes:

Example 192 (relative durations of quarter notes and half notes):



Each half note in Example 192 lasts exactly twice as long as each quarter note.

Notice that the symbols for quarter notes and eighth notes are quite similar—the only difference being the addition of the flag attached to the stem of the eighth note. Sixteenth notes have two flags. Shorter durations can be written by adding more flags to the stem: each additional flag divides the previous duration in half. (A thirty-second note, therefore, will have three flags, and so on.)

Note: Note durations longer than a whole note are possible as well. Double whole notes (written as a whole note with two vertical lines on either side: $\text{||}\text{O}\text{||}$) last as long as two whole notes, but are not commonly used. We will discuss other ways of lengthening a note's duration momentarily.

Notes with flags (eighth notes, sixteenth notes, etc.) are sometimes connected by beams. This is done for a number of reasons—one of which, as discussed in Lesson *YYY* and *ZZZ*, is to clarify the meter of a given piece. The following example shows how a group of flagged notes is equivalent to the same number of beamed notes:

Example 193:



As Example 193 demonstrates, separate notes with flags are heard and performed the same as if they were beamed together. Note that different durations can be beamed together as well, as in the third line of Example 193.

Activity XXX.1:

Being familiar with the basic relationships between different note values will be immensely helpful in your study of music. Answer the following questions pertaining to the accompanying rhythms.

Exercise XXX.1a

The duration of each measure of the following rhythm is equivalent to how many quarter notes?



[Answer: 2. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Add up the fractions represented by each of the note values in a single measure. How many quarter notes would it take to achieve the same sum?)”]

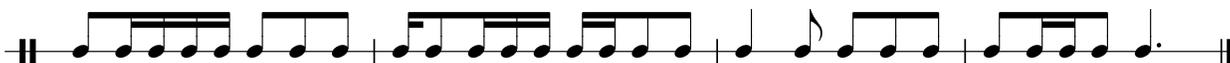
[Follow-up question:]

The duration of each measure of this rhythm is equivalent to two quarter notes. How many half notes would be equivalent to the duration of a single measure?

[Answer: 1. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Referring to Example 191, how many half notes are equivalent to two quarter notes?)”]

Exercise XXX.1b

The duration of each measure of the following rhythm is equivalent to how many eighth notes?



[Answer: 6. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Add up the fractions represented by each of the note values in a single measure. How many eighth notes would it take to achieve the same sum?)”]

[Follow-up question:]

The duration of each measure of this rhythm is equivalent to six eighth notes. How many quarter notes would be equivalent to the duration of a single measure?

Each of the rest values in Example 194 lasts as long as the corresponding note value, and all of the proportional relationships still apply. Note the similarity between eighth-note and sixteenth-note rests with their corresponding note symbols. Both rests consist of a diagonal slash with the same number of flags as found in the note symbols. (A thirty-second-note rest, therefore, would have three small flags attached to a diagonal slash.)

Note: Whole-note rests and half-note rests look very similar and it is easy to confuse the two. Both are written on the staff within the third space from the bottom. One way to remember the difference is that the whole-note rest is written below the line it is attached to, as though somebody dug a hole in that line. (“Whole” sounds like “hole.”) Half-note rests, on the other hand, appear above the line they are attached to, as though that line was wearing a hat. (“Half” sounds similar to “hat.”)

Activity XXX.2:

Replace each of the rests in the following example with a note of equal value:



[Answers:



. Response for each correct answer: “Correct!” Response for each incorrect answer: “Incorrect. Try again.”]

Dots and ties:

The symbols for note durations and rests discussed so far are very useful and capable of expressing a wide variety of rhythms. However, they are limited in that the relationships between different note values are based on simple 1-to-2 ratios. What if, for example, a composer wanted a rhythm consisting of a half-note (equal to two quarter notes) followed by a note whose duration was equal to three quarter notes. This likely situation would be impossible using only the symbols described so far. Fortunately, there are two ways of notating such durations.

Very frequently, you will encounter notes with a small dot immediately to the right. One such note appears at the very beginning of the first Mozart excerpt from above:

Example 195 (W.A. Mozart, Piano Sonata in Bb major, K. 333, Mvt. II, mm. 1-4):

The high F in the first measure of Example 195 is referred to as a dotted quarter note. Adding a dot to a note increases the duration of the note by half of the original note value. A dotted quarter note, in other words, lasts one and a half times as long as a normal quarter note:

Example 196 (dotted note):



An eighth note is equal to half of a quarter note. Therefore, a dotted quarter note is equal to a regular quarter note plus an eighth note. Any note value can be dotted. A dotted eighth note, for example, is equal to one and a half eighth notes (or, an eighth note plus a sixteenth note).

Rests can be dotted as well. Just as with dotted notes, adding a dot to a rest will increase its duration by half of the original value.

Note: You may occasionally come across notes with two dots. These are referred to as *double-dotted* notes. The second dot adds half of the value of that added by the first dot! A double-dotted quarter note, for example, would be equal to a quarter note plus an eighth note plus a sixteenth note:

Example 197 (double dotted note):



Activity XXX.3:

Answer the following questions about dotted notes.

Exercise XXX.3a

A dotted quarter note is equivalent to how many eighth notes?

[Answer: 3. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise XXX.3b

A dotted whole note is equivalent to how many half notes?

[Answer: 3. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise XXX.3c

A dotted half note is equivalent to how many eighth notes?

[Answer: 6. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise XXX.3d

A dotted whole note is equivalent to how many sixteenth notes?

[Answer: 24. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Another way of increasing a note's duration is through the use of *ties*. A tie is written as a curved line connecting two notes. The duration of the first note is increased by the duration of any notes tied to it. The following example demonstrates:

Example 198:

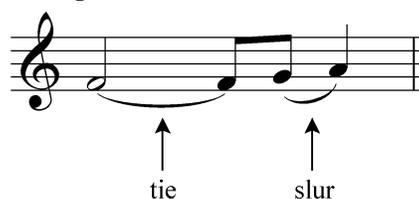


In Example 198, the initial half-note F is tied to the following eighth-note F. The initial F is heard as one long note, the duration of which is equal to a half note plus an eighth note. In other words, listening to Example 198, we hear three different notes: a long F, followed by a short G and a short A.

Any two note values can be tied together, making the tie a particularly versatile rhythmic tool. The duration created by the tie in Example 198, for instance, could not be expressed using dotted notes. Unlike dots, which can be added to notes or rests, ties cannot be used to increase the duration of a rest. Ties can be used to connect three or more notes as well.

Ties can be easily confused with *slurs*. Slurs are also written as curved lines connecting two (or more) notes. They serve a variety of purposes—phrase grouping in particular—but are essentially used to indicate to the performer a grouping of notes for expressive purposes. The following example shows a tie and a slur:

Example 199:



Slurs are easily distinguished from ties because they connect *different* pitches. A tie, because it is used to extend a single pitch, always connects two notes at the same pitch.

Activity XXX.4

The following excerpt (W.A. Mozart, Piano Sonata in Bb major, K. 333, Mvt. II, mm. 1-4) contains a number of slurs and one tie. Identify the tie by clicking on it.

The image shows a four-measure musical excerpt in B-flat major, 2/4 time. The top staff is the right hand, and the bottom staff is the left hand. The right hand has slurs over measures 1, 2, and 4. The left hand has a slur over measures 1 and 2, and a tie connecting the two F notes in measure 4.

[Answer: the tie connects the two Fs in the left hand, m. 4. Response if correct: “Correct!” Response if incorrect: “Incorrect. Remember: a slur connects two or more notes of different pitches, a tie connects just two notes of the same pitch. Try again.”]

Conclusion:

Rhythm and meter are different—but closely-related—aspects of how music unfolds in time. Most Western music is characterized in part by a steady, underlying pulse, commonly referred to as the beat. Meter refers to how these beats are organized, whether in groups of two (duple meter), three (triple meter), four (quadruple meter), or some other number. Rhythm refers to the actual durations of sounds and silence in the context of a particular meter.

In written music, we use a set of symbols to indicate various note durations:

Table 1:

Whole notes:	
Half notes:	
Quarter notes:	
Eighth notes:	
Sixteenth notes:	

And so on. Shorter durations can be written by adding extra flags. Longer durations are possible as well, but are not in common use. Any of these note values can represent the beat. Each of these note values also has a corresponding symbol to represent a rest of equal duration:

Table 2:

Whole-note rest:	
Half-note rest:	
Quarter-note rest:	
Eighth-note rest:	
Sixteenth-note rest:	

And so on.

Versatile though the note value symbols are, they are not, by themselves, capable of expressing all possible durations. There are two common methods for increasing the duration of a given note. Adding a dot to a note increases its duration by half of the original value. Rests can be dotted as well. Connecting one note to another increases the value of the original note by the value of the added note. Rests cannot be tied.

Lesson YYY: Simple Meters

Introduction:

Although rhythm and meter are inextricably linked—two closely-related facets of how music unfolds over time—the words are used to describe different things. Both are related to the *beat*—a steady, underlying pulse found in the majority of Western music. Rhythm refers to the variety of note and rest durations that appear in the context of the beat. Meter, on the other hand, refers to how the beats are grouped and, as we will discuss shortly, divided. Lesson XXX describes three such groupings: meters that sort the beat into groups of twos (alternating strong and weak beats) are known as duple meters. Meters that sort the beat into groups of three or four are referred to respectively as triple and quadruple meters.

But describing a type of meter with regards to how it groups the beats provides only one part of the equation. We will now discuss the varying ways in which the beat can be *divided*. This lesson will consider meters in which the beat is regularly divided into groups of two and Lesson ZZZ will discuss those meters which regularly divide the beat into groups of three.

Beat division:

Listen to the following excerpt from a Mozart sonata. As you listen, tap along with your foot to find the beat. You should be able to hear two beats per measure—in other words, this excerpt is in a duple meter:

Example 200 (W.A. Mozart, Piano Sonata in Eb major, K. 282, Mvt. IV, mm. 1-16):

The musical score is presented in three systems, each with a treble and bass clef staff. The key signature is three flats (Eb major), and the time signature is 2/4. Measure numbers 1, 8, and 12 are indicated at the start of their respective systems. The notation includes various note values (quarter, eighth, sixteenth notes), rests, and articulation marks such as slurs and accents.

Were you able to hear that this excerpt is in a duple meter? The basic, underlying pulse has a duration equal to that of a quarter note. These quarter-note beats are organized into groups of two by the measure lines. Notice how the notation emphasizes the duple meter: shorter durations (eighth notes and sixteenth notes) are grouped in a way that does not obscure the duple meter. More on this momentarily.

As you may have noticed, the basic beat is not the only regular pulse. Listen to Example 200 again. This time, as you are tapping your foot to the beat tap your hand twice per beat. This faster pulse—twice as fast, in this case—is referred to as the *beat division*. The following example clarifies:

Example 201:

The image shows two musical staves. The top staff is labeled 'beat' and the bottom staff is labeled 'beat division'. Both staves are in 2/4 time. The top staff shows a sequence of quarter notes: quarter, quarter, quarter, quarter, quarter, quarter. The bottom staff shows a sequence of eighth notes: eighth, eighth, eighth, eighth, eighth, eighth, eighth, eighth. Vertical lines connect the quarter notes in the top staff to the eighth notes in the bottom staff, showing that each quarter note beat is divided into two eighth notes.

In this case, each quarter-note beat can be divided into two eighth notes. In other words, as your foot is tapping quarter notes along with the music, your hand should be tapping eighth notes. Meters like this, in which the beat is regularly divided into twos, are referred to as *simple meters*.

Activity YYY.1:

What would be the note value of the beat division for a simple meter in which the beat was equal to a half note?

[Answer: quarter note. Response if correct: “Correct!” Response if incorrect: “Incorrect. (Hint: Remember, the beat division for a simple meter is equal to *half* the duration of the beat itself.)”]

