

Musicianship Resources

Kris P. Shaffer

May 28, 2013

© This work is copyright ©2013 by Kris P. Shaffer and is licensed under a Creative Commons Attribution-ShareAlike 3.0 Unported License.

Part I

Introduction

1 Introduction to the inverted musicianship course (for students)

The Musicianship courses at CSU are *inverted* or *flipped* courses. In a nutshell, that means little-to-no lecture in class meetings, but instead a focus on individual, small-group, or whole-class activities. The rationale behind the inverted course model is that class time is too valuable to be spent doing things that can be done easily outside of class. Those precious few hours per week in which students are surrounded by their peers and in the presence of their professor should be spent doing the things that make best use of that environment. *Information transfer* (transferring information from the instructor's notebook to the students' notebooks) can happen just as well, and sometimes *better*, outside of class at the student's own pace. On the other hand, facilitating deep understanding of the material and enabling students to apply knowledge or skills in new contexts can be difficult to accomplish when working outside of class in isolation. In fact, a number of studies on student learning have demonstrated significant advantages to in-class work that focuses on exploration and application, rather than the delivery of information. Thus, we will primarily use individual and collaborative tasks *in class* that will allow you to explore concepts and begin to develop skills, while you are in the company of your peers and your professor. When raw facts need to be communicated and/or memorized, that will take place primarily outside of class.

Because in most university courses information transfer typically happens in class while application typically happens outside of class, we call a course that inverts, or flips, that pattern an *inverted* or *flipped* course. In these *inverted* courses, then, information is gathered, absorbed, and memorized largely outside of class, or as a secondary result of other in-class activity; knowledge is assimilated and applied, and skills are developed, in class.

1.1 What does the *inverted* musicianship class look like?

When you walk into the classroom for the first time, you will see the design of this class quickly. For starters, the room has no regular chairs. You will have no chair backs on which to rest (i.e., sleep). You will have no slide-out tray on which to take notes. Instead, you will sit on a piano bench in front of an electronic piano keyboard, possibly with a computer attached (if not, you can bring a laptop). In this class you will be *doing* things—making music, playing with music, picking music apart, and putting it back together.

You will also notice that the piano keyboards are arranged into groups of four, so that two students sit side-by-side facing two other students side-by-side. There are also white boards on multiple walls. There is *no front* to the room. Even the instructor keyboard and the projector screen are on different sides of the room. This room is not designed for one person to spout information to the rest, but for all to be at work simultaneously. Sometimes that work is in pairs, sometimes in your groups of four, sometimes as individuals (each keyboard should have its own pair of headphones). And there is room for me to walk around and engage you as individuals, pairs, or groups. Even when we do have whole-class activities, they are just that: activities (not passivities). You will be busy!

Specifically, we will do things in class like performing (mostly singing, but also some keyboard playing), listening (both to *dictate* what we hear onto the musical staff and to *analyze* what we hear for its structure and meaning), discussing, composing, transcribing, and writing. While you will still do many of these things outside of class time as well, I will rarely ask you to engage in such activities without having practiced them in-class first, where you have the benefit of your professor, your peers, and your piano.

What you do outside of class will also look very different from a typical lecture-then-homework class. But before I walk you through that, let me take a step back and give you the general model of how we will do things.

1.2 Analyze–Access–Assimilate–Apply

My three-year-old son repeatedly asks my wife and me, “Why is the sky blue?” He asks this because he has seen the sky and learned that it is blue, peaking his curiosity as to why. And this is a natural way to learn. Children do not sit inside waiting for someone to explain to them what “sky” is, that it is blue, and why, before they go outside and see it for themselves. They see it, make observations, and those observations lead to questions. A good “inverted” class follows this natural pattern: explore first, which leads both to learning and to questions, which lead to more learning.

Ramsay Mussalam¹, a science educator and education researcher, has developed a model for this kind of learning that he calls “Explore–Flip–Apply.” The main idea is that students *explore* a topic first. This exploration leads to *questions* about the topic and leads to organic *learning* of facts and concepts along the way. This is followed by the instructor providing information to fill in student gaps and answer questions (*flip*, a term that has become synonymous for many in the flipped-class movement with making videos that substitute for lectures or textbooks), and then activities that help students solidify their learning by *applying* knowledge in some task.

Our course will follow a similar model: *Analyze–Access–Assimilate–Apply*.

Much of our study will begin with analysis: look at a piece of music, or a collection of pieces, make observations, ask questions, dig into them, try to figure them out. Performance plays a big part in this analysis, both so you know what the piece sounds like, and so you can feel how it goes and commit more of it to memory. While I may assign you some pieces to listen to, with or without a score, before a class meeting, this analysis or exploration will largely take place in class in collaboration with peers. It’s important that you exhaust the analysis process first, figuring out as much as you can from tinkering. Once you are stuck (or think you have it all figured out!), we’ll connect as a large group (in class, or through writing) to share and solidify our findings.

Once we have analyzed, made observations, formulated questions, sought answers to those questions in the music, and come up with an initial understanding of the music, we’ll move on to access. At this point, I will assign out-of-class work in the form of readings, listenings, or videos that will correct misconceptions, clarify vague understandings, and fill in gaps. Some of this will come from course textbooks, and some of it I will make myself. As much as possible, though, I will try not to make these “canned” assignments, but to react to your analysis. Through me, you will seek to access the knowledge that you were unable to come up with on your own. Remember, many experts have been spending years formulating these ideas! I’m your gateway to that material.

Of course, I’m not the only gateway to that material! There is a wealth of material online and in the library. You are free, and encouraged, to pursue access through channels other than me. And in this course we will also work on developing the all-important skill of filtering out the good and the bad information that exists out there.

After the analysis and access stages are complete (well, they never *really* are, but we have to move on at some point!), we proceed to *assimilate* the information. That means moving from “I remember” to “I *understand*.” Assimilation involves turning facts about

¹<http://www.cyclesoflearning.com>

something you’ve already analyzed into concepts that can be applied to something you’ve never seen before. This is where the hard work is, as well as the need for your peers and professor. Thus, while some assimilation will happen naturally outside of class, it will be a significant—and possibly the most significant—focus of in-class activity and my efforts as your instructor.

The last stage in the process is to *apply* the conceptual knowledge that has been assimilated. This will come in the form of writing an analysis of a piece you’ve never seen before without the help of your peers, composing a piece in the style of a particular composer or genre, or improvising according to the norms of a particular style. This is the bulk of the work that will be assessed by me. If knowledge has been learned incorrectly, or has not been sufficiently assimilated, application will be a tough road with little reward at the end. But if we have all done our jobs well in the preceding stages, it should be the easiest and the most enjoyable part of the process.

Early application work will typically be practiced in-class, often in groups. However, final assessments will come from projects conducted independently. While I will give you some class time for independent projects while I and your peers are available for appropriate consultation, most of the application work should be done outside of class.

1.3 What does this model require of the student?

As the student in this class, the responsibility for learning the course material and mastering the concepts will be yours. I am your resource and your guide. This means that in class, you will not be passive recipients of knowledge, but active analysts and creators. That’s what you’re training to be anyway. Might as well start now!

2 Introduction to this “textbook” (for instructors and scholars)

This website is the still-growing, online “textbook” for the Musicianship I–IV course sequence at Charleston Southern University. Textbook is in scare quotes because this is neither a book, nor entirely comprised of text. But it is the main source of information, and the main resource for student reference, in those courses. (Students are also expected to purchase and make use of Gary Karpinski’s *Manual* and *Anthology* for ear-training and sight singing—two excellent resources that are last on my list to be replaced by my own online materials.)

This website is meant to accompany “inverted” or “flipped” courses that largely follow an inquiry based model (see the Introduction to the inverted musicianship course²). That means that my students only occasionally engage these resources as the first step in learning a new concept or skill. Rather, these resources are usually meant to follow an earlier stage of analysis or inquiry, or a study of models to be emulated. As a result, most of the pages on this site do not read like a textbook. They are somewhere in between prosy lecture notes and reference material, with minimal graphical or audio examples. This is on purpose. I sometimes ask students to find examples of things discussed in the text in the models they studied or performed in class, for example. I also try to design the resources to be easily referenced while performing a task—such as model composition. This necessitates short, pithy prose rather than elaborate, masterful exposition.

If you are looking for a book to read that will teach you music theory or musicianship skills independently, this probably will not work. It is designed with a particular kind of

²[invertedCourse.html](#)

class in mind, which is collaborative and for which this is only a supplemental resource to the primary pedagogical tool—active engagement with the materials in the presence of peers and a professor.

If you are a theorist exploring different pedagogical models or schools of thought, you may find this site interesting. Standard textbooks are written with the typical lecture–homework–test/project model in mind, so this will provide a different pedagogical approach from those texts (many of which are excellent at what they do, of course). Also, standard textbooks tend to offer more standard (and, therefore, older) approaches to concepts, and in recent years the diversity of schools of thought represented by the most common textbooks has diminished (in my estimation). I, however, try to incorporate the best new theories and approaches into my materials, especially since some new developments are readily accessible and audible to undergraduate music students. I also am comfortable joining in with certain schools of thought, where there are competing views on the same issues. Thus, this site include concepts drawn from Gjerdingen’s *Galant* schemata, Caplin’s formal functions, Hepokoski & Darcy’s approach to Sonata Theory, Jay Summach’s refinement of concepts of pop/rock form (modeled after Hepokoski/Darcy’s and Caplin’s approach), and Quinn’s harmonic function theory. If you are interested in pedagogical materials that draw on some of these newer theories, or a pedagogical approach that is unashamedly in line with the “Meyer School” and what Quinn calls the “neo-McHoseian” approach to harmony (though everyone else just calls it “Quinnian”), this site may interest you, as well.

2.1 Open source

This “textbook” is an *open-source* textbook. That means that you are free to use, modify, distribute, even sell its contents provided that you 1) attribute the original to me, and 2) pass on the same rights to others (which includes me!) by licensing your derivative work the same way I license this one. (See the Creative Commons license deed linked on the left/bottom of this page.) In fact, I highly encourage others to “hack” this book: supplement it, reword it, add examples, drop chapters, mash it up with another one. Not only will that mean a greater diversity of material available, but if you improve your version of this work with your hacks, I can use those improvements to make this resource better, too.

If you want to “fork” this textbook, either to deploy it for your own course without worrying about me changing it on you (this website is still very much a work-in-progress, after all), or to use it as the basis for your own derived work, click “View on Github” (above or to the left), log in (or sign up), and “fork” the project. From there, you can edit, add, or remove the text, graphics, and videos (all text is in the very user-friendly Markdown format), or the theme (HTML and CSS). You can also send me a “pull request,” if you’ve made a change you think would be beneficial to add to this version. You can even download an individual file to convert into a Word document and distribute as a handout in class.

Happy reading, watching, and hacking!

Please email me with questions at kris.shaffer@gmail.com, or follow me on Twitter³ or my blog⁴. And if you make use of any of these resources, please drop me a line. I’d love to hear what you’re doing with it.

³<http://www.twitter.com/krisshaffer>

⁴<http://kris.shaffermusic.com>

Part II

Fundamentals

3 Meter and time signatures

Meter involves the way multiple pulse layers work together to organize music in time. Standard meters in Western music can be classified into *simple meters* and *compound meters*, as well as *duple*, *triple*, and *quadruple* meters.

Duple, triple, and quadruple classifications result from the relationship between the counting pulse (Karpinski's *secondary* pulse) and the pulses that are *slower* than the counting pulse (Karpinski's *primary* pulse). In other words, it is a question of *grouping*: how many beats (secondary pulse) occur in each bar (primary pulse). If counting-pulse beats group into twos, we have duple meter; groups of three, triple meter; groups of four, quadruple meter. Conducting patterns are determined based on these classifications.

Simple and compound classifications result from the relationship between the counting pulse and the pulses that are *faster* than the counting pulse. In other words, it is a question of *division*: does each beat divide into two equal parts, or three equal parts. Meters that divide the beat into two equal parts are *simple meters*; meters that divide the beat into three equal parts are *compound meters*.

Thus, there are six types of standard meter in Western music:

- simple duple (beats group into two, divide into two)
- simple triple (beats group into three, divide into two)
- simple quadruple (beats group into four, divide into two)
- compound duple (beats group into two, divide into three)
- compound triple (beats group into three, divide into three)
- compound quadruple (beats group into four, divide into three)

In a time signature, the *top number* (and the top number only!) describes the type of meter. Following are the top numbers that always correspond to each type of meter:

- simple duple: 2
- simple triple: 3
- simple quadruple: 4
- compound duple: 6
- compound triple: 9
- compound quadruple: 12

In *simple meters*, the bottom number of the time signature corresponds to the type of note corresponding to a *single beat*. If a simple meter is notated such that each quarter note corresponds to a beat, the bottom number of the time signature is 4. If a simple meter is notated such that each half note corresponds to a beat, the bottom number of the time signature is 2. If a simple meter is notated such that each eighth note corresponds to a beat, the bottom number of the time signature is 8. And so on.

In *compound meters*, the bottom number of the time signature corresponds to the type of note corresponding to a *single division of the beat*. If a compound meter is notated such that

each dotted-quarter note corresponds to a beat, the eighth note is the division of the beat, and thus the bottom number of the time signature is 8. If a compound meter is notated such that each dotted-half note corresponds to a beat, the quarter note is the division of the beat, and thus the bottom number of the time signature is 4. Note that because the beat is divided into three in a compound meter, the beat is always three times as long as the division note, and *the beat is always dotted*.

4 Pitches and octave designations

Karpinski, Chapter 8 (pp. 36–37), provides an adequate explanation of *generic* pitch names on the treble and bass staves, and you are already familiar with the modification of generic pitches with sharps, flats, and naturals. However, when specifying a particular pitch precisely, we also need to know the *register*. In fact, if all you have is C-sharp or B-flat, you do not have a *pitch*, you have a *pitch-class*. A pitch-class plus a register together designate a specific pitch.

We will follow the International Standards Organization (ISO) system for register designations. In that system, middle C (the first ledger line above the bass staff or the first ledger line below the treble staff) is C4. An octave higher than middle C is C5, and an octave lower than middle C is C3.

The tricky bit about this system is that the octave starts on C and ends on B. So an ascending scale from middle C contains the following pitch designations:

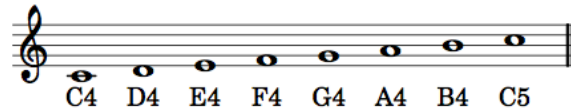


Figure 1: Ascending diatonic scale from middle C.

And a descending scale from middle C contains the following pitch designations:



Figure 2: Descending diatonic scale from middle C.

Pitches on the alto staff are as follows:



Figure 3: Natural pitches on the alto staff.

Any accidentals follow the octave designation of the natural pitch with the same generic name. Thus a half step below C4 is C-flat4 (even though it sounds the same as B3), and a half step above C4 is C-sharp4.

Note that a complete designation contains both the pitch-class name (a letter name plus an optional sharp or flat) and the register (the ISO number indicating the octave in which the pitch is found). Unless both are present, you do not have the full designation of a specific pitch.

5 Intervals and dyads

An *interval* is the distance between two pitches, usually measured as a number of steps on a scale.

A *dyad* is a pair of pitches sounding together (in other words, a two-note chord). Since a dyad is defined by the interval between the two pitches, dyads are often simply called intervals.

Thus, the term *interval* regularly refers both to the distance between two pitches on a scale and to a dyad whose pitches are separated by that distance.

5.1 Chromatic intervals

The simplest way to measure intervals, particularly at the keyboard, is to count the number of half-steps, or *semitones*, between two pitches. To determine the chromatic interval between C4 and E4, for example, start at C4 and ascend the chromatic scale to E4, counting steps along the way: C#4, D4, D#4, E4. E4 is four semitones higher than C4. Chromatic intervals are notated with a lower-case *i* followed by an Arabic numeral for the number of semitones. C4–E4 is four semitones, or *i4*.

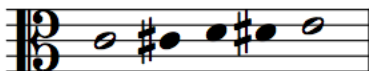


Figure 4: Chromatic steps from C4 to E4.

5.2 Diatonic intervals

More commonly for tonal music, we are interested in the number of steps on the diatonic (major or minor) scale. This is a bit tricky—not because it’s difficult, but because it’s counterintuitive. Unfortunately, the system is too old and well engrained to change it now! But once you get past the initial strangeness, diatonic intervals are easy.

When identifying a diatonic interval, begin with the *letter names only*. That is, treat C, C-sharp, and C-flat all as *C* for the time being. Next, count the number of steps (different letters) between the two pitches in question, *counting both pitches*. This will give you the *generic interval*.

For example, from C4 to E4, counting both C and E, there are three diatonic steps (three letter names): C, D, E. Thus, the generic interval for C4–E4 is a *third*. The same is true for any C to any E: C#4 to E4, Cb4 to E#4, etc. They are all diatonic thirds.

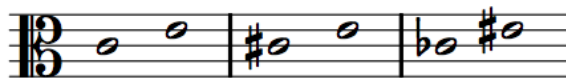


Figure 5: Three kinds of generic thirds.

Often more specificity is needed than generic intervals can provide. That specificity comes in the form of *interval quality*. And combining quality with a generic interval produces a *specific interval*.

There are five possible interval qualities:

- augmented (A)
- major (M)
- perfect (P)
- minor (m)
- diminished (d)

To obtain an interval's quality, find both the generic interval and the chromatic interval. Then consult the following table to find the specific interval.

Table 1: Simple diatonic intervals.

Generic interval	i0	i1	i2	i3	i4	i5	i6	i7	i8	i9	i10	i11	i12
unison	P1	A1											
second	d2	m2	M2	A2									
third			d3	m3	M3	A3							
fourth					d4	P4	A4						
fifth							d5	P5	A5				
sixth								d6	m6	M6	A6		
seventh										d7	m7	M7	A7
octave												d8	P8

For example, C4–E4 is a generic third, and has a chromatic interval of i4. A third that encompasses four semitones is a *major third* (M3). Note that both generic interval and chromatic interval are necessary to find the specific interval, since there are multiple specific diatonic intervals for each generic interval and for each chromatic interval.

Note that some generic intervals can be augmented, perfect, or diminished, and other intervals can be augmented, major, minor, or diminished. There is no generic interval that can be both major/minor and perfect; if it can be major or minor, it cannot be perfect, and if it can be perfect, it cannot be major or minor. An augmented version of an interval is always one semitone wider than major or perfect; diminished is always one semitone smaller than minor or perfect.

Solfège can also help to determine the specific interval. Each pair of solfège syllables will have the same interval, no matter what the key, as long as it is clear which syllable is the lower pitch and which is the upper pitch. Memorizing the intervals between solfège pairs can help speed along your analysis of dyads as they appear in music. For example, knowing that *do–mi*, *fa–la*, and *sol–ti* are always major thirds and knowing that *re–fa*, *mi–sol*, *la–do*, and *ti–re* are always minor thirds will allow for faster analysis of dyads in major keys.

5.3 Compound intervals

The intervals discussed above, from unison to octave, are called *simple intervals*. Any interval larger than an octave is considered a *compound interval*. Take the interval C4 to E5. The generic interval is a tenth. However, it functions the same as C4 to E4 in almost all musical circumstances. Thus, the tenth C4–E5 is also called a *compound third*. A compound interval takes the same quality as the corresponding simple interval. If C4–E4 is a major third, then C4–E5 is a major tenth.



Figure 6: Simple and compound major thirds.

5.4 Interval inversion

In addition to C4–E4 and C4–E5, E4–C5 also shares a similar sound and musical function. In fact, any dyad that keeps the same two pitch classes but changes register will have a similar sound and function. However, the fact that E4–C5 has E as its lowest pitch instead of C means that it has a different generic interval: E4–C5 is a sixth, not a third. Because of that difference, it will also play a different musical function in some circumstances. However, there is no escaping the relationship.

Dyads formed by the same two pitch classes, but with different pitch classes on bottom and on top, are said to be *inversions* of each other, because the pitch classes are *inverted*. Likewise, the intervals marked off by those inverted dyads are said to be *inversions* of each other.

Again, take C4–E4 (major third) and E4–C5 (minor sixth). These two dyads have the same two pitch classes, but one has C on bottom and E on top, while the other has E on bottom and C on top. Thus, they are inversions of each other.



