

## **MUSIC 106 Music Theory through Performance and Composition**

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**Description:** Music 106 is the second part of our comprehensive introduction to music, covering classical music, chromatic harmony, and twentieth-century music. The emphasis throughout is on learning by creating, performing, and listening to music. Though this is an academic course, we try not to lose sight of the fact that music is something that brings us joy.

**Course Web Site:** [https://blackboard.princeton.edu/courses/1/MUS106\\_S2011](https://blackboard.princeton.edu/courses/1/MUS106_S2011)

**Prerequisite:** Music 105 or permission of the instructor.

**Requirements/Grading:** There are two lectures, two precepts, and one ear-training lab each week. Attendance at all sessions is required. Grades are based on the midterm (15%), final (15%), weekly written assignments (45%), final project (10%), class/precept participation (5%) and ear training (10%). You must pass each component to pass the class. Late assignments will be marked down one grade per day, unless an extension has been explicitly granted by the preceptor or professor. Extensions are granted within 24 hours of the due date only under exceptional circumstances. Surprise quizzes, or attendance sheets, may be used in the event that attendance seems to falter.

*Please note that learning music theory, like learning a language, requires regular practice. We will supply a steady stream of assignments, but students are also expected to explore the material on their own.*

**Weekly assignments** are posted on Blackboard each Thursday, and due in Thursday lecture of the next week. **Precepts and ear training start the second week of classes!**

**Texts** (the same as MUS105):

1. J.S. Bach, *371 Harmonized Chorales & 69 Chorale Melodies With Figured Bass*, Riemenschneider, ed. (New York: G. Schirmer/Warner Bros.)
2. W. A. Mozart, *Complete Sonatas for Pianoforte* (Dover)
3. [OPTIONAL] *Tonal Harmony*, Kostka & Payne (McGraw Hill; any edition)
4. MacGamut (a computer program for ear training)
5. Dannhäuser, *Solfeges des Solfeges*, vol. 1, freely downloadable here:  
[http://imslp.org/wiki/Category:Dannhäuser%2C\\_Adolphe](http://imslp.org/wiki/Category:Dannhäuser%2C_Adolphe)
6. *Recommended:* free/cheap notation software such as Finale Notepad:  
<http://www.finalemusic.com/notepad/>

**Unit 1. Advanced functional harmony (4 weeks)**

1. Fauxbourdon and the Three Systems	2/1
2. Fauxbourdon II	2/3
3. Sequences I	2/8
4. Sequences II	2/10
5. Classical form I: The Sonata Exposition	2/15
6. Classical form II: Minuet & Trio/Theme & Variations/Rondo	2/17
7. Schemas (incl. the anomalous V4/3)	2/22
8. iii + third substitution	2/24

**Unit 2. Romanticism and chromaticism (4 weeks)**

*Optional Reading:* K&P Chapters 21-27

9. Altered dominant chords (I): diminished sevenths, augmented sixths	3/1
10. Altered dominant chords (II): augmented chords	3/3
11. Altered predominants (I): “borrowed predominants” Altered tonic chords: i intensifying V, I+ intensifying IV.	3/8
12. Altered predominants (II): the Neapolitan	3/10
<b>*** MIDTERM EXAM IN PRECEPTS ***</b>	
13. Romantic forms: songs and intermezzos	3/22
14. Neighboring & passing diminished sevenths	3/24
15. The major-third and minor-third systems	3/29
16. Chopin E-minor prelude	3/31

**Unit 3. Twentieth century tonal music (4 weeks)**

*Optional Reading:* K&P Chapters 28-30

17. Chords and scales: the crisis of chromaticism (Scriabin)	4/5
18. Modality, new scales, and the 468 key areas of 20 <sup>th</sup> -century music for every composer a scale: whole-tone and Debussy, etc. Key distance and voice leading between scales	4/7
19. Extended chords	4/12
20. The tritone substitution	4/14
21. Impressionism	4/19
22. Jazz	4/21
23. Minimalism	4/26
24. Conclusion: 20 <sup>th</sup> -century music	4/28

**FINAL PROJECT DUE**

5/10

## Fauxbourdon and the Three Systems

In Music 105, you learned the basic principles governing the construction of *harmonic cycles*: tonal harmonies progress from tonic to dominant along the descending circle of thirds, returning to the tonic by way of a few special progressions ( $V \rightarrow I$ ,  $vii^\circ \rightarrow I$ ,  $IV \rightarrow I$ , etc.). You also learned that this basic system can be enriched with secondary dominants and modulation.

However, the system of harmonic cycles is just the first of three separate syntactical systems operating in functionally tonal music. The other two, though somewhat less central, play an important role in the style. You certainly need to be conversant with them if you want to understand Bach, Mozart, Haydn, etc.

The second system, “fauxbourdon” or the system of *parallel triads*, will be described in this handout.<sup>1</sup> The third system, the system of *sequential tonality*, will be discussed in the next handout.

1. *History of fauxbourdon.* Interestingly, the second system is the longest-lasting of the three, dating back to the early Renaissance, and extending to the present day.<sup>2</sup> Starting in the 1400s, one finds passages in which first-inversion triads move in parallel, particularly in the music of Guiliam Dufay (1397–1474). See, for instance, the following excerpt (stolen from the Wikipedia article, which is pretty good), where the only harmonies are “open fifths” (such as D3-A3-D4) and first inversion triads, with the latter always moving in parallel and almost always stepwise.

The image shows a musical score excerpt for the piece "Sumer Is Icite" by Guillaume Dufay. It is written in 3/4 time and consists of three staves: a vocal line (soprano), a second vocal line (alto), and a lute line (bass). The lyrics are "Su - mens il lud A - ve". The music features a characteristic fauxbourdon style, with the lute line playing a series of parallel triads in first inversion (e.g., D3-A3-D4, E3-B3-E4, F3-C4-F4, G3-D4-G4, A3-E4-A4, B3-F4-B4, C4-G4-C5, D4-A4-D5). The vocal lines move in parallel motion with the lute line, creating a rich, harmonic texture.

Fauxbourdon passages can also be found in jazz (which often uses parallel triads, particularly in “drop 2” or “locked hands” piano style), and popular music. For instance, the Pixies’ “Wave of Mutilation” moves from IV to I through parallel stepwise motion:  $IV \rightarrow iii \rightarrow ii \rightarrow I$ .

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<sup>1</sup> “Fauxbourdon” is often translated as “false bass,” with *bourdon* referring (I believe) to a certain kind of organ pipe often used for the bass notes.

<sup>2</sup> The system of harmonic cycles starts in the early 1600s, and is often associated with Monteverdi. Sequential tonality starts around the same time, and is often associated with (the eldest) Gabrielli. Functional tonality has three fathers!



I think the first-inversion triads have the function of cleansing the listener's palate<sup>3</sup>, giving us a little break from the incessant recirculation of harmonies. However, you can also see this passage as an extravagant way to connect the initial  $IV^6$  to the final  $ii^6$ . Note that the passage works, in large part, because it leads to a stereotypical cadence:  $ii^6 \rightarrow I^4 \rightarrow V \rightarrow I$ , which reorients our ears and reintroduces the system of harmonic cycles. (In other words: if you're going to use a long chain of first-inversion triads, make sure you end up somewhere really recognizable.) For a similar example, see the opening of the third movement of Beethoven's first C major piano sonata. For another example, see the Trio of Beethoven's first piano sonata, or the Rondo of his second piano sonata.

When writing fauxbourdon, make sure that your melody makes sense, and that the parallel motion leads somewhere recognizable—usually to a strong dominant or a strong cadence. It may help to think of fauxbourdon as a kind of “thickened melody.”

*C.  $I^6$  as a neighbor to  $ii^6$ .* Here's a passage from Mozart's B $\flat$  major piano sonata (K333) where a phrase ends with a  $ii^6-I^6-ii^6-vii^6$  progression; you can think of the  $I^6$  as a kind of “neighbor chord” appearing within the sequence of stepwise triads.

This particular figure is pretty common in Mozart. In fact, the first piano sonata begins with what can be construed as a  $ii^6 \rightarrow I^6 \rightarrow ii^6 \rightarrow V$  progression, where the  $I^6$  is again neighboring.

Interestingly, there is some evidence that fauxbourdon becomes less common as Mozart gets older. Intuitively, they sound to me a little “Haydnish” or “early classical.”

*D. Root position versions.* Sometimes you can find long chains of parallel *root position* triads. Here, for example, is the last movement of the Mozart E $\flat$  major sonata, with  $IV$  rising to  $I$  by a sequence of stepwise root position triads. Note that to avoid very obvious parallel fifths, the fifth needs to occur after the beat. This note then moves down to an on-the-beat third, almost as if it were an incomplete neighbor.

<sup>3</sup> BTW, do you know the difference between palette, pallet, and palate?

Interestingly, where first-inversion fauxbourdon tends to move downward (though not always), the root position version is more likely to move upward. Furthermore, the progression here (IV→V→vi→vii°) is extremely common in root-position fauxbourdon. Note that vii° is fine in these contexts.

Here's a related example from the last movement of Mozart's first B♭ major sonata, where the progression is I→ii→vii°→I.

I ii vii° I I ii vii° I IV V

Methodological digression: usually, when we see arpeggiated triads (as in Alberti bass) we “verticalize” them, pretending that they embellish a musical “background” in which the chord exists as a chorale-style sonority articulated by independent voices. We then assert that the prohibition on parallel perfect fifths applies both at the surface and at this imaginary background layer. Root-position fauxbourdon presents a challenge to this approach: if we verticalize the notes, we end up with parallel fifths in the background; but if we refuse to verticalize the notes (say, because we want to avoid those parallels) then we seem to trivialize the claim that parallel fifths are avoided at the background level—because it turns out that we verticalize *only when that process does not produce parallel fifths*. (Actually, a similar problem sometimes happens with first-inversion fauxbourdon, when the top two voices are a fifth apart. See the third movement of Haydn's C minor piano sonata no. 16.) I don't know an obvious way out of this dilemma. I think the best approach is to think of root-position fauxbourdon as a kind of tonal idiom, in which the prohibition on parallel fifths has temporarily been suspended.

*E. Four voices.* Fauxbourdon works best with three voices, since you can simply move them all in parallel, without creating octaves or fifths. With four voices, you need to rejigger the voices in a way that inevitably seems a little awkward. Nevertheless, you will find the technique in four-voice contexts. Here's the opening of Bach's chorale no. 106. In the last two measures, we have I→V<sup>6</sup>→IV<sup>6</sup>→iii<sup>6</sup>→ii<sup>6</sup> leading to a modulation to F♯ minor. Note how three voices move in parallel while the tenor hops back and forth between close and half-open positions.

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For other examples, see Chorales 42 (mm. 7–8) and 61 (m. 15).

### 3. Fauxbourdon, The Rule of the Octave, and Descending Scalar Bass Lines

Let's return to Music 105 for a moment, and remember what I called *the Rule of the Octave*: a handy “rule of thumb” for harmonizing ascending and descending scales in the bass. The ascending version of the Rule of the Octave is pretty straightforward, with just one or two obvious choices for IV for each bass note.

C: I vii<sup>°6</sup> I<sup>6</sup> ii<sup>6</sup> V iv V<sup>6</sup> I  
or IV or IV<sup>6</sup>

The descending version is trickier. The historical sources describe a version where the bass moves downward from a tonic on  $\hat{1}$  to a dominant on  $\hat{5}$ , with the latter moving to  $V\frac{1}{2}$  and then  $I^6$ . This works, but it's not such a common progression.