Now listen to the following excerpt. Again, you’ll find that the meter has two beats per measure.

Example 202 (W.A. Mozart, Piano Sonata in D major, K. 311, Mvt. III, mm. 1-16):

In this case, however, if you try tapping the beat division with your hand while tapping the beat with your foot, you'll find it is difficult to divide the beat in two. Tapping your hand three times for every foot tap is much more natural. In this meter, the beat is divided into three notes. The following example clarifies:

Example 203:

In this case, the beat is divided into threes. Each beat—the duration of which is equal to a *dotted* quarter note—is divided into three eighth notes. Meters such as this, in which the beat is divided into threes, are referred to as *compound meters*.

These two terms, *simple* and *compound*, indicate how the basic pulse is divided. They are usually used in conjunction with *duple*, *triple*, and *quadruple* to give a more or less complete description of any given meter. Both of the examples above have two beats per measure. In other words, they are both *duple* meters. They differ, however, in how those beats are divided. Example 200 divides the beat into twos and is therefore referred to as being in a *simple duple* meter. Example 202, on the other hand, divides the beat into threes and is therefore referred to as being in a *compound duple* meter.

Activity YYY.2:

Is the following piece (W.A. Mozart, Minuet No. 3 in D major (from 12 Minuets, K. 103), mm. 1-10) in a simple meter or compound meter?

[Answer: simple. Response if correct: “Correct! This piece is in a simple triple meter.” Response if incorrect: “Incorrect. Try again. (Hint: Look for a division of the beat into shorter note values. Is the beat divided into two notes or three?)”]

The remainder of this lesson will focus on simple meters. A discussion of compound meters can be found in Lesson ZZZ.

Note: You may have noticed that each of the two excerpts above begin with an incomplete measure. Example 200 begins with an eighth note before the first measure line and Example 202 begins with a quarter note and an eighth note. An incomplete measure at the start of a piece of music is referred to as an *anacrusis* or *pickup measure*. Even though the music begins on a weak beat (or off beat) with regards to the meter, we have no trouble identifying the first downbeat.

The following example provides another example of an anacrusis. (Note that the first *full* measure is labeled as m. 1.)

Example 204 (B. Higley and D. Kelley, “Home on the Range,” mm. 1-7):

Anacrusis can be used with any type of meter, simple or compound.

Simple meters and time signatures:

Any of the beat groupings mentioned above—duple, triple, or quadruple—can represent a simple meter. A simple triple meter, for example, would have three beats per measure, each of which would regularly divide into two.

Each of the examples above have some numbers just to the right of the key signature on the first line of music. These numbers are referred to as a *time signature* (or *meter signature*). They indicate to the performer the type of meter present in any given piece of music.

Each time signature consists of two numbers, one stacked on top of the other. For simple meters, the top number represents the number of beats and the bottom number the note value of a single beat. In Example 200, we saw the time signature “ $\frac{2}{4}$ ” and called that meter “simple duple.” The top number, in this case “2,” tells us there are two beats per measure (hence, “duple”). The bottom number, in this case “4,” tells us that each beat has a duration equivalent to a quarter note.

Consider the following short, familiar piece:

Example 205 (Minuet from the Notebook for Anna Magdalena Bach, mm. 1-16):

We see the time signature “ $\frac{3}{4}$ ” at the beginning of Example 205. Here, the “3” indicates that there are three beats per measure and the “4” that each beat is the length of a quarter note. As the shorter durations make clear, the meter is simple: each quarter note divides into two eighth notes.

Simple meters are generally very easy to recognize. Any time signature in which the top number is 2, 3, or 4 represents a simple meter.

Note: For simple meters, the general rule of thumb is that the top number of the time signature indicates the number of beats per measure (duple, triple, or quadruple) and the bottom number indicates the beat value. As discussed in Lesson ZZZ, however, this rule of thumb does not apply to compound meters.

The following examples show several common simple-meter time signatures:

Example 206 (common simple-meter key signatures):

a. simple quadruple:



b. simple triple:



c. simple duple:



d. simple duple:



The difference between “ $\frac{4}{4}$ ” or “ $\frac{2}{2}$ ” is subtle. Both time signatures have measures whose durations are equal to a single whole note (four quarter notes or two half notes). The difference lies in how the music is performed or heard. The former will have four distinct beats per measure, while the latter will have only two.

Note as well that Examples 206c and 206d (“ $\frac{2}{4}$ ” and “ $\frac{2}{2}$ ”) are both simple duple meters. Both of them have two beats per measure. They differ only in the note value of the beat (a quarter note and a half note, respectively).

Frequently, you will encounter other, non-numeric symbols used as time signatures. These are shown in Example 207:

Example 207 (alternative time signatures):

a. “common time”:



b. “cut time” (or, “alla breve”):



These time-signature symbols are often used as a shorthand way to write “ $\frac{4}{4}$ ” or “ $\frac{2}{2}$.”

Note: The symbol used for common time resembles the letter “C”—the first letter of the word “common.” The symbol used for cut time has a vertical line, *cutting* the “C” in half. These mnemonic devices, though useful, are not grounded by any historical accuracy.

Activity YYY.3:

For each of the following simple-meter time signatures, identify the number of beats per measure and the note value of a single beat.

Exercise YYY.3a

How many beats per measure are indicated by the following time signature?



[Answer: 4. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Remember that for simple meters, the top number of the time signature indicates the number of beats per measure.)”]

[Follow-up question:]

What is the note value of the beat, as indicated by this time signature?

[Answer: half note. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Remember that for simple meters, the bottom number of the time signature indicates the note value of the beat.)”]

Exercise YYY.3b

How many beats per measure are indicated by the following time signature?



[Answer: 2. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

What is the note value of the beat, as indicated by this time signature?

[Answer: half note. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Exercise YYY.3c

How many beats per measure are indicated by the following time signature?



[Answer: 2. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Remember that for simple meters, the top number of the time signature indicates the number of beats per measure.)”]

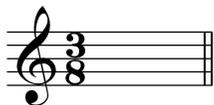
[Follow-up question:]

What is the note value of the beat, as indicated by this time signature?

[Answer: eighth note. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Remember that for simple meters, the bottom number of the time signature indicates the note value of the beat.)”]

Exercise YYY.3d

How many beats per measure are indicated by the following time signature?



[Answer: 3. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Remember that for simple meters, the top number of the time signature indicates the number of beats per measure.)”]

[Follow-up question:]

What is the note value of the beat, as indicated by this time signature?

[Answer: eighth note. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Remember that for simple meters, the bottom number of the time signature indicates the note value of the beat.)”]

Beaming:

Note durations shorter than a quarter note—eighth notes, sixteenth notes, thirty-second notes, etc.—are written by adding flags to the stem. (Refer to Lesson XXX for more on rhythmic notation.) These flags can also be notated as beams: horizontal lines that connect two or more notes. Beams can be a helpful way to make a score appear less cluttered. They can also help emphasize the meter to the performer.

Beams are typically used to reflect the meter by grouping notes that occur within a single beat. Consider the following examples:

Example 208 (beaming in a simple meter):

a. incorrect:



b. correct:



Both of the rhythms in Example 208, if performed, would sound exactly the same. Although the corresponding note durations are identical, the beaming is quite different. Both rhythms are in simple duple meter, with two quarter notes per measure. The red dashed lines divide each measure in half, making clear which beats belong to the first beat and which to the second in each measure.

As you can see, in Example 208a some of the beams connect notes over the dashed line. This obscures the meter, making it difficult to recognize that there are two beats per measure. (The first measure, for example, looks as though it has *three* beats.) In Example 208b, on the other hand, none of the beams cross a dashed line. The durations of each group of beamed notes add up to that of the beat—a quarter note in this case. It is much easier to recognize the duple meter in Example 208b.

Activity YYY.4:

Several of the measures in the following rhythm have beaming that obscures the meter rather than support it. Click on the measures with incorrect beaming:



[Answers: m. 2 and m. 4. Response for each correct answer: “Correct!” Response for each incorrect answer: “Incorrect. The beaming in this measure does support the meter.”]

Conclusion:

Meter refers to the organization of basic underlying pulses in music. In Western music, we define a particular meter based on two parameters: how the beats themselves are grouped and how they are regularly divided. Beats are generally organized into groups of two, three, or four beats per measure. We refer to these as duple, triple, and quadruple meters respectively. Beats are generally divided into sets of two or three notes. Meters in which the beat is regularly divided into two notes are referred to as *simple* meters. (Those that divide the beat into three notes are referred to as *compound* meters, and are discussed in greater depth in Lesson ZZZ.)

The meter of a particular piece is generally indicated by the *time signature*—a stack of two numbers written on the first line of music, just to the right of the key signature. For simple meters, the top number indicates the number of beats per measure while the bottom indicates the note value of assigned the beat.

Beams, the horizontal lines that connect notes whose durations are shorter than a quarter note, can be used to help express the meter of a particular piece of music. Notes are typically grouped with beams *within* a single beat instead of across two or more beats. This makes the meter easier to recognize for both the performer and the analyst.

Lesson ZZZ – Compound Meters

Introduction:

Lesson YYY outlines the different ways in which the underlying pulse of a piece of music (the beat) can be regularly divided. It also provides an introductory discussion of the nature of simple meters, those in which the beat is regularly divided into two equal notes. This lesson continues that discussion and looks at compound meters, those in which the beat is regularly divided into three equal notes.

This lesson will also provide a brief discussion of triplets—a type of beat division that strays from the norm for a given meter.

Compound meters:

As discussed in Lesson YYY, compound meters are characterized by how the beat is regularly divided into three equal notes. Consider the following excerpt from a song by Schubert. This piece is in a compound duple meter. There are two beats per measure (each equal in length to a dotted quarter note) and each beat is divided into *three* eighth notes:

Example 209 (F. Schubert, “Des Müllers Blumen” (No. 9 from *Die Schöne Müllerin*, D. 795), mm. 7-14):

The musical score for Example 209 is presented in two systems. The first system covers measures 7-10, and the second system covers measures 11-14. The music is in a compound duple meter (6/8) and the key signature has three sharps (F#, C#, G#). The vocal line is in the treble clef, and the piano accompaniment is in the bass clef. The lyrics are: "Am Bach viel klei - ne Blu - men stehn, aus hel - len blau - en Au - gen sehn, der - Bach, der ist - des Mül - lers Freund und hell - blau Lie - be - hens Au - ge scheint."

Compound meters, like simple meters, are indicated with time signatures. Understanding compound time signatures, however, is not quite as straightforward. For simple meters, the time signature conveys information about the *beat*: the top number indicates the number of beats per measure and the bottom number the note value of each beat. Compound meters, on the other hand, convey information about the *beat division*.

Note: Lesson YYY discusses how beams can be used to group notes in a way that clarifies the meter. While the right hand of the piano part in Example 209 does just this (organizing the eighth notes into groups of three), the notated vocal part does not. This is typical of vocal music, where beams are used primarily to group notes that belong to a single syllable of the text.

Take, for example, the time signature from the example above: “ $\frac{6}{8}$.” As we saw before, this is a compound duple meter. Each beat is equal to a dotted quarter note and each beat is regularly divided into three eighth notes:

Example 210 (compound beat division):

The image shows two musical staves illustrating the beat division in 6/8 time. The top staff, labeled 'beat', shows a 6/8 time signature followed by two measures. Each measure contains two dotted quarter notes. The bottom staff, labeled 'beat division', shows the same 6/8 time signature followed by two measures. Each measure contains six eighth notes, with three eighth notes grouped together by a beam in each measure, demonstrating that one beat is equal to three eighth notes.

As you can see from Example 210, the numbers in the time signature refer to the beat *division*. Each measure of “ $\frac{6}{8}$ ” has six eighth notes. In other words, to find the number of beats per measure, one must divide the top number by three. If the top number is 6, the meter is duple. If the top number is 9 or 12, the meter is respectively triple or quadruple. These are the most common top numbers for compound-meter time signatures: 6, 9, and 12.