Figure 7: Inversion relationship: major third and minor sixth.

Three relationships exhibited by these two dyads hold for all interval inversions.

First, the chromatic intervals add up to 12. (C4–E4 = i4; E4–C5 = i8; i4–i8 = i12) This is because the two intervals add up to an octave (with an overlap on E4).

Second, *the two generic interval values add up to nine* (a third plus a sixth, or 3 + 6). This is because the two intervals add up to an octave, and one of the notes is counted twice when you add them together. (Remember the counterintuitive way of counting off diatonic intervals, where the number includes the starting and ending pitches, and when combining inverted intervals, there is always one note that gets counted twice—in this case, E4.)

Lastly, the major interval inverts into a minor, and vice versa. This always holds for interval inversion. Likewise, an augmented interval's inversion is always diminished, and vice versa. A perfect interval's inversion is always perfect.

major \leq minor
augmented \leq diminished
perfect \leq perfect

Interval inversion may seem confusing and esoteric now, but it will be an incredibly important concept for the study of voice-leading and the study of harmony.

5.5 Melodic and harmonic intervals

The last distinction between interval types to note is *melodic* v. *harmonic* intervals. This distinction is simple. If the two pitches of a dyad sound at the same time (a two-note chord), the interval between them is a *harmonic interval*. If the two pitches in question are sounded back-to-back (as in a melody), the interval between them is a *melodic interval*. This distinction is important in voice-leading, where different intervals are preferred or forbidden in harmonic contexts than in melodic contexts. The difference is also important for listening, as hearing melodic and harmonic intervals of the same quality requires different techniques.

5.6 Consonance and dissonance

Intervals are categorized as *consonant* or *dissonant* based on their sound (how stable, sweet, or harsh they sound), how easy they are to sing, and how they best function in a passage (beginning, middle, end; between certain other intervals; etc.). Different standards apply to melody and harmony. The following categories will be essential for your work in strict voice-leading, and they will be a helpful guide for free composition and arranging work, as well.

Melodic consonance and dissonance

The following *melodic* intervals are *consonant*, and can be used in strict voice-leading both for successive pitches and as boundaries of stepwise progressions in a single direction:

- All perfect intervals (P4, P5, P8)
- All diatonic steps (M2, m2)
- Major and minor thirds
- Major and minor sixths

All other *melodic* intervals are *dissonant*, and must be avoided for successive pitches and as boundaries of stepwise progressions in a single direction, including:

- All augmented and diminished intervals (including those that are enharmonically equivalent to consonant intervals, such as A2 and A1)
- All sevenths

Harmonic consonance and dissonance

The following *harmonic* intervals are *imperfect consonances*, and can be used relatively freely in strict voice-leading (except for beginnings and endings):

- Major and minor thirds
- Major and minor sixths

The following *harmonic* intervals are *perfect consonances*, and must be used with care in limited circumstances in strict voice-leading:

- All perfect intervals *except the perfect fourth* (P1, P5, P8)

All other *harmonic* intervals are *dissonant*, and must be employed in very specific ways in strict voice-leading, including:

- All diatonic steps (M2, m2)
- All augmented and diminished intervals (including those that are enharmonically equivalent to consonant intervals, such as A2 and A1)
- All sevenths
- Perfect fourths

6 Triads and seventh chords

A chord is any combination of three or more pitch classes that sound simultaneously.

A three-note chord whose pitch classes can be arranged as thirds is called a *triad*.

To tell whether or not a chord is a triad, take the pitch classes present in the chord. Assuming there are three pitch classes (not necessarily three *pitches*), arrange them on the circle of generic scale steps. (By generic, I mean that A-natural, A-flat, and A-sharp are all kinds of A.)

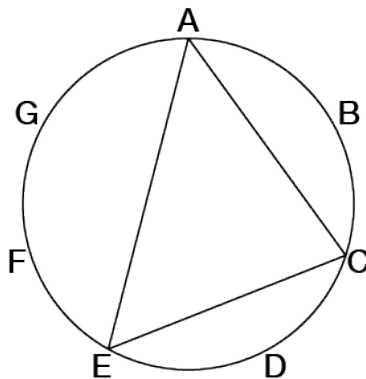


Figure 8: A triad (A, C, E) on the diatonic circle of steps.

If the three pitch classes are distributed as above, with two intervals skipping one pitch class and with one interval skipping two pitch classes, the chord is a triad. (There are a few exceptions to this rule, but they rarely appear in Western music, so don't worry about them for now.)

A circle of thirds makes things even clearer, as the pitch classes of a triad will always sit next to each other.

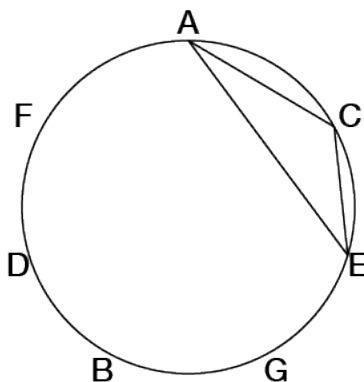


Figure 9: A triad (A, C, E) on the diatonic circle of thirds.

6.1 Identifying and labeling triads

Triads are identified according to their *root* and *quality*.

Triad roots

To find a triad's root, arrange the pitch classes on a circle of thirds (mentally or on paper). When you arrange the pitch classes on the circle of thirds, the root is the *lowest* pitch-class of the three-pitch-class clump. Expressed another way, if the circle *ascends* by thirds as it moves clockwise, the root is the "earliest" note (thinking like a literal clock), and the other pitch classes come "later."

Once you know the root, you can identify the other notes as the *third* of the chord (a third above the root) and the *fifth* of the chord (a fifth above the root). The third of the chord is the pitch class that is a third higher than the root. The fifth of the chord is the pitch class that is a fifth higher than the root.

Triad qualities

To find a triad's quality, identify the diatonic interval between the root and the other members of the chord. There are four qualities of triads that appear in major and minor scales, each with their own characteristic intervals.

- major triad: M3 and P5 above the root
- minor triad: m3 and P5 above the root

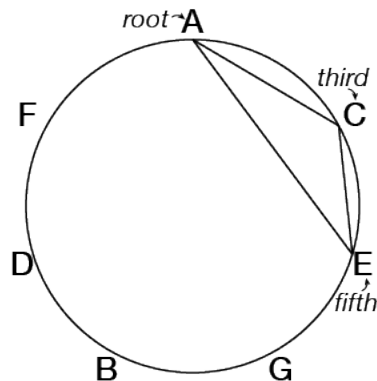


Figure 10: A triad (A, C, E) on the diatonic circle of thirds.

- diminished triad: m3 and d5 above the root
- augmented triad: M3 and A5 above the root

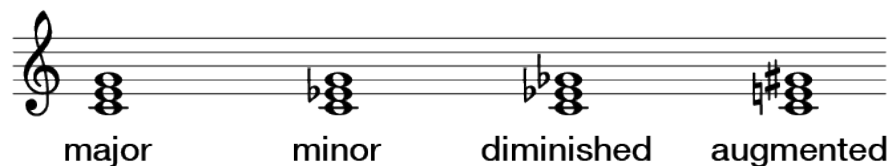


Figure 11: Four qualities of triads.

Lead-sheet symbols

A triad can be summed up by a single symbol, such as a lead-sheet chord symbol. A lead sheet symbol includes information about both root quality, as well as which pitch class occurs in the lowest voice (called the *bass* regardless of who is singing or playing that pitch).

A lead-sheet symbol begins with a capital letter (and, if necessary, an accidental) denoting the root of the chord. That letter is followed by information about a chord's quality:

- major triad: no quality symbol is added
- minor triad: lower-case “m”
- diminished triad: lower-case “dim” or a degree sign
- augmented triad: lower-case “aug” or a plus sign

Finally, if a pitch class other than the chord root is the lowest note in the chord, a slash is added, followed by a capital letter denoting the pitch class in the bass (lowest) voice.

A C-major triad's lead-sheet symbol is simply **C**. A C-minor triad is **Cm**. A D-sharp-diminished triad with an F-sharp in the bass is **D#dim/F#**. And so on.

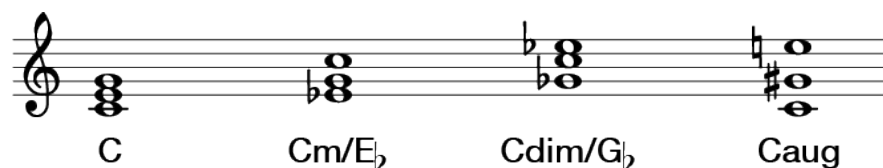


Figure 12: Four qualities of triads with lead-sheet symbols.

6.2 Roman numerals

Chords can be labeled according to their function within a key. One system for doing so uses Roman numerals to designate the scale degree of the chord's root. For example, in the key of C major, a C-major chord would be labeled "I," a D-minor chord "II," E-minor "III," and so on. In G minor, an A-diminished triad would be labeled "II," F-major "VI," etc. Always use capital Roman numerals. In general, Roman numerals will be labeled *below* the score.

In major keys, chords with the same Roman numeral are made up of the same scale-degrees (using the same solfège syllables), and they have the same quality. In other words, triads labeled "I" in any major key will be major triads containing *do*, *mi*, and *sol*. III triads will be minor triads containing *mi*, *sol*, and *ti*, etc. The same is true for minor keys (though I in minor is different from I in major).

Following are the qualities and scale-degrees belonging to each triad in every major key:

- I: major – *do*, *mi*, *sol*
- II: minor – *re*, *fa*, *la*
- III: minor – *mi*, *sol*, *ti*
- IV: major – *fa*, *la*, *do*
- V: major – *sol*, *ti*, *re*
- VI: minor – *la*, *do*, *mi*
- VII: diminished – *ti*, *re*, *fa*

Following are the qualities and scale-degrees belonging to each triad in every minor key:

- I: minor – *do*, *me*, *sol*
- II: diminished – *re*, *fa*, *le*
- III: major – *me*, *sol*, *te*
- IV: minor – *fa*, *le*, *do*
- V: major – *sol*, *ti*, *re*
- VI: major – *le*, *do*, *me*
- bVII: major – *te*, *re*, *fa*
- VII: diminished – *ti*, *re*, *fa*

6.3 Building a triad

To build a triad on the staff, identify the root, quality, and bass note from the lead-sheet symbol. The root and quality will tell you what three pitch classes belong to the triad. For example, **Caug** tells you the root is C, and the quality is augmented. Since the quality is augmented, there is a major third above the root (E) and an augmented fifth above the root (G-sharp). Since there is no bass note appended to the lead-sheet symbol, the bass note is the same as the root: C. Write a C on the staff (in any comfortable register), then write the other chord tones (E and G-sharp) *above* the C (see the C_{aug} triad in the above figure).

For **C_m/E_b**, the root is C, and the quality is minor. Since the quality is minor, there is a minor third above the root (E-flat) and a perfect fifth above the root (G). The slash identifies E-flat as the bass note. Write the E-flat on the staff. Then write a C and a G above it to complete the chord (again, see above).

When all the members of the triad are as close to the bass note as they can be, the chord is in what is called *close position* (C, C_m/E_b, and C_{dim}/G_b above). When there are spaces between chord tones, the chord is in *open position* (C_{aug} above). (In certain musical situations, only one of those positions will be useful or desirable.)

6.4 Listening to triads

Each triad quality has its own distinct sound, and to an extent that sound is preserved even when the chord is *inverted* (when the pitch classes are arranged so that a pitch class other than the root is in the lowest voice). As you practice identifying and writing triads, be sure to play the triads, both to check your analysis/writing and to develop the ability to identify chord qualities quickly by ear.

6.5 Seventh chords

A four-note chord whose pitch classes can be arranged as thirds is called a *seventh chord*.

Like with a triad, the pitch classes belonging to a seventh chord occupy adjacent positions (a four-pitch-class clump) on the circle of thirds. The four members of a seventh chord are the *root*, *third*, *fifth*, and *seventh*.

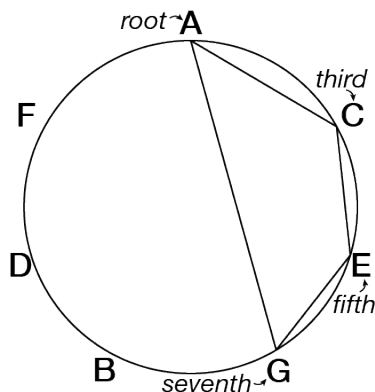


Figure 13: A seventh chord (A, C, E, G) on the diatonic circle of thirds.

There are five qualities of seventh chords that appear in diatonic music: major seventh, dominant seventh, minor seventh, diminished seventh (also called fully-diminished), and half-diminished seventh. They are comprised of the following intervals above their roots:

- major seventh: M3, P5, and M7 above the root (or major triad with a major seventh)
- dominant seventh: M3, P5, and m7 above the root (or major triad with a minor seventh)
- minor seventh: m3, P5, and m7 above the root (or minor triad with a minor seventh)
- diminished seventh: m3, d5, and d7 above the root (or diminished triad with a diminished seventh)
- half-diminished seventh: m3, d5, and m7 above the root (or diminished triad with a minor seventh)

Following are the lead-sheet abbreviations for seventh-chord qualities:

- major seventh: maj7 (Gmaj7) — a triangle can substitute for “maj”
- dominant seventh: 7 (B7)
- minor seventh: m7 (F#m7)
- diminished seventh: dim7 (Ddim7) — a degree sign can substitute for “dim”
- half-diminished seventh: half7 (Ahalf7) — a degree sign with a slash through it can substitute for “half”

Roman numerals

Following are the qualities and scale-degrees belonging to each seventh chord in every major key:

- I: major seventh – *do, mi, sol, ti*
- II: minor seventh – *re, fa, la, do*
- III: minor seventh – *mi, sol, ti, re*
- IV: major seventh – *fa, la, do, mi*
- V: dominant seventh – *sol, ti, re, fa*
- VI: minor seventh – *la, do, mi, sol*
- VII: half-diminished seventh – *ti, re, fa, la*

Following are the qualities and scale-degrees belonging to each seventh chord in every minor key:

- I: minor seventh – *do, me, sol, te*
- II: half-diminished seventh – *re, fa, le, do*

- III: major seventh – *me, sol, te, re*
- IV: minor seventh – *fa, le, do, me*
- V: dominant seventh – *sol, ti, re, fa*
- VI: major seventh – *le, do, me, sol*
- bVII: dominant seventh – *te, re, fa, le*
- VII: half-diminished seventh – *ti, re, fa, le*

Part III

Voice-leading and model composition

7 Introduction to strict voice-leading

The study of the theory of Western music involves three main components: voice-leading, harmony, and form. *Voice-leading* deals with the relationship of two or more musical lines (or melodies) combined into a single musical idea. *Harmony* addresses the rules or norms for combining chords into successions. *Form* addresses the rules or norms for the combination of phrases and other small musical units into larger units—including whole movements and works.

We will address all three of these facets of musical theory. However, of the three, voice-leading is the most fundamental. Thus, we begin our study of music theory, then, with *strict voice-leading*, or *counterpoint*.

Twentieth-century musician and theorist, Heinrich Schenker, wrote:

The purpose of counterpoint, rather than to teach a specific style of composition, is to lead the ear of the serious student of music for the first time into the infinite world of fundamental musical problems (*Kontrapunkt*, p. 10).

Following this line of thinking, our early voice-leading exercises will not be in a specific style (classical, baroque, romantic, pop/rock, etc.). Instead, these exercises will eliminate important musical elements like *harmony*, *orchestration*, *melodic motives*, *formal structure*, and even many elements of *rhythm*, in order to focus very specifically on a small set of musical problems. These other elements of music will be introduced one-by-one as we progress through the course (and into future courses).

Also, note Schenker's expression "lead the ear." These are not pencil-and-paper exercises. Rather, they must be *performed*—with voice and/or keyboard, often with a partner—so that the ear, the fingers, the throat, and ultimately the mind can internalize the sound, sight, and feel of good (and bad) musical lines, and good (and bad) combinations of musical lines.

The specific method we will use is called *species counterpoint*—so called because the study progresses through stages, or species, where one or two new musical "problems" are introduced. This approach has existed in some form since the early seventeenth century. The specific method we will use is very close to that articulated by Johann Joseph Fux, in his *Gradus ad parnassum* (*Steps to Parnassus*, 1725). Master composers from the eighteenth to the twenty-first centuries have used this method, or some variation on it. While Fux proposed five species, moving from two-voice combinations up to six- and eight-voice combinations, we will focus on species one through four, in two voices only.

8 Types of contrapuntal motion

There are four types of contrapuntal motion between two musical lines. Differentiating these four types of motion is essential to generating good voice-leading, both strict and free.

In *parallel motion*, two voices move in the same direction by the same generic interval. For example, the following two voices both move up by a step. Note also that both dyads form the same generic interval (sixth). This will always be true when two voices move in parallel motion.

In *similar motion*, also called *direct motion*, two voices move in the same direction, but by different intervals. For example, the following two voices both move down, but the upper voice moves by step while the lower voice moves by leap. Note also that the two dyads are different generic intervals. This will always be the case with similar or direct motion.



Figure 14: Example of parallel motion: C–A to D–B.



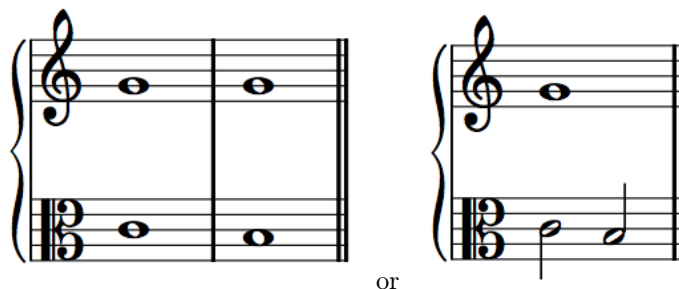
Figure 15: Example of similar motion: C–G to A–F.

In *contrary motion*, two voices move in opposite directions—one up, the other down.



Figure 16: Example of contrary motion: C–E to A–F.

In *oblique motion*, one voice is stationary, while the other voice moves (in either direction). The stationary tone may or may not be rearticulated.



or

9 Composing a *cantus firmus*

Exercises in strict voice-leading, or species counterpoint, begin with a single, well formed musical line called the *cantus firmus* (fixed voice, or fixed melody; pl. *cantus firmi*). Our first exercises in strict voice-leading will be to compose a good *cantus firmus*.

The first step is to sing and analyze model *cantus firmi*. A number of them are provided here⁵. (These models will also be used as the starting points for our two-voice exercises.)

From these *cantus*, notice the following general characteristics, which are typical of all well formed *cantus firmi*:

- length of about 8–16 notes
- arhythmic (all whole notes; no long or short notes)
- begin and end on *do*
- approach final tonic by step (usually *re–do*, sometimes *ti–do*)
- all note-to-note progressions are melodic consonances
- range (interval between lowest and highest notes) of no more than a tenth, usually less than an octave
- a single climax (high point) that appears only once in the melody
- clear logical connection and smooth shape from beginning to climax to ending
- mostly stepwise motion, but with some leaps (mostly small leaps)
- no repetition of “motives” or “licks”
- any large leaps (fourth or larger) are followed by step in opposite direction
- no more than two leaps in a row; no consecutive leaps in the same direction
- the leading tone progresses to the tonic
- in minor, the leading tone only appears in the penultimate bar; the raised submediant is only used when progressing to that leading tone

⁵Graphics/counterpoint/cantusFirmi.pdf

10 Composing a first-species counterpoint

Counterpoint is the mediation of two or more musical *lines* into a meaningful and pleasing *whole*. This depends on many factors—including the quality of each individual line, the harmonic intervals between them at any given moment, the independence of the lines, etc.

Counterpoint is *not* the construction of harmonic music, but the combination of lines into a pleasing whole. While the intervals between two notes sounding at any given time is critical, *the lines cannot suffer*. On the other hand, we cannot simply compose two melodies of the same length in the same key and call it counterpoint. A composer must always keep in mind both the *integrity of each line* and the intervallic relationships between them.