C: I V<sup>6</sup> IV<sup>6</sup> V V<sup>2</sup> I<sup>6</sup> vii<sup>°6</sup> I

But there's another version where the root-position dominant is avoided. Here the descending scale is harmonized in fauxbourdon style, with first-inversion triads over every scale degree except the tonic.

C: I V<sup>6</sup> IV<sup>6</sup> iii<sup>6</sup> ii<sup>6</sup> I<sup>6</sup> vii<sup>°6</sup> I

My suspicion is that this second version is at least as popular as the first. If this is right, then it means that *fauxbourdon is essential to harmonizing one of the most important possibilities in the tonal system, namely the descending scalar bass*.

This basic fauxbourdon-style descending bass can be varied in a number of common ways, all of which you need to learn.

*Variation 1: I $\frac{4}{4}$  for iii<sup>6</sup>.* The most important variation replaces the iii chord (unusual, in system of harmonic cycles) with a I $\frac{4}{4}$ . This is sometimes called a *passing  $\frac{4}{4}$* , though I find that name misleading; I prefer to think of the I $\frac{4}{4}$  as a common *musical idiom* which can appear in just a few standard contexts.<sup>4</sup>

C: I V<sup>6</sup> IV<sup>6</sup> I $\frac{4}{4}$  ii<sup>6</sup> I<sup>6</sup> vii<sup>°6</sup> I

The I $\frac{4}{4}$  is probably more common than iii<sup>6</sup>, in part because it endows the progression with an attractive and unusual  $I \rightarrow V \rightarrow IV \rightarrow I$  feel. In fact, many composers use this progression precisely to create the sense of harmonic “retrogression” whereby V goes to IV.<sup>5</sup>

Now that know this variation, you can use the descending pattern in a variety of ways, depending on where you choose to stop the descending motion. The following options typically occur at the beginning of phrases:

Option 1: Use just the first three chords, as in  $I \rightarrow V^6 \rightarrow IV^6 \rightarrow V^6 \rightarrow I$

Option 2: Go down to ii<sup>6</sup> and cadence  $I \rightarrow V^6 \rightarrow IV^6 \rightarrow I\frac{4}{4} \rightarrow ii^6 \rightarrow \text{cadence}$

Option 3: Go down to a root position V/V:  $I \rightarrow V^6 \rightarrow IV^6 \rightarrow I\frac{4}{4} \rightarrow ii^6 \rightarrow I^6 \rightarrow V^7/V$

<sup>4</sup> The term “passing chord” suggests a more general procedure, as if you can throw in  $\frac{4}{4}$  chords whenever you can justify them as being “passing.” But this isn’t true: the vast majority of “passing  $\frac{4}{4}$  chords” are I $\frac{4}{4}$  chords that connect IV<sup>6</sup> to ii<sup>6</sup> as described in this handout.

<sup>5</sup> Cf. the second themes of Schubert’s *Quartett-Satz* or Brahms’s G major violin sonata.

(Of course, you can use  $iii^6$  in these contexts as well.) You can also use *just* the portion of the progression  $IV^6 \rightarrow I_4^6 \rightarrow ii^6$ . This is very common, as are the close variants  $IV^6 \rightarrow I_4^6 \rightarrow ii^6$  and  $IV^6 \rightarrow I_4^6 \rightarrow IV$ , again appearing in isolation from the larger sequence.

*Variation 2: IV for ii<sup>6</sup>.* In this version, the  $ii^6$  is replaced with a root position IV.

C: I V<sup>6</sup> IV<sup>6</sup> I<sub>4</sub> IV I<sup>6</sup> vii<sup>6</sup> I

One usually finds this variation in conjunction with the first, creating a pair of  $IV \rightarrow I$  progressions over a falling stepwise bass:  $IV^6 \rightarrow I_4^6 \rightarrow IV \rightarrow I^6$ . The great thing about this progression is that it allows you to construct a canon in which outer voices play  $\hat{6}-\hat{5}-\hat{4}-\hat{3}$ , offset by two beats. Here's an example from Mozart's first C major sonata (first movement); we're in G major, and the excerpt starts on IV. Starting in m. 2, both melody and bass outline E-D-C-B (bass starts on beat 2, melody on beat 4). The inner voice has G, doubled at the octave (G<sup>4</sup>/G<sup>5</sup>).

G major: IV<sup>6</sup> I<sub>4</sub> IV I<sup>6</sup> (etc.)

Mozart often uses the  $IV^6 \rightarrow I_4^6 \rightarrow IV \rightarrow I^6$  on its own, separating it from the larger fauxbourdon pattern. However, you can use the full progression ( $I \rightarrow V^6 \rightarrow IV^6 \rightarrow I_4^6 \rightarrow IV \rightarrow I^6 \rightarrow vii^6 \rightarrow I$ ). For example, the third measure of Bach's fourth Brandenburg Concerto uses a close variant with  $iii^6$  instead of  $I_4^6$ :

**Allegro.**

Flauto traverso.

Violino principale.

Violino di ripieno.

Viola di ripieno.

Violoncello.

Violone.

Cembalo concertato.

The last part of this progression,  $IV \rightarrow I^6 \rightarrow vii^{o6} \rightarrow I$ , is important enough to have acquired its own name: the “Prinner” progression. (This name was invented by the contemporary theorist Robert Gjerdingen.) The soprano is typically in parallel tenths with the bass, and the pattern is often found in the middle of a phrase, after an initial progression that serves as the “opening gambit.” For instance, a sentence might open with  $I \rightarrow V^6 \rightarrow V^7 \rightarrow I$  (the opening gambit) followed by a  $IV \rightarrow I^6 \rightarrow vii^{o6} \rightarrow I$  (a “Prinner” continuation).

C: IV I<sup>6</sup> vii<sup>o6</sup> I

Note that this progression is something like a “schema” or “outline” or “background pattern” which can be embellished in various ways. We’ll talk about schemas later in the course.

To repeat: not only is the whole sequence important, it also contains within it a number of important idioms:  $IV^6 \rightarrow I_4^6 \rightarrow (IV, ii^6, \text{ or } ii^{\flat})$ ,  $IV^6 \rightarrow I_4^6 \rightarrow IV \rightarrow I^6$ , and  $IV \rightarrow I^6 \rightarrow vii^{o6}$  (“prinner”). I think it’s much easier to remember these as parts of a single pattern, rather than as three unrelated progressions.

C: I V<sup>6</sup> IV<sup>6</sup> I<sub>4</sub> IV/ii<sup>6</sup> I<sup>6</sup> vii<sup>o6</sup> I

common opening      common IV-I-IV-I pattern      prinner

passing I<sub>4</sub> progression  
(ending with ii<sup>6</sup>, ii<sup>6</sup><sub>♭</sub>, or IV)

*Variation 3: inserting V<sup>2</sup> chords into the sequence.* The third standard variation is to embellish the descending bass with  $\frac{1}{2}$  chords. For instance, you can replace the opening  $V^6$  with  $V^2/IV$

C: I V<sup>2</sup>/IV IV<sup>6</sup> I<sub>4</sub> IV I<sup>6</sup> vii<sup>o6</sup> I

or you can insert  $\frac{1}{2}$  chords that act as applied dominants to the next chord in the sequence, simply by repeating a bass note:

C: I V<sup>6</sup> IV<sup>6</sup> iii<sup>6</sup> V<sup>2</sup>/ii<sup>6</sup> ii<sup>6</sup> V<sup>2</sup> I<sup>6</sup> vii<sup>o6</sup> I

These variations tend to convert the stepwise fauxbourdon sequence into something more like a “descending fifth sequence,” to be covered next week.

4. *Minor keys.* One also finds fauxbourdon in minor keys. Typically, descending passages use the natural minor scale (e.g.  $i \rightarrow v^6 \rightarrow iv^6 \rightarrow \text{etc.}$ ) while ascending passages involve melodic minor. However, you sometimes find harmonic minor ( $i \rightarrow V^6 \rightarrow iv^6 \rightarrow \dots$ ) and a range of other possibilities. Use your ear.

5. *Ascending versions of the  $IV^6 \rightarrow I_4^6 \rightarrow ii^6$ .* Here's an interesting passage from Mozart's first sonata: the phrase starts on the tonic in G major and immediately moves to a  $ii_2^6$ . This then leads to a long progression that moves back and forth between  $ii^6$  and  $IV^6$  by way of  $I_4^6$ . Rhetorically, the music feels like it's treading water, until the  $ii^6$  finally gets its act together and progresses to the cadential  $I_4^6 \rightarrow V^7$  that we've been expecting. The phrase is a bit unusual in that it uses the descending fauxbourdon idiom  $IV^6 \rightarrow I_4^6 \rightarrow ii^6$  in an ascending fashion. But it's pretty comprehensible as a slight variant on the progressions we've been exploring.

The image shows two systems of musical notation for piano accompaniment. The first system consists of two staves (treble and bass clef) with a trill (tr) above the first measure. The second system also consists of two staves, with a trill (tr) above the final measure. Below the first system, a series of Roman numerals indicates the chord progression: G: I, ii<sub>2</sub><sup>6</sup>, [ I<sub>4</sub><sup>6</sup>, IV<sup>6</sup>, I<sub>4</sub><sup>6</sup>, ii<sub>2</sub><sup>6</sup>, I<sub>4</sub><sup>6</sup>, IV<sup>6</sup>, I<sub>4</sub><sup>6</sup> ?? ], ii<sup>6</sup>. Below the second system, the Roman numerals I<sub>4</sub><sup>6</sup> and V<sup>7</sup> are indicated.

## Sequences

A sequence is a repeating musical pattern that is transposed each time it repeats. There are *melodic* sequences in which only the melody follows a regular pattern, *harmonic* sequences in which only the chords follow a regular pattern, and sequences in which *both* melody and harmony follow the regular pattern. We'll focus on this last category, which is the most common.

In baroque and classical music, sequences create motion: they usually appear after a strong thematic statement has been made, and often serve as a way of linking one thematic statement with the next. Sequences are very common in baroque music, and often appear within phrases. In classical music, they are still common, but they occur in more specific places—for instance, the transition or development sections in sonata form (about which more later.) Sequences are somewhat mechanical, and allow the ear to relax a little: once you've understood the basic pattern, it doesn't require too much concentration to follow the pattern as it moves around. (In other words, they give the ear and brain a break.) Sequences can also be very fun to listen to, because of the way they combine repetition (the same rhythmic and melodic pattern) and change (this pattern moves from chord to chord).

Sequences move in diatonic space. There are three distinct diatonic interval-types, so we can classify sequences into six categories, depending on whether the sequence ascends or descends.

**The six categories of sequence:**

Up by second	Down by second
Up by third	Down by third
Up by fourth (= down by fifth)	Down by fourth (= up by fifth)

Sequences can be entirely *diatonic*, using only the pitches of a single key, or *chromatic*, typically because they use applied dominant chords. A single sequential pattern can usually occur in both diatonic and chromatic varieties.

The basic rule for constructing sequences is this: sequences tend to move to the next sequential level by way of a descending fifth or ascending step progression. (This is because down-by-fifth and up-by-step are the two dominant→tonic progressions, expressed by V→I and vii°→I respectively.) For example, suppose you want to create a sequence that starts on I and moves up by step:

*basic sequential pattern:*    **I**            **ii**            **iii**            **IV**            **V**

The next step is to precede each new chord with the chord that lies a fifth above (or maybe, a step below) it. In a chromatic sequence, these chords will be *applied dominants* to the next chords. In a diatonic sequence, they will just be ordinary diatonic triads or seventh chords that descend by fifth. Even in a diatonic sequence, however, these chords will have a faint dominant function – serving to provide a smooth transition to the next sequential iteration.