Since the bottom number indicates the duration of the beat division, one must add three of these note values together to get the beat unit. In the case of “ $\frac{6}{8}$ ” the lower number indicates that the beat division is equal in duration to an eighth note. Three eighth notes add up to one dotted quarter note. The beat unit of a compound meter will always be a dotted note.

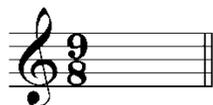
Note: A good rule of thumb to follow is that if the top number of a time signature is 2, 3, or 4, the meter is simple. If the top number is 6, 9, or 12 (any multiple of three, greater than three), the meter is compound.

Activity ZZZ.1:

Identify each of the following time signatures as simple or compound and as duple, triple, or quadruple. Then identify the note value of the beat.

Exercise ZZZ.1a

Does the following time signature represent a simple or compound meter?



[Answer: compound. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Remember, if the top number is 6, 9, or 12, the meter is compound.)”]

[Follow-up question:]

Is this meter duple, triple, or quadruple?

[Answer: triple. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Hint: For compound meters, divide the top number by three to determine the number of beats per measure.)”]

[Follow-up question:]

What is note value of a single beat?

[Answer: dotted quarter note. "Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again. (Hint: For compound meters, the beat unit is three times the length of the note value indicated by the bottom number of the time signature.)"]

Exercise ZZZ.1b

Does the following time signature represent a simple or compound meter?



[Answer: simple. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

Is this meter duple, triple, or quadruple?

[Answer: duple. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

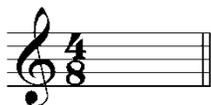
[Follow-up question:]

What is note value of a single beat?

[Answer: half note. "Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise ZZZ.1c

Does the following time signature represent a simple or compound meter?



[Answer: simple. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

Is this meter duple, triple, or quadruple?

[Answer: quadruple. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

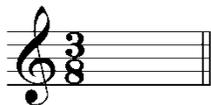
[Follow-up question:]

What is note value of a single beat?

[Answer: eighth note. "Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise ZZZ.1d

Does the following time signature represent a simple or compound meter?



[Answer: simple. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

Is this meter duple, triple, or quadruple?

[Answer: triple. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

[Follow-up question:]

What is note value of a single beat?

[Answer: eighth note. "Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Exercise ZZZ.1e

Does the following time signature represent a simple or compound meter?



[Answer: compound. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Remember, if the top number is 6, 9, or 12, the meter is compound.)”]

[Follow-up question:]

Is this meter duple, triple, or quadruple?

[Answer: quadruple. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Hint: For compound meters, divide the top number by three to determine the number of beats per measure.)”]

[Follow-up question:]

What is note value of a single beat?

[Answer: dotted eighth note. “Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again. (Hint: For compound meters, the beat unit is three times the length of the note value indicated by the bottom number of the time signature.)”]

Exercise ZZZ.1f

Does the following time signature represent a simple or compound meter?



[Answer: simple. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

Is this meter duple, triple, or quadruple?

[Answer: quadruple. Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

[Follow-up question:]

What is note value of a single beat?

[Answer: quarter note. “Response if correct: “Correct!” Response if incorrect: “Incorrect. Try again.”]

Tuplets:

You will quite frequently encounter beat divisions that defy your expectations based on your observations about the meter. Consider the following piece:

Example 211 (J. Haydn, Piano Sonata No. 3 in C major, Mvt. III, mm 1-8):

This excerpt from a piano sonata by Haydn is in “ $\frac{3}{4}$,” a simple triple meter. As the time signature indicates, one beat has a value equal to a quarter note. Since “ $\frac{3}{4}$ ” is a simple meter, the quarter note beat normally divides into two eighth notes. But, on the second and third beats of m. 6 (and the first beat of m. 7), three eighth notes are squeezed into each beat.

This rhythmic figuration is known as a triplet and is normally notated as it appears in Example 211: with a small “3” written alongside each group of beamed notes. Triplets such as these represent a temporary shift to the corresponding compound meter. If “ $\frac{3}{4}$ ” is a *simple* triple meter, “ $\frac{9}{8}$ ” would be the corresponding *compound* triple meter:

Example 212:

a. beat division in “ $\frac{3}{4}$ ”

b. beat division in “ $\frac{9}{8}$ ”

In “ $\frac{3}{4}$ ” each beat can be divided into *two* eighth notes. In “ $\frac{9}{8}$ ” each beat can be divided into *three* eighth notes. A triplet, therefore, represents a kind of rhythmic borrowing from the corresponding compound meter. In other words, when we hear the triplets in mm. 6-7 of Example 211, it sounds as though Haydn has temporarily switched to a *compound* triple meter, where each beat is divided into three even eighth notes.

The generic term for this type of rhythmic alteration is a *tuplet*. In addition to triplets, another type of tuplet is a *duplet*. Duplets typically appear in pieces in compound meters, like the following:

Example 213 (M. Ravel, “Noel des jouets,” mm. 29-34):

29

Bel - zé - buth, le chien som - bre

32

Guet - te l'En - fant de su - cre peint

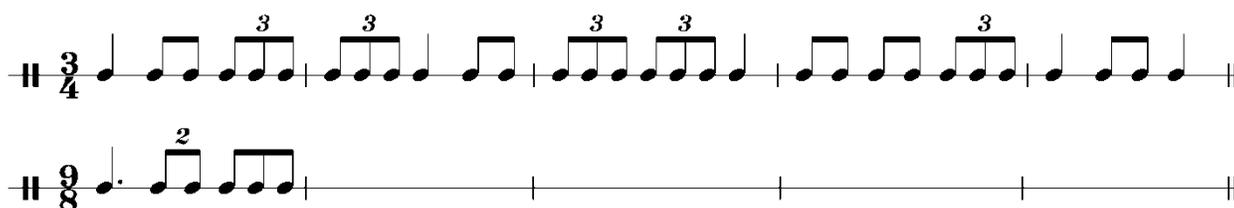
As the name implies, a duplet alters the rhythm so that two notes take up the space that would normally accommodate three. In this sense, a duplet can be thought of as the opposite of a triplet. The example above is in “ $\frac{6}{8}$,” a compound duple meter. Typically the beat (a dotted quarter note) would be divided into three eighth notes. In mm. 32-33, however, we see that each beat is divided into *two* eighth notes (indicated by the bracketed “2” above each group). Each of these duplets fills the space of an entire beat, or, three eighth notes.

Tuplets can be a very versatile tool with regards to the rhythmic expressiveness of a composition and many other types can be found. The two types discussed here, triplets and duplets, are by far the most common.

Activity ZZZ.2:

Triplets and duplets can be thought of as beat divisions borrowed from the corresponding simple or compound meter. The following example shows a rhythm in “ $\frac{3}{4}$,” a simple triple meter, that contains some triplets borrowed from “ $\frac{6}{8}$,” the corresponding compound meter. Convert the rhythm to “ $\frac{6}{8}$,” by adjusting each rhythm accordingly. The first measure has been done for you.

(As you can see, eighth notes become eighth note duplets and triplets become straight eighth notes.)



[Answer:



. Response if correct: "Correct!" Response if incorrect: "Incorrect. Try again."]

Conclusion:

Compound meters are those in which the beat regularly divides into three even notes (as opposed to simple meters, which divide into two notes). Like any type of meter, compound meters are usually expressed with time signatures, though in such cases the numbers convey information about the beat division.

The bottom number of a compound-meter time signature indicates the note value of the beat division and the top number—usually 6, 9, or 12—indicates how many such notes make up one full measure. Since the top number refers to the beat division, one need simply divide it by three to determine how many beats appear in a single measure: 6 indicates a duple meter, 9 indicates a triple meter, and 12 indicates a quadruple meter. To determine the note value of the beat, one need simply add three beat division units together. The beat in a compound meter will therefore always be a dotted note.

Composers are not limited to the normal beat division of a given meter. They may—and often do—borrow the beat division from the corresponding simple or compound meter. These rhythmic figurations are known generically as tuplets. Triplets provide a compound-meter beat division in a simple-meter context (three notes in the space of two). Duplets do just the opposite: they provide a simple-meter beat division in a compound-meter context (two notes in the space of three).

Lesson !!!: The Circle of Fifths

Introduction:

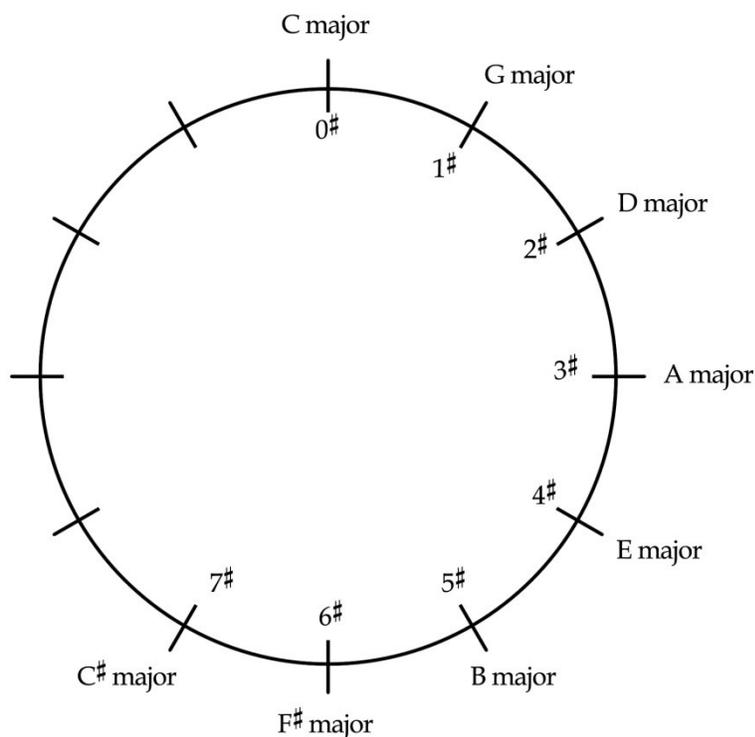
Closely-related keys share six of their seven pitch classes. In Lesson VVV, we saw that if we started with C major we could build another major scale (G major) on scale degree $\hat{5}$ which would have one sharp in the key signature. If we built a major scale on $\hat{5}$ of G major, we would arrive at D major which requires two sharps. The pattern could continue indefinitely.

In this lesson we will discuss the various types of relationships that occur between keys. We will introduce a widely-used diagram known as the *circle of fifths* to provide a visual representation of these relationships.