To begin our study of this important factor of musical theory and composition, we will explore *first-species counterpoint*. In first species counterpoint, a single new line—called the *counterpoint*—is written above a given cantus firmus. That new line contains one note for every note in the cantus. In other words, both the cantus firmus and the counterpoint will be all whole notes.

10.1 The counterpoint line

In general, the counterpoint should follow the principles of writing a good cantus firmus. There are some minor differences, to be discussed below, but generally a first-species counterpoint should consist of two cantus-firmus-quality lines.

Beginning a first-species counterpoint

When writing a counterpoint *above* a cantus firmus, the first note of the counterpoint should be *do* or *sol* (a P1, P5, or P8 above the cantus).

When writing a counterpoint *below* a cantus firmus, the first note of the counterpoint must always be *do* (P1 or P8 below the cantus).

Ending a first-species counterpoint

The final note of the counterpoint must always be *do* (P1 or P8 above/below the cantus).

Always approach the final interval by contrary stepwise motion. If the cantus ends *re-do*, the counterpoint's final two pitches should be *ti-do*. If the cantus ends *ti-do*, the counterpoint's final two pitches should be *re-do*. Thus the penultimate bar will either be a minor third or a major sixth between the two lines. This is the case for both major and minor keys.

Independence of the lines

Like the cantus firmus, the counterpoint should have a single climax. To maintain the independence of the lines and the smoothness of the entire passage, these climaxes should not coincide.

A single repeat/tie in the counterpoint is allowed, but try to avoid repeating at all.

Avoid *voice crossing*, where the upper voice is temporarily lower than the lower voice, and *vice versa*.

Avoid *voice overlap*, where one voice leaps past the previous note of the other voice. For example, if the upper part sings an E4, the lower part cannot sing an F4 in the following bar.

Intervals and motion

The interval between the cantus and counterpoint at any moment should not exceed a perfect twelfth (octave plus fifth). In general, try to keep the two lines within an octave where possible, and only exceed a tenth in “emergencies,” and only briefly (one or two notes).

In general, all harmonic *consonances* are allowed. However, unisons should only be used for first and last intervals, and *imperfect consonances* are preferable to *perfect consonances* for all intervals other than the first and last dyads. In all cases, aim for a variety of harmonic intervals over the course of the exercise.

Never, ever, ever use two perfect consonances of the same size in a row: **P5–P5** or **P8–P8**. This includes both simple and compound intervals. For example, **P5–P12** is considered the same as **P5–P5**. (Two different perfect consonances in a row, such as **P8–P5**, is allowed, however, but try to follow every perfect consonance with an imperfect consonance if possible.)

Vary the types of motion between successive intervals (parallel, similar, contrary, oblique). Try to use all types of motion (except, perhaps, oblique motion), but prefer contrary motion where possible. It is best for preserving the independence of the lines.

Use similar and parallel motion within the following constraints:

- Do not use more than three of the same imperfect consonance type in a row (e.g., three thirds in a row). This diminishes the independence of the lines.
- *Never* move into a perfect consonance by similar motion (this is called *direct* or *hidden octaves*). This draws too much attention to an interval which already stands out of the texture.
- Avoid combining similar motion with leaps, especially large ones.

10.2 Demonstration

In this video⁶, I illustrate the process of composing a first-species counterpoint. This video provides new information about the compositional process, as well as concrete examples of the above rules and principles.

11 Composing a second-species counterpoint

In second-species counterpoint, the counterpoint line moves in half notes against a cantus firmus in whole notes. This 2:1 rhythmic ratio leads to two new key features that must be considered—one metric and one harmonic: the differentiation between *strong beats* and *weak beats*, and the introduction of the *passing tone* dissonance.

11.1 The counterpoint line

As in first species, the counterpoint line should be singable, have a good shape, with a single climax and primarily stepwise motion (with some small leaps and an occasional large leap for variety). However, a second-species counterpoint should be even *more dominated by stepwise motion* than in first species, because there are less sticky situations that would

⁶<https://vimeo.com/56828309>

require a leap. If the counterpoint must leap, prefer to do so from strong beat to weak beat (within the bar) rather than from weak beat to strong beat (across the barline). Also, because there are more notes in a second species line, there should usually be one or two *secondary climaxes*—notes lower than the overall climax that serve as “local” climaxes for portions of the line.

Beginning a second-species counterpoint

As in first species, begin a second-species counterpoint above the cantus firmus with *do* or *sol*. Begin a second-species counterpoint below the cantus firmus with *do*. Unisons are permitted for the first and last dyads of the exercise.

A second-species line can begin with two half notes in the first bar, or a half rest followed by a half note. *Beginning with a half rest is preferred (and easier)*. Regardless of rhythm, the first pitch in the counterpoint should follow the intervallic rules above.

Ending a second-species counterpoint

The final pitch of the counterpoint must always be *do*, as in first species.

The penultimate note of the counterpoint should be *ti* if the cantus is *re*, and *re* if the cantus is *ti*, as in first species.

The penultimate bar of the counterpoint can either be a *whole note* (making the last two bars identical to first species), or two half notes. Which option you use will depend on how you are approaching the final bar.

Strong beats

Strong beats (downbeats) should *always be consonant*, and should not be unisons. As in first species, prefer imperfect consonances (thirds and sixths) to perfect consonances (fifths and octaves).

Motion across bar lines (from weak beat to strong beat) follows the same rules as first species counterpoint. For instance, if a weak beat is a perfect fifth, the following downbeat must not also be a perfect fifth.

Likewise progressions from downbeat to downbeat must follow principles of first-species counterpoint. The following are some examples, but not an exhaustive list:

- No two consecutive bars can begin with the same perfect interval.
- The pitches that begin consecutive downbeats must not make a dissonant melodic interval. (Exception: if the counterpoint leaps an octave from the strong beat to the weak beat, the leap should be followed by step in the opposite direction making a seventh with the preceding downbeat. This is okay.)
- No more than three bars in a row should begin with the same imperfect consonance.

Hidden or direct fifths/octaves between successive downbeats are allowed.

Weak beats

Weak beats should exhibit a mixture of consonant and dissonant intervals. Among consonances, unisons are permitted on weak beats when necessary to make good counterpoint

between the lines. Any dissonance must follow the pattern of the *dissonant passing tone*, explained below. Also explained below are a number of standard patterns for consonant weak beats. Chances are high that if your weak beats do not fit into one of the following patterns, there is a problem with the counterpoint, so use them as a guide both for composing the counterpoint, and for evaluating it.

Weak beat patterns

The following patterns (whose terms are either standard or taken from Salzer & Schachter's *Counterpoint in Composition*) should guide your use of weak-beat notes in a second-species counterpoint line. A good general practice is to start with a downbeat note, then choose the following downbeat note, and finally choose a pattern below that will allow you to fill in the space between downbeats well.

Most of these are used as examples in the demonstration video at the bottom of the page.

Dissonant weak beats

All dissonant weak beats must be dissonant passing tones, so called because the counterpoint line passes from one consonant downbeat to another consonant downbeat by stepwise motion. The melodic interval from downbeat to downbeat in the counterpoint will always be a third, and the passing tone will come in the middle in order to fill that third with passing motion.

Consonant weak beats

A *consonant passing tone* outlines a third from downbeat to downbeat, and has the same pattern as the dissonant passing tone, except that all three tones (downbeat, passing tone, downbeat) are consonant with the cantus. A consonant passing tone will always be a sixth or perfect fifth above/below the cantus.

A *substitution* also outlines a third from downbeat to downbeat. However, instead of filling it in with stepwise motion, the counterpoint leaps a fourth and then steps in the opposite direction. It is called a substitution because it can substitute for a passing tone in a line that needs an extra leap or change of direction to provide variety. Like the consonant passing tone, all three notes in the counterpoint must be consonant with the cantus.

A *skipped passing tone* outlines a fourth from downbeat to downbeat. The weak-beat note divides that fourth into a third and a step. Again, all three intervals (downbeat, skipped passing tone, downbeat) are consonant with the cantus.

An *interval subdivision* outlines a fifth or sixth between successive downbeats. The large, consonant melodic interval between downbeats is divided into two smaller consonant leaps. A melodic fifth between downbeats would be divided into two thirds. A melodic sixth between downbeats would be divided into a third and a fourth, or a fourth and a third. Not only must all three *melodic* intervals be consonant (both note-to-note intervals and the downbeat-to-downbeat interval), but each note in the counterpoint must be consonant with the cantus.

A *change of register* occurs when a large, consonant leap (P5, sixth, or octave) from strong beat to weak beat is followed by a step in the opposite direction. It is used to achieve melodic variety after a long stretch of stepwise motion, to avoid parallels or other problems, or to get out of the way of the cantus. It should be used infrequently. And as always, each note must be consonant with the cantus.

A *delay of melodic progression* outlines a step from downbeat to downbeat. It involves a leap of a third from strong beat to weak beat, followed by a step in the opposite direction into the following downbeat. It is called a “delay” because it is used to embellish what otherwise is a slower first-species progression (motion by step from downbeat to downbeat).

A *consonant neighbor tone* occurs when the counterpoint moves by step from downbeat to weak beat, and then returns to the original pitch on the following downbeat. If the first downbeat makes a fifth with the cantus, the consonant neighbor will make a sixth, and *vice versa*.

11.2 Demonstration

In this video⁷, I illustrate the process of composing a second-species counterpoint. This video provides new information about the compositional process, as well as concrete examples of the above rules and principles.

12 Composing a third-species counterpoint

In third-species counterpoint, the counterpoint line moves in quarter notes against a cantus firmus in whole notes. This 4:1 rhythmic ratio creates a still greater differentiation between beats than in second species: *strong beats* (downbeats), *moderately strong beats* (the third quarter note of each bar), and *weak beats* (the second and fourth quarter notes of each bar). Third species also introduces the *neighbor tone* dissonance, and two related figures in which dissonances can participate in leaps.

12.1 The counterpoint line

As in first and second species, the counterpoint line should be singable, have a good shape, with a single climax that does not coincide with the climax of the cantus firmus, and primarily stepwise motion (with some small leaps and an occasional large leap for variety). Like second species, a third-species counterpoint should be even *more dominated by stepwise motion* than in first species, because there are less sticky situations that would require a leap. If the counterpoint must leap, prefer to do so within the bar rather than across the barline. Also like second species, there should usually be one or two *secondary climaxes*—notes lower than the overall climax that serve as “local” climaxes for portions of the line.

Beginning a third-species counterpoint

Begin a third-species counterpoint above the cantus firmus with *do* or *sol*. Begin a third-species counterpoint below the cantus firmus with *do*. Unisons are permitted for the first and last dyads of the exercise.

A third-species line can begin with four quarter notes in the first bar, or a quarter rest followed by three quarter notes. Regardless of rhythm, the first pitch in the counterpoint should follow the intervallic rules above.

⁷<http://vimeo.com/57085974>

Ending a third-species counterpoint

The final pitch of the counterpoint must always be *do*, and must be a whole note.

The penultimate note of the counterpoint (the last quarter note of the penultimate bar) should be *ti* if the cantus is *re*, and *re* if the cantus is *ti*.

Strong beats

Principles for strong beats (downbeats) are generally the same as in second species.

Strong beats should *always be consonant*, and should not be unisons. Prefer imperfect consonances (thirds and sixths) to perfect consonances (fifths and octaves).

Motion across bar lines (from beat 4 to downbeat) follows the same rules as first species counterpoint.

Progressions from downbeat to downbeat follow principles of second-species counterpoint, with one exception (see below). The following are some examples, but not an exhaustive list:

- No *three* consecutive bars can begin with the same perfect interval (two in a row are fine).
- No more than three bars in a row should begin with the same imperfect consonance.
- The pitches that begin consecutive downbeats must not make a dissonant melodic interval.

If a downbeat contains a perfect fifth, neither the third or the fourth beat of the previous bar can be a fifth. If a downbeat contains an octave, neither the second, third, or fourth beat of the previous bar can be an octave.

Hidden or direct fifths/octaves between successive downbeats are allowed.

Other beats

Beats 2–4 should exhibit a mixture of consonant and dissonant intervals. Among consonances, unisons are permitted on weak beats when necessary to make good counterpoint between the lines. Any dissonance must follow the pattern of the *dissonant passing tone* or the *dissonant neighbor tone*, explained below. Also explained below are a number of standard patterns for consonant weak beats.

Harmonic dissonances

Generally, dissonances in third species can occur on beat 2, 3, or 4, and should be *preceded and followed by stepwise motion* (with the exception of the *double neighbor* and the *nota cambiata*, explained below). If all dissonant notes in the counterpoint follow one of the following models, they should have a pleasing effect. If not, they may sound harsh or unresolved, or will be difficult to sing.

The *dissonant passing tone* fills in the space of a melodic third via stepwise motion. The notes before and after the passing tone must be consonant with the cantus.

Note that it is possible to have two dissonant passing tones in a row (P4–d5 or d5–P4). As long as these dissonances do not fall on downbeats and the counterpoint moves in stepwise motion in a single direction, it is permissible to have two dissonant passing tones in a row.

The *dissonant neighbor tone* ornaments a consonant tone by stepping away and stepping back to the original consonance (6–7–6 over the cantus, for example). It is melodically identical to the consonant neighbor tone of second species, with the difference being the harmonic dissonance. It is best employed on beats 2 and 4.

The *double neighbor* occurs when beats 1 and 4 in the counterpoint are the same tone, and beats 2 and 3 include the notes a step higher and a step lower than the original tone. For example, C–D–B–C or C–B–D–C. Both beats 2 and 3 are dissonant, but since both are embellishing the original tone by step, the leap between them sounds fine and is easy to sing. When using a double neighbor, the direction between beats 3 and 4 should be the same as between beat 4 and the following downbeat. That motion across the barline should also be stepwise.

The *nota cambiata* (changing tone) is a five-note figure that outlines a step progression from downbeat to downbeat. It follows one of two patterns:

- down by step – down by third – up by step – up by step
- up by step – up by third – down by step – down by step

The first pattern will result in a step down from downbeat to downbeat, and the second pattern will result in a step up from downbeat to downbeat. For a *nota cambiata* to be effective, the first, third, and fifth notes *must be consonant with the cantus*. The second note will be dissonant and will leap to the third tone, but that is fine if the entire figure is followed precisely.

Consonances

The counterpoint can move in and out of consonant tones freely by step, as well as by leap from another consonance, with the following considerations:

- All melodic leaps, of course, must be melodic consonances.
- A large leap should be followed by a step in the opposite direction.
- Motion from the fourth beat into the following downbeat should follow the constraints above for motion into strong beats.

There is no demonstration video for third species.

13 Composing a fourth-species counterpoint

In fourth-species counterpoint, the counterpoint line and cantus firmus both move once per bar, but they are rhythmically offset from each other by a half note. (Think syncopation on the bar level.) The counterpoint line will be notated in half notes, with each weak-beat half note tied across the bar line to the following strong beat. This arrangement means that in pure fourth-species counterpoint, the two lines always move in oblique motion. It also introduces a new kind of dissonance: the *suspension*.

13.1 The suspension

The *suspension* is an accented dissonance, meaning it always occurs on strong beats. Like the *passing tone* and *neighbor tone* dissonances, it is always preceded and followed by harmonic consonances.

A suspension figure has three parts:

- the *preparation*: a weak-beat note in the counterpoint that is consonant with the cantus. This note will be tied into ...
- the *suspension* itself: a strong-beat note in the counterpoint that is dissonant with the cantus. This note is the same as the preparation.
- the *resolution*: a weak-beat note in the counterpoint that is consonant with the cantus. It will always be a step lower than the suspended tone.

Use dissonant suspensions as much as possible in fourth species. Not only are they the characteristic sound of fourth species, but they sound nice, and proper use of them in fourth species will prepare you for the use of both suspensions and dissonant chord tones in later composition and arranging work.

Types of suspensions

Suspensions are categorized according to the intervals of the *suspension* and *resolution* tones above/below the cantus firmus. A **7–6 suspension**, for example, includes a strong-beat suspension that forms a seventh with the cantus, which resolves down by step to a weak-beat tone that forms a sixth with the cantus.

Possible dissonant suspensions *above* the cantus firmus are **7–6**, **4–3**, and **9–8**. (These are the only options that start on a dissonance and resolve to an allowable consonance.) Possible dissonant suspensions *below* the cantus firmus are **2–3**, **5–6**, and **4–5**. (7–8 is theoretically possible, but it sounds bad. Don’t use it.)

Using suspensions

Treat suspensions in fourth species the same way you would treat their intervals of resolution in first species. In other words, do not use two 9–8 or 4–5 suspensions in a row (since you cannot use two octaves or two fifths in a row in first species). Use 7–6 and 4–3 (above) or 2–3 and 5–6 (below) liberally, but no more than three times in a row (like thirds and sixths in first species).

Following the same principle, do not use the “consonant suspension” **6–5** twice in a row, since its interval of “resolution” is a fifth. In fact, avoid any configuration that would create two fifths or two octaves on consecutive weak beats in fourth species (called “after-beat” fifths or octaves).

13.2 The fourth-species counterpoint line

Use dissonant suspensions whenever possible. This will create a line consisting mostly of downward, stepwise motion. That is fine. It will also make it hard to direct motion towards a climax. That is also fine. Do not worry about the shape of the line if it is singable and the suspensions are properly prepared and resolved.

If a dissonant suspension is not possible, try to use a tie from weak beat to strong beat. This can be a “consonant suspension,” or you can leap up from downbeat consonance to weak-beat consonance. At least one or two upward leaps will be necessary to counteract the downward resolutions in order to keep the line in a singable range.

If neither a dissonant suspension or consonant tied figure is possible, it is permissible to *break species* (see video demo below). When you break species, follow the principles of second-species counterpoint and resume fourth-species ties as soon as possible. Try not to break species more than once per exercise, and for just a bar or two.

Beginning a fourth-species counterpoint

Begin a fourth-species counterpoint above the cantus firmus with *do* or *sol*. Begin a second-species counterpoint below the cantus firmus with *do*. Unisons are permitted for the first and last dyads of the exercise.

Always begin with a half rest.

Ending a fourth-species counterpoint

There is only one option for ending fourth species.

The cantus firmus *must* end with *re-do*. Do not use a cantus that ends with *ti-do*.

The counterpoint will end with a dissonant suspension. The penultimate bar will contain *do-ti*, and the final bar will contain a whole note *do*. The *do-ti* will form a 7–6 suspension above the *re* in the cantus, or a 2–3 suspension below the *re* in the cantus. As a dissonant suspension, that *do* will always be tied over from the previous bar.

13.3 Demonstration

In the following videos, I illustrate the process of composing a fourth-species counterpoint above and below a cantus firmus. This video provides new information about the compositional process, as well as concrete examples of the above rules and principles.

Composing a fourth-species counterpoint above a cantus firmus.⁸

Composing a fourth-species counterpoint below a cantus firmus.⁹

14 Strict keyboard-style voice-leading

14.1 Basso continuo

The simplest form of keyboard-style writing is *basso continuo* (It. for “continuous bass” or “thoroughbass”). *Basso continuo* writing is essentially a chordal version of first-species counterpoint. Instead of composing a single line above a cantus firmus, one composes a succession of chords (performed in the right hand) above a bass line (performed in the left hand). *Basso continuo* writing, also referred to as *realizing a figured bass*, gives no consideration to melody, only to the use of proper chords and the smoothest voice-leading possible.

In any keyboard-style writing, there are four voices: the bass line (which is usually provided in *basso continuo* style), and three *upper voices*: the *melody* or *soprano*, the *alto*, and

⁸<http://vimeo.com/57389373>

⁹<http://vimeo.com/58488043>

the *tenor* (from highest to lowest). Since all three must be played by a single hand, they should never span more than an octave.

When choosing the notes to place in the upper voices above a figured bass, use the bass and figures to determine the pitch classes present in the chord. (When realizing an *unfigured bass*, you must determine appropriate figures before realizing.) If the chord is a four-note chord, use each chord member once, including the bass (exceptions will be noted later). If a chord has three pitch-classes (a triad, for instance), use each pitch-class once, and “double” one of them according to the following principles:

- If the figure is 6/4, 5/3 or other chord of the fifth, double the bass pitch class.
- If the figure is 6/3 and the bass is a *fixed scale degree* (*do*, *re*, *fa*, or *sol*), double the bass pitch class.
- If the figure is 6/3 and the bass is a *variable scale degree* (*mi/me*, *la/le*, or *ti/te*) or a chromatically altered pitch, double one of the upper voices at the octave or unison.
- Generally, never double a variable scale degree or a chromatically altered pitch.