*chromatic sequence:*        **I** V/ii    **ii** V/iii    **iii** V/IV    **IV** V/V    **V**

diatonic sequence:            I vi    ii viio   iii I    IV ii V

If you examines the diatonic version of this sequence, you will notice that it is somewhat peculiar. In particular, it contains a chord progression (vii<sup>o</sup>-iii-I) that breaks many of the rules that you have been trying to learn! To make matters even worse, the above chord progression sometimes uses *root-position* diminished triads. This involves yet another rule violation, since diminished triads do not usually occur in root position. Nevertheless, this chord progression is extremely common. Why? *Because the sequential pattern overrides the local voice-leading considerations.* The force of the repetition is so strong that it overcomes our objections to the unusual chords. (Notice, by the way, that *most* of the chord progressions in the diatonic sequence are perfectly OK. It's just the ones involving iii that are unusual.) You might say that the vii<sup>o</sup> is acting not as a dominant of I, but as a strange kind of dominant (a "diatonic dominant?" or "sequential dominant?") of iii.

By the way, though the above examples both begin with "I," a sequence can start on any chord.

With these points in mind, let's look at some of the most important kinds of sequences.

**1(a) Up by second.** This is the **second most common** type of sequence in Bach. We've already discussed the basic chord progression above. It can be found in both diatonic and chromatic varieties. Very often, the chords that descend by fifth are found in first inversion. For this reason, the sequence is sometimes described as the "5-6" sequence (or "the 5-6 technique") because of the way root-position and first-inversion chords alternate. The sequence can also appear with all the chords in root position, however.

a) diatonic

C: I    vi<sup>6</sup>    ii    vii<sup>o6</sup>    iii    I<sup>6</sup>    IV    ii<sup>6</sup>    V<sup>7</sup>    I

b) chromatic

C: I    V<sup>6</sup><sub>5</sub>/ii    ii    V<sup>6</sup><sub>5</sub>/iii    iii    V<sup>6</sup><sub>5</sub>/IV    IV    V<sup>6</sup><sub>5</sub>/V    V    V<sup>6</sup><sub>5</sub>/vi    vi    V<sup>7</sup>    I

Note that this sequence allows you to harmonize a nearly complete ascending chromatic scale. It is typical to break the sequence once you reach the vi chord, either returning to IV (or V/V), or leaping ahead to the V6 chord, as I have done here.

**1(b) Down by second.** Let's repeat the procedure we followed above when we derived the ascending by step sequence. We begin with a diatonic pattern that descends by step.

*basic sequential pattern:*    **I**            **vii°**        **vi**            **V**            **IV**

We then precede each new chord with the chord that lies a fifth above it. This time we'll start with the diatonic version of the sequence

*diatonic sequence:*            **I**    **IV**    **vii°**    **iii**    **vi**    **ii**    **V**    **I**

Notice that the roots all descend by fifth. By inserting chords into the descending-step pattern, we have created a descending fifth sequence. *Thus, the descending-step and descending-fifth sequences are the same.* This is **easily the most useful and most common** of all the sequences.

Here you have great flexibility about where to put the applied chords. *Since the sequence descends by step, every chord could potentially be used as the applied dominant of the next chord.* The typical pattern is to leave the IV-vii progression unaltered. However, iii can become V/vi, vi can become V/ii, and ii can become V/V. In this way, you can use a descending fifth sequence to modulate to vi, ii, or V!

As before, it is very common to find some of the chords in inversion. Here's an example where the sequence modulates to V.

C: I            IV<sup>6</sup>            vii°            V<sup>6</sup>/vi            vi            V<sup>6</sup>/V            V

**2(a) Up by third.** Ascending-third sequences are **rare**. They are usually chromatic, and usually stop after one or two repetitions. They tend to involve root position chords. Here are two typical examples:

*moving from I to V:*            **I**    V/iii    **iii**    V/V    **V**

*moving from IV to I:*            **IV**    V/vi    **vi**    **V**    **I**

You probably won't need to use this sequence in your writing!

**2(b) Down by third.** Descending-third sequences are **relatively common**. They are usually chromatic, and very often the bass forms a descending scalar line. Here's an example using seventh chords.

C: I    V<sub>3</sub><sup>4</sup>/vi    vi    V<sub>3</sub><sup>4</sup>/IV    IV    V<sub>3</sub><sup>4</sup>/ii    ii    V<sup>7</sup>    I

Note that here, the upper voices do not follow a strictly sequential pattern. You could say that this passage is a *harmonic* but not a *melodic* sequence.

There is another **common** chord progression that you should know. This is the chord progression used in Pachelbel's canon.

*the Pachelbel progression:*    I    V    vi    iii    IV    I    IV    V

Each new step in the sequence is initiated by an ascending step rather than descending fifth. This can be thought of as a diatonic version of vii<sup>o</sup>→I, or perhaps as a diatonic “deceptive progression.” You should learn this progression. It's a very common idiom in classical and popular music.

I    V<sup>6</sup>    vi    iii<sup>6</sup>    IV    I    IV    V<sup>7</sup>

Finally, you sometimes find sequences of pure descending thirds: C a F b<sup>o</sup> G, etc. This is an interesting sequence that is somewhat hard to explain.

**3(a). Descending by fourth (ascending fifths).** This is commonly found in Mozart development sections, typically with applied dominants. It *sometimes* appears as a brief diatonic sequence of ascending fifths:

I    V    ii    vi

Much more common are for the ascending fifths to be preceded by dominant chords of some kind:

I    V/V    V    V/ii    ii    V/vi    vi

This chord progression often appears in minor, frequently with diminished seventh chords serving as the applied dominants. This is very effective because of the common tone relationship between the minor chords and the applied diminished-seventh chords.

c: i      vii<sup>°</sup><sub>3</sub><sup>4</sup> / v      v      d: vii<sup>°</sup><sub>3</sub><sup>4</sup>      i      vii<sup>°</sup><sub>3</sub><sup>4</sup> / V      V

Note that diminished sevenths resolve somewhat unusually, with the bass descending by fourth rather than by step! (I've also written the chord using 5 voices. This again is pretty common.)

**3(b). Ascending by fourth (descending fifths).** We've already done this one! It's the same as the descending step sequence.

**FINAL NOTE.** You'll occasionally find other sequences not listed on this handout, though these are by far the most important.

Sometimes, the sequential "unit" has several chords in it — for instance, the sequential unit could be (I V I V/ii): this is just the ascending-step pattern with a I-V-I added in. The important thing to be on the lookout for are repeating fragments of music that get transposed by the same interval with every repeat.

## THE CLASSICAL FORMS

Most classical pieces are in 3 or 4 movements, with the outer movements fast and one of the middle movements slow. The individual movements themselves conform to a small number of very standard patterns—in fact, the four forms described below probably account for 90% of classical pieces.

**I. Sonata form.** You’ve basically already learned Sonata form — it’s an expanded version of the rounded binary form we considered in MUS105. Like rounded binary form, the sonata form has three parts that are grouped into two units, each of which is typically repeated.

||: A :|| ||: B A' :||

The opening A section is called the *exposition*. It sets out the main themes of the piece. It begins in the tonic, with a strong, memorable theme; it then quickly modulates to a closely related key: in major, this is usually the dominant; in minor, it is usually the relative minor, or possibly the minor dominant. (In the nineteenth century, following Beethoven, composers begin to experiment with a wider range of secondary keys.) It then presents a second, memorable theme. Some more themes follow, perhaps less memorable, with (perhaps) a memorable theme before the cadence in the new key that ends the exposition.

The B section is called the *development*. It visits a variety of new key areas, reusing the themes of the opening section. One very often finds sequences here. The development typically ends with a half cadence on V, preparing for the return of the A section.

The A' section is called the *recapitulation*. It repeats the exposition *but without the modulation*. The music stays in the tonic key the entire time. In this sense, it can be said to “solve” the “problem” posed by the exposition—rectifying the fact that the original A section ended up in the wrong key.

A. *The exposition.* The exposition itself can be broken down into several sections.

		<i>half cadence</i>		<i>possible</i>		<i>full cadence</i>
		<i>cadence? (real pause)</i>	<i>(real pause)</i>	<i>elided cadences</i>	<i>(pause)</i>	
		↓	↓	↓ ↓ ↓	↓	
	First Theme	Transition	Second Theme Group	Closing theme		
<b>Major:</b>	I	I→V	V	V		
<b>Minor:</b>	I	i→III	III	III		

The opening section, from the first theme to the end of the transition, is very flexible. It often involves two phrases: a strong memorable first phrase, and a second, transitional phrase that modulates to the new key. The opening section almost always ends in a half cadence, usually in the new key. However, it is entirely possible to have an opening section that does not modulate—a half cadence in the old key leads immediately to a second theme in the dominant. See #2, below.

There are many possibilities for this opening section, however. For example:

1. A very standard pattern is to begin with a strong, memorable phrase whose cadence is *elided*—that is, the cadence of the first phrase does “double duty” as the beginning of the transitional phrase. The transitional phrase then begins with the opening material, but takes it in a new direction, modulating to a new key. (See, for example, the Mozart A minor piano sonata.)

- 1a. Alternatively, you can begin with a strong memorable phrase that ends in a half cadence. The second phrase starts similarly to the first, but modulates to the new key, ending in a half cadence of that key. (Mozart G minor symphony, no. 40, first movement.)

2. Sometimes the opening theme does not modulate, and there is no separate transition. The second theme simply starts in the new key. The three Mozart D major sonatas follow this pattern, as does the Mozart C major Sonata no. 10

3. The opening phrase can reach a full cadence on the tonic. The transitional phrase then starts with new, contrasting material that makes the modulation happen. Cf. the Mozart G major piano sonata.

There are many other patterns that are possible. I suspect that there are a few basic patterns (~8-10) that account for a great many sonata forms. **In almost every case, the opening section ends with a brief pause, to signal that the music is about to go somewhere new.**

The **second theme** represents the next big event in the sonata form. It is usually memorable and melodic. Sometimes it contrasts strikingly with the opening theme. Sometimes it reuses ideas from the opening theme. The second theme often consists in a number of smaller phrases, which is why people sometimes call it the *second group* or *second theme area*. Usually the motion does not stop during the second theme—cadences are elided, the goal being to keep the music going until the end of the exposition.

**Very often composers recall the opening music, or the opening key, somewhere during the second theme.** Often this is done quite subtly. Watch for it.

Finally, the exposition ends sometimes ends with a **closing theme** signaling that we’re about to finish. Usually, this closing music is memorable but light in character.

*B. The development.* The development reuses the musical ideas of the exposition. It is typically full of sequences, built out of the expositional material, and cycling through a variety of keys, avoiding the keys of the exposition. There are very few rules. The development ends modulates back to the tonic and ends on a half cadence.

The development rarely involves new themes, though this occasionally happens. Beethoven did this in his third symphony and it was considered revolutionary. However, antecedents can be found in the work of earlier composers.

*C. The recapitulation.* The recapitulation (recap) often repeats the opening material very closely. Its main job is to present the second theme area in the home tonic key. Sometimes material is eliminated, sometimes it is reordered. (A reasonably common thing to do is bring back the opening theme after the second theme.) Typically it repeats the exposition closely, with only a few measures altered to keep the second theme in the tonic key. **It is always interesting to look at what changes in a sonata recapitulation.** Ask yourself what the composer changed, what stayed the same, what got eliminated, and what got transposed.