The circle of fifths:

The following diagram arranges the sharp keys around the edge of a circle:

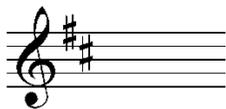
Example 214 (the circle of fifths, sharp keys only):



This diagram, commonly referred to as the *circle of fifths*, is a useful way of visualizing key relationships. The diagram gets its name from the fact that as we move clockwise around the circle, each new key is built on the fifth scale degree of the one that came before it. (The accidentals for each corresponding key signature are indicated on the inner circle.) C major is placed at the top of the diagram because it requires no accidentals. Each clockwise step also adds one more sharp to the key signatures. Moving from D major to A major, for example, requires the addition of one more sharp:

Example 215:

a. D major:

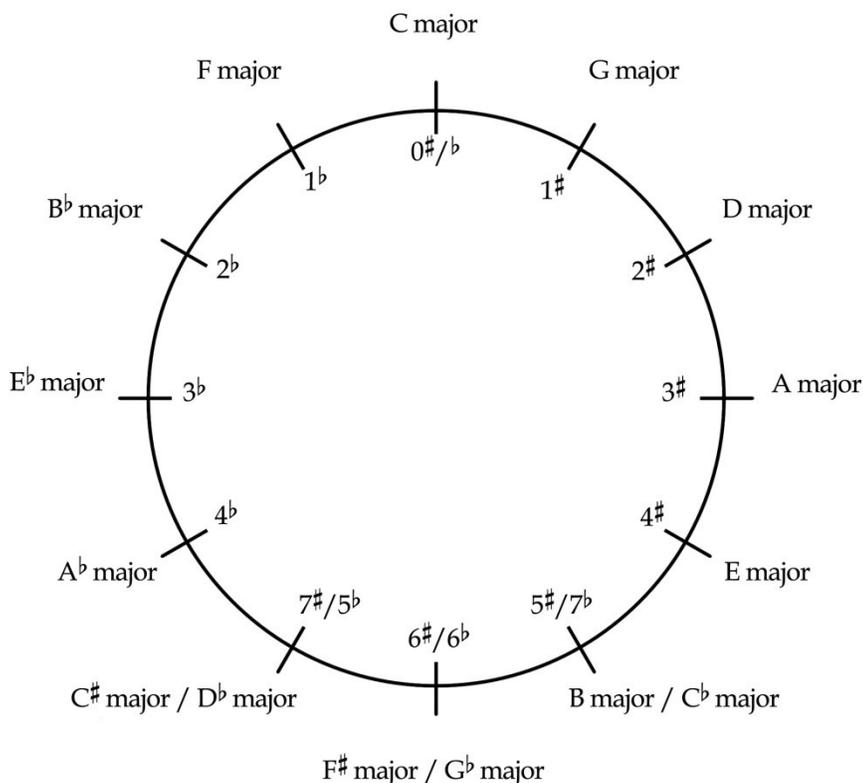


b. A major:



We can add flat keys to the circle as well. Increasingly flat keys will move *counterclockwise* around the circle:

Example 216 (the circle of fifths, all major keys):



Moving counterclockwise, each subsequent key is built on scale degree $\hat{4}$ of the one before it and has one additional flat in its key signature. Moving from E^b major to A^b major, for example, requires one additional flat in the key signature:

Example 217:

a. E^b major:b. A^b major:

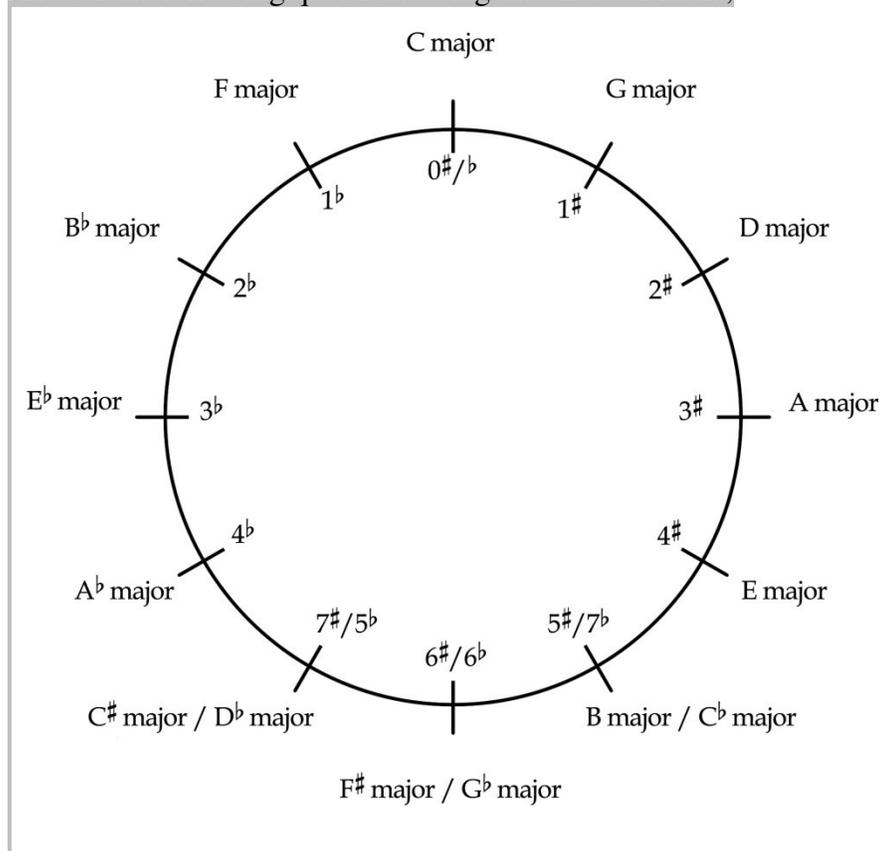
If we consider the entire circle, we can make several interesting observations. A clockwise move results in one of the pitches of the scale—scale degree $\hat{4}$ —being raised. This raised pitch becomes scale degree $\hat{7}$ in the new key. For example, in moving from D major to A major, G is raised to G^\sharp , as in Example 215. Likewise, moving counterclockwise around the circle will result in one pitch, scale degree $\hat{7}$, being lowered. This lowered pitch becomes scale degree $\hat{4}$ in the new key. So moving from E^b major to A^b major requires that D be lowered to D^b , as in Example 217.

Notice as well that there is some overlap at the bottom of the circle. These keys—which tend to be used less frequently than those with fewer accidentals—are enharmonically equivalent. C[♯] major and D^b major, for example, both begin on the same pitch class, but are spelled differently.

You should be familiar enough with the relationships between major keys and their key signatures to be able to reproduce the circle of fifths from memory.

Activity !!!.1:

Answer the following questions using the circle of fifths,



Exercise !!!.1a

How many pitch classes do A major and E major have in common?

[Answer: 6. Response if correct: “Correct! A major and E major share six of their seven pitch classes.” Response if incorrect: “Incorrect. (Hint: How many steps are there between these two keys? Each step represents one different pitch.)”]

Exercise !!!.1b

How many pitch classes do F major and G major have in common?

[Answer: 5. Response if correct: “Correct! F major and G major share five of their seven pitch classes.” Response if incorrect: “Incorrect. (Hint: How many steps are there between these two keys? Each step represents one different pitch.)”]

Exercise !!!.1c

How many pitch classes do E^b major and A major have in common?

[Answer: 1. Response if correct: “Correct! E^b major and A major share only one of their seven pitch classes.” Response if incorrect: “Incorrect. (Hint: How many steps are there between these two keys? Each step represents one different pitch.)”]

Exercise !!!1d

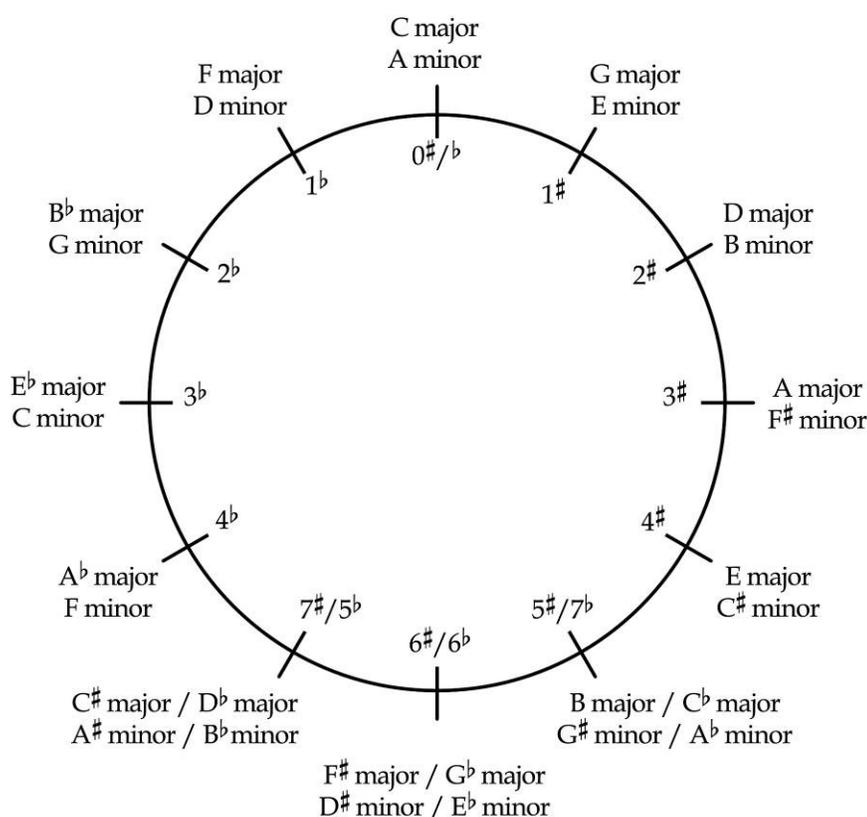
How many pitch classes do B^b major and D major have in common?

[Answer: 3. Response if correct: “Correct! B^b major and D major share three of their seven pitch classes.” Response if incorrect: “Incorrect. (Hint: How many steps are there between these two keys? Each step represents one different pitch.)”]

Minor keys and the circle of fifths:

Minor keys can be added to the circle as well. Each minor key is paired with its relative major (the key with which it shares a key signature). A minor, therefore, is placed at the top of the circle, paired with C major:

Example 218 (the complete circle of fifths):



Earlier, we saw that as we move clockwise around the circle, each new key begins on scale degree $\hat{5}$ of the key that came before it. This is true for major keys and minor keys. Continuing to step up to scale degree $\hat{5}$ of each new key will eventually bring us back to the beginning: A, E, B, F#, C#, G#, D# = E^b, B^b, F, C, G, D, A.

Note that while the circle of fifths is particularly useful for showing the closeness of keys that differ by only one pitch class, parallel keys are not as clearly demonstrated. E minor and E major, for example, are three steps away from each other on the circle. Keep in mind, however, that, despite this distance, parallel keys *sound* quite similar. Because they share the same tonic (and scale degrees, $\hat{2}$, $\hat{4}$ and $\hat{5}$), it is easy to hear the relationship between parallel keys.

Conclusion:

All keys, major and minor, can be arranged on a circle of fifths to show the relationships between them. Relative keys are paired together because they share the same key signature. C major and A minor, for example, appear at the top of the circle and have no accidentals in their key signatures.

A clockwise move around the circle results in a new scale with one additional sharp (or one less flat) built on scale-degree $\hat{5}$ of the one that came before it. Likewise, a counterclockwise move around the circle results in a new scale with one additional flat (or one less sharp) built on scale-degree $\hat{4}$ of the one that came before it. The keys are arranged in a circle, because continually stepping around the circle will eventually return to the beginning.

The circle of fifths is particularly useful in showing the closeness of various keys with regards to their key signatures. C major and G major are closely related, differing by only one pitch class. C major and F \sharp major, on the other hand, are not closely related and differ by six pitch classes. It is important to keep in mind that parallel keys, while not adjacent on the circle of fifths, are *heard* as closely related because they share the same tonic.

Lesson AAA: Basic Interval Progressions

Exam:

Question 1a:

[Multiple choice question:] Identify the following interval:



[Possible answers: m2, M2, m3, M3, P4, A4, d5, P5, m6, M6, m7, M7, P8]

[Answer: A4. Feedback for correct answer: "Correct! G and C[#] form an augmented fourth." Feedback for incorrect answer: "Incorrect. G and C[#] form an augmented fourth (A4)."]

[Follow-up question:] Is this interval consonant or dissonant in two-voice textures?

[Answer: dissonant. Feedback for correct answer: "Correct! An augmented fourth is dissonant." Feedback for incorrect answer: "Incorrect. An augmented fourth is dissonant."]

Question 1b:

[Multiple choice question:] Identify the following interval:



[Possible answers: m2, M2, m3, M3, P4, A4, d5, P5, m6, M6, m7, M7, P8]

[Answer: P5. Feedback for correct answer: "Correct! B^b and F form a perfect fifth." Feedback for incorrect answer: "Incorrect. B^b and F form a perfect fifth (P5)."]

[Follow-up question:] Is this interval consonant or dissonant in two-voice textures?

[Answer: consonant. Feedback for correct answer: "Correct! A perfect fifth is consonant." Feedback for incorrect answer: "Incorrect. A perfect fifth is consonant."]