In *basso continuo* style, if the chord is properly voiced (correct pitch classes and correct doublings), two key principles of voice-leading will ensure good counterpoint between the voices most of the time:

- *The law of the shortest way* (a term coined by composer Arnold Schoenberg): move each voice as little as possible. Prefer repetition to steps, steps to leaps, and one leap at a time to several voices leaping at the same time.
- *Move the right hand in contrary or oblique motion to the bass*. When the bass leaps by fourth or fifth, though, this rule can be ignored.

In some cases, these rules cannot be followed absolutely (such as when a functional dissonance must be resolved, or when a melody makes it impossible—two cases to be considered later). In all cases, observe the following:

- No parallel fifths or octaves between any pair of voices.
- No contrary fifths or octaves between outer voices.
- Do not approach an octave between the outer voices by similar motion unless the melody moves by step. (All other direct/hidden fifths and octaves are permissible.)

14.2 Melodic keyboard style

Strict keyboard-style voice-leading involves the composition of two primary musical lines—the melody and the bass line. The inner voices are secondary and serve largely as harmonic “filler.” *All principles of good basso continuo voice-leading hold* for melodic keyboard-style writing. However, because of the inclusion of a melody, several additional principles of composition must be observed.

The *outer voices* (melody and bass) draw the most attention, and therefore they should make good counterpoint with each other. The melody should largely follow the principles of composing a cantus firmus or a first-species counterpoint line. In a strict keyboard-style melody that means:

- The melody should begin on a member of the tonic triad.
- The melody should end on tonic.
- The melody should have a single climax and good, smooth shape.
- The melody should be “singable” (even though it will be played on the keyboard).

These melodic constraints may make following the *law of the shortest way* and contrary/oblique motion with the bass difficult, and at times impossible. When that happens, be very careful not to compose voice-leading errors such as forbidden parallels.

In general, if you follow the figures, double the correct chord tone, move the upper voices as little as possible and in contrary or oblique motion to the bass, and take special care when the melody makes the latter impossible, your voice leading will sound smooth and will be fairly easy to perform. Those are the goals of strict keyboard-style voice-leading.

14.3 Notation

The melody always has an upward-pointing stem. Alto and tenor share a downward-pointing stem. If the alto and tenor share a note, that note receives a single downward-pointing stem. If melody and alto share a note, that notehead is double-stemmed.

14.4 Tendency tones

Ti (not *te*) and *le* (not *la*) are *tendency tones*.

Generally speaking, when *ti* appears in an upper voice of a dominant-functioning chord, it should be followed by *do* in the same voice upon change of function (to T, Tx, or S).

Likewise, when *le* appears in an upper voice of a subdominant-functioning chord, it should be followed by *sol* in the same voice upon change of function.

Exceptions to these tendencies include:

- When *ti* is in the middle of a stepwise descent (*re-do-ti-la-sol*, for example), it can progress down by step.
- When *ti* is in an inner voice, it can progress down to *sol* if necessary to accomplish good voice-leading in the other voices and ensure complete chords. This is called a *frustrated leading-tone*.
- When *ti* is a functional dissonance of a tonic-functioning chord (see below) it should progress down by step.

14.5 Functional dissonances

Following are the scale degrees which act as dissonances for their respective functions:

function	dissonances
T or Tx	7, 5 when 6 is also present
S	3, 1 when 2 is also present
D	4, 6

When one of these scale degrees is present in a chord with the corresponding function, the dissonant scale degree should *resolve down by step over the next change in function*. In strict keyboard style, these functional dissonances should behave like one of the three dissonance types of species counterpoint: a *passing tone* or *neighbor tone* dissonance that is approached by step, or a *suspension* dissonance that is approached by a common tone. The suspension type is preferred.

Once a functional dissonance is introduced, it must be resolved down by step in the same voice when the function changes. The dissonance can also be *transferred* to another voice before resolution—for instance, if there are multiple chords in a row exhibiting the same function, a dissonance that appears in the alto can be transferred to the tenor in the following chord, and then resolve in the tenor when the function changes. (It is more typical, and smoother sounding, to transfer dissonances between inner voices or from an inner voice to an outer voice than from an outer voice to an inner voice. Once a dissonance appears in the melody or bass, it tends to resolve in that voice.)

Functional dissonance resolutions often cause conflicts with other principles of voice leading. Except in special cases such as *schemata* (standard patterns that are common enough to sound appropriate, even if they follow different rules), the functional dissonance resolution takes precedence over other principles such as the *law of the shortest way*, contrary motion with the bass, and preferring common tones and steps to melodic leaps. A dissonance resolution is never an excuse for illegal parallels, and only rarely can justify non-standard doublings.

14.6 Demonstration

In this video¹⁰, I illustrate the process of realizing a thoroughbass in strict basso-continuo style.

15 Melodic keyboard-style voice-leading schemata

Following are a number of *schemata* for keyboard-style voice-leading. Some of these are patterns that are common enough to warrant special attention (and memorization). Others require non-default voice-leading or doublings. In any case, these are worth memorizing to assist both in composition/arranging and in recognition of standard patterns.

15.1 Voice exchange

A *voice exchange* occurs when the melody and bass lines exchange pitches over the course of a simple contrapuntal prolongation. For example, in the progression **T(1 D2p 3)**, the bass begins on *do* and ends on *mi*. In a voice exchange, the melody would reverse this, starting on *mi* and ending on *do*. This common pattern can use either a 6/4 or a 6/3 chord for **D2p**:

Using this voice exchange pattern will ensure smooth voice-leading throughout the prolongation.

Note that the *fa* in the **D2p** chord of the second example does *not* resolve down to *mi*. This is permissible because *mi* is required of the bass line, and because the smooth outer-

¹⁰<http://vimeo.com/60340315>



T(1 D₂p 3)

Figure 17: Voice exchange with a 6/4 passing chord.



T(1 D₂p 3)

Figure 18: Voice exchange with a 6/3 passing chord.

voice counterpoint and stepwise inner-voice motion counteract any harshness perceived by the unresolved dissonance.

The voice exchange can also be used with a **D₄i** chord. Note that the upper voices will be exactly the same as with a 6/4 **D₂p**.



T(1 D₄i 3)

These patterns can be used in major or minor, transposed to any key, and the **D₂p** voice exchanges can be used in reverse, as well—**T(3 D₂p 1)**. They can also be used to prolong S and D: **S(4 T₅p 6)** or **D(5 S₆p 7)**, for example.

15.2 Parallel tenths

Do-re-mi in the bass can also be accompanied by *mi-fa-sol* in the melody, making *parallel tenths*.



T(1 D2p 3)

Figure 19: Parallel tenths.

Note here that, like the *fa* in the **D2p** voice exchange, the *fa* in the melody is an unresolved functional dissonance. In this case, the voice leading once again is so smooth that it overrides the need for the functional dissonance to resolve.

This pattern can also be used in major or minor, transposed to any key, and in reverse.

15.3 Champagne progression

While **T(1 D2p 3)** is a perfectly acceptable way to accompany *mi-fa-sol* in the melody, a more interesting (and also more involved) way to harmonize that melody is what my undergraduate theory professor, Gene Biringer, called the *champagne progression*: **T(1 S6d 3)**. (It's the progression you use when you want to impress a date.)

The champagne progression is very nice, but must be treated carefully. *Only* use it with *mi-fa-sol* (or *me-fa-sol*) in the melody, and *always* use the following voice-leading (note the non-standard doubling of the bass—*la/le*—in the **S6d** chord).



T(1 S6d 3)

Figure 20: Champagne progression.

The standard champagne progression (above) uses a 6/3 chord for **T3**. Following is a variant using 5/3 for **T3**, which Biringer dubbed “pink champagne,” because it is especially nice. It should also be especially *rare*, or it loses its punch.

The champagne progression should only be used to prolong tonic function.

15.4 Deceptive resolution

A *deceptive resolution* occurs When a **D5** chord does not progress, as expected, to a **T1** to form an authentic cadence, but instead progresses to **Tx6**. In the deceptive resolution, it



T(1 S6d 3)

Figure 21: Pink champagne progression.

is important for *ti* to resolve to *do*—as it would in an authentic cadence—not *la/le*. This fulfills its role as a tendency tone, helps the “deception” to work, and avoids the dissonant augmented second *ti–le* in minor. This results in a non-standard doubling.

In a deceptive resolution, always double *do* in the Tx6 chord, *not* the bass.



D₅ Tx6

Figure 22: Deceptive resolution.



D₅ Tx6

Figure 23: Deceptive resolution with a seventh.

15.5 Leaving out the fifth

When *ti–do* appears in the melody of an authentic cadence, and the **D5** chord takes a seventh, it is impossible to fully voice both chords *and* resolve the functional dissonance.

It is imperative to resolve this functional dissonance. In order to do so, either leave out the fifth of the **T1** chord (and triple the bass):



Figure 24: Authentic cadence with unresolved seventh.



Figure 25: Dropping the fifth (tripling bass) of T1.

or leave out the fifth of the **D5** chord, and double the bass:



Figure 26: Dropping the fifth (doubling bass) of D5.

The incomplete **D5** is preferable to the incomplete **T1**, but voice-leading into the **D5** should dictate which option you choose.

15.6 Leaving out the third

When an **S4** progresses into a **D5**, and both are *seventh chords*, it can be impossible to prepare and resolve the functional dissonances of both chords while fully voicing them.

Instead, leave out the third above the bass of the **S4** chord—*la/le*—and double the bass. This will retain the trigger and bass note *fa*, as well as the two pitches making the dissonance, and will allow a second *fa* in an upper voice that can prepare the seventh of the **D5** chord.



S₄ D₅ T_I

Figure 27: S₄–D₅ with unprepared seventh.



S₄ D₅ T_I

Figure 28: Dropping the third (doubling bass) of S₄.

15.7 Double-neighbor prolongation

The *double-neighbor* prolongation of tonic poses no problems for voice-leading. However, it is important to note that **T(1 D(2 7)n 1)** is far more common than **T(1 D(7 2)n 1)**.

15.8 Plagal progressions

As a rule, **T** is used for contrapuntal prolongation of **S**, **S** prolongs **D**, and **D** prolongs **T**. However, there are some common patterns in which **S** is used to prolong **D**.

The *champagne progression* is one, which has been described above. Another is the **S4d**, as well as the related **S4e**—both described in the harmonic syntax resource.

One other common figure is to use **S4** as a complete or incomplete neighbor to **T3**. Common progressions include:

- **T(1 S4i 3)**
- **T(3 S4n 3)**

Also common is a *change-of-figure* prolongation of **T1**: 5/3 to 6/4 to 5/3. The 6/4 chord (*fa-la/le-do*) can be considered an **S** chord, but it is more appropriate simply to consider

the sixth and fourth above the bass in that chord to be neighbor tones to the fifth and third. Simply label such a progression **T1**——.

16 Realizing a figured bass line

This video¹¹ demonstrates the process of realizing a figured bass line in melodic keyboard style (using Lilypond notation software).

17 Realizing an unfigured bass line

To realize an unfigured bass, first determine the harmonic functions projected by the scale-degree progression in the bass. Then choose figures for each bass note consistent with those functions. Lastly, realize the resulting figured bass according to the usual procedures.

This video¹² demonstrates the process.

The following chart provides the most common functions for each diatonic scale degree and the most common figures for each functional bass type. Keep in mind that once you have determined the functional progression, you may change the specific figures to smooth out the voice leading in the final realization.

$\begin{smallmatrix} 5 \\ 3 \end{smallmatrix}$	$\begin{smallmatrix} 4 \\ 2 \end{smallmatrix}$	$\begin{smallmatrix} 6 & 4 & 6 & 6 \\ 4 & 3 & 5 \end{smallmatrix}$	$\begin{smallmatrix} 5 & 7 \\ 3 \end{smallmatrix}$	$\begin{smallmatrix} 6 & 5 \\ 3 \end{smallmatrix}$	$\begin{smallmatrix} 6 & 6 & 5 & 7 \\ 5 & 3 \end{smallmatrix}$	$\begin{smallmatrix} 4 \\ 2 \end{smallmatrix}$	$\begin{smallmatrix} 5 & 7 \\ 3 \end{smallmatrix}$	$\begin{smallmatrix} 6 \\ 4 \end{smallmatrix}$	$\begin{smallmatrix} 5 \\ 3 \end{smallmatrix}$	$\begin{smallmatrix} 6 \\ 4 \end{smallmatrix}$	$\begin{smallmatrix} 6 & 6 \\ 5 \end{smallmatrix}$
T1	S1	D2(p)	S2	T3	S4	D4	D5	T5(p)	Tx6	S6	D7

18 Voice-leading in contemporary Christian worship music

The purpose of our study of voice-leading in contemporary Christian worship music is to enable you to take a lead sheet (melody and chord symbols) to a worship song and from it produce two other vocal parts (alto and tenor) that are readily singable and make good counterpoint with the melody and the bass line.

18.1 Vocal ranges

Melody

The melody for a worship song will be sung by men *and* women, with vastly different vocal ranges. It is important that it is singable by the entire congregation, not just the leader.

As much as possible, keep the melody between C4 and D5 (C3 and D4 for men). Do not go below A3 (A2 for men) or above E5 (E4 for men), and use that expanded range only when absolutely necessary. (In your assignments for this class, the melody will be given, but in your future work, keep this melody ideal in mind when writing songs or transposing existing songs.)

¹¹<http://vimeo.com/60863823>

¹²<http://vimeo.com/48673007>

Alto

As much as possible, keep the alto line between G3 and A4. You can extend it up to C5, but do so sparingly.

Tenor

As much as possible, keep the tenor line between C3 and E4. You can extend it up to G4, but do so sparingly.

18.2 The bass line

We will be composing with three vocal parts. However, the lead-sheet chord symbols will provide us with a bass line as well. Treat the bass line as a fourth voice for the purpose of chord completion, doubling, and avoiding illegal parallel and hidden/direct intervals. However, it will remain unsung.

18.3 Invertible parts

Because the melody will be sung by people of both genders and, thus, in multiple octaves—and occasionally, the tenor and alto parts may be sung in different octaves as well—you must take extra care to avoid bad parallels. Specifically you must always *avoid parallel fourths between the upper voices*.

This new prohibition on parallel fourths can be understood with a simple example. If the melody and alto make parallel fourths as written, when the melody is sung an octave lower, it now makes parallel fifths with the alto. While parallel fourths in a three- or four-part texture sound fine, parallel fifths can be jarring, and we want to avoid their occurrence when our arrangements are sung by full congregations or with different gender combinations in the leading ensemble.

Always treat the bass line as the lowest voice. Thus, parallel fourths with the bass are acceptable (though they usually only result from weird harmonies, so you won't see them often).

18.4 Overlap and voice-crossing

As in classical keyboard- and chorale-style writing, we want to avoid voice overlap and voice crossing. However, in pop/rock and contemporary worship music, melodies often include larger and more frequent leaps than chorale or keyboard melodies. As a result, we need to be more careful about voice-crossing and overlap. So devote extra attention to this in order to avoid jarring-sounding arrangements or parts that are difficult to sing.

Also, since we will be typesetting the tenor part on a different staff from the alto part, it is easy to miss voice crossings between the alto and tenor. Always be careful to check those parts for overlap. Working at the keyboard will prevent this error to a large extent.

In some melodic situations, it will simply be impossible to harmonize each melody note with a complete chord and avoid voice overlap. In such situations, it is fine to make an incomplete chord (doubling two, or even all three, voices at the unison) in order to avoid overlap. When such situations arise, try to minimize the impact of the incomplete chord. For example, make an incomplete chord in a place where there are multiple melody notes to a single chord; this way all chord tones can be sung by some part before the chord change, even if they don't all sound at the same time. Also, in situations where a melody note is short, low, and on an upbeat (i.e., a pickup), and is followed by a large upward leap to

a long note on the beat, put the unison/incomplete chord on the short, low, pickup note rather than the high, long, downbeat.

18.5 Syncopation and chord realization

Syncopation almost always involves an early arrival of an otherwise typical rhythmic figure. When the melody is syncopated, the alto and tenor parts should take the same rhythm. In general, vocal parts should involve pitches that belong to the chord indicated by the lead-sheet chord symbol (or well behaved embellishing tones). However, when syncopations happen across a chord change, the syncopated notes should belong to the following chord. For example, if chords change every downbeat, and a syncopation causes the melody (and inner voices) to arrive one eighth note before the downbeat, the vocal notes should be evaluated as either chord tones or embellishing tones of the chord that arrives on the downbeat. The melodies you will encounter will probably already be composed in such a manner, and following this rule will result in better, more natural sounding harmonizations.

18.6 Chords other than triads and seventh chords; pedal dissonances

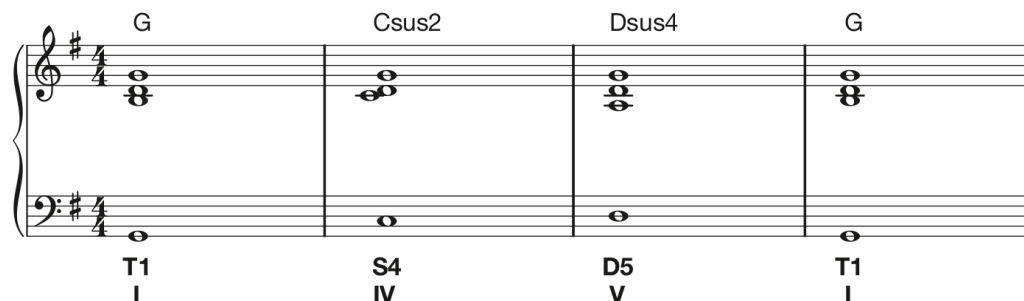
The worship music we will explore does not contain any new chords relative to our study of harmonic analysis, but it will contain chords we have not encountered in keyboard-style voice-leading. They also contain a new dissonance type (which is part of these new chords). The dissonance type is the *pedal tone* dissonance, and the new chords are suspended-4th, suspended-2nd, and added-9th chords.

The suspended-4th chord (**sus4**, or simply **sus**; thoroughbass figure is 5/4, or simply 4) is typically encountered in one of two ways. The first is with the fourth above the bass/root resolving down over the same bass note to the third, making a triad. Thus, the fourth is a true suspension (4-3), and the voice-leading is identical to a 4-3 compound cadence in keyboard-style. This typically happens, like in keyboard-style classical music, over scale-degree 5 in the bass (**D5** or **V**), or over scale-degree 1 in the bass (**T1** or **I**).

The second common occurrence of a **sus4** chord is with the fourth above the bass functioning as a pedal tone. A pedal tone is a non-functional tone that is a common tone with both the preceding and following chords. Typically, that common tone is a functional consonance (trigger or associate) of the preceding and following chords, and it is only a dissonance for the **sus4** chord. The pedal tone and its preceding and following common tones should always occur in the same voice; in other words, a single voice will have the same note for all three chords. In this usage, the **sus4** chord almost always occurs with scale-degree 5 as its root/bass.

The second above the bass in the **sus2** chord (thoroughbass figure of 5/2) and the added-9th chord (**add9**; thoroughbass figure of 5/3/2) almost always functions as a pedal tone, as well, with bass and fifth being functional consonances. It typically occurs with scale-degree 4 as the bass/root (though occasionally scale-degree 1). Whether a **sus2** or **add9** is used usually depends on which is easiest to finger on the guitar; the chords are functionally identical (and interchangeable in the vocal parts or at the piano).

Following is an example, typical of pop/rock music, including both the **sus2** and the **sus4** in their usual positions.



13

In the **Csus2** chord, the second above the bass (D) is a pedal tone. It is non-functional (scale-degree 5 is neither trigger, associate, nor dissonance of S), it is preceded by a common-tone D (associate of T) and followed by a common-tone D (trigger of D). In the **Dsus4** chord, the fourth above the bass (G) is a pedal tone. It is non-functional (scale-degree 1 is neither trigger, associate, nor dissonance of D), it is preceded by a common-tone G (associate of S) and followed by a common-tone G (trigger of T).