The subdominant often makes an appearance in the recapitulation, especially in major keys. To see why, note that the exposition of a major key sonata modulates up by fifth, from tonic to dominant. If, in the recapitulation, you get to the subdominant, then you can reuse this modulation up by fifth—now modulating from subdominant up to tonic, rather than from tonic up to dominant.

**Ia. Slow movement sonata form.** Slow movements are sometimes in an abbreviated sonata form that has no development.

**II. Theme and variations.** The theme and variations form is a repetitive form. A passage of music (the “theme”) is stated. It is then repeated a number of times, embellished each time. Usually the harmonies stay relatively fixed, though they may be embellished somewhat. Often the melodic outline of the original theme is discernable, though sometimes it can be hard to find.

Symbolically, the theme and variations form can be written AA'A"A''' (etc.)

Abstractly, this is the form of a lot of jazz compositions, which also often feature a simple repeating chord pattern. In jazz, soloists improvise over the repeating chord pattern; in the classical theme-and-variations form, the composer varies the theme.

In classical music, the theme is a rounded binary form of the sort you studied last semester: an 8-measure first phrase (A) that modulates to the dominant; a 4- or 8-measure middle section (B), and a return of the original A section, altered now so as to end in the tonic.

**Rounded binary form:**                      ||: A :|| B A' :||

Theme and variations often tend to accelerate as the movement goes on, using faster and faster note values. This helps to give a kind of progressive quality to an otherwise static form.

In general the variations are all in the same key. However, there is usually a variation in the parallel major or minor. There is also often an *adagio* (“slow”) variation as well.

**III. Minuet-and-trio or Scherzo-and-trio.** This form developed from dance music. A “minuet” is a kind of dance. The minuet-and-trio is usually in  $\frac{3}{4}$  time; the scherzo-and-trio can be in  $\frac{3}{4}$  or  $\frac{2}{4}$ . The word “scherzo” means joke. As you might imagine, these movements are often light or humorous in character.

Like the theme and variations, these forms are built out of the rounded binary form. They begin with a first rounded binary form (the minuet or scherzo), progress to a second rounded binary form (the trio), and end by repeating the original rounded binary form. In this last section, the individual repeats of the rounded binary form are often omitted.

**MINUET OR SCHERZO**

||: A :|| ||: B A' :||  
*A*

**TRIO**

||: A :|| ||: B A' :||  
*B*

**MINUET OR SCHERZO**

(no repeats!)  
 || A || || B A' ||  
*A*

**IV. Rondo.** Rondos typically appear as the last movement of a classical piece. They are typically light, fast, and celebratory in character. The form of a rondo is **ABACADA ...**

A recurring **A** section (the Rondo theme) alternates with *episodes* containing other musical material (B, C, D, ...), usually in other keys. In general Rondos are non-developmental: the later sections do not reuse or transform the material of the earlier sections. Nor are the repeats of the A section substantially altered, though they may sometimes be shortened.

There is a hybrid of sonata and rondo form called *sonata-rondo form*. Here, the B section, initially in a closely related key, returns in the original key:

*expo. dev. recap.*  
**AB AC AB'**

Interestingly, there are rondos in which each section is a rounded binary form. See, for example, the last movement of Haydn’s D major piano sonata #37 (or 50, in some editions.)

**V. Other forms.** Not every classical movement is in one of the above forms, though most are. Slow movements in particular tend to depart from these templates. In general, use your judgment. If you can’t fit something into one of the preceding forms, it probably doesn’t belong.

## Using Schemas in Sonata Forms

The classical style is not just a set of rules about what to avoid. It also includes idioms or *schemas* that encompass the most common compositional possibilities. In many cases, these idioms are more than just harmonic progressions: they also include outer-voice melodic patterns that can serve as melodic “skeletons” for more complex melodies. (That is, the outer-voice skeletons will be embellished with chordal skips, passing tones, and other decorative devices, as discussed in Music 105.) These schemas become more and more important as you study sonata form more and more closely, since it turns out that certain schemas have their natural home in certain sections of the form.

In this handout I’ll go over a few common patterns that might help you with your classical-style writing. I’ll start with basic patterns common to all sorts of phrases, and then focus on some ideas more particular to sonata form. Many of the schemas on this handout, as well as all of the cutsie schema names, are taken from Robert Gjerdingen’s *Music in the Galant Style*. You may encounter them again in Music 206.

You should feel free to use these in your sonatas: rather than demonstrating a lack of originality, this is a sign that you appreciate the idiomatic nature of the style. You should also feel free to modify and alter the schemas as you see fit: these are not rigid templates set in stone but rather flexible clay that can be molded and shaped in countless different ways. And don’t let these schemas constrain your imaginations: it will be boring for us if the entire class just combines and recombines these same possibilities. Strike out on your own if you feel so inclined! Also, remember that you still have to use your ears! “I combined some common schemas!” is no defense against “your music sounds lame.”

In all of the following examples, I’m showing the basic pattern with stemmed notes; common variants are given with closed unstemmed noteheads.

### 1. Common phrasal patterns.

A. Phrase openings. Here are some nice ways to start a phrase or piece.

A1. The “Meyer.” One of the most useful schemas combines 1-7/4-3 in the soprano supported by  $I \rightarrow V_3^4 \rightarrow V_5^6 \rightarrow I$ , forming a balanced sentence opening.

The image shows a musical score for a four-measure phrase in C major. The notation is presented in a grand staff with a treble clef on the top staff and a bass clef on the bottom staff. The melody in the treble clef consists of four quarter notes: C4, G4, F4, and E4. The bass line consists of four chords: C major (C4, E3, G3), F major (F3, A2, C3), C major (C3, E2, G2), and C major (C3, E2, G2). Below the bass staff, the chord progression is labeled as C: I, V<sub>3</sub><sup>4</sup>, V<sub>5</sub><sup>6</sup>, I.



B. Continuations. A good phrase opening requires a solid continuation. Here are some of the most common patterns I've gleaned from the Mozart sonatas. In most cases, these continuations lead onward to a standard cadence such as  $I^6 \rightarrow ii^6 \rightarrow V \rightarrow I$ .

B1. The most important continuation is simply to move toward a cadential progression with some version of  $I^6 \rightarrow ii^6 \rightarrow V \rightarrow I$ . (For instance, one might also use  $IV$  instead of  $ii^6$  or insert a  $I_4^6$  before  $V$ .) If this leads you to the cadence too quickly, you can use a deceptive cadence, or move from  $V$  to  $V_3^6/vi$  and then on to  $vi$ . There is no particularly salient outer-voice pattern here.

B2. The "Prinner." Here we have  $IV \rightarrow I^6 \rightarrow vii^{o6} \rightarrow I$  with 6-5-4-3 in the soprano. You learned this pattern when we studied fauxbourdon in Week 1. A variant uses  $ii^6$  in place of the initial  $IV$ . In either case, the Prinner usually leads to a standard cadence.

C:  $IV$   $I^6$   $vii^{o6}$   $I$   
 or  $ii^6$  or  $ii-vii^{o6}$

Another variant, sometimes called the "Fonte," combines 6-4-5-3 (or 6-6-5-5) in the melody with  $V_3^6/ii \rightarrow ii \rightarrow V_3^6 \rightarrow I$ . (Note that this is a little descending-step sequence.) You can also encounter this pattern after the double bar in a rounded binary form.

C:  $V_3^6/ii$   $ii$   $V_3^6$   $I$

B3.  $I \rightarrow (V^7/IV) \rightarrow IV \rightarrow V \rightarrow I$ . If you haven't used this as an opening gambit, it works fine as a phrase continuation.

B4. Another familiar fauxbourdon pattern is  $IV^6 \rightarrow I_4^6 \rightarrow IV \rightarrow I^6$ , or its rotation  $IV \rightarrow I^6 \rightarrow IV^6 \rightarrow I_4^6$ . As part of a strong thematic statement (e.g. first theme or initial second theme) it is typically not repeated; instead, like all of the continuations we're considering, it moves onward to the cadence.

version 1                      version 2

C:  $IV$   $I^6$   $IV^6$   $I_4^6$   $IV^6$   $I_4^6$   $IV$   $I^6$

B5. The little ascending-step sequence  $I^6 \rightarrow IV \rightarrow V_3^6/V \rightarrow V$  sometimes appears as a phrase continuation, perhaps with  $V_3^6/IV$  in place of  $I$ .

B6. Modulating phrases sometimes continue with  $V \rightarrow V/V \rightarrow$  cadence in dominant.

2. *End of first theme area.* The end of the first theme area is the music right before the pause that precedes the second theme. This music often—but not always—features an extensive alternation between I and V, either in the old key or in the new key. It is very common for this music to feature a pedal point.

A. Dominant pedal in the old key. The music often reaches a dominant pedal in the *original key*. Usually, the melody 2-1-7 is supported with  $ii^6 \rightarrow V^6/V \rightarrow V$ , leading to a rapid alternation between V and  $I_4^6$ , and a stop on V (again, in the original key).<sup>2</sup> After a pause, the music starts up in the dominant key, with the V chord acting as a kind of pivot (V in the old key, I in the new). See the opening of Mozart's C major sonata, K545, movement I, for an example of this pattern.

C:  $ii^6$        $V^6/V$       V       $I_4^6$       V  $I_4^6$  (etc.)

B. Dominant pedal in the new key. Another tactic is to modulate and then articulate a dominant pedal in the *new key*. Again, it is common to tonicize the **new dominant** with  $ii^6 \rightarrow V^6/V \rightarrow V$ . Here one often finds the progression  $V \rightarrow I_4^6 \rightarrow V/V \rightarrow V$ , all over a dominant pedal. (A common variant uses the *minor*  $i_4^6$ , even if the ultimate destination is a major key;  $vii^{o7}/V$  is common here as well.) For an example, see the opening of Mozart's sonata K310.

C. No pedal point or alternation. Very frequently, the transition ends without a pedal point or a rapid alternation between I and V. In this case, the music simply modulates to a new key and then ends with a half-cadence (in particular  $ii^6 \rightarrow V^6/V \rightarrow I_4^6 \rightarrow V$ ) in that key. This may be the most common modulatory technique in the piano sonatas.

3. *Second theme ideas.* Remember, there is almost always a little pause before the second theme! Second themes are very often repeated. They frequently start on a chord other than the tonic, such as V. Sometimes you see a second theme beginning with the progression  $V^7/ii \rightarrow ii \rightarrow V^7 \rightarrow I$  (cf. the "Fonte" above.)

4. *After the principal second theme.* After the main secondary theme, one often finds a variety of subsidiary themes. These are often very simple in their harmony, and frequently feature a straightforward exchange of I and V. Here the 8-bar norm often breaks down, and you find 2-, 4-, or 6-bar phrases. Remember, you can get a lot of mileage out of phrase rhythm: for instance, starting the phrase on V rather than I.

---

<sup>2</sup> Gjerdingen calls  $ii^6 \rightarrow V^6/V \rightarrow V$  the "Indugio."

A. This is a good place to use the repeating version of  $IV^6 \rightarrow I_4^6 \rightarrow IV \rightarrow I^6$ , discussed in the Fauxbourdon handout.