Question 2a:

[Multiple choice question:] Is the following parallel interval progression permissible or forbidden in two-voice textures?



[Possible answers: permissible, forbidden.]

[Answer: forbidden. Feedback for correct answer: "Correct! Parallel fifths are not allowed." Feedback for incorrect answer: "Incorrect. Parallel fifths are not allowed."]

Question 2b:

[Multiple choice question:] Is the following parallel interval progression permissible or forbidden in two-voice textures?



[Possible answers: permissible, forbidden.]

[Answer: permissible. Feedback for correct answer: "Correct! Parallel sixths are allowed." Feedback for incorrect answer: "Incorrect. Parallel sixths are allowed."]

Question 3a:

Continue the following interval progression using stepwise, contrary motion:



[Answers: upper voice to D and lower voice to G OR both voices to B. Feedback for D/G correct answer: “Correct! A minor third can move by stepwise contrary motion to a perfect fifth.” Feedback for B/B correct answer: “Correct! A minor third can move inwards to form a unison.” Feedback for all other incorrect answers: “Incorrect. That is not a valid interval progression. In this case, the voices could either move inwards to form a unison B, or outwards to form a perfect fifth.”]

Question 3b:

Continue the following interval progression using stepwise, contrary motion:



[Answers: upper voice to B^b and lower voice to G. Feedback for correct answer: “Correct! A perfect fifth can move by stepwise contrary motion to a minor third.” Feedback if student has upper voice moving to D and lower voice moving to E: “Incorrect. This progression does exhibit stepwise, contrary motion, but a perfect fifth cannot move to a minor seventh in a two-voice texture because sevenths are dissonant. The voices should have moved inward to form a minor third.” Feedback for all other incorrect answers: “Incorrect. The voices should move inward to form a minor third.”]

Question 4:

Complete the following interval progression in two unique and valid ways by providing voices for the second beat moving in either parallel or contrary motion.



[Answers:

- Upper voice to D / lower voice to F
- Upper voice to B^b / lower voice to D
- Upper voice to B^b / lower voice to G
- Upper voice to A^b / lower voice to F
- Upper voice to D / lower voice to D
- Upper voice to E^b / lower voice to C

Feedback for correct answer: “Correct!” Feedback for incorrect answer: “Incorrect. Those voices don’t create a valid parallel- or contrary-motion interval progression.”]

Question 5:

Complete the following interval progression in two unique and valid ways by providing voices for the second beat moving using similar motion only.



[Answers:

- Upper voice to F / lower voice to F
- Upper voice to F / lower voice to A
- Upper voice to B^b / lower voice to D

- Upper voice to A / lower voice to F
- Upper voice to D / lower voice to B^b

Feedback for correct answer: “Correct!” Feedback for incorrect answer: “Incorrect. Those voices don’t create a valid similar-motion interval progression.”]

Question 6a:

Identify all of the intervals in the following two-voice progression:

[Answer:

8 6 3 3 6 5

. Feedback for each correct answer: “Correct!” For each incorrect answer: “Incorrect. That is a [X].”]

Question 6b:

Now label each pair of intervals as having parallel, contrary, similar, or oblique motion.

[Answer:

8 6 3 3 6 5

C C P C O

. Feedback for each correct answer: “Correct!” For each incorrect answer: “Incorrect. Those two intervals exhibit [X] motion.”]

Question 7a:

Identify the basic interval progression being followed by the red notes in the following excerpt (J.S. Bach, BWV 269, “Aus meines Herzens Grunde,” mm. 1-7):

[Answer: oblique motion (6-5). Feedback for correct answer: “Correct! The tenor and the soprano are moving in oblique motion from a major sixth to a perfect fifth (“6 - 5”).” Feedback for incorrect answer: “Incorrect. The tenor and the soprano are moving in oblique motion from a major sixth to a perfect fifth (“6 - 5”).”]

Question 7b:

Identify the basic interval progression being followed by the red notes in the following excerpt (J.S. Bach, BWV 269, “Aus meines Herzens Grunde,” mm. 1-7):

The musical score shows the first seven measures of the piece. The bass line contains three red notes: G2 (first measure), F#2 (second measure), and E2 (third measure). The interval between G2 and F#2 is a minor sixth, and the interval between F#2 and E2 is a minor third.

[Answer: oblique motion (6-3). Feedback for correct answer: “Correct! The tenor and the bass are moving in contrary motion from a minor sixth to a minor third (“6 - 3”).” Feedback for incorrect answer: “Incorrect. The tenor and the bass are moving in contrary motion from a minor sixth to a minor third (“6 - 3”).”]

Lesson BBB: Three- and Four-Voice Progressions

Exam:

Question 1: Complete the following progression by providing a second pitch for the inner voice that produces at least one valid interval progression with an outer voice and is a member of the I chord in C major:

V - I

[Students enter answer onto score. Answer: up by step to C. Feedback if correct: “Correct! The middle voice should move from B up a step to C, creating an oblique “6 - 5” progression with the soprano.” Feedback if student goes to any other C, E, or G: “Incorrect. That pitch does belong to the I chord, but does not create valid interval progressions with the outer voices.” Feedback if student enters any other pitch: “Incorrect. That pitch does not belong to the I chord in C major.”]

Question 2: Complete the following progression by providing a second pitch for the inner voice that produces at least one valid interval progression with an outer voice and is a member of the V chord in B^b major:

ii - V

[Answer: hold on C. Feedback if correct: “Correct! By sustaining C, the middle voice creates an oblique interval progression with the soprano.” Feedback if student goes up a fourth to F: “Incorrect. This is a valid interval progression with the soprano (“5 - 3”), but it creates parallel octaves created with the bass.” Feedback if student goes down a third to A: “Incorrect. This creates a valid interval progression with the soprano (“5 - 8”), but it creates a doubled leading tone, A. Both As above the V chord will have a strong pull to B^b which would in turn create parallel octaves between the soprano and the middle voice.” Feedback for any other F, A, or C: “Incorrect. This pitch does belong to the V chord, but does not create valid interval progressions with the outer voices.” Feedback for any other pitch: “Incorrect. That pitch does not belong to the V chord in B^b major.”]

Question 3: Complete the following progression by providing a second pitch for the inner voice that produces at least one valid interval progression with an outer voice and is a member of the vi chord in A major:

I - vi

[Answer: down a third to A. Feedback if correct: “Correct! This is the best choice since it is a member of the vi chord and creates valid interval progressions with both the bass (“3 - 3”) and the soprano (“3 - 6”).” Feedback for any other F#, A, or C#: “Incorrect. This pitch does belong to the vi chord, but does not create

valid interval progressions with the outer voices.” Feedback for any other pitch: “Incorrect. That pitch does not belong to the vi chord in A major.”]

Question 4: Complete the following progression by providing a second pitch for the inner voice that produces at least one valid interval progression with an outer voice and is a member of the V chord in E minor:

iv - V

[Answer: down a step to B. Feedback if correct: “Correct! Stepping down to B will create valid interval progressions with the soprano (“3 - 3”) and the bass (“3 - 1”).” Feedback if student steps up to D[#]: “While this may seem to be a valid answer (it creates valid interval progressions with both the bass and the soprano), it leads to a doubled leading tone in the V chord. Since D[#] has such a strong pull to E in E minor, this will lead to a parallel unison.” Feedback for any other B, D[#], or F[#]: “This pitch does belong to the V chord, but does not create valid interval progressions with the outer voices.” Feedback for any other pitch: “That pitch does not belong to the V chord in E minor.”]

Question 5: Complete the V chord in the following progression by providing pitches for the two inner voices. Each pitch should produce at least one valid interval progression with an outer voice.

i - V

[Students must enter both answers correctly. Answers: D in alto moves down by step to C[#] and A is sustained in the tenor. Feedback if both answers are correct: “Correct! The alto should step down the C[#], the leading tone, and the tenor should sustain A.” Feedback if alto is correct but tenor is incorrect: “That is almost correct. Your alto is correct, but the tenor should sustain A.” Feedback if tenor is correct, but alto goes to C: “That is almost correct. Your tenor voice is correct, but you forgot to raise the leading tone in the alto.” Feedback if tenor is correct but alto goes to something other than C or C[#]: “That is almost correct. Your tenor voice is correct, but the alto should step down to C[#], the leading tone.” Feedback if both voices are incorrect: “Both voices are incorrect. The alto should step down the C[#], the leading tone, and the tenor should sustain A.”]

Question 6a: In this activity you will analyze the voice leading in a progression from V to vi.

V - vi

Bass and soprano: _____ [Answer: “8 - 5.”]

Bass and alto: _____ [Answer: “5 - 3.”]

Bass and tenor: _____ [Answer: “10 - 8” or “3 - 1.”]

Tenor and soprano: _____ [Answer: “6 - 5.”]

Tenor and alto: _____ [Answer: “3 - 3.”]

Alto and soprano: _____ [Answer: “4 - 3.”]

[Students must fill in each blank correctly ([X]). Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. The correct answer was [X].”]

Question 6b: Which of these progressions contains resultant intervals?

[Possible answers: the list from above. Answer: “Alto and soprano.” Feedback if correct: “Correct! The fourth in the “4 - 3” progression between the alto and soprano is a resultant interval.” Feedback if incorrect: “Incorrect. The fourth in the “4 - 3” progression between the alto and soprano is the only resultant interval.”]

Question 7a: Identify the interval progressions between the tenor and the soprano voices in this chorale excerpt (the third phrase from J.S. Bach, BWV 67.7, “Du Friedefürst, Herr Jesu Christ”):

[Answers: 6, 5, 6, 6, 8, 6, 7, 6. Feedback for correct answer: “Correct!” Feedback for incorrect answer: “This interval is incorrect.”]

Question 7b: Which of these is a resultant interval?

[Possible answers: the list from above (or simply have students click on the correct answer). Answer: the 7 on the penultimate beat. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. The only resultant interval is the minor seventh on the penultimate beat of the excerpt.”]

Lesson CCC: The Minor Scale

Exam:

Question 1: Adjust the pitches as necessary to create an Ab-minor scale:



[Answer: . Feedback for correct answer: “Correct! Scale degrees $\hat{3}$, $\hat{6}$, and $\hat{7}$ each need to be lowered by a half step.” Feedback for incorrect answer: “Incorrect. Scale degrees $\hat{3}$, $\hat{6}$, and $\hat{7}$ each need to be lowered by a half step to C^b , F^b , and G^b , respectively.”]

Question 2a: Does this chord require any adjusted notes? If so, adjust the notes where necessary to reflect the harmonic minor composite. If not, click “No Change.”



C minor: V

[Answer: The B in the alto should be changed to B \sharp . Feedback for correct answer: “Correct! The alto needs to be raised to B \sharp to act as the leading tone.” Feedback for incorrect answer: “Incorrect. The alto needs to be raised to B \sharp to act as the leading tone.”]

Question 2b: Does this chord require any adjusted notes? If so, adjust the notes where necessary to reflect the harmonic minor composite. If not, click “No Change.”



E minor: III

[Answer: “No Change.” Feedback for correct answer: “Correct! The diatonic III chord does not require any adjusted pitches.” Feedback for incorrect answer: “Incorrect. The diatonic III chord does not require any adjusted pitches.”]

Question 2c: Does this chord require any adjusted notes? If so, adjust the notes where necessary to reflect the harmonic minor composite. If not, click “No Change.”



B minor: vii^o

[Answer: The A in the soprano should be changed to A \sharp . Feedback for correct answer: “Correct! The soprano needs to be raised to A \sharp to act as the leading tone.” Feedback for incorrect answer: “Incorrect. The soprano needs to be raised to A \sharp to act as the leading tone.”]