(Those of you who play guitar will recognize this chord progression as well as the fixed G and D in the two upper-most voices. It is a very common way to play these chords in the key of G major on the guitar: strings 1 and 2 held on the third fret for every chord.)

18.7 Typesetting

When typesetting arrangements in this style, put the melody in voice 1 (stems up) of the the top staff, using a treble clef. The alto part should be voice 2 (stems down) on that same staff. The tenor part will sit on its own staff below that, typically with a treble clef with a little 8 underneath it (meaning that the notes sound an octave lower than on the regular treble clef). When working on your arrangements, it will be helpful to transcribe the bass line given in the lead sheet symbols on a third staff (bass clef) for the purpose of checking your voice-leading and listening to your harmonies as you work. Delete this staff before submitting your assignments.

Lead-sheet chord symbols should also be included in your arrangements (copied from the original lead sheet). Put these in “staff text” in MuseScore or NoteFlight (the same tool used for thoroughbass figures in keyboard style).

Lyrics will also be required. They will involve the lyric tool, which we have so far been using for functional bass.

18.8 Video demo

In this video¹⁴, I walk through arranging the opening phrases of “We Fall Down” by Chris Tomlin.

¹³Graphics/susChordExample.png

¹⁴<http://vimeo.com/64117108>

Part IV

Harmony

19 Introduction to thoroughbass

A *thoroughbass* (It. *Basso continuo*, Ger. *Generalbaß*, also called a *figured bass*) is a harmonic shorthand of a musical passage or work. It is composed of a bass line, and chord symbols—called *figures*. It is called a “thorough” bass or “continuous” bass line because it includes the lowest sounding note at any given moment, *regardless of the instrument or voice sounding the note*. It usually corresponds to a single instrument or vocal part, but not always.

The historical origin of the thoroughbass part was in church settings where a piece for 6–8 singers was to be performed by one or two voices with a keyboard instrument. The keyboardist, rather than play the 4–7 remaining parts, would transcribe the lowest note and shorthand figures to remind himself of the (simple) intervals present above that lowest voice. This would allow the keyboardist to play one or two of the more important lines, and fill the rest of the texture with blocked or arpeggiated chords. (Think seventeenth-century lead sheet.) A good keyboardist, who knew his harmony and voice-leading, could simply follow the bass line without figures (an *unfigured bass*) and listen to the melody, improvising the rest. Less experienced keyboardists, however, could manage otherwise complicated pieces by reading a bass line and memorizing a small number of figures and basic voice-leading rules.

We will use thoroughbass lines for a number of purposes in this class:

- Harmonic “reductions” of pieces and passages with dense textures or complicated voice-leading
- Shorthand representations of stock harmonic patterns
- The harmonic basis for model composition exercises (akin to the *cantus firmus* of species counterpoint)

Thoroughbass is a simple, and foundational, concept. Master it early, and subsequent activities will be much easier.

Note on figure placement: Thoroughbass figures can appear above or below the bass line. Both are common, but for this class, we will always place them *above* the bass line. This connects them to our habits of interval analysis during species counterpoint, keeps figures separate from other harmonic symbols we will place below the bass line, and make typesetting in notation software easier when both figures and other symbols are in play simultaneously.

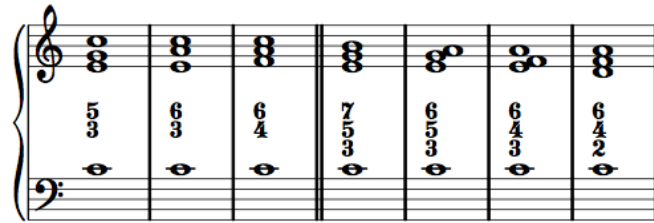
19.1 Figures

In general, a thoroughbass figure indicates the *simple intervals above the bass* for all pitch classes present in the chord.

Note that the largest number typically found in thoroughbass figures is 7. In general, *compound intervals* (an octave or larger) are reduced to their *simple interval* equivalent. A tenth becomes a third, a thirteenth becomes a sixth, etc.

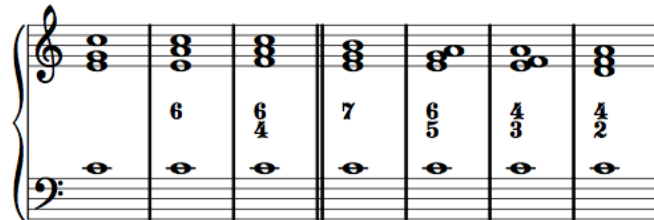
The most common chords in tonal music are *triads* and *seventh chords*. The following figures apply to these chords:

- 5/3: use a fifth and a third above the bass (one note of the chord will be doubled)



- 6/3: use a sixth and a third above the bass (one note of the chord will be doubled)
- 6/4: use a sixth and a fourth above the bass (one note of the chord will be doubled)
- 7/5/3: use a seventh, a fifth, and a third above the bass
- 6/5/3: use a sixth, a fifth, and a third above the bass
- 6/4/3: use a sixth, a fourth, and a third above the bass
- 6/4/2: use a sixth, a fourth, and a second above the bass

These figures are so common, that most of them have shortcuts:



- no figure = 5/3
- 6 = 6/3
- 6/4 is never abbreviated
- 7 = 7/5/3
- 6/5 = 6/5/3
- 4/3 = 6/4/3
- 4/2 (or just 2) = 6/4/2

Other shortcuts generally follow two simple rules:

- Assume a fifth is present above the bass unless there is a “6” in the figure.
- Assume a third is present above the bass unless there is a “4” or a “2” in the figure.

Unfamiliar figures and chords

Only seven figures are given above. If you see a figure you do not recognize, simply follow the intervals. Likewise, if analyzing a chord that is not a triad or seventh chord, simply label the *simple* intervals you see/hear above the bass, from top to bottom in descending order: 7/6/3 or 5/4, for example. In time, you will become familiar with a number of other harmonic possibilities, and their corresponding figures.

Chords of the fifth and chords of the sixth

All chords can be categorized as either a *chord of the fifth* or a *chord of the sixth*. This distinction will be important for our study of voice-leading.

A *chord of the fifth* contains a fifth above the bass, but no sixth above the bass.

A *chord of the sixth* contains a sixth above the bass.

Chromatic alteration

If a note is chromatically altered (different than the key signature), the figure must be altered as well. Since bass notes are already present in the bass, a chromatic alteration in the bass will not make it into the figure. However, any other alteration in the upper voices (such as a raised leading tone in minor) must be reflected in the figure. To do so, simply put a sharp, flat, or natural to the left of the appropriate number.

Of course, there are some shortcuts. For example, draw a line (a “slash”) through a number to denote that it is raised by half-step (can substitute both for sharp or for natural). Also, when altering the third above the bass, simply use the sharp, flat, or natural and leave out the “3.”



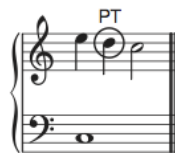
In general, if there is a shortcut available, use it. The shortcuts are more standard than the corresponding full notation.

Keep in mind that some chords have abbreviated figures. For example, it is common for the leading tone to be the third above the bass in a 5/3 chord. In such a situation, a bass note that otherwise would have no figure needs a sharp or a natural for its thoroughbass figure.

20 Embellishing tones

20.1 Passing Tone (PT)

A passing tone is a non-chord tone (dissonance) that occurs between two chord tones, creating stepwise motion. The typical figure is *chord tone – passing tone – chord tone*,



filling in a third (see example to the right), but two adjacent passing tones can also be used to fill in the space between two chord tones a fourth apart. A passing tone can be either accented (occurring on a strong beat or strong part of the beat) or unaccented (weak beat or weak part of the beat).

20.2 Complete Neighbor Tone (NT)



Like the passing tone, a complete neighbor tone is a non-chord tone (dissonance) that occurs between two chord tones; however, a complete neighbor tone will occur between two instances of the same chord tone. Also like the passing tone, movement from the chord tone to the neighbor tone and back will always be by step. A complete neighbor can be either accented or unaccented, but unaccented is more common. Double Neighbor Figure (DN) – Like the complete neighbor figure, the double neighbor figure begins and ends on the *same* chord tone. Between those two instances of the chord tone are two non-chord tones—one a step above and the other a step below the chord tone. Though individually we may consider each of the two non-chord tones to be incomplete neighbors (below), working together in the double-neighbor figure they balance each other out and create a contiguous whole with the overall stability of a complete neighbor. A double neighbor figure is typically unaccented.

20.3 Incomplete Neighbor Tone (INT)



The incomplete neighbor tone is an unaccented non-chord tone that is approached by leap and proceeds by step to an accented chord tone. Broadly speaking an incomplete neighbor tone is any non-chord tone a step away from a chord tone that proceeds or follows it (and is connected on the other side by leap), but other kinds of incomplete neighbor tones have special names and roles that follow below.

20.4 Appoggiatura (APP)



An appoggiatura is a kind of incomplete neighbor tone that is accented, approached by leap (usually up), and followed by step (usually down, but always in the opposite direction of the preceding leap) to a chord tone.

20.5 Escape Tone (ESC)



An escape tone, or *échappée*, is a kind of incomplete neighbor tone that is unaccented, preceded by step (usually up) from a chord tone, and followed by leap (usually down, but always in the opposite direction of the preceding step).

20.6 Anticipation (ANT)



An anticipation is essentially a chord tone that comes early. An anticipation is a non-chord tone that will occur immediately before a change of harmony, and it will be followed on that change of harmony by the same note, now a chord tone of the new harmony. It is typically found at the ends of phrases and larger formal units.

20.7 Suspension (SUS)



A suspension is formed of three critical parts: the *preparation* (accented or unaccented), the *suspension* itself (accented), and the *resolution* (unaccented). The preparation is a chord tone (consonance). The suspension is *the same note* as the preparation and occurs simultaneous with a change of harmony. The suspension then proceeds down by step to the resolution, which occurs over the same harmony as the suspension. The suspension is in many respects the opposite of the anticipation: if the anticipation is an early arrival of a chord tone belonging to the following chord, a suspension is a lingering of a chord tone belonging to the previous chord that forces the late arrival of the new chord's chord tone. However, the suspension must be treated with a great deal more care than the anticipation. The most common suspensions (and their resolutions) in upper voices form the following intervallic patterns against the bass: 9–8, 7–6, 4–3. (With the exception of 9–8, the pitch class of the resolution tone should never sound in another voice simultaneous with the suspended tone.) Instead of *SUS*, it is preferable to notate the intervallic pattern in the thoroughbass figures.

20.8 Retardation (RET)



A retardation is essentially an upward-resolving suspension. It is almost always reserved for the final chord of a large formal division (or a movement), and it frequently appears simultaneously with a suspension (as seen in the example to the right). Instead of *RET*, it is preferable to notate the intervallic pattern in the thoroughbass figures.

21 Introduction to musical functions

The concept of musical functions is foundational to musical analysis, and essential to the understanding of musical styles.

A musical *function* describes the role that a particular musical element plays in the creation of a larger musical unit. Function is tied very much to the idea of expectation: given a certain element in a certain context, what element(s) is/are likely to come next? Likewise, how does a given element fulfill or deny the expectations set by what came before it?

A musical function typically has two defining features: the characteristics of the musical elements that tend to belong to that function (what notes tend to be found in the chord, for example), and the kinds of elements (or functions) that tend to precede or follow it in a succession of musical elements. Note that this is entirely dependent on the typical patterns of a musical *style*. Different styles of music may exhibit different functions or different behaviors for the same functions. The study of function and the study of style are inextricably linked.

The two musical traits most commonly studied for their functional properties in Western art and popular music are *harmony* and *form*. The study of both harmonic functions and formal functions will lead to an understanding of harmonic and formal *syntax*: the

norms or principles according to which musical elements are combined into meaningful and stylistically appropriate successions. The study of harmony or form, then, is not a matter of learning to label chords, phrases, and modules correctly. It is a matter of *interpreting the role that chords, phrases, modules, etc. play in the larger context in which they are found*. That, of course, requires fluency in identifying (and thus labeling) individual musical elements. But identification is only the beginning of a much bigger, and more interesting, process of analysis. And it is that analytical work that will lead to true understanding of the pieces of music analyzed, and the styles to which they belong.

22 Harmonic functions

Harmonic syntax concerns the norms or principles according to which harmonies (i.e., chords) are placed into meaningful successions. In Western classical music (pop/rock harmony is covered separately), harmonic syntax is closely tied to phrase structure. Harmony is not the only musical characteristic that contributes to the building of musical phrases. However, certain chords and chord progressions tend to appear in beginnings, middles, and ends of phrases. Thus the *function* of a chord concerns not only the notes that belong to it and which chords tend to precede and follow it, but where it tends to be employed in the course of a musical phrase.

You may already be familiar with one method of studying harmonic syntax, a *root-oriented* system that labels triads and seventh chords according to the scale degree of the root using Roman numerals. We will use these from time to time (and almost exclusively in our study of pop/rock music). However, for classical music, especially keyboard music of composers like Mozart, Haydn, Beethoven, and their contemporaries, we will use another system called *functional bass*.

The details of functional bass theory were largely put together in the last decade or so by Ian Quinn (Yale University). However, the system is not entirely new. It is based on older theories of harmony from figures like Jean-Phillipe Rameau, Hugo Riemann, and Allen McHose. The theory is based on five fundamental principles:

- Chords are collections of scale degrees.
- Each scale degree has its own tendencies.
- The collective tendencies of a chord's scale degrees in combination is the chord's function.
- The member of the chord in the bass (rather than the root) is the privileged member of the chord—that is, the chord member that determines, predicts, and/or encapsulates the general function of the chord more than the others.
- Scale-degree tendencies in classical tonal music tend to group together into three broad functional categories, traditionally called *tonic* (T), *subdominant* (S), and *dominant* (D).

The syntactic properties of these functions will be covered elsewhere. What follows simply explains how to determine the function of a chord and provide a basic, uninterpreted *functional bass* label to a triad or seventh chord.

22.1 Finding the function of a chord

Each of the three harmonic functions—*tonic* (T), *subdominant* (S), and *dominant* (D)—have characteristic scale degrees. Tonic’s characteristic scale degrees are 1, 3, 5, 6, and 7. Subdominant’s characteristic scale degrees are 1, 2, 3, 4, and 6. Dominant’s characteristic scale degrees are 2, 4, 5, 6, and 7.

Quinn (in a manner similar to Daniel Harrison) further distinguishes these scale degrees, using the categories of functional *triggers*, functional *associates*, and functional *dissonances*. These categories differentiate between scale degrees more or less characteristic of a function, and they help us understand the functional properties of chords whose scale degrees belong to more than one function, as well as how certain notes behave within a chord.

Table 2: Functional scale degrees.

function	triggers	associates	dissonances
T	1 and 3	5 and 6	5 (if 6 is also present) and 7
S	4 and 6	1 and 2	1 (if 2 is also present) and 3
D	5 and 7	2	4 and 6

Table 3: Functional scale degrees, in moveable-*do* solfège.

function	triggers	associates	dissonances
T	<i>do</i> and <i>mi/me</i>	<i>sol</i> and <i>la/le</i>	<i>sol</i> (if <i>la/le</i> is also present) and <i>ti/te</i>
S	<i>fa</i> and <i>la/le</i>	<i>do</i> and <i>re</i>	<i>do</i> (if <i>re</i> is also present) and <i>mi/me</i>
D	<i>sol</i> and <i>ti/te</i>	<i>re</i>	<i>fa</i> and <i>la/le</i>

To determine the function of a chord, find the function that includes all the scale degrees of a chord (irrespective of chromatic alterations). If more than one function contains all the scale degrees, take the function with the most triggers in the chord.

There is one exception to this (for now): a chord with scale degrees 6, 1, and 3 is a special kind of tonic chord, called a *destabilized tonic*. It’s functional label is Tx, rather than T.

22.2 Labeling chords

A chord’s *uninterpreted* functional bass label is its function (T, S, D, or Tx) followed by the Arabic numeral for the scale degree of its bass note. A tonic chord with *do* in the bass is **T1**. A dominant chord with *ti* in the bass is **D7**. If the bass note is chromatically altered, use a + or – to denote raised or lowered (*la* and *ti* in minor do not count, since *le*, *la*, *te*, and *ti* all belong to minor), and if there is a chromatically altered note anywhere in the chord, put the functional bass symbol inside square brackets: **[S6]**, **[S+4]**, **[T–7]**, etc.

See the resource on harmonic syntax for *interpreted* functional bass analysis.

23 Harmonic syntax

Harmonic syntax concerns the norms or principles according to which harmonies (i.e., chords) are placed into meaningful successions. In classical-era Western art music, harmonies generally group into three *harmonic functions*—tonic (T) or destabilized tonic (Tx),

subdominant (S), and dominant (D). Generally speaking, harmonies progress through a cyclical progression of functions:

$$\mathbf{T} \Rightarrow \mathbf{T_x} \Rightarrow \mathbf{S} \Rightarrow \mathbf{D} \Rightarrow \mathbf{T} \Rightarrow \text{and so on } \dots$$

However, things are a little more complicated than that when dealing with “real music.” Thus, for now, we will limit our study to isolated, complete, self-sufficient phrases. This is an idealized, oversimplified setting—like strict voice-leading—which is useful for learning the basics. Some such phrases even exist in real music! But more often than not, multiple phrases work together to express this complete harmonic progression. However, it is a helpful starting point. Future study will explore how classical composers employ harmonic progressions in larger musical works that combine multiple phrases (which are not self-sufficient) into larger themes and movements.

23.1 The idealized phrase

The idealized phrase is a single musical phrase that progresses through an entire cycle of harmonic functions, beginning and ending on tonic. (Strict voice-leading exercises are such phrases.) These phrases begin with a point of stability (tonic), move away from that stable point, and then eventually lead to a point of high tension and resolution (an *authentic cadence*). This pattern of stability–instability–stability, or rest–motion–rest, with a single goal at the end, should be familiar both from species counterpoint and from strict keyboard-style voice-leading. (This pattern also governs large-scale formal structures in classical music.)

The simplest phrase that exhibits this complete harmonic cycle is:

$$\mathbf{T1\ D5\ T1.}$$

This phrase begins and ends with the most stable harmony (**T1**), and includes an *authentic cadence* (**D5–T1**). The **D5** is the high point of instability, containing the tendency tone (*ti*) that most strongly points to the final point of arrival (*do*, or tonic).

This harmonic cycle can be expanded by inserting a subdominant chord, a destabilized tonic chord, or both, as in the following examples:

$$\begin{aligned} &\mathbf{T1\ S4\ D5\ T1} \\ &\mathbf{T1\ T_x6\ D5\ T1} \\ &\mathbf{T1\ T_x6\ S2\ D5\ T1} \end{aligned}$$

Any harmonic progression that follows the pattern

$$\mathbf{T1 \Rightarrow (T_x) \Rightarrow (S) \Rightarrow D5 \Rightarrow T1}$$

can serve as the basis for a complete idealized phrase (harmonies in parentheses are optional).

Functional zones

Phrases are seldom 3–5 chords long, however, and functions can be expressed by more than a single chord. Thus we can understand the harmonic functions not simply as chords, but as *zones* in a phrase, that can be created by a number of chords or short chord progressions. More generally, then, our idealized musical phrase contains a single progression of functional zones $\mathbf{T} \Rightarrow (\mathbf{T}\mathbf{x}) \Rightarrow (\mathbf{S}) \Rightarrow \mathbf{D} \Rightarrow \mathbf{T}$, begins with **T1**, and ends with an authentic cadence (**D5–T1**).

Triggering and prolonging functional zones

To establish, or trigger, a functional zone, a *fixed scale degree must appear in the bass*. In other words, tonic can be triggered by **T1**, subdominant by **S2** or **S4**, and dominant by **D5**. These are called *functional chords* (because they trigger the function) or *cadential chords* (because they can participate in a cadence). Other chords are called *contrapuntal chords*, and are used to *prolong* a function throughout the zone. (Note that because Tx is destabilized by nature, it does not take a fixed scale degree in the bass. In fact, Tx almost always appears as Tx6, and it will immediately proceed to S or D.)

Functional prolongations are shown in the functional bass analysis. Such an analysis is called an *interpreted* functional bass, because the harmonies are interpreted according to the way they behave in the phrase, rather than merely labeled. Generally speaking, parentheses () or curly brackets {} are used to denote prolongation of a function.