C: IV I<sup>6</sup> IV<sup>6</sup> I<sub>4</sub><sup>6</sup>

B. A related progression (Gjerdingen’s “Fenaroli”) allows for repeating  $V \rightarrow I$  interchange.

C: V<sub>4</sub><sup>3</sup> I V<sub>3 I<sup>6</sup></sub>

4. *End of the exposition.* Expositions often end with a simple “closing theme” that features repeated  $V \rightarrow I$  progressions. One progression commonly found here (Gjerdingen’s “Quiescenza”) is  $V^7/IV \rightarrow IV_4^6 \rightarrow V^7 \rightarrow I$ , all over a tonic pedal. This has the virtue of recalling the tonic key (IV of the dominant) while also reinforcing the new key. Note that this progression is similar to that discussed in section 3B above.

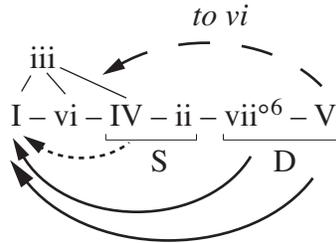
C: I V/IV IV<sub>4</sub><sup>6</sup> V I  
(C pedal)

## Mediants and Third Substitution

**1. Mediant (iii) chords.** The mediant triad is a rare chord in major, though it does appear. It is rare (perhaps) because iii blurs the boundary between the two fundamental harmonic categories of tonic and dominant: it shares two notes with the tonic (scale degrees 3 and 5) and two with the dominant (5 and 7), and is in this sense maximally similar to both.

It turns out that the mediant triad has two fundamental uses, depending on whether it is acting more like a tonic or more like a dominant.

**A. The mediant triad as tonic-type chord.** The mediant is often approached from I, and usually progresses to vi or IV.



Sometimes, you find the I-iii-V progression, particularly in Brahms. iii is useful when harmonizing an 8-7-6 melody:



Sometimes a dominant chord will progress directly to iii as a kind of deceptive resolution, as in the third measure of the following chorale, where V (D major) moves to B minor.

**O Herre Gott, dein göttlich Wort**

14.

These tonic-type mediant chords also appear in minor, though they have a very different feel, since III is the relative major. In minor, III is usually approached by its own dominant. It typically moves to IV, VI, or ii<sup>6</sup>. Bach occasionally uses i-III-V, but this is pretty rare.

Remember: in baroque and classical music, I<sup>6</sup> is the standard chord; iii is an exception.

**B. The mediant triad as a dominant-type chord.** The iii chord can also act as a substitute for the dominant chord, especially when it is in first inversion.

C: I ii<sup>6</sup> iii<sup>6</sup> I    c: i ii<sup>6</sup> III+<sup>6</sup> i

Here, the third scale degree is almost always approached from scale-degree 2 and almost always falls by third to the tonic. This chord is actually reasonably common in Bach’s minor-mode chorales.

**2. “Third substitution.”** Our discussion of iii chords suggests a more general principle operating in tonal harmony. The basic idea is that one triad can substitute a root position triad for a first-inversion triad on the same root. The reason is that two such triads share two of their notes: F-A-C and F-A-D differ only in the substitution of the D for the C. This means that one chord can replace the other without much disrupting either the harmonic or contrapuntal content of the music: the *harmonic* content is preserved because the two chords share two important notes (F and A); the *contrapuntal* content is preserved because the unshared notes are only one step apart.

You’ve already encountered this principle in 105, for instance when you learned that IV and ii<sup>6</sup> function similarly.

I call this “third substitution,” since the roots of the two chords are a third apart.

The new idea here is that third substitution is fairly ubiquitous in tonal harmony:  $IV^6$  and  $vi$ ,  $ii^6$  and  $IV$ , and  $vii^{\circ 6}$  and  $V$ , all function similarly.

The image shows two systems of musical notation, each with a treble and bass clef staff. The first system contains 12 measures with Roman numeral labels below:  $V^{\frac{3}{4}}$ , I,  $V^{\frac{3}{4}}$ ,  $vi$ , V,  $vi$ , V,  $IV^6$ , I, IV, I,  $ii^6$ . The second system contains 12 measures with Roman numeral labels below:  $ii$ ,  $V^6$ ,  $vii^{\circ 6}$ ,  $V^6$ ,  $vii^{\circ 7}$ , I,  $V^{\frac{3}{4}}$ , I, V, I,  $iii^6$ , I. Vertical dashed lines separate the measures in both systems.

Look again at Bach chorale #14, shown on page 1. The piece opens with a I- $vi$ - $iii$ -IV progression. This first  $iii$  chord can be understood as a third substitution for the expected  $I^6$ ; it works because it has both the third and fifth of the expected B-D-G chord, differing only in the substitution of  $F\sharp$  for G. The second phrase starts with a V- $iii$  progression, in which the  $iii$  chord can be understood as another third substitution for  $I^6$ .

Here's a passage from Bach's Chorale 21, where we find a V- $V^2$ - $vi^{\frac{6}{4}}$ - $vii^{\circ 6}$  progression (C major). One way to understand the  $vi^{\frac{6}{4}}$  is as a "third substitution" for the expected  $I^6$  chord.

The image shows a short musical passage from Bach's Chorale 21, consisting of two staves (treble and bass clef) with several measures of music. The progression is V- $V^2$ - $vi^{\frac{6}{4}}$ - $vii^{\circ 6}$ .

This principle will return later in the semester when we study the idea of "tritone substitution." There we'll see that, under certain circumstances, one seventh chord (such as  $C^7$ ) can replace another seventh a *tritone* away (such as  $F\sharp^7$ ). The explanation turns out to be quite similar to those describing these third substitutions.

**IF YOU SEE A WEIRD DIATONIC PROGRESSION, ASK YOURSELF WHETHER YOU CAN UNDERSTAND IT AS THIRD SUBSTITUTION FOR SOMETHING MORE NORMAL.**

*Final note:* Harmonic progressions are the most regular in the classical music of Haydn, Mozart, and Beethoven. Before that (as in Bach) the harmonic progressions are more irregular, because we're closer to the period of modal music, in which every progression was allowed; after that (as in Brahms), the harmonic progressions are more irregular because we're moving toward the twentieth century, when everything is again permitted.

The classical period represents a time of unusual order, in which the harmonic progressions are exceedingly regular.

### ALTERED DOMINANT CHORDS

If we are thinking in terms of the diatonic scale, then it is possible to resolve a dominant seventh chord so that each voice moves by the smallest possible distance to its destination—one diatonic scale step. Here, F is held constant, A moves up by step, and C and E $\flat$  move down by step.



However, if we are thinking in terms of the chromatic scale, then we can no longer say that each voice moves by the smallest possible distance: though A and E $\flat$  move by one semitone, C moves by *two* semitones. From the standpoint of the chromatic scale, there is a “gap” between C and B $\flat$ . One might therefore “alter” the F $^7$  chord, replacing C with C $\flat$ . When the resulting chord resolves to B $\flat$  major, every moving voice moves by semitone.



This basic principle—altering chords so as to decrease the overall voice-leading motion—is central to nineteenth-century music. These alterations are most commonly applied to dominant-functioned chords (V and vii), though they are sometimes applied to other chords as well.

#### I. The fully diminished seventh chord in major.

In major, the seventh of the vii $^{\circ 7}$  chord typically resolves downward by two semitones. It is very common to replace this chord with vii $^{\circ 7}$ , transforming the minor seventh into a diminished seventh that resolves downward by semitone.



Here we have lowered scale degree six, so that it is a semitone away from scale degree five. One often finds this lowered scale-degree six acting as an upper neighbor over a dominant chord:

## II. The “flat five” dominant chord, and variants thereof.

In a major key, three of the most common dominant chords are  $\text{vii}^{\circ 6}$ ,  $\text{V}^7$ , and  $\text{vii}^{\circ 7}$ . Let’s consider how each might be altered to remove the whole-step motion from scale degree 2 to scale degree 1.

These sorts of progressions are very common, starting from the mid. 1820s or so. Note the very strange notation: in the Roman numeral “ $\text{vii}^{\circ 6[\text{b}3]}$ ”, the symbol “6” refers to the distance above the *bass*, while the symbol “ $\text{b}3$ ” refers to the distance above the *root*!

Note also that the second substitution creates parallel fifths. These are rarely (but sometimes) used in the first half of the nineteenth century. In the second half, they are more common.

Finally, observe that the first two substitutions suggest the dominant seventh chord on  $\text{D}\flat$ , a tritone away from the normal dominant  $\text{G}^7$ . This is the origin of what jazz musicians call the “tritone substitution”—replacing a dominant seventh chord with the dominant seventh a tritone away. We will return to this later in the course.

## III. The Augmented Sixth chords.

The chords discussed in the previous section are quintessentially nineteenth-century chords—the territory of Chopin and Brahms. In the baroque and classical period, these substitutions are all but unknown. However, the substitutions we have discussed were very common as alterations of the *applied dominant chord*  $\text{V}/\text{V}$  and  $\text{vii}/\text{V}$ . (More rarely, they were used for applied dominants of chords other than  $\text{V}$ .) This is kind of weird, when you think about it. The substitutions were

first used for applied dominant chords (V/V and vii/V), and only later used for the actual dominant chords (V and vii) themselves.

A musical score in the minor mode (three flats) showing a sequence of chords. The chords are labeled below the staff as follows: i, It<sup>6</sup>, V, i, Ger<sub>5</sub><sup>6</sup>, i<sub>4</sub><sup>6</sup>, V<sup>7</sup>, i, i, Fr<sub>3</sub><sup>4</sup>, V, i, Fr<sub>3</sub><sup>4</sup>, i<sub>4</sub><sup>6</sup>, V<sup>7</sup>, i.

Unfortunately for you, these altered V/V and vii/V chords have their own silly names. “vii<sup>o[b3]</sup>/V” is called the **Italian** chord. When it is in first inversion, as it almost always is, it is called the **Italian sixth**, and written It<sup>6</sup>. The chord “vii<sup>o7[b3]</sup>/V” is called the **German** chord. When it is in first inversion, as it almost always is, it is called the **German sixth**, written Ger<sub>5</sub><sup>6</sup>. Finally, the chord V<sup>7[b5]</sup>/V is called the **French** chord. When it is in second inversion, as it almost always is, it is called the **French four-three**, written Fr<sub>3</sub><sup>4</sup>. As far as I can tell, the names are meaningless: there is nothing particularly Italian, German, and French about these chords.

The chords are very common in the minor mode—they are almost as common as the unaltered forms of V/V and vii/V. This is because the “altered” note—D<sup>b</sup> in the preceding examples—is the natural-minor form of scale-degree 6. In fact, there is an alternative derivation: you can see the chords in the preceding example as iv, iv<sup>7</sup>, and ii<sup>o7</sup> in which scale degree 4 has been replaced by #4, creating the leading tone to the dominant note.

Even those these chords are most common in minor, they are also found in the major mode as well. As long as the voice leading in the outer voices makes sense, they will sound quite reasonable in major.

A musical score in the major mode (one flat) showing a sequence of chords. The chords are labeled below the staff as follows: I, IV<sup>6</sup>, It<sup>6</sup>, V, I, Ger<sub>5</sub><sup>6</sup>, I<sub>4</sub><sup>6</sup>, V<sup>7</sup>, I, I, vi, Fr<sub>3</sub><sup>4</sup>, V, I, Fr<sub>3</sub><sup>4</sup>, I<sub>4</sub><sup>6</sup>, V<sup>7</sup>, I.