Question 3: Change the relevant pitches of the following minor scale to conform to the adjusted melodic minor composite:

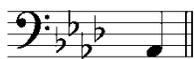


[Answer: . Feedback if correct: "Correct! Scale degrees $\hat{6}$ and $\hat{7}$ each need to be raised by half step." Feedback if incorrect: "Incorrect. Scale degrees $\hat{6}$ and $\hat{7}$ each need to be raised by half step to B natural and C \sharp , respectively."]

Lesson DDD: Figured Bass

Exam:

Question 1a: According to the figured bass signature, what pitches must appear above this bass note?



$\frac{5}{3}$

[Answer: C and E^b. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This figured bass signature implies that a C and an E^b must appear above the bass.”]

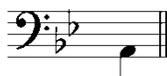
Question 1b: According to the figured bass signature, what pitches must appear above this bass note?



$\frac{6}{4}$

[Answer: A and C[#]. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This figured bass signature implies that an A and a C[#] must appear above the bass.”]

Question 1c: According to the figured bass signature, what pitches must appear above this bass note?



$\frac{6}{3}$

[Answer: C and F. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This figured bass signature implies that a C and an F must appear above the bass.”]

Question 2a: In which voice will the “6 - 5” motion indicated by the figured bass occur? And to which pitch should that voice move?



[(Students must enter two answers.) Answer: Tenor and E. Feedback if correct: “Correct! The “6 - 5” figure indicates that the tenor must step down to E.” Feedback if incorrect: “Incorrect. The “6 - 5” figure indicates that the tenor must step down to E.”]

Question 2b: In which voice will the “8 - 7” motion indicated by the figured bass occur? And to which pitch should that voice move?



[(Students must enter two answers.) Answer: Tenor and G. Feedback if correct: “Correct! The “8 - 7” figure indicates that the tenor must step down to G.” Feedback if incorrect: “Incorrect. The “8 - 7” figure indicates that the tenor must step down to G.”]

Question 3a: [Multiple choice.] Which figured bass signature would be used to represent this chord?



[Options: “ $\overset{5}{3}$,” “ $\overset{6}{3}$,” and “ $\overset{6}{4}$.” Answer: “ $\overset{5}{3}$.” Feedback if correct: “Correct! This is a root position triad.”
Feedback if incorrect: “Incorrect. This is a root position triad (represented by $\overset{5}{3}$).”]

Question 3b: [Multiple choice.] Which figured bass signature would be used to represent this chord?



[Options: “ $\overset{5}{3}$,” “ $\overset{6}{3}$,” and “ $\overset{6}{4}$.” Answer: “ $\overset{6}{3}$.” Feedback if correct: “Correct! This is a first-inversion triad.”
Feedback if incorrect: “Incorrect. This is a first-inversion triad (represented by $\overset{6}{3}$).”]

Question 3c: [Multiple choice.] Which figured bass signature would be used to represent this chord?



[Options: “ $\overset{5}{3}$,” “ $\overset{6}{3}$,” and “ $\overset{6}{4}$.” Answer: “ $\overset{6}{4}$.” Feedback if correct: “Correct! This is a second-inversion triad.”
Feedback if incorrect: “Incorrect. This is a second-inversion triad (represented by $\overset{6}{4}$).”]

Question 4a: According to the figured bass signature, what pitches must appear above this bass note?



[Answers: B, D[#], and F[#]. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This figured bass signature implies that B, D[#], and F[#] must appear above the bass.”]

Question 4b: According to the figured bass signature, what pitches must appear above this bass note?



[Answers: F[#], A, and B. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This figured bass signature implies that F[#], A, and B must appear above the bass.”]

Question 4c: According to the figured bass signature, what pitches must appear above this bass note?



[Answers: F[#], G[#], and B. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This figured bass signature implies that F[#], G[#], and B must appear above the bass.”]

Question 4d: According to the figured bass signature, what pitches must appear above this bass note?



[Answers: C, E, and G. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This figured bass signature implies that C, E, and G must appear above the bass.”]

Question 5a: [Multiple choice.] Which figured bass signature would be used to represent this chord?



[Options: “7,” “ $\frac{6}{5}$,” “ $\frac{4}{3}$,” and “ $\frac{4}{2}$.” Correct answer: “ $\frac{4}{3}$.” Feedback if correct: “Correct! This is a second-inversion seventh chord.” Feedback if incorrect: “Incorrect. This is a second-inversion seventh chord (represented by $\frac{4}{3}$).”]

Question 5b: [Multiple choice.] Which figured bass signature would be used to represent this chord?



[Options: “7,” “ $\frac{6}{5}$,” “ $\frac{4}{3}$,” and “ $\frac{4}{2}$.” Correct answer: “7.” Feedback if correct: “Correct! This is a root position seventh chord.” Feedback if incorrect: “Incorrect. This is a root position seventh chord (represented by 7).”]

Question 5c: [Multiple choice.] Which figured bass signature would be used to represent this chord?



[Options: “7,” “ $\frac{6}{5}$,” “ $\frac{4}{3}$,” and “ $\frac{4}{2}$.” Correct answer: “ $\frac{4}{2}$.” Feedback if correct: “Correct! This is a third-inversion seventh chord.” Feedback if incorrect: “Incorrect. This is a third-inversion seventh chord (represented by $\frac{4}{2}$).”]

Question 5d: [Multiple choice.] Which figured bass signature would be used to represent this chord?



[Options: “ 7_5 ,” “ 6_5 ,” “ 4_3 ,” and “ 4_2 .” Correct answer: “ 6_5 .” Feedback if correct: “Correct! This is a first-inversion seventh chord.” Feedback if incorrect: “Incorrect. This is a first-inversion seventh chord (represented by 6_5).”]

Question 6a: According to the figured bass signature, what pitches must appear above this bass note? (Remember to apply the chromatic alterations to the correct voice.)



[Answers: C[#] and E. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This figured bass signature implies that C[#] and E must appear above the bass.”]

Question 6b: According to the figured bass signature, what pitches must appear above this bass note? (Remember to apply the chromatic alterations to the correct voice.)



[Answers: E and A[#]. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This figured bass signature implies that E and A[#] must appear above the bass.”]

Question 6c: According to the figured bass signature, what pitches must appear above this bass note? (Remember to apply the chromatic alterations to the correct voice.)



[Answers: C^b and F^b. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This figured bass signature implies that C^b and F^b must appear above the bass.”]

Question 7a: What roman numeral and figured bass signature should appear under the chord indicated by the arrow? (J.S. Bach, “Aus meines Herzens Grunde,” BWV 269, mm. 5-7.)

[Answer: V⁶ or V₃⁶. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This chord should be represented with “V⁶.”]

Question 7b: What roman numeral and figured bass signature should appear under the chord indicated by the arrow? (J.S. Bach, “Aus meines Herzens Grunde,” BWV 269, mm. 5-7.)

The image shows a musical score for a piano in 3/4 time, key of D major. The score consists of two staves: a treble clef staff and a bass clef staff. The bass line in the third measure has an upward-pointing arrow under the note G4.

[Answer: ii_5^6 or ii_3^6 . Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. This chord should be represented with " ii_5^6 ."]]

Lesson EEE: The Dominant Seventh Chord

Exam:

Question 1a: What pitch in the alto voice will complete this V^7 chord in G major?



G: V^7

[Answer: F^\sharp . Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. This V^7 chord is missing the leading tone. The alto should be F^\sharp ."]]

Question 1b: What pitch in the soprano voice will complete this V^7 chord in E minor?



e: V^7

[Answer: A. Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. This V^7 chord is missing scale degree $\hat{4}$. The soprano should be F^\sharp ."]]

Question 2a: What is the root of a V^7 chord in B^b major?



B^b : V^7

[Answer: F. Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. The root of V^7 in B^b major is F."]]

Question 2b: What pitches three pitches in the upper voices complete this V^7 chord in B^b major?



B^b : V^7

[Answer: A, C, and E^b . Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. The upper voices should contain A, C, and E^b ."]]

Question 3a: Identify the two tendency tones in the following V^7 chord (scale degrees $\hat{7}$ and $\hat{4}$):

F: V⁷

[Answers: E and B^b. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. The two tendency tones in this chord are E and B^b.”]

Question 3b: Resolve the diminished fifth formed by E and B^b in this V⁷ chord:

F: V⁷

[Answer: The soprano should step down to A and the alto should step up to F. Feedback if correct: “Correct! The diminished fifth should contract to a major third.” Feedback if incorrect: “Incorrect. The soprano should step down to A and the alto should step up to F.”]

Question 4: Resolve the following V⁷ to a tonic chord with three roots, one third, and no fifth. (The bass has been provided for you.)

G: V⁷

G: V⁷

[Answer: G: V⁷ I . Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. The soprano should resolve to B, the alto should resolve to G, and the tenor should resolve to G.”]

Question 5: Resolve the following V₅⁶ to the tonic. (The bass has been provided for you.)

Bb: V₅⁶



[Answer: B \flat : V $\frac{6}{5}$ I . Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. The soprano should resolve to D, the alto should resolve to B \flat , and the tenor should remain on the common tone F."]

Lesson FFF: The vii° Chord

Exam:

Question 1:

What makes the vii° chord unique among the other triads in a major key?

- It is built entirely of diatonic pitches.
[Feedback: Incorrect. While the vii° chord *is* made entirely of diatonic pitches, it is not alone. All of the diatonic triads are built using only diatonic pitches. The correct answer is that it is dissonant.]
- It is dissonant.
[Feedback: Correct! The vii° chord constitutes the only dissonant member of the set of diatonic triads. All of the other triads are consonant; they are either major or minor.]
- It is a minor triad.
[Feedback: Incorrect. Although the symbol for the vii° chord is written with lowercase letters, it also has a small circle indicating that it is not minor, but rather diminished. The correct answer is that it is dissonant.]

Question 2a:

Identify the tritone-forming pitches:



[Answers: F# and C]

[Feedback for correct answer: “Correct! F# and C form a tritone.”]

[Feedback for pitch that appears in the chord, but is not correct: “Incorrect. F# and C are the tritone forming pitches in this chord.”]

[Feedback for pitch that does not appear in the chord: “Incorrect. That pitch does not belong to vii°6 in G major.”]

Questions 2b: [For each correct answer from Question 2a.]

What interval does F# form with the bass?

[Answers: “M6” or “major sixth”]

[Feedback for correct answer: “Correct! F# forms a major sixth with the bass.”]

[Feedback for incorrect answer: “Incorrect. F# forms a major sixth with the bass.”]

Questions 2c: [For each correct answer from Question 2a.]

What interval does C form with the bass?

[Answers: “m3” or “minor third”]

[Feedback for correct answer: “Correct! C forms a minor third with the bass.”]

[Feedback for incorrect answer: “Incorrect. C forms a minor third with the bass.”]

Question 2d:

What type of tritone is formed by F# and C in this chord?

[Answer: “d5” or “diminished fifth”]

[Feedback for correct answer: “Correct! F# and C form a diminished fifth in this chord.”]

[Feedback for incorrect answer: “Incorrect. F# and C form a diminished fifth in this chord.”]

Question 3:

The following example presents you with a tritone (consisting of the leading tone and scale degree $\hat{4}$) and the resolution of one of the voices. Complete the tritone resolution by providing the pitch for the second voice.



[Answer: B]

[Feedback for correct answer: "Correct! This is the only valid answer. If the lower voice ascends to B, the tritone resolves from a d5 (diminished fifth) to a m3 (minor third)."]

[Feedback for answer "A#": "This is not a valid answer. Oblique motion is not permitted when resolving a tritone. The lower voice may not sustain A#."]]

[Feedback for answer "G": "This is not a valid answer. The tritone may only resolve from a d5 (diminished fifth) to a P5 (perfect fifth) if both voices are ascending by step. In this example, the lower voice may not descend because it is the leading tone and must resolve upwards to the tonic."]]

[Feedback for all other answers: "This is not a valid answer. Both voices must move by step when resolving a tritone. [X] creates disjunct motion in the lower voice."]]