Following are the primary techniques used to prolong functional zones in an idealized classical phrase. Examples of specific progressions and notational conventions are provided.

Change-of-figure prolongation

A *change-of-figure prolongation* occurs when the bass repeats (or is sustained, or drops an octave) while one or more of the upper voices change. If the function and the bass scale degree remain the same, the functional bass remains the same, but the thoroughbass figure changes.

Change-of-bass prolongation

A *change-of-bass prolongation* occurs when two chords of the same function appear back-to-back, but with different bass pitch classes. **D5–D4**, **T1–T3**, and **T1–Tx6** are common examples.

Parentheses are used to show the prolongation of a function through the change of bass. **T1–T3** becomes **T(1 3)**, and **T1–Tx6** becomes **T(1 x6)**, for example.

Contrapuntal prolongation – passing chord

Many change-of-bass prolongations involve a skip of a third in the bass, such as **T(1 3)**. Just as in second-species counterpoint a melodic third from downbeat to downbeat invites the use of a passing tone, a melodic third in the bass between these two chords invites the use of a *passing chord*.

The bass note of a passing chord will fill in the third with stepwise motion. The melody will also often contain passing motion.

A function is typically prolonged by contrapuntal chords belonging to the function that precedes it in the standard cycle. T is prolonged by D, D by S, and S by T.

A passing chord that prolongs the above **T(1 3)** progression would then be a dominant chord (D precedes T) with scale-degree 2 in the bass (the passing tone between scale degrees 1 and 3): **D2**. In an interpreted functional bass, the D2 is placed within the parentheses, to show that it prolongs tonic rather than express its own function. It is also followed by a lower-case **p** to show that it functions as a *passing* prolongation. The whole progression is labeled **T(1 D2p 3)**.

Contrapuntal prolongation – incomplete neighbor chord

In second-species counterpoint, variety could come by using a *substitution* in place of a passing tone. This leap of a fourth followed by step in the opposite direction still outlines a third from downbeat to downbeat, but offers a break from too much stepwise motion in the counterpoint.

In harmonic writing, the same effect is obtained by an *incomplete neighbor chord*. The bass follows the same pattern as the second-species counterpoint, and the function of the contrapuntal chord is the same as its passing-chord counterpart. Thus instead of a passing motion of **T(1 D2p 3)**, a substitution pattern in the bass would produce **T(1 D4i 3)**, with the **i** denoting an incomplete neighbor chord.

Contrapuntal prolongation – complete neighbor chord

Just as a *neighbor tone* in second- or third-species counterpoint could be used to ornament a single tone and return to it, a *neighbor chord* uses a neighbor-tone motion in the bass to prolong a function and return to the original bass pitch. The function of a neighbor chord follows the same principle as the passing or incomplete neighbor chord. Following are some examples of neighbor-chord prolongations:

- **T(1 D7n 1)**
- **T(3 D4n 3)**
- **S(4 T3n 4)**
- **D(7 S6n 7)**

Just as third-species counterpoint has a *double neighbor* figure, harmonies (especially **T1**) can be prolonged by two chords using a double-neighbor figure in the bass. Such a progression would be analyzed **T(1 D(2 7)n 1)**.

Contrapuntal prolongation - divider and embellishing chords

In second-species counterpoint, an *interval subdivision* divided a large leap between downbeats into two smaller leaps. Likewise, a *divider chord* takes a large leap between bass notes in a change-of-bass prolongation (or a simple octave leap in the bass) and divides it into two smaller leaps.

Divider chords almost always prolong tonic function, and can do so using either subdominant or dominant dividers. The most common divider-chord prolongations are:

- **T(1 D5d 1)**, where the bass ascends or descends an octave between **T1** chords.
- **T(1 S4d 1)**, where the bass ascends or descends an octave between **T1** chords.

- **T(1 S6d 3)**, dubbed the *champagne progression* by my undergraduate theory professor Gene Biringer, because it is “the progression you pull out when you want to impress a date.” This progression is listed in the *harmonic schemata* resource, because it typically follows a unique voice-leading pattern.

In the case of the first two progressions, the same harmonic progression can occur without the bass changing register. In other words, the bass leaps from *do* to *sol* or *fa*, but returns to the original bass note. Instead of dividing a large leap, the bass note of the intervening chord looks like an *embellishing tone* from third species. (In third-species counterpoint, an *embellishing tone* ornaments another tone by leaping to another consonance (usually a third or fourth away) and returning to the original tone.) Thus, what would otherwise be a *divider chord* is instead an *embellishing chord*. Such a chord takes a postscript of **e** instead of **d**:

- **T(1 D5e 1)**
- **T(1 S4e 1)**

Subsidiary harmonic progressions

The last type of prolongation is not contrapuntal, but instead involves weak versions of the typical **T–(S)–D–T** progression. When such a progression fails to produce a proper cadence—i.e., ends with contrapuntal chords such as **D7–T1** or **D4–T3**, or uses a “deceptive resolution” **D5–Tx6** in place of the cadential **D5–T1**—the progression is called a *subsidiary harmonic progression* (the term comes from Edward Aldwell & Carl Schachter; Steven Laitz calls the same progression an *embedded phrase model*). It is “subsidiary” (or “embedded”) because instead of occupying the whole phrase, it is subsidiary to (or embedded in) a larger progression. These subsidiary progressions *always prolong tonic* and are labeled with curly brackets {}.

For instance, consider the following possible harmonic progression for a phrase:

T1 S4 D4 T3 S4 D5 T1

The first progression through the **T–S–D–T** cycle does not produce a cadence when it returns to T. However, it cannot be said to be a contrapuntal prolongation because it follows the normal functional cycle perfectly. This is a subsidiary progression. When it is closed off in curly brackets to show its role prolonging tonic function, the phrase as a whole then shows a single, strong progression through the **T–S–D–T** cycle.

T{1 S4 D4 3} S4 D5 T1

It is important to use the curly brackets to show the difference between the subsidiary progression and the contrapuntal prolongation. They not only follow different harmonic patterns, but they sound different and originate with different concepts (prolonging tonic via voice-leading/counterpoint or via a weak harmonic progression).

Prolonging a progression

Occasionally, a contrapuntal chord is used not to prolong a single function, but to connect chords of different functions—in other words, to prolong a progression.

The most common occurrence is when a bass line moves down by step from *do* to *sol*, which is especially common in minor. The bass line *do-te-le-sol* is harmonized by **T1 D7 S6 D5**. While it may seem that the appropriate interpretation would be that **S6** is a passing chord between the two dominants, that does not square with the sound of the progression—particularly when the **S6** chord is a strong, chromatic subdominant chord. Instead, it makes more musical sense to hear the **S6** as a functional subdominant leading to the cadential **D5**. The **D7** chord, then, is simply a passing chord that connects **T1** with **S6**.

To notate this by hand, draw an arrow between **T1** and **S6**, and place **D7p** on top of the arrow. When entering the functional bass into notation software, it is fine to notate the progression **T1 D7p S6 D5**. The meaning will be understood. However, when analyzing by hand, the arrow makes the interpretation clearer, and therefore should be used.

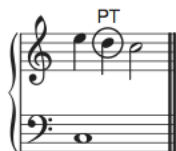


Figure 29: Typical use of **D7p**.

24 Classical cadence types

A *cadence* is a point of arrival that punctuates the end of a musical unit, such as a phrase, theme, large formal section, or movement. A cadence is at once a harmonic, melodic, rhythmic, and formal event, but cadences tend to be grouped according to different ways in which harmony and melody articulate that point of arrival.

24.1 Authentic and half cadences

These unit-ending points of arrival are first grouped into *authentic cadences* and *half cadences*. An authentic cadence occurs when a formal unit ends with the progression **D5–T1** (*sol* to *do* in the bass voice). If the melody accompanying this harmonic progression ends on *do*, it is called a *perfect authentic cadence*; if the melody ends on *mi* or *me* (or more rarely *sol*), it is called an *imperfect authentic cadence*.

Phrases that end on **D5** without progressing to **T1** are called *half cadences*. These cadences typically contain *re* in the melody, though *ti* and *sol* are also possible points of melodic arrival. The **D5** is almost invariably a triad (5/3), rather than a seventh chord.

Differentiating between *perfect authentic cadences* (PAC), *imperfect authentic cadences* (IAC), and *half cadences* (HC) by ear and with a score is essential both to formal analysis and model composition.

24.2 Simple, compound, and double cadences

Writers of Italian keyboard treatises like Furno¹⁵ and Fenaroli¹⁶ (and, more recently, American historical theorists like Robert O. Gjerdingen¹⁷) differentiate cadences according to the voice-leading found over the dominant harmony. These distinctions do not replace the above PAC/IAC/HC distinctions; rather they add another level of detail that is particularly helpful in model composition. These voice-leading distinctions provide three more cadence categories to complement PAC, IAC, and HC: the *simple cadence*, the *compound cadence*, and the *double cadence*.

A *simple cadence* occurs when the dominant harmonic function is articulated by a single chord—either a triad or a seventh chord. The simple cadence can be used in a PAC, IAC, or HC construction, though the seventh-chord version is typically only found in authentic cadences.

A *compound cadence* occurs when the bass note *sol* of the cadential dominant is repeated, often with the second *sol* an octave lower than the first. The compound cadence comes in three specific forms.

The first type of compound cadence involves a 4–3 suspension—*do* to *ti*—over the *sol* bass of the D5 harmony. In a four-voice texture, the other two voices sustain a fifth above the bass and an octave above the bass. The *thoroughbass* figure is typically the abbreviated 4–3, which stands for 8/5/4–8/5/3 in four voices. The 4–3 suspension can occur over the cadential dominant of a PAC, IAC, or HC.



Figure 30: 4–3 compound cadence.

The second type of compound cadence adds a *mi/me* to *re* voice (6–5) to the above 4–3 suspension. In a four-voice texture, the bass is doubled. The typical thoroughbass figure is 6/4–5/3, leading to the common name for this progression, the *cadential six-four*. The complete figure is 8/6/4–8/5/3. The cadential six-four can occur over the cadential dominant of a PAC, IAC, or HC.

The last type of compound cadence is a special case of the cadential six-four, where the fourth voice introduces a seventh over the second dominant chord, rather than simply doubling the bass for both chords. This compound cadence type requires four voices and complete thoroughbass figures of 8/6/4–7/5/3. This figure rarely occurs over the dominant of a half cadence and is instead reserved primarily for authentic cadences.

¹⁵<http://faculty-web.at.northwestern.edu/music/gjerdingen/partimenti/collections/Furno/regoleP5.htm>

¹⁶<http://faculty-web.at.northwestern.edu/music/gjerdingen/partimenti/collections/Fenaroli/Regole/regoleP3.htm>

¹⁷<http://faculty-web.at.northwestern.edu/music/gjerdingen/index.htm>



D5 T1

Figure 31: 4–3 compound cadence with full thoroughbass figures.



D5 T1

Figure 32: Cadential six-four.



D5 T1

Figure 33: Cadential six-four with full thoroughbass figures.



Figure 34: Cadential six-four with seventh.

A *double cadence* is a four-stage pattern over the cadential dominant used almost exclusively in perfect authentic cadences. Though it had expired from common use by the time of Mozart and Haydn, it was a staple for earlier *galant* composers and *Classical* treatises on composition and accompaniment. The four-stage pattern over the dominant is $5/3$ – $6/4$ – $5/4$ – $5/3$. In four voices, the bass is also doubled, or a seventh can be applied to any *chord of the fifth* (i.e., not the $6/4$).



Figure 35: Double cadence.

24.3 Voice-leading in strict keyboard style

In melodic strict keyboard style, always end with a perfect authentic cadence (PAC). Approach the melody's final *do* by step whenever possible, from *re* or *ti*, preferably from *re*. When using compound or double cadences, use the orientation of upper voices shown in the above figures (transposed to the appropriate key, of course).

In *basso continuo* style, the top voice can end with any member of the tonic triad. As much as possible, use the voices provided in the figures above, but invert them (move the tenor line to the top, making the melody and alto the alto and tenor, for example). Simply make sure that if *ti* occurs in the top voice before the final tonic chord, it resolves its tendency up to *do*.

In either case, pay special attention to the cadential six-four version of the compound cadence. Despite forming a consonant triad with the bass, both the sixth and the fourth of

the first chord act like suspensions, and therefore *must resolve down by step*. This is true no matter which part is in the melody, alto, or tenor.

25 Generating Roman numerals from a figured-bass line

Both bass lines and root progressions are important for the study and mastery of tonal harmony. Most of our work will focus on the bass lines, and what follows will help you analyze the root progressions present in any figured bass line. In other words, this will help you perform a Roman numeral analysis of a figured bass line.

Note that in this class, we will *always* use capital Roman numerals, with no “inversion symbols” added to them. Some theorists use Roman numerals as catch all symbols that include information about the chord’s root, quality, and presence of dissonant tones. We will not. Instead, the Roman numeral for us will only carry information about the root of the chord and its relationship to the tonic of the key. Like functional bass, we use Roman numerals to tell us something about *harmonic syntax*—the progression of harmonies in a key. Most of the time, the root is enough for us to understand how a chord functions in that progression. And like functional bass, when we do need more information, that information is always available in the thoroughbass. Since we will typically perform a thoroughbass reduction *before* doing a Roman numeral or functional bass analysis, there is no need to carry this extra information into the Roman numerals. They represent the root progression, not the entire collection of pitches present.

25.1 Chords of the fifth

In any chord of the fifth (5/3 or 7/5/3 chord), the bass note and the root of the chord are the same. The Roman numeral to be assigned to any chord of the fifth, then, is the scale degree of its bass note. If *do* is in the bass, the bass is scale-degree 1, and the Roman numeral is **I**. If *re* is in the bass, the Roman numeral is **II**. And so on.



Figure 36: Triads (5/3).

25.2 “First-inversion” chords of the sixth

Chords of the sixth that take the figures 6/3 or 6/5/3 are *first-inversion* chords. They are so named because the third of the chord (the next chord member above the bass) is in the lowest voice. However, thinking about inversions while performing an analysis can be cumbersome. It is often simpler to remember that if the figure is 6/3 or 6/5/3 (or an abbreviation such as 6 or 6/5), *the root of the chord is the sixth above the bass*. If *mi* is in



Figure 37: Seventh chords.

the bass, and the figure is “6”, the root is *do*, and the Roman numeral is **I**. If *fa* is in the bass and the figure is “6/5”, the root is *re*, and the Roman numeral is **II**. And so on.



Figure 38: Triads (6/3).



Figure 39: Seventh chords (6/5).

25.3 “Second-inversion” chords of the sixth

Chords of the sixth that take the figures 6/4 or 6/4/3 (or an abbreviation such as 4/3) are *second-inversion* chords. They are so named because the fifth of the chord (the second member of the chord above the bass note) is in the lowest voice. Again, it is often simpler to remember that for 6/4, 6/4/3, and 4/3 chords, *the root is the fourth above the bass*. If *re* is in the bass, and the figure is 4/3, the root is *sol*, and the Roman numeral is **V**.



Figure 40: Triads (6/4).

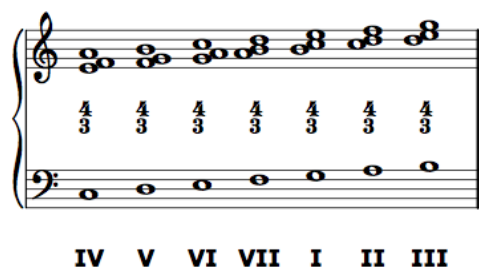


Figure 41: Seventh chords (4/3).

25.4 “Third-inversion” chords of the sixth

Chords of the sixth that take the figure 6/4/2 (or its abbreviation 4/2 or simply 2) are *third-inversion* chords. Their root is a second, or a step, above the bass. The most common 4/2 chord has *fa* in the bass, and *sol* is its root, making its Roman numeral **V**.

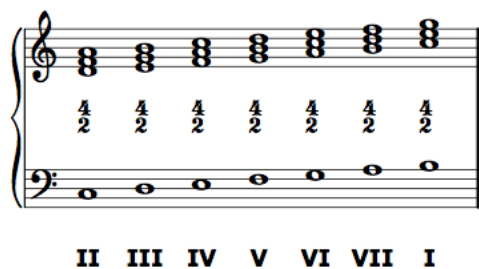


Figure 42: Seventh chords (4/2).

26 Chromatically altered subdominant chords

The most common chromatically altered subdominant chords (aside from the applied dominant of V) are the *Neapolitan chord* and the various *augmented-sixth chords*.

6 6 6 4/3 6 5 6 4/3
 [S4] [S6] [S6] [S6] [S6]
 N. It. Fr. Ger. Sw.

Figure 43: Chromatically altered subdominant chords.

26.1 Neapolitan chord

The Neapolitan chord contains lowered scale-degree 2, along with scale-degree 4, and lowered scale-degree 6: *ra*, *fa*, and *le*. It is a major triad, and it usually appears with *fa* in the bass (first-inversion), which is also doubled in a four-voice texture. It's designation is **N6**.

In a Roman numeral analysis, **N6** substitutes for a Roman numeral (that is, it is not a flat-II chord). In a functional bass analysis, **N.** is placed below the functional designation of **[S4]**.

26.2 Augmented-sixth chords

Augmented-sixth chords are so named because of the augmented sixth that occurs between *le* and *fi*, the two scale-degrees that are present in every augmented-sixth chord. The other pitch(es) in the chord determine which kind of augmented-sixth chord is present.

The *Italian augmented-sixth chord* is the simplest augmented-sixth chord, with only three members: *le*, *do*, and *fi*. *Le* is typically the bass note, and in a four-voice texture, *do* is typically the pitch that is doubled. When *le* occurs in the bass, the functional designation is **[S6]**. Under that functional bass symbol, we also label the chord **It.** In a Roman numeral analysis, just **It.** will do. The figured bass is a simple slashed "6."

The *French augmented-sixth chord* has four members: *le*, *do*, *re*, and *fi*. As in the Italian sixth, *le* is typically the bass note, and the functional designation is **[S6]**. Under that functional bass symbol, we label the chord **Fr.** In a Roman numeral analysis, just **Fr.** will do. The figured bass is a slashed "6" with a "4" and a "3."

The *German augmented-sixth chord* has four members: *le*, *do*, *me*, and *fi*. As in the other augmented sixth chords, *le* is typically the bass note, and the functional designation is **[S6]**. Under that functional bass symbol, we label the chord **Ger.** In a Roman numeral analysis, just **Ger.** will do. The figured bass is a slashed "6" with a "5." The German sixth is almost always followed by a cadential 6/4 chord.

The *Swiss augmented-sixth chord* has four members: *le*, *do*, *ri*, and *fi*. This chord is named "Swiss" because it sounds German but is spelled like the French. (*ri* in place of *me*) (Switzerland is a mixture of German-, French-, Italian-, and Romansch-based languages and cultures, with German and French being the largest.) *Le* is typically the bass note, and the functional designation is **[S6]**. Under that functional bass symbol, we label the chord **Sw.** In a Roman numeral analysis, just **Sw.** will do. The figured bass is a slashed "6" with a

slashed “4” and a “3.”

27 Applied chords

Tonicization is the process of momentarily emphasizing a non-tonic chord by using chords borrowed from the key in which that chord is tonic. Unlike *modulation*, there is no cadence in a new key, only a short progression of chords borrowed from another key.

The chord that is tonicized is typically a chord that belongs to the present key. The chords that emphasize it are usually the chords borrowed from another key. And these chords are usually chromatic alterations of chords native to the present key.

The most straightforward example is when a subdominant chord is chromatically altered by changing *fa* to *fi*, and then progresses, like usual, to the dominant chord. This alteration of *fa* to *fi* turns a regular subdominant chord into a chord that has a dominant function in the “key of the dominant.”

For example, take the chord progression F–G–C in C major. We would analyze this as **S4 D5 T1**. If we change *fa* (F) to *fi* (F#) in the F chord, we get F#dim–G–C. In the key of C, we analyze this progression as **[S+4] D5 T1**, showing the chromatic alteration by square brackets, and the raised scale-degree four with a plus. However, we can also note that F#dim is native to G major; it is a dominant-functioning chord (**D7**) in the key of G—the key in which the following chord is tonic. Thus, we can interpret the **[S+4]** as a **D7/V**, read “D seven of five.” It is at once a chromatically altered subdominant in C and a dominant in G, and both of those identities reflect its function in this example progression.