Here’s a useful way to think about the augmented sixths. All scale degrees are labeled relative to the major scale

Italian sixth	scale degrees $\flat 6$ , 1, and $\sharp 4$
German six-five	scale degrees $\flat 6$ , 1, $\flat 3$ and $\sharp 4$
French four-three	scale degrees $\flat 6$ , 1, 2 and $\sharp 4$

#### IV. Dominant chords with a raised second scale degree.

So far we've lowered the second scale degree so that it moves by semitone to the tonic. However, the second scale degree can also move up by major second to the third scale degree:



Here composers often *raise* the second scale degree so that it moves up by semitone to the third scale degree. This produces an augmented triad, which is notated  $V^+$ .



As the second example above shows, one can also raise the fifth of a dominant seventh chord. Just like the “flat five” (or “augmented sixth”) chords we studied earlier, the dominant seventh with raised fifth has an augmented sixth—here, between C natural and A#. This interval wants to expand outward by semitone to an octave.



In general, you won't go wrong if you keep in mind that the whole point of these chromatic alterations is to create opportunities for semitonal voice leading.

What about the diminished seventh chord on the leading tone? It also contains scale degree two, which can move up by half step to the third scale degree. It can also be raised, though this is somewhat more uncommon than raising the fifth of V or  $V^7$ . Strauss used it, famously, in his tone poem *Till Eulenspiegel* (1894-5). Chopin used it as well (Nocturne #1), though I emphasize that it is somewhat rare. I include it here mainly for completeness and systematicity.

$\text{vii}^{\circ 4}_3$     $\text{I}^6$     $\text{vii}^{\circ 4}[\#3]_3$     $\text{I}^6$

Finally, the augmented chord sometimes appears as a passing chord between I and IV. Here you can think of the I chord as acting as V of IV.

$\text{I}$     $\text{I}^+$     $\text{IV}^6_4$     $\text{V}^7$     $\text{I}$   
 (I pedal)

### V. Spooky possibilities in minor.

In minor, the seventh of  $\text{V}^7$  moves down by major second to the third scale degree. One could, if one wanted *lower* this note to create opportunities for semitonal voice leading.

**Nineteenth century composers almost never did this.** Instead, they permitted this major-second step. Twentieth century composers like Shostakovich and Poulenc *did* exploit this possibility. (If you want to sound like Shostakovich, this is a good place to start!) It creates a wonderful, spooky kind of dominant chords. Interested students are invited to explore this matter on their own.

### ALTERED PREDOMINANTS

There are two important kinds of altered dominants. In major, one finds minor iv and half diminished ii<sup>o7</sup>: these are often called “borrowed dominants.” (Sometimes, they are described as examples of “modal mixture.”) In minor, one finds  $\flat$ ii<sup>6</sup> substituting for ii<sup>6</sup>—this is the “Neapolitan sixth” chord.

**1. iv and ii<sup>o7</sup> in major.** In a standard IV-I progression, scale degree 6 moves by two semitones to scale degree 5. Nineteenth century composers often substituted  $\flat$ 6 for 6, creating semitonal motion. This substitution changes IV into iv and ii or ii<sup>7</sup> into ii<sup>o</sup> or ii<sup>o7</sup>. These altered dominants are very common in the 19th century, and mark one of the main differences between the classical and the romantic styles. Altered dominants are also common in many genres of popular music.

These chords can progress either to I or to V. The whole point of the alteration is to increase the possibilities for semitonal motion:  $\flat$ 6 “wants” to go to 5.  $\flat$ 6 is usually treated as a neighbor tone. But it can also appear as a passing tone between  $\flat$ 6 and 5.

**NOTE:** an altered ii<sup>o7</sup> can progress *directly* to I. The unaltered ii<sup>7</sup> cannot.

C: I iv I IV<sup>6</sup> iv<sup>6</sup> V<sup>7</sup> I I ii<sup>o6</sup><sub>5</sub> I I ii<sup>o6</sup><sub>5</sub> V<sup>8-7</sup> I

#### VOICE-LEADING NOTES:

- $\flat$ 6 is an “active” tone. Although it can be doubled, you should try to avoid doing so. In a progression such as the second one above, doubling the A $\flat$  could have the effect of undermining the very strong bass line.

- If you do double the altered tone, remember that it cannot progress to the leading tone, since that would create an augmented second.

- $\flat$ 6 should not progress to  $\flat$ 6. This is because the altered dominant has a very strong tendency to go to I or V. Unaltered dominants are weaker chords, with tendency to move; thus moving from the altered pre-dominant to the normal dominant can create a weak, unsatisfying progression.

- Take care to avoid cross-relations.

**TERMINOLOGICAL NOTE:** These chords are sometimes said to be “borrowed” from the parallel minor. They are also described as examples of “modal mixture,” or mixing of the major mode with its parallel minor. I don’t think this is the most useful way to think about these chords. It is much simpler, and more logical, to think of them as chromatic alterations, closely analogous to the altered dominant chords described on the previous handout. On the other hand, we need a name for the chords and “borrowed predominants” and “modal mixture” are as good as any.

These same principles lead to alterations of the tonic chord. In the I-V chord progression, scale degree 3 typically moves downward to by whole step to scale degree 2. Classical and romantic composers often substituted  $\flat 3$  for 3, creating a  $i$ -V chord progression. This is exactly the same progression as the  $iv$ -I progression we have just been studying, only transposed downward by perfect fourth:  $iv$ -I creates smooth voice leading from the subdominant to the tonic, as scale degree  $\flat 6$  moves down by semitone to 5;  $i$ -V create smooth voice leading from the tonic to the dominant, as  $\flat 3$  leads downward by semitone to 2.

C: I    i    V    I<sub>4</sub><sup>6</sup>    i<sub>4</sub><sup>6</sup>    V    I    i    V<sup>7/V</sup>    V

Usually, a minor  $i$  chord serves as an intensification of  $V$ . (The  $\flat 3$  reverses our harmonic expectations, making  $I$  sound like it "wants" to go to  $V$ .) Often, this progression occurs over a dominant pedal as part of a cadential six-four. In the third example above,  $i$  progresses to  $V$  by way of an applied dominant. This progression is fairly common.

Whereas the altered predominants described in the preceding section are found only in the nineteenth century, the minor tonic chord was used by classical composers: examples can be found all over the music of Haydn and Mozart. This is interestingly reminiscent of our earlier investigation of altered dominant chords: there, we found that the  $\flat 5$  dominant chords appeared first as *secondary dominants*; these are the Italian, German, and French “augmented sixth” chords. Only later in the nineteenth century were the  $\flat 5$  dominants used as actual dominants that progress directly to  $I$ . In much the same way, we find that classical composers used the minor tonic to intensify  $V$ ; only in the nineteenth century did Romantic composers use the minor subdominant to intensify  $I$ . In both cases, chromaticism first appears as a method of intensifying the dominant chord; only later is it used to intensify the tonic.

## 2. The Neapolitan sixth chord.

In minor, the  $ii^{o6}$  chord often resolves to  $i_4^6$ , with scale-degree 2 moving down by two semitones. Classical composers sometimes lowered 2 to  $b2$ , creating a semitonal upper-neighbor to the tonic. This chord is called the “Neapolitan chord” (or just “the Neapolitan”) and written with an “N” instead of a Roman numeral. The Neapolitan is almost always in first inversion. When it is, it is called the “Neapolitan sixth,” and written  $N^6$ .

i    $ii^{o6}$     $i_4^6$     $V^7$    i   i    $N^6$     $i_4^6$     $V^7$    i   i    $N^6$     $V^7$    i

As the third example above shows, the Neapolitan can resolve directly to V. Here,  $b2$  moves down by *diminished third* to the leading tone, which then resolves upward. Think of this as a process of encircling the tonic with its upper and lower semitonal neighbors.

Though the Neapolitan is usually in first inversion, it can be used in root position, if the voice leading makes sense. Since it is a major chord, it can also be tonicized. Though the Neapolitan is usually used in minor, it can appear in major. However, it can sound jarring when used carelessly.

i    $V^7/N$    N    $V^7$    i   I    $V^7/N$    N    $V^7$    I

The dominant of the Neapolitan is enharmonically equivalent to the German augmented sixth chord, and this can lead to some fun:

## COMMON TONE DIMINISHED 7TH CHORDS

You have learned how to use diminished seventh chords as chords that have dominant function. The other major type of diminished seventh chord is the *common-tone* diminished seventh. Common-tone diminished seventh chords are built on the root of the chord they resolve to, and have a neighboring function (though they often serve as *incomplete neighbor chords*). By contrast, leading-tone seventh chords that act as dominants do not share any notes with the chords they resolve to. Common-tone diminished seventh chords usually decorate I and V (or V7) in major; they are never used to decorate minor triads, and rarely decorate V (or V7) in minor. They sometimes decorate applied dominants.

This is the standard voice leading for these chords: scale degree #2 acts as a neighbor to 3; #4 and 6 act as neighbors to 5. 1 is usually, though not necessarily in the bass.

C: I   ct<sup>°7</sup>   I   I   ct<sup>°7</sup>   I   (same)   I<sup>6</sup>   ct<sup>°7</sup>   I<sup>6</sup>

You should notate a common-tone diminished seventh with the symbol ct<sup>°7</sup>. Inversion numbers are not used.

In the standard approach to the chord, 5 is doubled. However, you are free to double any note.

a. doubling 3

b. doubling 1

The resolution to V is the same; however, when resolving to V7, the 6th above the bass acts as a neighbor to the seventh of the dominant chord.

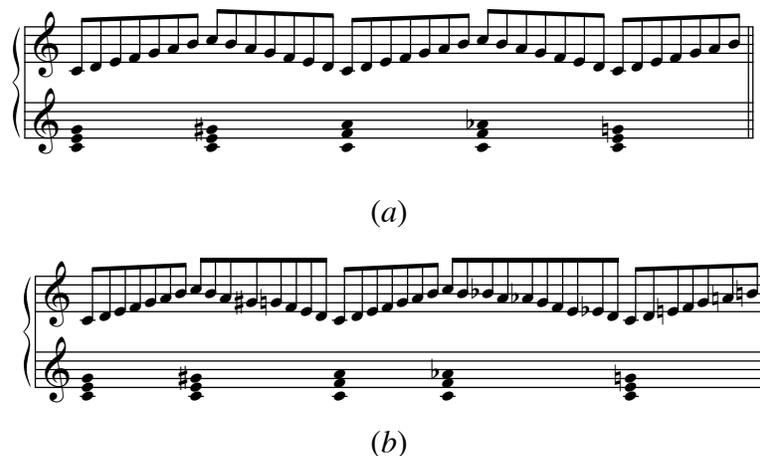
C: V   ct<sup>°7</sup>   V<sup>7</sup>   V   ct<sup>°7</sup>   V<sup>2</sup>



### NEW SCALES FOR NEW CHORDS

The chromatic era witnessed a dramatic expansion of harmonic options—new chords were permitted, and new progressions were allowed between familiar chords. But there were relatively few extensions to music’s *scalar* vocabulary. The familiar scales of the tonal tradition, augmented by the chromatic scale, suffice for the analysis of most early and mid-nineteenth-century music.

This led to a compositional problem: what melodic notes should be used to accompany the altered sonorities of the chromatic tradition? This problem was particularly acute in musical situations that called for a large number of melodic notes to accompany a single altered chromatic sonority. To see why, consider Figure 1. Suppose you would like to accompany each chord with a complete scale—say an ascending scalar run that spans at least an octave. You can accompany all the chords with the C major scale. But, as Figure 1(a) shows, this results in an unpleasant clash between the altered and unaltered forms of the same note. It is very natural to want to avoid such clashes, which have a distinctive, dissonant bite that is inappropriate in many musical circumstances. One possible alternative is simply to insert additional chromatic notes into the scalar run, as shown in Figure 1(b). The result is a scale-like texture that does not suggest any familiar scales.