Question 4:

The following example presents you with a tritone (consisting of the leading tone and scale degree $\hat{4}$). Resolve the tritone according to the rules given in this lesson by first providing a pitch for the upper voice, then one for the lower voice.



[Answers: C (upper) / F (lower) or A (upper) / F (lower)]

[Combine the following feedback texts as appropriate.]

[Feedback for C/F correct answer: "Correct! This is a valid resolution. If the upper voice ascends out of a d5 (diminished fifth), the lower voice must also ascend. The tritone then resolves from a d5 to a P5 (perfect fifth). Furthermore, E is the leading tone and must resolve to the tonic."]]

[Feedback for A/F correct answer: "Correct! This is a valid resolution. If the upper voice descends after a d5 (diminished fifth), the lower voice must ascend. The tritone then resolves from a d5 to a M3 (major third). Furthermore, E is the leading tone and must resolve to the tonic."]]

[Feedback for B^b in the upper voice: "B^b is not a valid answer for the upper voice. Oblique motion is not permitted when resolving a tritone. The upper voice may not sustain B^b."]]

[Feedback for anything other than C or A in the upper voice: "This is not a valid answer. Each voice must move by step when resolving a tritone. [X] creates disjunct motion in the upper voice."]]

[Feedback for E in the lower voice: "Incorrect. Oblique motion is not permitted when resolving a tritone. The lower voice may not sustain E."]]

[Feedback for D in the lower voice with C in the upper voice: "Incorrect. This is not a valid answer. If the lower voice descends to D while the upper voice ascends to C, the resulting interval will be a m7 (minor seventh). This is also a dissonance and cannot be used as a resolution from a tritone. Furthermore, E is the leading tone and must resolve to the tonic."]]

[Feedback for above F or below D in the lower voice: "Incorrect. Both voices must move by step when resolving a tritone. Your answer, [X], creates disjunct motion in the lower voice."]]

[Feedback for D in the lower voice with C in the upper voice: "Incorrect. This is not a valid answer. The tritone may only resolve from a d5 (diminished fifth) to a P5 (perfect fifth) if both voices are ascending by step. In this example, the lower voice may not descend because it is the leading tone and must resolve upwards to the tonic."]]

Question 5a:

The following exercise consists of a vii° chord resolving to a I chord.

d: vii° i

Is the voice leading correct in every voice as vii° resolves to i?

- Yes. [response: That is incorrect. Look again at the alto voice and try again.]
- No. [response: Correct!]

[Answer: “No.”]

[Feedback for correct answer: “Correct! The leading tone ($C^{\#}$) does not resolve properly.”]

[Feedback for incorrect answer: “Incorrect. The $C^{\#}$ in the alto voice should ascend to D because it is the leading tone.”]

Question 5b:

If you answered “No” to the previous question, adjust the necessary voice to fix the voice leading. If you answered “Yes,” proceed to Question 6.

[Correct move: Alto voice should move from $C^{\#}$ to D instead of $C^{\#}$ to B.]

[Feedback for correct move: “Correct! The alto voice needed to be adjusted to properly resolve the leading tone.”]

[Feedback for incorrect move: “Incorrect. The voice leading in that voice is already valid. The alto voice should have been adjusted to move from $C^{\#}$ to D instead of $C^{\#}$ to B to properly resolve the leading tone.”]

Question 6:

Complete the following progression in four-voice SATB texture:

b: vii° i

Lesson GGG: Seventh Chords

Exam:

Question 1a: Move one of the upper voices to create a V^7 chord:



A: V

[Answer: soprano should be changed from E to D. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. A V^7 chord in A major contains the pitches E, G^\sharp , B, and D. You should have moved the soprano from E to D.”]

Question 1b: Move one of the upper voices to create a ii^{o7} chord:



f#: ii^o

[Answer: alto should be changed from G^\sharp to F^\sharp . Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. A ii^{o7} chord in F^\sharp minor contains the pitches G^\sharp , B, D, and F^\sharp . You should have moved the alto from G^\sharp to F^\sharp .”]

Question 2a: Describe the intervallic content of this seventh chord by identifying the quality of the triad and the quality of the seventh.



G: vii^7

[Multiple choice question] The quality of the triad is _____.

[Options: “major,” “minor,” and “diminished.” Answer: “diminished.” Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This triad is diminished.”]

[Multiple choice question] The quality of the seventh is _____.

[Options: “major,” “minor,” and “diminished.” Answer: “minor.” Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This seventh is minor.”]

Question 2b: Describe the intervallic content of this seventh chord by identifying the quality of the triad and the quality of the seventh.



b#: V^7

[Multiple choice question] The quality of the triad is _____.

[Options: “major,” “minor,” and “diminished.” Answer: “major.” Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This triad is major.”]

[Multiple choice question] The quality of the seventh is _____.

[Options: “major,” “minor,” and “diminished.” Answer: “minor.” Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This seventh is minor.”]

Question 3a: What roman numeral should appear in place of the question mark? Be sure to indicate the inversion in your answer.

[Answer: vii^{\flat}_5 . Feedback if correct: “Correct!” Feedback for correct roman numeral but wrong inversion:

“That is the correct roman numeral, but the wrong inversion. This is a vii^{\flat}_5 in B^b major.” Feedback for correct inversion but wrong roman numeral: “That is the correct inversion, but the wrong roman numeral. This is a vii^{\flat}_5 in B^b major.” Feedback if entirely incorrect: “Incorrect. This is a vii^{\flat}_5 in B^b major.”]

Question 3b: What roman numeral should appear in place of the question mark? Be sure to indicate the inversion in your answer.

[Answer: V_3^4 . Feedback if correct: “Correct!” Feedback for correct roman numeral but wrong inversion: “That is the correct roman numeral, but the wrong inversion. This is a V_3^4 in G minor.” Feedback for correct inversion but wrong roman numeral: “That is the correct inversion, but the wrong roman numeral. This is a V_3^4 in G minor.” Feedback if entirely incorrect: “Incorrect. This is a V_3^4 in G minor.”]

Question 4a: Write a V_5^6 in D minor in four-part SATB voicing.

[Answer: C[#] in the bass with A, E, and G in the upper voices in any arrangement. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. A V_5^6 in D minor will have C[#] in the bass with A, E, and G in the upper voices.”]

Question 4b: Write a ii_5^6 in F major in four-part SATB voicing.



F: ii_5^6

[Answer: B^b in the bass with G, D, and F in the upper voices in any arrangement. Feedback if correct:

“Correct!” Feedback if incorrect: “Incorrect. A ii_5^6 in D minor will have B^b in the bass with G, D, and F in the upper voices.”]

Question 5: Complete the following progression from I to ii_5^6 . Remember to prepare the seventh of the ii_5^6 as a common tone from the I chord. (The bass has been provided for you.)

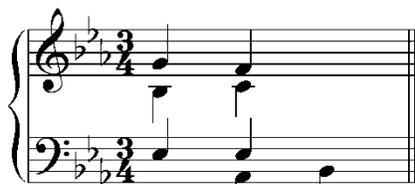


E \flat : I ii_5^6



[Answer: E \flat : I ii_5^6 . Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. The seventh of the ii_5^6 chord should be introduced as a common tone E \flat in the tenor. The soprano should step down to F and the alto up to C.”]

Question 6: Continue the following progression from ii_5^6 V. Remember to resolve the seventh of the ii_5^6 properly. (The bass has been provided for you.)



E \flat : I ii_5^6 V

[Answer: Eb: I ii⁶ V or Eb: I ii⁶ V . Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. The seventh of the ii₅⁶ chord should resolve down to D in the tenor. The soprano should remain on F and the alto should step up to D or down to B^b.”]

Question 7: Complete this “I - IV⁷ - V” progression in four voices. The voicing of the I chord and the bass line have been provided. (Remember, the seventh of the IV⁷ chord must be prepared as a common tone and must resolve downwards by step. Also, be sure to avoid parallel fifths in the move from IV⁷ to V.)

A: I IV⁷ V

[Answer: A: I IV⁷ V . Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. This progression should be voiced as follows:

A: I IV⁷ V .”]

Question 8: Identify the tritones in this vii^{o7} chord:

b: vii^{o7}

[Answer: A[#]/E and C[#]/G. Feedback if correct: “Correct! A[#] and E form a diminished fifth while C[#] and G also form a diminished fifth.” Feedback if incorrect: “Incorrect. The two tritones are formed by A[#] and E (diminished fifth) and C[#] and G (another diminished fifth).”]

Question 9: Complete the resolution of vii^{o7} to i keeping the proper resolutions of the tritones in mind:

b: vii^{o7} i

[Answer: b: vii^{o7} i . Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. Both tritones should resolve inwards by step, like so:

b: vii^{o7} i ."]

Lesson HHH: Nonharmonic Tones

Exam:

Question 1a: Given the following interval progression, where might a diatonic passing tone be inserted? Insert a valid diatonic passing tone.



[Answer: F# between G and E in the upper voice or F# between E and G in the lower voice. Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. A passing F# could appear in either voice."]

Question 1b: Given the following interval progression, where might a diatonic passing tone be inserted? Insert a valid diatonic passing tone.



[Answer: Eb between D and F in the upper voice. Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. A passing Eb could appear in the upper voice."]

Question 2: Insert three diatonic passing tones into the following passage: [Students can insert passing tones by entering a note or by selecting the two tangent pitches.]



[Possible answers:

- E between D and F in upper voice m. 5
- G between A and F in lower voice m. 1
- E between F and D in lower voice m. 4
- B between C and A in lower voice m. 7

Feedback for each correct: "Correct!" Feedback for each incorrect: "Incorrect. That is not a valid diatonic passing tone."]

Question 3a: What type of passing tone is the G in this example? [Multiple choice.]



[Options:

- Unaccented diatonic passing tone
- Accented diatonic passing tone
- Unaccented chromatic passing tone
- Accented chromatic passing tone.

Answer: Accented diatonic passing tone. Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. The G is an accented diatonic passing tone."]

Question 3b: What type of passing tone is the E natural in this example? [Multiple choice.]

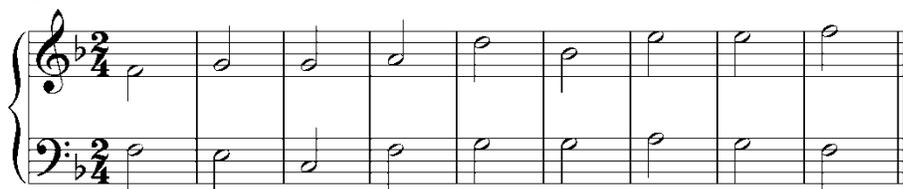


[Options:

- Unaccented diatonic passing tone
- Accented diatonic passing tone
- Unaccented chromatic passing tone
- Accented chromatic passing tone.

Answer: Unaccented chromatic passing tone. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. The E is an Unaccented chromatic passing tone.”]

Question 4: Insert three diatonic neighbor tones into the following passage: [Students can insert neighbor tones by entering a note.]



[Possible answers:

- A between the Gs in upper voice m. 2
- F between the Gs in upper voice m. 2
- F between the Es in upper voice m. 7
- D between the Es in upper voice m. 7
- A between the Gs in lower voice m. 5
- F between the Gs in lower voice m. 5

Feedback for each correct: “Correct!” Feedback for each incorrect: “Incorrect. That is not a valid diatonic neighbor tone.”]

Question 5a: What type of neighbor tone(s) appear(s) in this example? [Multiple choice.]



[Options:

- Upper diatonic neighbor tone
- Lower diatonic neighbor tone
- Upper chromatic neighbor tone
- Lower chromatic neighbor tone
- Double neighbor tones

Answer: Double neighbor tones. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. The F# and A form a double neighbor tone around the G.”]

Question 5b: What type of neighbor tone(s) appear(s) in this example? [Multiple choice.]



[Options:

- Upper diatonic neighbor tone
- Lower diatonic neighbor tone
- Upper chromatic neighbor tone
- Lower chromatic neighbor tone
- Double neighbor tones

Answer: Lower chromatic neighbor tone. Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. The F# is a lower chromatic neighbor tone to the G."