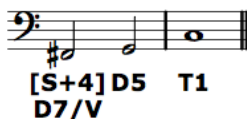


Figure 44: **[S+4]** or **D7/V**.

Such borrowing of chords can happen for *any non-diminished triad in the home key*. That is, any diatonic triad can be preceded by a chromatically altered chord that also functions as a dominant chord in which the following chord is tonic. Thus, the example progression of F#dim–G can occur in any key to which G major belongs: G major, C major, D major, B minor, A minor, or E minor.

Two things will always be true of the applied chord, which must be reflected in any functional bass analysis, and which can help you spot errors in your analysis:

- The chromatically altered chord will function as a dominant chord in the key of the chord that follows it.
- The chromatically altered chord will be an alteration of the function that logically precedes the function of the chord that follows it.

On the latter point, if the tonicized chord has tonic function in the current key, the applied chord will be an altered dominant of the current key. If the tonicized chord has dominant function in the current key, the applied chord will be an altered subdominant of the current key. If the tonicized chord has subdominant function in the current key, the applied chord will be an altered tonic of the current key.

27.1 Analytical notation

Like chromatically altered subdominant chords, every applied chord will have two elements to its functional bass symbol. First, on the normal line of functional bass analysis will be a symbol showing its function in the current key and the scale degree of the bass note (with “+” or “−” for altered bass pitches), surrounded by square brackets to signify that the chord is chromatically altered. (The square brackets are necessary no matter in which voice the chromatic alteration occurs.) Second, below the normal line of functional bass analysis will be a symbol denoting the key from which it is borrowed and the functional bass symbol the chord would have in that key.

In our above example of F#dim–G–C in the key of C, the regular functional bass line would read **[S+4] D5 T1**, and below the **[S+4]** would be the symbol **D7/V**. The latter symbol uses a slash to denote “in the key of” and a Roman numeral to denote the tonic of that key *relative to the current key*. We will use Roman numerals similarly when studying modulation to denote tonics of key areas to which the music modulates. Roman numerals, however, are *never* used to denote chordal roots in the context of a functional bass analysis.

The following figured bass line demonstrates the proper notation for a number of different applied chords in the context of a single key. Note the functional bass symbols for the chromatically altered chords, the use of slash notation and Roman numerals, and the functional relationship of applied chords and the tonicized chords that follow them. Note also that if a scale degree repeats, but in altered form, in the bass, only a plus or minus need be included in the functional bass. Hence **T(1 [+])** rather than **T(1 [+1])**.

T(1 [+]) D7/II S2 D7/III T3 S(4 [2]) D5/V D5 T1
T1 — — — — — —

Figure 45: Some common applied chords.

27.2 Scale degrees in applied chords

Just as the various dominant functioning chords in a key will contain some combination of the dominant-functioning scale degrees—*sol*, *ti* (occasionally *te*), *re*, *fa*, and/or *le* (occasionally *la*)—each category of applied dominant chords will have their own set of usual scale degrees. They are as follows.

- **D/II** — *di*, *mi*, *sol*, *la*, and *te*.
- **D/lowered-III (minor)** — *re*, *fa*, *le*, and *te*.
- **D/III (major)** — *ri*, *fi*, *la*, *ti*, and *do*.
- **D/IV** — *mi*, *sol*, *te*, *do*, and *ra*.

- D/V — *fi, la, do, re, and me.*
- D/lowered-VI (minor) — *sol, te, ra, and me.*
- D/VI (major) — *si, ti, re, mi, and fa.*
- D/lowered-VII (minor) — *la, do, me, and fa.*

28 Modal mixture

Modal mixture (also called *modal borrowing*) refers to the use of chords belonging to a parallel key—for example, a passage in F major incorporating one or more chords from F minor. Note that, like with the use of applied chords, this does not necessarily constitute modulation. Only a cadence can confirm a new key. Without a cadence in a new key, the non-diatonic chords are simply “borrowed.”

Note that the use of the leading-tone in place of the subtonic, or a melodic-minor figure (*sol-la-ti-do*) in a minor key does *not* constitute modal mixture. Those are considered “native” to the minor mode.

28.1 Thoroughbass notation

A chord borrowed from the parallel major or minor will take the same thoroughbass figure as the “native” chord. However, it will require at least one chromatic alteration (flat, natural, sharp, or slash). Be careful to account for abbreviated figures: a 4/3 figure, for example, is short for 6/4/3. If the sixth above the bass is altered, that needs to be included in the figure (just like in a French augmented sixth chord, or a D2 chord in minor).

28.2 Functional bass notation

Chords borrowed from parallel keys are chromatically altered chords, and therefore their functional bass symbols should be enclosed in square brackets. For example, if an **S4** chord in major is borrowed from the parallel minor (*fa-le-do* instead of *fa-la-do*), the functional bass symbol is [**S4**] not **S4**. If the bass note is not altered, this is the only change to the functional bass (but be sure to alter the thoroughbass figure as well).

If the bass note is chromatically altered, that must be reflected in the functional bass with a plus or minus before the numeral (as well as the square brackets). For example, if a passage in a major key incorporates a 5/3 chord over *le* (*le-do-me* instead of *la-do-mi*), the functional bass is [**Tx-6**].

28.3 Roman numeral notation

When the root of a borrowed chord belongs to the home key (e.g., using an E-minor chord instead of an E-major chord), the Roman numeral remains the same, since the Roman numeral simply represents the scale-degree of the chordal root. For example, if a piece in minor ends with a *Picardy third* (a major tonic triad), the Roman numeral is still **I**. (The thoroughbass will be altered to reflect the chromatic change.)

If the root is altered relative to the home key, use a flat or sharp in front of the Roman numeral to designate the alteration: flat to designate *lowered* (that is, a semitone below

normal), sharp to designate *raised* (a semitone above normal). For example, a *le-do-me* chord in a major key is bVI. (Again, alter the thoroughbass as necessary.)

29 Modulation

Tonicization occurs when a chord or short succession of chords are borrowed from another key in order to emphasize—or *tonicize*—a chord in the home key. (See [analyzing applied chords][Applied].) *Modulation* occurs when a longer succession of chords emphasizes a new tonic, leading to the perception of a new key. The principal difference between tonicization and modulation is the presence or absence of a cadence: tonicization does *not* incorporate a cadence in the tonicized key; modulation *does* incorporate at least one cadence (PAC, IAC, or HC) in a new key.

There are several ways in which a composer can effect a modulation. The most common are described below.

29.1 Direct/phrase modulation

A *direct modulation* occurs when a chord in the previous key is followed directly by a chord in the new key. In other words, there is no smooth transition or overlap between keys, just a direct movement from one key to the next. This often happens at phrase boundaries, with the old-key tonic ending one phrase and the new-key tonic beginning the next. When a direct modulation happens across a phrase boundary, it is also called a *phrase modulation*.

Examples of phrase modulations abound at the point between the end of the exposition in a minuet or a sonata and the beginning of the repeat of the exposition (if an exposition repeat is present).

A direct modulation is noted in a harmonic analysis by following the last chord in the old key with the new key, followed by a colon, and then the first chord in the new key.

G: T1 S4 D5 T1 Am: T1 ...

or

G: I II V I Am: I ...

29.2 Step-up/pump-up modulation

In the pop literature, direct modulations by step (whole or half) are common for final choruses or final cycles. Direct/phrase modulations by step from old-key tonic to new-key tonic in pop music are also called *step-up* or *pump-up modulations*. A step-up modulation is notated like a direct modulation.

“I Wanna Be Sedated” by the Ramones¹⁸ includes an obvious *step-up* modulation.

29.3 Truck-driver modulation

A *truck-driver* modulation is a direct modulation that moves from the old key (usually the tonic chord) to the dominant chord of the new key to prepare that tonic arrival, again

¹⁸<http://youtu.be/N-EKcjpEIGo>

common in pop music. The idea behind the name (coined by Walter Everett) is that the music loses energy briefly while in “neutral” (the new key dominant) before moving to a higher state of energy (the new-key tonic, a step above the old-key tonic). A truck-driver modulation is notated like a direct modulation.

Billy Ocean’s “Get Outta My Dreams”¹⁹ contains a classic truck-driver modulation.

29.4 Pivot-chord modulation

A *pivot-chord* modulation makes use of at least one chord that is native to both the old key and the new key. It is the most common type of modulation in common-practice tonal music. The smoothest type of pivot-chord modulation uses a pivot-chord that expresses the same function in both keys, preferably subdominant function, but other functional arrangements are possible and commonly used.

When a chord expresses dominant function in the new key and is an applied chord in the old key, it is not a pivot chord. Instead, that chord is effecting a direct or truck-driver modulation. A pivot chord must belong to the diatonic collection of both keys (keeping in mind that in minor, both *la* and *le*, and both *ti* and *te* are “native” to the minor key).

A pivot-chord modulation is notated in a special way. The pivot chord receives its analytical symbol for the old key, as usual. Below that symbol is the new key, colon, and the analytical symbol for the pivot chord in the new key. When using notation software, the two-layered analysis is fine. When analyzing by hand, use a bracket like the one shown in the following example.

6 7
#

F: T(1 D7p x6) |
C: S2 D5 T1

Figure 46: Bracket notation for pivot-chord modulations.

30 Harmony in pop/rock music

Harmony in pop/rock music does not always follow the same norms and patterns of classical-era music. Thus, functional-bass notation does not work for all situations. Instead, we will primarily use Roman numerals for our analysis of harmony in pop/rock music, occasionally using functional bass as a supplement to help us make sense of a particular harmonic pattern or relate it to what we’ve studied in classical harmony.

One key difference between rock and classical harmony is that chords in pop/rock music are almost always root-position triads or seventh chords. This affects the “rules” of harmonic syntax, as 6/3 chords in classical progressions are replaced by 5/3 chords in pop/rock progressions. (For instance, the classical progression IV–IV6, or S(4 6) in functional bass,

¹⁹<http://youtu.be/zNgcYGgtf8M>

becomes IV–VI, or S4 Tx6 in functional bass. The same bass line does the same work, but by using a 5/3 chord instead of a 6/3 chord, the functional progression changes to something that would break the rules of classical syntax.) This can make harmonic analysis a little tricky in pop/rock music, especially since there is no published theory of rock harmony that is equal to Quinn’s functional theory of classical harmony. However, it makes chord labeling and harmonic dictation simpler. Most of the time, all you need is the scale degree of the bass.

Following is a chart of bass scale degrees and the roots/Roman numerals most typically associated with them. Keep this chart handy when transcribing and dictating rock harmonic progressions. As you can see, most bass notes typically go with a single chord.

Table 4: Bass scale degrees and commonly associated harmonies in pop/rock music. Less common chords are enclosed in square brackets.

bass	5/3 or 7	6/3 or 5
<i>do</i>	I	
<i>re</i>	II	
<i>mi/me</i>	[III]	I
<i>fa</i>	IV	
<i>sol</i>	V	
<i>la/le</i>	VI	[IV]
<i>te</i>	VII	
<i>ti</i>		V

30.1 Harmonic functions in minor

In classical harmony, usually the same chords are used in major and in minor with the same functions. For example, T1 S4 D5 T1 (I IV-or-II V I) is common in both modes, though the quality of chords will change. In rock/pop music, especially that of the last 20 years or so, there are some common differences in the normative harmonic patterns of major and minor modes.

For instance, the most common S–D progression in major is IV–V. While this is also common in minor, there is another common S–D progression that is far more common in minor than major: VI–VII. Thus the typical cadential bass line of *fa–sol–do* is replaced by *le–te–do*. In other words, Dm–E(m)–Am is replaced by F–G–Am.

Where minor-key songs with IV–V–I bear a stronger resemblance to their *parallel* major (sharing the same bass syllables and Roman numerals), songs that employ this VI–VII–I progression bear a stronger resemblance to the *relative* major (sharing the same bass notes and actual chords).

For example, the common S–D–T progression in C major is F–G–C. In A minor, the same functional progression could be F–G–Am.

Songwriters like Matt Redman (“We Shall Not Be Shaken”) and U2 (“One”) take advantage of this relationship in songs where the verse and chorus modules are in different keys. In both cases, the verse is in minor and is based on a chord progression that ends VI–VII, followed by a return to I at the beginning of the next phrase. In both cases, the chorus begins on I in the relative major, turning the VI–VII in the minor key into IV–V in the major key. This two-key approach with VI–VII /IV–V as “pivot” point has become increasingly

common in recent years, in songs such as “We Shall Not Be Shaken” by Matt Redman²⁰ and “One” by U2²¹.

30.2 Schemata

There are a number of common stock chord progressions that recur in many pop/rock songs. Typically, these stock progressions, or schemata, will occur in cyclical patterns; that is, the same progression will repeat multiple times in a row. This is particularly common in choruses of verse-chorus songs, but also happens in verses, strophes, and bridges. This is helpful for identifying harmonies by ear, since in addition to listening for bass scale degrees and considering whether the harmonies are chords of the fifth (5/3 or 7) or chords of the sixth (typically 6/3 or 6/5), we can listen for common patterns that we’ve heard in other songs. Following are a number of common schemata for pop/rock harmonic progressions.

“50s doo-wop” progression (a.k.a., “Friday” progression, after Rebecca Black)

||: I – VI – IV – V :||

or

||: I – VI – II – V :||

This cyclical chord progression was very common in rock ballads from the 1950s and early 1960s, hence the name (example: “Duke of Earl” by Gene Chandler²²).

However, it has continued to be used every since (examples: the verse and chorus of “Friday” by Rebecca Black²³, the chorus of “Total Eclipse of the Heart” by Bonnie Tyler²⁴).

Because it is typically employed in cycles, it can also be found starting on a different chord in the cycle and then proceeding through the same succession of chords. For example, “Viva la Vida” by Coldplay²⁵ works through a cyclical repetition of the same succession of chords, but their phrases begin on IV rather than I:

||: IV – V – I – VI :||

“Sensitive female” progression

||: VI – IV – I – V :|| (in major)

||: I – VI – III – VII :|| (in minor)

Like the 50s doo-wop, this is a four-chord cyclical progression. It has been around for some time but became increasingly common beginning in the mid-1990s with female singer/songwriters like Sarah McLachlan²⁶, Jewel²⁷, and Joan Osborne²⁸ (hence the name). Though the chord progression can be found in many aggressive songs written for adolescent teen males, its prominence in songs by mid-1990s female singer/songwriters led Marc Hirsh,

²⁰http://youtu.be/ZGp_70IYfUQ

²¹<http://youtu.be/xh-ACkYmdc4>

²²<http://youtu.be/j9PoUsRibtE>

²³<http://youtu.be/kfVsfOSbJY0>

²⁴<http://youtu.be/lcOxhH8N3Bo>

²⁵<http://youtu.be/dvgZkm1xWPE>

²⁶http://youtu.be/_QUq72fla3o

²⁷<http://youtu.be/AfsS3pIDBfw>

²⁸http://youtu.be/USR3bX_PtU4

a writer for the Boston Globe, to coin the name “sensitive female chord progression,”²⁹ and for good or ill the name has stuck.

This progression is interesting in two particular ways. First, like the 50s doo-wop, it can begin its rotation in places other than the first chord. For example, U2’s “With or Without You”³⁰ cycles through this progression with phrases starting on tonic:

||: I – V – VI – IV :||

The second interesting feature of this progression is its mode ambiguity. The same chords—depending on the passages before and after a series of repetitions of the progression, and depending on which chords in the cycle begin and end it—can project a feel of major or of minor. In other words,

Am – F – C – G

can sound like VI–IV–I–V in C major, or like I–VI–III–VII in A minor. In fact, some songwriters take advantage of this duality in songs that modulate back and forth between relative major and minor keys, as well as in songs with some parallel ambiguity in the text (hence its usefulness for those mid-1990s songwriters). An example is “What About Love” by Heart³¹, which has an obvious D-minor intro, a D-minor/F-major verse using the sensitive female progression, and a chorus obviously in F major.

“Puff” progression

I – III – IV ... (to begin a phrase)

The “puff” progression is named after “Puff, the Magic dragon” by Peter, Paul, and Mary³², a song that begins with this progression. It does not participate in 3- or 4-chord cycles like the above progressions. However, it is typically bound to the opening of phrases, and typically harmonizes the bass *mi/me* as III, rather than a first-inversion I. “House of the Rising Sun” by the Animals³³ is an example of this progression beginning phrases in minor (*do-me-fa* ...).

Blues progression

A *12-bar blues progression* is composed of three (typically) four-bar phrases (z1, z2, and z3 or T, S, D). The first phrase (z1 or T) is entirely tonic harmony (I). The second phrase (z2 or S) contains two bars of subdominant (IV) and two bars of tonic (I). The final phrase (z3 or D) begins with one bar of dominant (V) followed by one bar of subdominant (IV) and two bars of tonic (I). The third phrase may or may not end with a *turnaround*.

I ///| IV /I /| V IV I /

A *16-bar blues progression* is composed of four (typically) four-bar phrases, usually two iterations of T/z1, followed by S/z2 and D/z3. The final phrase may or may not end with a *turnaround*.

I ///| I ///| IV /I /| V IV I /

²⁹http://web.archive.org/web/20100113080032/http://www.boston.com/ae/music/articles/2008/12/31/striking_a_chord/

³⁰<http://youtu.be/XmSdTa9kaiQ>

³¹<http://youtu.be/KE5GGMhmo-M>

³²<http://youtu.be/Wik2uc69WbU>

³³<http://youtu.be/bwAw9ThDQmk>

Of the two, 12-bar blues is more common. And though both can be found in modules of all types of functions, blues progressions are most typically found in strophes (both in strophic and in AABA song forms).

Frequently, songwriters will make alterations to the standard harmonic pattern or extend/compress phrases by a bar or two. However, if you hear most of the features above, consider it an altered blues progression and use the standard 12- or 16-bar pattern as a reference for listening to what specific details have been altered.

A straight 12-bar blues progression can be found in “Hound Dog” by Elvis Presley³⁴.

“Don’t Be Cruel” by Elvis Presley³⁵ presents a 12-bar blues pattern with an alteration of the final phrase (II–V–I rather than V–IV–I) in the strophes (the song is in AABA form).

“Surfin’ USA” by the Beach Boys³⁶ presents a 16-bar blues strophe with the two first phrases each beginning on two bars of V before two bars of I (V /I /instead of I ///).

Pachelbel progression

||: I – V – VI – III – IV – I – IV – V :||

The Pachelbel progression comes from ‘Canon’ in D Major by ‘Pachelbel’ (the scare quotes indicate that the piece is neither a canon nor likely composed by Pachelbel). It’s prevalence in popular music has recently been made famous by the Pachelbel Rant³⁷.

The full progression is given above, but there are a few common alterations. First, the cadential progression may be changed (substituting two bars of V or a cadential 6/4–5/3 for the final IV–V progression). Also, instead of moving in root-position triads, some composers and songwriters will invert every other chord:

||: I – V6 – VI – III6 – IV – I6 – IV – V :||

Lastly, some composers or songwriters will only use the first four or five chords and follow with a completely new second half. As long as the first four chords—in root position or with the standard inversions—are present, we can consider it an instance of the Pachelbel progression.

See the above video for song examples (though be careful: halfway through the song, he changes to a rotation of the sensitive female progression).

Lament progression

||: I – VII – VI – V :||

This progression need not be included in a cycle, but occasionally it does. It is named the “lament” progression because in early classical music, this chord progression (almost always in minor) was used as the *ground bass* (a repeated bass pattern that formed the foundation for a set of variations, not unlike the cyclical progressions of pop/rock songs) for songs of lament. Examples include “Dido’s Lament” by Henry Purcell, from the opera *Dido and Aeneas*, and J.S. Bach’s “Crucifixus,” from his Mass in B Minor.

The opening of the verse in Muse’s “Thoughts of a Dying Atheist”³⁸ is a prominent example from recent pop/rock music (there it is followed by a circle-of-fifths progression; see below).