**Figure 1.** Accompanying chromatic chords with scales

These two alternatives represent the main nineteenth-century solution to the problem of associating chord and scale. Figure 2(a) illustrates the first strategy using an excerpt from Strauss’s *Till Eulenspiegel*: here, the underlying harmony B $\flat$ -D $\flat$ -E-G $\sharp$

serves as an altered dominant chord that resolves semitonally to the tonic F. The scale in the bass, however, is a simple  $A\flat$  major scale, and does not contain the  $E\sharp$  of the harmony. The result is a fleeting dissonance between scale and harmony, as the scalar  $F-E\flat$  clashes with the harmonic  $E\sharp$ . Figure 2(b) presents a passage from Wagner’s *Parsifal* that illustrates the second strategy. Here, a chromatic chord is harmonized with quasi-scalar chromatic object: the underlying harmony is a diminished-seventh chord on  $G\sharp$ , while the scalar run touches on all the chromatic notes except  $F\sharp$  and  $G$ . The effect is of a quasi-scalar wash that creates a sense of motion, but does not clearly suggests a familiar scalar collection.



**Figure 2.** Chords and scales in (a) Strauss, and (b) Wagner

At around the turn of the twentieth century composers started to realize that there are a small number of interesting scales that contain all the familiar chords of nineteenth century harmony. We studied these in Music 105, Handout 4: diatonic, acoustic (or melodic minor ascending), whole tone, and octatonic, all of which have steps that are 1 or 2 semitones large, and thirds that are 3 or 4 semitones large. In addition, there are three other scales (harmonic minor, harmonic major, and hexatonic) that have thirds that are 3 or 4 semitones large. These scales initially started to appear in the late nineteenth century, in the music of Liszt, Rimsky-Korsakov, and others. Composers like Debussy and Ravel developed an impressive and sophisticated set of techniques for using these scales in the first decade of the twentieth century. Later jazz musicians refined and systematized—or perhaps rediscovered—these techniques, incorporating them into the functional harmonic routines of traditional harmony. This “modern jazz synthesis,” as I like to call it, fuses traditional functional harmony, nineteenth century chromaticism, and the impressionist exploration of nondiatonic scales.

Figure 3 shows a dominant-tonic progression from the first movement of Ravel’s String Quartet. The progression takes place over a dominant pedal in the cello, which repeats the note C in three separate octaves. If we consider the viola’s notes to be part of the chord, then the dominant chord contains the notes  $C-E-G-B\flat-C\sharp-A$  and is enharmonically equivalent to a “minor ninth” chord with an added sixth scale degree—a typical nineteenth-century chromatic sonority. The two chords are accompanied by two different scales: the V chord is accompanied in the second violin by an octatonic scale ;

the tonic chord is accompanied by six of the seven notes of the F major scale. In each case the scale in question contains the underlying sonority.

Figure 3 consists of three musical staves labeled (a), (b), and (c).  
 (a) Shows a piano accompaniment with a complex octatonic scale. The right hand plays a melodic line with eighth and sixteenth notes, while the left hand plays a bass line with eighth notes. The scale is chromatic and includes notes from both F major and D minor.  
 (b) Shows a chromatic embellishment of the chord progression. It features three chords: F major (F, A, C), F major with a lowered ninth (F, A, C, D♭), and D minor (D, F, A). The D♭ is lowered from the natural D of the F major chord.  
 (c) Shows a purely diatonic chord progression. It features three chords: F major (F, A, C), F major with a lowered ninth (F, A, C, D♭), and D minor (D, F, A). The D♭ is lowered from the natural D of the F major chord.

**Figure 3.** The octatonic scale in Ravel’s String Quartet

Figure 3 interprets the passage on three levels. Level (c) is purely diatonic, and depicts a relatively standard  $V^9-I^6$  progression. Level (b) provides a chromatic embellishment of this pattern: the ninth degree of the chord, D, is lowered to become a  $C\sharp$ , which resolves upward by semitone to the D. This produces a sophisticated chord progression that combines elements of a V-I progression in F major with a  $vii^{\circ 7}-i$  chord progression in D minor. Finally, level (a) embellishes this progression by adding the octatonic scale. What is particularly interesting about Figure 3 is that each of its three levels involve different musical scales. Level (c) is purely diatonic, and uses a functional chord progression familiar from classical harmony. Level (b) uses a chromatic embellishment that evokes the efficient chromatic-scale voice leadings of the Romantic era. Level (a) adds a third level of scalar complexity, as the altered dominant chord gives rise to an additional scale that is neither diatonic nor chromatic.

Jazz inherits and systematizes this aspect of impressionist practice. Figure 4 presents a ii-V-I progression from Bill Evans’s solo recording of “Turn Out the Stars.” The F minor-seventh and  $E\flat$  major seventh chords are accompanied by the  $E\flat$  major scale. The  $B\flat$  seventh chord, however, is accompanied by the octatonic scale—very much in the manner of Figure 3. Jazz theorists are quite systematic and explicit when describing these relations between chord and scale: books of jazz theory provide “recipes” that show students which scales may be associated with the familiar, chromaticized chords of jazz harmony. The chromaticized chords descend from the nineteenth-century music, and embellish the classical era’s ii-V-I progressions. The scales are precisely those that characterize impressionist musical practice. In this sense,

jazz represents a fusion of traditional classical harmony, nineteenth century chromaticism, and the impressionist exploration of nondiatonic scales.



**Figure 4.** Bill Evans using the octatonic scale

This naturally leads to the question: given a familiar chromatically altered chord, what scale goes with it? If you want to compose interesting, modern tonal music, this is not a bad question to ask yourself ...

**EXTENDED CHORDS**

The chords  $ii^7$  and  $V^7$  are common in classical music, while the remaining seventh chords are relatively rare. Composers in the nineteenth-century began to use these remaining seventh chords more consistently. They also began experimenting with ninths and other extended chords.

A descending-fifth sequence of seventh chords gives rise to a very natural stepwise descending voice leading. The following progression appears all over nineteenth century music. You should learn it.

$IV^7$     $vii^4_3$     $iii^7$     $vi^4_3$     $ii^7$     $V^4_3$     $I^7$

Q1: what natural voice leading is produced by seventh chords in descending *thirds* sequence? Q2 (review): why are progressions by descending fifths and descending thirds important?

This voice-leading pattern is often accompanied by a fifth voice sounding the chord roots. Triadic music typically uses four voices—the lowest to leap to the root, and the top three to participate in efficient voice leading between complete triads. In the same way, seventh-chord-based music often uses five voices, one for the root and the rest for efficient voice leading between upper-voice seventh chords.

$IV^7$     $vii^{07}$     $iii^7$     $vi^7$     $ii^7$     $V^7$     $I^7$

To get a sequence of *ninth* chords all we have to do is shift the upper voices by third, like so:

The image shows a musical score for a sequence of ninth chords. The chords are:  $vi^9$ ,  $ii^9$ ,  $V^9$ ,  $I^9$ ,  $IV^9$ ,  $vii^{\circ 9}$ , and  $iii^9$ . The last two chords,  $vii^{\circ 9}$  and  $iii^9$ , are marked with an asterisk (\*). The notation is written in a grand staff with treble and bass clefs. The bass line consists of single notes, while the upper voices are chords with notes shifted by thirds.

Note that the final two chords are starred. Both  $vii^{\circ 9}$  and  $iii^9$  have very dissonant minor ninths above the root. For this reason, they're typically avoided.

It's kind of amazing that these extended progressions still sound recognizably similar to their triadic counterparts! You might think that by adding all these extra notes we'd destroy, or at least fundamentally change, the sense of the passages. But we hear them as embellishing the triadic patterns they evolved from.

In addition to ninth chords, there are two other very common extended chords that result from embellishing the tonic and dominant chords with the sixth (or thirteenth) above the root. When the sixth above the root is added to the dominant, this is sometimes called the "Chopin sixth."

The image shows a musical score for a sequence of chords. The chords are:  $ii^7$ ,  $V^{7add6}$  or  $V^{13}$ ,  $I$ ,  $V^7$ , and  $I^{add6}$ . The last chord,  $I^{add6}$ , is labeled as NOT:  $vi_5^6$ . The notation is written in a grand staff with treble and bass clefs. The bass line consists of single notes, while the upper voices are chords with notes added above the root.

Note that here the principle of root-functionality ("extended snowman form") is breaking down: the chord C-E-G-A is a C chord with added sixth, *not* an A chord in first inversion! Note also that we can describe these chords either using labels  $V^{add6}$  and  $I^{add6}$  or  $V^{13}$  and  $I^{13}$ . Usually we call them thirteenth chords when the ninth is also present. Usage is not consistent, however.

**In general, the larger the chord, the more important it is to keep the root in the bass. When very large, "thick" chords are used in all sorts of inversions, harmonic identity becomes very uncertain.**

Historically, the “Chopin sixth” appears earlier in the nineteenth century, while the  $I^{add6}$  chord appears toward the end of the century.

We can embellish our sequence of ninth chords with these two added sixths to get the following:

$ii^9$   $V^9$   $I^9$   $ii^9$   $V^{13}$   $I^{9add6}$   $ii^9$   $V^9$   $I^9$   $ii^9$   $V^{13}$   $I^{9add6}$

The second two measures are the same as the first two; all I’ve done is transpose the top two voices down by octave. The upper voice patterns in the second and fourth measures are supremely important in twentieth-century music. (Q: where?) You will have to memorize them, so you might as well get started!

Now, of course, the fun starts when you start *altering* these progressions chromatically to create semitonal voice leading. The possibilities are nearly limitless ...

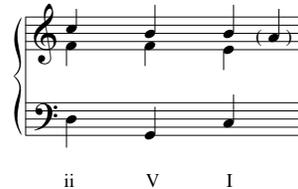
## JAZZ HARMONY: AN INTRODUCTION

### 1. Diatonic Harmony: Basic Theory

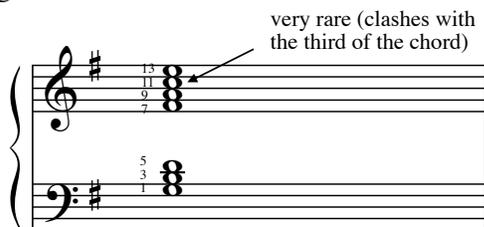
Jazz harmony uses extended chords (9ths, 11ths, and 13ths) to express the same harmonic functions found in classical harmony. ii-V-I progressions are particularly common in jazz, and many tunes consist almost entirely of chains of ii-V-I progressions.

In classical harmony, chords are assumed to be triads. You can add notes to them (sevenths, and very occasionally ninths) only under special conditions. In jazz, the opposite situation obtains—you are permitted to add any (diatonic) note to any chord *unless there is some reason why you should not*.

For harmonic coherence, chords are typically found in root position. (Otherwise, it would be very difficult to distinguish a C major triad with added sixth from an A minor seventh chord in first inversion!) Furthermore, it is helpful to think of jazz chords as having three crucial elements: the root, third, and seventh, progressing as in the following example:



As long as this basic voice-leading skeleton is clear, chords can be freely embellished with extra notes. To see how this works, let's consider an extended stack of thirds based on the tonic scale degree.