Question 6a: Identify an unaccented passing tone in this excerpt (J.S. Bach, "Als der gütige Gott vollenden wollt sein Wort," BWV 264, mm. 1-2):

[Answer: The C in the tenor at the end of m. 1. Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. That is not an unaccented passing tone."]

Question 6b: Identify the preparation of a "4 - 3" suspension in this excerpt (J.S. Bach, "Als der gütige Gott vollenden wollt sein Wort," BWV 264, mm. 1-2):

[Answer: The G in the alto on the "&" of beat 1, m. 1. Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. That is not the preparation of a "4 - 3" suspension."]

Question 7a: What type of suspension appears in the following example?

[Answer: 6-5. Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. The upper voice forms a "6 - 5" suspension with the bass."]

Question 7b: What type of suspension appears in the following example?

[Answer: 4-5. Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. The bass forms a "4 - 5" suspension with the upper voice."]

Question 8a: According to this model:

4 - 3 becomes... 4 - 3

Complete the upper voice of the following suspension:

9 - 8

[Answer: 9 - 8 (answers may vary in register). Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. A "9 - 8" in the upper voice would have B resolving to A."]

Question 8b: According to this model:

4 - 3 becomes... 4 - 3

Complete the upper voice of the following suspension:

7 - 6

[Answer: 7 - 6 (answers may vary in register). Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. A "7 - 6" in the upper voice would have F resolving to E^b."]

Lesson III: Auxiliary Sonorities

Exam:

Question 1: Complete the following expansion of the E^b-major reference sonority with an auxiliary sonority whose bass is a lower neighbor tone:

I (V°) I

[Answer: I (V°) I . Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. Your answer should look like this:

I (V°) I ."]

Question 2: Complete the following expansion of the G-minor reference sonority with an auxiliary sonority that sustains the bass of the reference sonority:

i (iv°) i

[Answer: i (iv°) i . Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. Your answer should look like this:

i (iv⁴) i .”]

Question 3: Complete the following expansion of the G-minor reference sonority with an auxiliary sonority that sustains the bass of the reference sonority:

i (iv⁴) i

[Answer: i (iv⁴) i . Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. Your answer should look like this:

i (iv⁴) i .”]

Question 3: Embellish the following expansion by incorporating a passing auxiliary vii^{o6} chord:

I (vii^{o6}) I⁶

[Answer: I (vii^{°6}) I[°] . Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. Your answer should look like this:

Question 4: In the following excerpt (W.A. Mozart, Sonata No. 2 in F major, K. 280, Mvt. 3, mm. 179-190) identify an auxiliary sonority by clicking on one of the roman numerals below:

[Answer: either of the V⁷'s in mm. 184 and 186. Feedback if correct: "Correct! That is an auxiliary sonority expanding the tonic harmony at the end of the movement." Feedback if incorrect: "Incorrect. That is not an auxiliary sonority. The V⁷ chords in m. 184 and m. 186 are auxiliary sonorities expanding the tonic harmony at the end of the movement."]

Question 5a: In the following passage in C major (J.S. Bach, "Christus ist erstanden, hat überwunden," BWV 284, mm. 1-2), some non-tonic chord is expanded with an auxiliary sonority. Click on the initial reference sonority:

[Answer: the initial reference sonority is the chord on beat two. Feedback if correct: "Correct!" Feedback if incorrect: "Incorrect. The V chord on beat two of m. 1 is expanded via an auxiliary sonority."]

Question 5b: What type of auxiliary sonority expansion occurs in m. 1?

[Possible answers: “V (IV) V,” “V(vii⁰⁶/V) V,” “V (I₄⁶) V,” “V (vi) V.” Correct answer: “V(vii⁰⁶/V) V.”
Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect.”]

Question 6a: Identify the fourth above the bass in the cadential $\frac{6}{4}$ chord in this excerpt (J.S. Bach, “Eins ist not, ach Herr, dies eine,” BWV 304, mm. 22-25) and identify what type of nonharmonic tone it is:

[(Students must click on the note and answer a multiple choice question.) Possible answers for multiple choice: “Anticipation,” “Appoggiatura,” “Suspension,” “Accented passing tone.” Answers: the fourth above the bass is the D dotted quarter note on the downbeat of m. 24 and it is a suspension. Feedback if correct: “Correct!”
Feedback if incorrect: “Incorrect.”]

Question 6b: Identify the sixth above the bass in the cadential $\frac{6}{4}$ chord in this excerpt (J.S. Bach, “Eins ist not, ach Herr, dies eine,” BWV 304, mm. 22-25) and identify what type of nonharmonic tone it is:

[(Students must click on the note and answer a multiple choice question.) Possible answers for multiple choice: “Anticipation,” “Appoggiatura,” “Suspension,” “Accented passing tone.” Answers: the sixth above the bass is the F quarter note on beat 2 of m. 24 and it is an accented passing tone. Feedback if correct: “Correct!”
Feedback if incorrect: “Incorrect.”]



[Answer: E \flat : I IV vii $^{\circ}$ /V V . Response if correct: “Correct! Raising the tenor to A natural changes the IV chord into a vii $^{\circ}$ /V.” Response if incorrect: “Incorrect. The tenor should be raised to A natural on beat three to change the IV chord into a vii $^{\circ}$ /V.”]

Question 4: One of the voices in the following progression contains an error as vii $^{\circ}$ /V resolves to V. Adjust one of the voices in the V chord to fix the voice leading:



g: i vii $^{\circ}$ /V V

[Answer: soprano should be A instead of D. Feedback if correct: “Correct! The soprano must resolve down by step to A (resolving the tritone formed by E and B $^{\flat}$ to a perfect fifth).” Feedback if incorrect: “Incorrect. The soprano must resolve down by step to A (resolving the tritone formed by E and B $^{\flat}$ to a perfect fifth).”]

Question 5a: Identify the tritone in the vii $^{\circ}$ /vi of the following excerpt (J.S. Bach, “Wo Gott der Herr nicht bei uns hält,” BWV 256, mm. 3-4):



vii $^{\circ}$ /V V

[Possible pitches: A in the bass, A in the tenor, F $^{\sharp}$ in the alto, C in the soprano. Answer: F $^{\sharp}$ in the alto and C in the soprano. Feedback if correct: “Correct! F $^{\sharp}$ and C form a diminished fifth.” Response if incorrect: “Incorrect. Those two pitches do not form a tritone.”]

Question 5b: To what interval does the diminished fifth formed by F $^{\sharp}$ and C resolve in this example?



vii $^{\circ}$ /V V

[Answer: major third (M3). Response if correct: “Correct!” Response if incorrect: “Incorrect. The tritone resolves to a major third on the downbeat of m. 3.”]

Question 6: Complete the progression below by inserting the pitches of a V 4 /V chord in A major into the most logical voices:



Ab: IV V_2^4/V V^6 I



[Answer: Ab: IV V_2^4/V V^6 I . Feedback if student's answer matches: "Correct!" Feedback if student's answer does not match: "Incorrect. The most logical placement of the pitches of a V_2^4/V chord in A



major would be as follows: Ab: IV V_2^4/V V^6 I ."]

Lesson KKK: Modulation

Exam:

Question 1: Name the five keys that are closely related to F major.

[Answers: G minor, A minor, B^b major, C major, and D minor. Feedback for each correct answer: “Correct!” Feedback for any incorrect answer [X]: “Incorrect. [X] is not a diatonic chord in F major and is therefore not a closely related key.”]

Question 2a: What is the dominant key in B^b major?

[Answer: F major. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect.”]

Question 2b: Name three pivot chords that might be used in a modulation from B^b major to F major (remember to use uppercase roman numerals for major chords and lowercase roman numerals for minor chords):

B^b major F major

=

=

=

[Possible answers: “I = IV,” “iii = vi,” “V = I,” and “vi = ii.” Feedback for each correct answer: “Correct!” Feedback for incorrect answer if first roman numeral [X] is I, iii, V, or vi: “That is incorrect. Although [X] is a potential pivot chord in a modulation from B^b major to F major, your equivalent roman numeral in C major is incorrect. Try again.” Feedback for all other incorrect answers: “That is incorrect. [X] is not a potential pivot chord in B^b major for a modulation to F major. Try again.”]

Question 3a: What is the relative minor key in G major?

[Answer: E minor. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. Try again.”]

Question 3b: Give the roman numeral for an A minor chord in G major and in E minor (remember to use uppercase roman numerals for major chords and lowercase roman numerals for minor chords).

Triad G major E minor

A minor: =

[Answers: ii/iv. Feedback if correct: “Correct! A minor is ii in G major and iv in E minor.” Feedback if first box is incorrect [X]: “That is partially correct. A minor is iv in E minor, but not [X] in G major. Try again.” Feedback if second box is incorrect [Y]: “That is partially correct. A minor is ii in G major, but not [Y] in E minor. Try again.”]

Question 4a: What is the supertonic key in A^b major?

[Answer: B^b minor. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. Try again.”]

Question 4b: Name three pivot chords that might be used in a modulation from A^b major to B^b minor (remember to use uppercase roman numerals for major chords and lowercase roman numerals for minor chords):

A^b major B^b minor

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[Possible answers: “I = VII,” “ii = i,” “IV = III,” and “vi = v.” Feedback for each correct answer: “Correct!” Feedback for incorrect answer if first roman numeral [X] is I, ii, IV, or vi: “That is incorrect. Although [X] is a potential pivot chord in a modulation from A^b major to B^b minor, your equivalent roman numeral in B^b minor is incorrect. Try again.” Feedback for all other incorrect answers: “That is incorrect. [X] is not a potential pivot chord in A^b major for a modulation to B^b minor. Try again.”]

Question 5a: What is the subdominant key in D major?

[Answer: G major. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. Try again.”]

Question 5b: Name three pivot chords that might be used in a modulation from D major to G major (remember to use uppercase roman numerals for major chords and lowercase roman numerals for minor chords):

D major G major

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[Possible answers: “I = V,” “ii = vi,” “IV = I,” and “vi = iii.” Feedback for each correct answer: “Correct!” Feedback for incorrect answer if first roman numeral [X] is I, ii, IV, or vi: “That is incorrect. Although [X] is a potential pivot chord in a modulation from D major to G major, your equivalent roman numeral in G major is incorrect. Try again.” Feedback for all other incorrect answers: “That is incorrect. [X] is not a potential pivot chord in D major for a modulation to G major. Try again.”]

Question 6a: What is the relative major key in B minor?

[Answer: D major. Feedback if correct: “Correct!” Feedback if incorrect: “Incorrect. Try again.”]

Question 6b: Give the roman numeral for an E-minor chord in B minor and in D major (remember to use uppercase roman numerals for major chords and lowercase roman numerals for minor chords).

Triad B minor D major

E minor: =

[Answers: iv/ii. Feedback if correct: “Correct! E minor is iv in B minor and ii in D major.” Feedback if first box is incorrect [X]: “That is partially correct. E minor is ii in D major, but not [X] in B minor. Try again.” Feedback if second box is incorrect [Y]: “That is partially correct. E minor is iv in B minor, but not [Y] in D major. Try again.”]

Question 7a: The following piece (J.S. Bach, “Das alte Jahr vergangen ist,” BWV 289, mm. 5-8) begins in E minor. The third phrase ends with a perfect authentic cadence in m. 6. In what key is this cadence?

[Answer: B minor (V). Feedback if correct: “Correct! The third phrase modulates to the dominant key of B minor.” Feedback if incorrect: “Incorrect. The third phrase modulates to the dominant key of B minor.”]

Question 7b: The fourth phrase ends with a perfect authentic cadence in m. 8. In what key is this cadence?

[Answer: G major (III). Feedback if correct: “Correct! The third phrase modulates to G major, the relative major.” Feedback if incorrect: “Incorrect. The third phrase modulates to G major, the relative major.”]