G: I

(Note that a diatonic “stack of thirds” can only contain seven distinct pitches; beyond the “thirteenth,” the notes begin to repeat.) In jazz, all but one of these notes can be freely added to the I chord. The exception is the 11<sup>th</sup> of the chord (here a C), which lies a minor ninth above the chord's third. This “minor ninth” is a very sharp dissonance; it also obscures the major third, which is a primary indicator of the chord's quality. For these reasons it is typically avoided.

The V chord presents a similar situation:

very rare (clashes with the leading tone and anticipates the I chord's tonic)

usually omitted

Here again, the eleventh of the chord clashes with the third, a minor ninth below. In addition, this note anticipates the tonic scale degree, and thus works against the dominant's tendency to lead to I. For this reason, the 11<sup>th</sup> is almost never used. Note also that the fifth is often left out of the dominant chord. This is because the fifth tends to thicken the sonority, distracting the ear from the chord's more important tendency tones (chiefly the third, seventh, ninth, and thirteenth).

Finally, consider the ii chord.

very rare (anticipates the V chord's leading tone)

possible, but somewhat rare

Here it is the thirteenth that is usually omitted from the chord. The reason is that the thirteenth anticipates the third of the dominant seventh chord that typically follows it. In jazz, the motion from the tonic scale degree (acting as the seventh of the ii chord) moving to the leading tone (acting as the third of the V chord) is a crucial signal of harmonic function. For this reason it is important that the ii chord *not* contain a leading-tone.

Notice that the 11<sup>th</sup> of the ii chord is a *major* ninth above the chord's third. It can therefore be used, though it is frequently left out of the chord.

## 2. "Left hand" voicings.

Pianists and arrangers have developed a convenient set of voicings that contain all the important tendency tones of the diatonic chords. These voicings fit easily under a single hand, and can be played with the right hand (using the left to play the root of the chord, or a bass line), or with the left (using the right to play a solo<sup>1</sup>). Even if one does not play the piano, they are worth knowing, because they encapsulate the basic principles of jazz voice-leading.<sup>2</sup>

<sup>1</sup> And trusting that the bass player will play the roots of the chords

<sup>2</sup> It is worth emphasizing that "voice leading" in jazz is a very flexible matter. Parallel fifths are tolerated, even celebrated. "Tendency tones" do not always move in the way one expects them to do—they have acquired new tendencies!



In minor, either of the ii chord voicings can precede either of the V chord voicings. (As in major, however, the A voicing of the V chord usually leads to the A voicing of the tonic.) This means there are four typical ways to harmonize a ii-V-i in minor:

ii-V-i in minor: four possibilities

1.                      2.                      3.                      4.

c: ii<sup>∘7</sup> V<sup>7</sup> i      ii<sup>∘7</sup> V<sup>7</sup> i      ii<sup>∘7</sup> V<sup>7</sup> i      ii<sup>∘7</sup> V<sup>7</sup> i

### 3. Fourth-based voicings.

Classically, chords are understood as stacks of thirds. However, the presence of many extended notes tends to undercut the a chord’s identity as a “stack of thirds.” For example, the dominant and tonic A/B voicings can be rearranged as a stack of fourths:

V<sup>13</sup>    I<sup>add6,9</sup>                  V<sup>13</sup>    I<sup>add6,9</sup>                  V<sup>13</sup>    I<sup>add6,9</sup>

On the right, these stacks are extended until they reach an “avoid note.” The use of these fourth-based voicings naturally led players to look for a quartal (fourth-based) voicing of the ii chord. The most common option here, the “So What” chord, is a complete stack of pentatonic thirds. For instance, here we have **D-F-G-A-C-D-F-G-A-C-D**. (The voicing gets its name because Bill Evans first played it on Miles Davis’s tune “So What,” on *Kind of Blue*. The chord is also the guitar tuing.)

Jazz musicians often play the chord in a variety of inversions, shown above on the right.

With these voicings in hand, we can now play fourth chords over a ii-V-I progression:

(a)                      (b)

ii    V    I            ii    V    I

So What    A voicings

Pianists often play three-note fourth-chords, as in (b) above.

#### 4. Chromatically altered dominant chords

The previous sections outline the essentials of *diatonic* jazz harmony. However, much of the harmonic energy of jazz involves the use of *nondiatonic* notes to enliven dominant sonorities. These nondiatonic notes add tension to the dominant chord, increasing its tendency to want to move to one.

The use of altered dominant chords derives from late nineteenth-century classical practice. Jazz musicians have extended and systematized these late nineteenth-century harmonic ideas, and developed a remarkable set of correspondences between altered harmonies and nondiatonic scales.

The following example depicts the most typical ways of altering a dominant chord:

1, 3, and 7:      5 and 9:              11:              13:

never altered    can be raised, lowered,    exists only in    usually not

or both at once.

raised form

*Unalterable notes:* 1, 3, and 7. These notes are not typically altered. The root defines the chord, and the tritone between the third and seventh gives it its “dominant” quality. All three notes are therefore essential.

*Doubly alterable notes:* both the fifth and ninth can be raised, lowered, or can be raised and lowered at the same time. However, these notes do not typically appear in both altered and

unaltered forms. In the example above, G can be raised ( $G\sharp$ ), lowered ( $G\flat$ ), or both at once ( $G\flat, G\sharp$ ). However, one would not normally find the G and  $G\sharp$  in the same chord.<sup>4</sup>

*The eleventh:* this note appears only in its raised form. A diatonic eleventh ( $F\sharp$  in the above example) clashes with the third of the chord, a minor ninth below it. A flattened eleventh ( $F\flat$  above) is equivalent to the major third.

*The thirteenth:* when the thirteenth appears, it is typically diatonic. A raised thirteenth ( $A\sharp$ ) is enharmonically equivalent to the seventh. A lowered thirteenth ( $A\flat$ ) is the same as a raised fifth, and is already covered by the preceding rules.

These altered tones for the most part act exactly as you would expect. A raised fifth ( $G\sharp$ ) is a tendency tone that wants to move upward, while a lowered fifth ( $G\flat$ ) typically moves down. Likewise, a lowered ninth ( $D\flat$ ) typically moves down by half-step. The raised ninth (“sharp nine” as it is often called) is a bit of an exception: it usually falls downward by augmented second. In the above example,  $D\sharp$  would typically move *down* to C, the fifth of the tonic chord.

Many important alterations arise from **tritone substitution**, the practice of replacing a dominant seventh voicing with that of the chord a tritone away: for instance,  $D\flat 7$  for  $G7$ . This replacement works because it preserves the third and seventh, while moving the remaining notes by short distances.

## 5. Chords and scales

Improvisers, when playing over diatonic chord progressions, typically use notes belonging to the tonic scale (major, harmonic or melodic minor). When improvising over chromatically altered dominant chords, however, they frequently use *nondiatonic* scales containing the chords in question.

Suppose, for example, you are trying to improvise over a  $C9\sharp 11$  chord. This chord contains the notes C-E-G- $B\flat$ - $D$ - $F\sharp$ . One can rearrange these notes to obtain the scale-fragment  $B\flat$ -C-D-E- $F\sharp$ -G. The task is therefore to fill in the space G- $B\flat$  with another note. “A” is the obvious choice; it produces a mode of a scale that should be familiar to you.

You may find it interesting to explore various chromatically altered dominant chords. Look for scales meeting the following two criteria:

- 1) the scale does not contain consecutive semitones (no B-C- $C\sharp$ , for example or B-C- $D\flat$ ).
- 2) the scale does not contain any “gaps” larger than two semitones. (So, for instance the space between G and  $B\flat$ , or between G and  $A\sharp$ , must be “filled in” by a third note.)

In following these rules, you will discover the basic principles of improvising over chromatically altered dominant chords. All the scales you will discover are commonly used in jazz; conversely, almost all of the commonly used jazz scales can be discovered in this way.

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<sup>4</sup> Of course, an unaltered ninth could appear alongside an altered fifth. Likewise, the G could appear alongside the raised eleventh ( $F\sharp$ ).

### THE FINAL STYLE: TWENTIETH-CENTURY TONAL MUSIC

I can think of five distinctive features of twentieth-century tonal music. (I'm sure there are others!)

1. Traditional musical rules lost some of their “absolute” character. The rules against parallel fifths and octaves were gradually abandoned, as composers like Debussy reveled in parallelisms. The procedures of functional harmony became more optional—a V chord might progress to a root position IV chord without anyone batting an eye.
2. Musicians made more reference to the music of the past, as well as to non-Western musics. Thus composers felt free to evoke medieval, Renaissance, or folk styles, as well as the procedures of the classical and Romantic eras. In this sense, music became polystylistic.
3. Composers made greater use of modes and scales. Six scalar collections played an especially prominent role: the diatonic, the acoustic (melodic minor ascending), the whole tone, the octatonic, the pentatonic, and the chromatic. In addition to these, composers made reasonably frequent use of the harmonic major, the harmonic minor, and hexatonic. All of these scales were used in almost all of their modes. See the scales handout from Music 105 for a detailed discussion.
4. Certain composers began writing a kind of music in which the scale itself became the harmony. Here, virtually any note in the scale could be used at the same time—the harmonic character was determined by the scale, rather than particular chords. The term “pandiatonicism” is often used to describe this music.
5. Other composers began exploring music that resulted from the combination of two simultaneous keys—*bitonality* or *polytonality*. Important figures here were Stravinsky and Bartok.
6. There was an enormous explosion of interest in the rhythmic domain. Many of these ideas came, directly or indirectly, from African rhythm: a higher level of syncopation, polyrhythm or polymeter (the use of two or more rhythms or meters at the same time), irregular meters such as 5/8 and 7/8, ostinatos (repeating rhythmic “grooves”) and so on. We could spend a whole semester talking about rhythm in twentieth-century music ... but unfortunately I can just mention it here.

Beyond these general observations, it's hard for me to give a simple summary of twentieth-century tonal music—unlike previous eras, there isn't a clear list of “dos” and “don'ts” that I can teach you. Instead, there are lots and lots of interesting ideas and directions, some shared and some particular to individual composers.

I can, however, make a few suggestions. If you'd like to get good at writing contemporary tonal music, here are some things to try:

1. *Study lots of music.* Play through, and get to know, the works of Debussy, Ravel, Stravinsky, Bartok, Shostakovich, Messaien, Conlon Nancarrow, Steve Reich, Philip Glass, and John Adams. Listen to lots of music. Try to figure out the principles that make it tick. “Borrow” things that sound interesting.
2. *Learn a little jazz.* You don't have to become a great jazz player, but there's a lot to learn from musicians like Art Tatum, Charlie Parker, and John Coltrane. A basic familiarity with this music goes a long way.
3. *Learn to associate scales and chords.* Learn how to quickly answer questions like: “what scale goes with the chord C-E-B $\flat$ -D-F $\sharp$ -A”? Know which chords belong to particular scales, and which scales go with particular chords.
4. *Learn the various voice leadings connecting familiar chords.* For instance, learn all the different ways of getting between dominant sevenths and half-diminished chords by semitonal voice leading. Study the following list. Think of various uses you can put these voice leadings to. Do you understand how these are structured?

original	inversion	retrograde (transposed)	transposed retrograde of inversion	original	inversion	variant of original	variant of inversion

(retrograde symmetrical)

But these are just suggestions. The main thing is to write music that is interesting, lively, original and fun. There are no directions for doing this, which is both a good and bad thing.