³⁴<http://youtu.be/2MnmIVBSZYM>

³⁵<http://youtu.be/mLsgqH2BOeg>

³⁶<http://youtu.be/sNypbmPPDco>

³⁷<http://youtu.be/JdxkVQy7QLM>

³⁸http://youtu.be/seNrC4_5Xxs

Circle-of-fifths progression (in minor)

||: I – IV – VII – III :||

Much more will be said about circle-of-fifths progressions in the context of classical music. In pop/rock music, we will focus on the above four-chord progression. This is considered a “descending” circle-of-fifths progression because each chord’s root moves down by fifth to the next root. In pop/rock, this progression often happens in minor beginning on I, moving to the relative major. Like the “sensitive female” progression, there is some key ambiguity in this progression, as the starting chord is easily considered tonic, but the motion from VII to III can easily be heard as V–I in the relative major key. And indeed, it can be used to move from the relative minor to the relative major.

Def Leppard’s “Love Bites”³⁹ (mildly explicit lyrics) begins with this four-chord progression repeated twice for the verse.

The verse of Muse’s “Thoughts of a Dying Atheist” (video above) begins with a lament progression, followed by a four-chord circle-of-fifths progression. This progression immediately repeats, returning to the initial minor key. However, the second time through, this lament–circle-of-fifths pattern leads to a chorus in the relative major (taking the III chord as the new tonic).

For a complete circle-of-fifths progression, see Gloria Gaynor’s “I Will Survive”⁴⁰:

||: I – IV – VII – III – VI – II – V /:||

³⁹<http://youtu.be/UPU9az11si0>

⁴⁰<http://youtu.be/Tth-8wA3PdY>

Part V

Form

31 Classical theme types

The following diagrams outline the key internal characteristics and functional role of the various theme types presented in William Caplin's *Classical Form*. Consult Chapters 3–5 of that text for further explanation and examples.

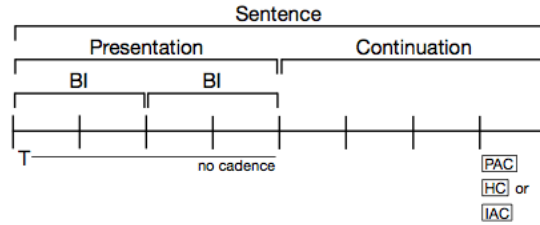


Figure 47: Sentence.

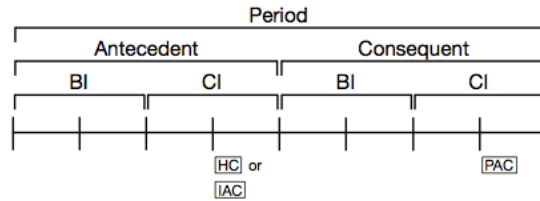


Figure 48: Period.

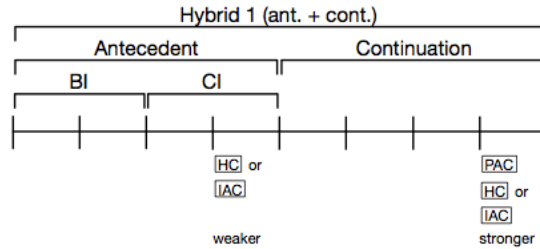


Figure 49: Hybrid 1.

32 Classical minuet form

32.1 Formal containers in the classical minuet

A classical minuet movement typically contains a *main minuet*, followed by a *trio* that is very similar in structure with a minuet, followed by a *da capo* repeat of the main minuet (usually performed without taking the repeats). The movement, then, has a large-scale ABA' form: *minuet-trio-minuet da capo*.

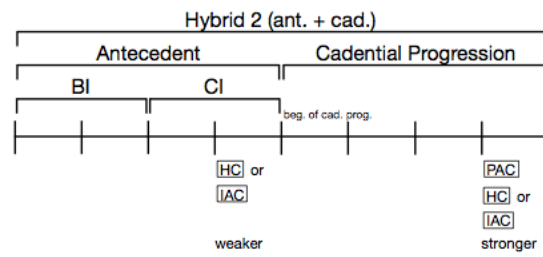


Figure 50: Hybrid 2.

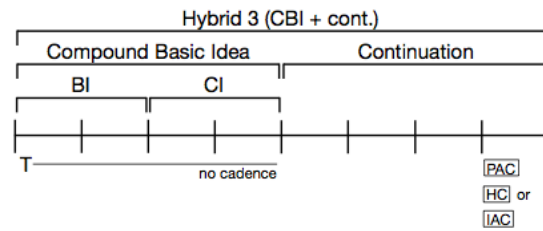


Figure 51: Hybrid 3.

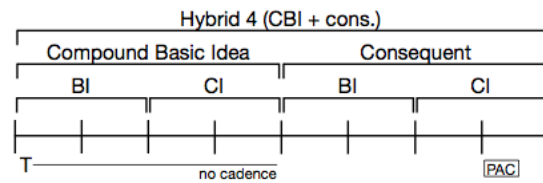


Figure 52: Hybrid 4.

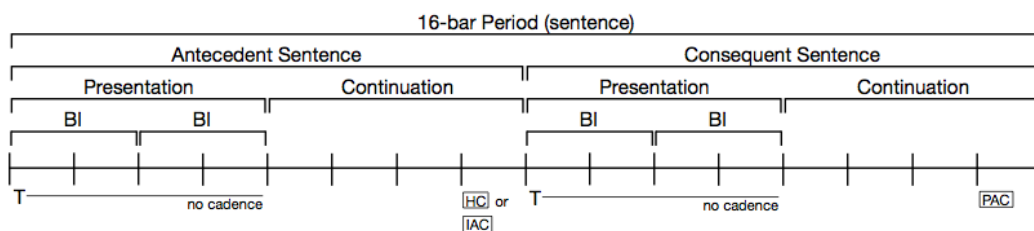


Figure 53: 16-bar period (sentences).

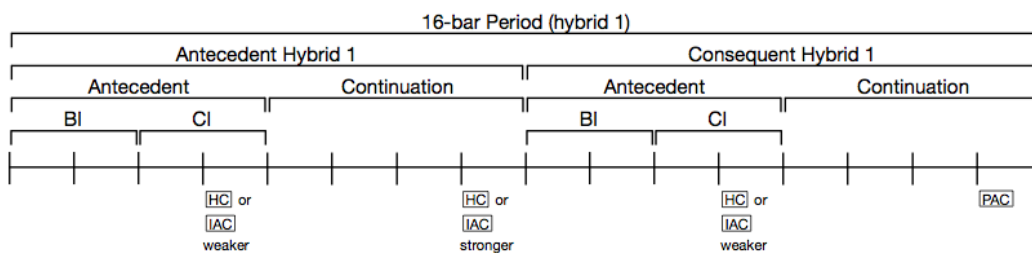


Figure 54: 16-bar period (hybrid 1 themes).

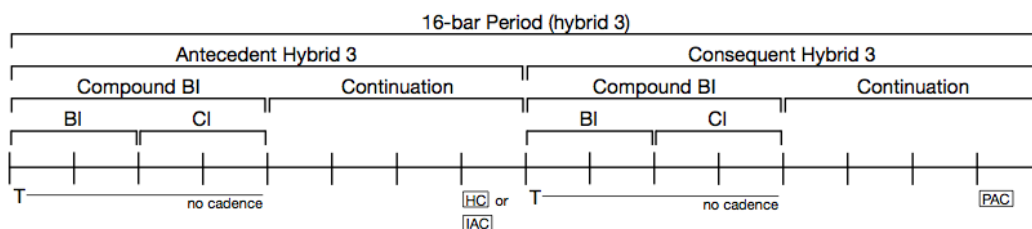


Figure 55: 16-bar period (hybrid 3 themes).

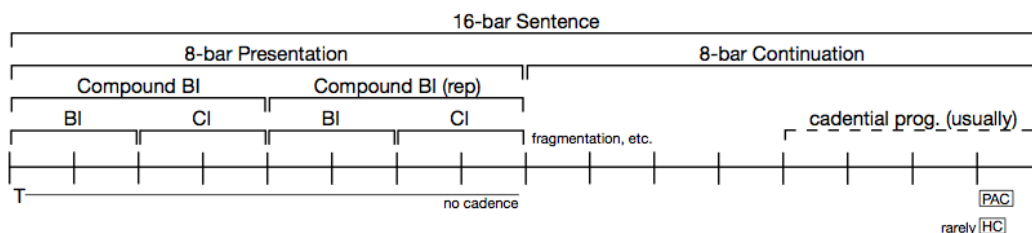


Figure 56: 16-bar sentence.

Both the main minuet and the trio tend to be *small ternary* structures. Like the minuet/trio movement, the small ternary form follows an ABA' structure. However, the small ternary structure found in the typical minuet is of the *rounded binary* type. That is, while there are three distinct parts—A, B, and A'—they are grouped into two larger sections, each of which is repeated.

The first part in the two-part structure is the *first reprise*, and the second part is the *second reprise*, so called because they each repeat. The first reprise contains the A section of the minuet; the second contains the B and the A' sections.

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

When listening to the minuet, the three parts of the small ternary structure are heard in the order:

A A B A' B A'

Thus, the minuet form has properties both of ternary or three-part form (three distinct sections: A, B, A') and binary or two-part form (two reprises).

32.2 Formal functions in the classical minuet

Each container in the minuet's (or the trio's) small ternary form has its own formal function attached to it. The formal function exhibited in the A section is called *exposition* function; the B section *contrasting middle* function; and the A' section *recapitulation* function. As with all formal functions, each of these functions have *internal characteristics* that define and identify it as well as a *position within the larger formal structure* that define it.

Exposition

The definitive internal characteristics of *exposition* function are the presence of a *characteristic melodic theme* that will define and identify the minuet, the *establishment of the home key*, and *movement toward a secondary key*. The characteristic melodic theme is typically a *period* or *hybrid 1* (antecedent + continuation), though it may also be a sentence or another hybrid type. In a typical exposition containing a period or hybrid 1, the home key is established by a cadence in the home key—usually a I:HC—at the end of the antecedent phrase. (A sentence would establish the home key through tonic prolongation in the presentation phrase.) Movement toward a secondary key takes place in a continuation or consequent phrase, ending almost always with a V:PAC (when coming from a major home key) or a III:PAC (minor home key). A *modulating Prinner* schema is often used in a continuation phrase modulating to V. Harmonic sequences are also common means of moving to the new key.

Major-key exposition:

phrase 1: Antecedent => I:HC

phrase 2: Consequent/continuation => V:PAC

Minor-key exposition:

phrase 1: Antecedent => I:HC

phrase 2: Consequent/continuation => III:PAC

The definitive position of exposition function is at the beginning of a small ternary form (A section, beginning of the minuet or beginning of the trio). When a minuet or trio begins, expect the above internal characteristics to be present, and listen for any deviations from those norms.

When listening to a minuet to identify whether or not a passage exhibits *exposition* function, first keep in mind simply that minuets rarely begin with a function other than exposition. If you are listening to a passage without knowing where the passage occurs in the movement, listen for a single tight-knit theme that ends with a V:PAC or III:PAC. If you are unsure about the modulation, use the repeat of the A section to determine whether the A section begins in the same key in which it ends. Classical minuets are highly conventional forms, and there are rarely exposition modulations other than I-to-V in major or I-to-III in minor.

Contrasting middle

The definitive internal characteristics of *contrasting middle* function are a *return to the home key* culminating in a I:HC or a *dominant arrival* in the home key, and a likely looser-knit structure than found in exposition or recapitulation functions. The return to the home key is often, though not always, accomplished by a *Fonte*, *Monte*, or *Ponte* schema, or some combination of those schemas, beginning immediately after the end of the A section/first reprise. Tighter-knit B sections are almost always *sentences*, beginning with a two-bar basic idea that is repeated a step higher (*Monte*) or a step lower (*Fonte*).

The definitive position of *contrasting middle* function is immediately following *exposition function* at the beginning of the second reprise (B section in a small ternary). If you lose track of the boundary between the A and B sections, listen for the repeat of the second reprise, which will go back to the beginning of the B section.

Recapitulation

The definitive internal characteristics of *recapitulation* function are the *return of the basic idea* from the A section at the beginning of the recapitulation, the *return of the home key* at the beginning of the recapitulation, and a final cadence in the home key—I:PAC. In a typical small ternary, the antecedent phrases that open A and A' are identical or nearly so. If a *modulating Prinner* was used in the A section's continuation phrase to modulate to V, a non-modulating Prinner will be used in the A' section's continuation phrase to prepare the final I:PAC.

The definitive position of *recapitulation* function is at the end of the second reprise, immediately following *contrasting middle* function (and preceding the repeat of the *contrasting middle* function when the entire second reprise is repeated).

33 Galant schemata

Schemata (pl. of *schema*) are “stock musical phrases employed in conventional sequences” (Gjerdingen 2007, p. 6). We can apply the term *schema* in three specific ways. First, a schema is a *prototype*—an idealized version of a common pattern. Second, a schema can be an *exemplar*—a single pattern that resembles the prototype. Third, a schema can be a *theory*—an explanation of a commonly occurring musical event. All of these ideas go into how we understand schemata. We understand an individual pattern (exemplar) as a version of an ideal general pattern (prototype), and that relationship helps us understand how that pattern is functioning within a particular passage of music (theory).

That latter point is significant. Like harmonic functions and formal functions, schemata have both internal defining characteristics *and* normative placements within a series of musical events. Just as identifying and interpreting the function of a particular chord involves taking an inventory of its internal characteristics (the scale degrees present) and its location in the phrase, identifying and interpreting a particular schema will involve noting both its internal characteristics and what comes before and after it. And just like a chord can project a particular harmonic function without containing every scale degree associated with that function, a phrase or sub-phrase can project the identity and function of a particular schema without possessing every defining characteristic of the schema. (In other words, not every exemplar could stand as a prototype.)

The remainder of this article provides the defining characteristics of a number of schemata common to *galant*, or Classical, music of eighteenth-century European court life, as well as

their typical placement in “conventional sequences.” The names and descriptions of the schemata follow Gjerdingen’s names and descriptions, which were often, in turn, based on the work of theorists like Joseph Riepel. I also frequently connect Gjerdingen’s descriptions to formal functions from William Caplin’s *Classical Form*. For more detail or examples, please consult those two sources.

33.1 Prinner

The *Prinner* is incredibly common in *galant* music, and it is typically a response to an opening schema. It often occurs in a *sentence* or a *hybrid* theme type as the *continuation* phrase.

The Prinner has four parts corresponding to four bass notes: *fa* – *mi/me* – *re* – *do*. The skeleton of the Prinner’s melody typically accompanies the bass in parallel tenths: *la/le* – *sol* – *fa* – *mi/me*. Harmonically, the *fa* and *do* bass notes tend to take chords of the fifth, and the two middle bass notes, *mi/me* and *re*, tend to take chords of the sixth. Often the *re*’s chord is embellished by a 7–6 suspension in an inner voice.

Some Prinner exemplars insert a *sol* bass note before the last chord, resulting in an authentic cadence: **D5–T1**. Non-modulating Primmers that operate as continuation phrases often contain this move in order to end the sentence or hybrid theme satisfactorily.

Non-modulating Primmers imply *modulating Primmers*. Indeed, the Prinner pattern is often found transposed up a fifth in order to effect a modulation to the dominant of the original key. This modulation is accomplished by a simple transposition. When transposed up a fifth, the first stage of the Prinner (chord of the fifth on *fa*) is the tonic of the home key (chord of the fifth, now on *do*), making a smooth transition. These modulating Primmers are used in sentence or hybrid themes either to modulate to the dominant key or to effect a strong half cadence. They also commonly appear at the beginning of the *Transition (TR)* zone in a sonata movement, effecting the same move to the dominant.

33.2 Fonte

A *Fonte* (It. for “fountain” or “well”—think *going down*) is a common pattern to begin the *contrasting middle* of a small ternary form. In other words, it follows the double-bar in a minuet, minuet trio, or rounded-binary theme. A Fonte is a *model/sequence* schema: a two-bar pattern is immediately repeated one step lower than the original.

Harmonically, the first two-bar unit (the *model*) contains two chords, one per bar: an applied dominant chord, and the tonicized chord to which the applied dominant points. The most common chord pattern for the Fonte’s model is **D7/II T1/II** of the home key, with the **D7** being a chord of the sixth and the **T1** being a chord of the fifth. (Other “inversions” are possible, such as **D4/II T3/II**.) When the model composes out **D7/II II**, the sequence will transpose it down to tonic: **D7 T1** of the home key.

As an example, the functional-bass analysis of a typical Fonte in a small ternary whose home key is G major looks like:

Note the non-cadential progressions, **D7–T1**. Normally such progressions would need to be interpreted as prolonging a tonal function (i.e., tonic function), which would be difficult to interpret here. Schemata often contain such progressions. Simply analyze the chords individually and label the schema, rather than trying to interpret these progressions as prolongational. (Indeed, they are not.)

A common model for a minuet containing a Fonte is as follows:



Figure 57: Haydn, Piano Sonata in G Major, Hob.XVI:27, III., mm. 9–12.

||: EXPOSITION ending with V:PAC :||: Fonte - phrase ending with I:HC – RECAPITULATION :||

The Fonte is a quick and easy way for a composer to transition from the key of the dominant (where a major-key minuet’s exposition cadences immediately before the double-bar) to the key of the tonic. It will usually be followed by a phrase that stands on or moves to the dominant of the home key. The half cadence or *dominant arrival* at the end of that phrase will prepare for the return to the opening material in the home key, the *recapitulation* of the minuet or small ternary.

33.3 Monte

A *Monte* (It. for “mountain”—think *going up*) functions similarly to a Fonte. It typically occurs as part of the *contrasting middle* section of a minuet or other small ternary, it is a model/sequence schema, and it involves an applied chord resolving to a tonicized chord—typically a **D7 T1** pattern. The difference is that where a Fonte goes *down* (**D7/II T1/II D7 T1**), a Monte goes *up* (**D7/IV T1/IV D7/V T1/V**). And where a Fonte is almost exclusively four bars long (one model followed by one transposed repetition), a Monte sometimes extends to six or more bars (one model followed by one *or more* transposed repetitions).

33.4 Ponte

A *Ponte* (It. for “bridge”) was another common schema for the *contrasting middle* of a minuet. Unlike the Fonte and the Monte, the Ponte need not be a model/sequence schema. It effects *delay* rather than *motion*. A Ponte typically functions like what Caplin calls *standing on the dominant*. The exposition of the major-key minuet will end with a PAC in the dominant of the home key. When a Ponte follows that cadence, it holds onto that **T1/V**, heightens tension melodically, and often adds a seventh to the chord (making it D5 of the home key). A passage built on a Ponte does not have a cadence, since there is no harmonic progression, but instead ends with a punctuated dominant chord in the home key, which Caplin calls a *dominant arrival* rather than a half cadence. This dominant arrival prepares the return of the home key and the opening basic idea that come at the minuet’s recapitulation.

33.5 References

Caplin, William. *Classical Form*. Oxford University Press, 2000.

Gjerdingen, Robert O. *Music in the Galant Style*. Oxford University Press, 2007.

34 Introduction to Sonata Theory

A classical *sonata* is a multi-movement work for solo instrument, chamber ensemble, or orchestra with at least one movement in *sonata form*. Almost always, the first movement of a sonata is in sonata form. The last movement is typically an upbeat *finale*, which can be in a number of different forms. Inner movements (second movement of a three-movement sonata; second and third movements of a four-movement sonata) are typically slow movements and/or dance movements (minuets or scherzos). Any non-dance movement in a sonata can take sonata form, but rarely *all* of them at once. Commonly, only the first movement takes sonata form, or the first and one other movement. The other movements will take other standard forms, such as minuet/trio, theme-and-variations, rondo, or sonata-rondo. In this unit, we will focus on sonata forms, particularly as they are found in first movements of instrumental sonatas.

34.1 Sonata form

Sonata form shares many structural properties with small ternary form (specifically the rounded binary variant). In fact, one can consider sonata form to be a larger, more complicated version of small ternary form. Thus, much of what you know about minuets will assist you in learning the basic structure of sonata movements and hearing their key features.

Like small ternary, a standard early sonata movement has a two-reprise structure (later sonatas shed the repeat of the second reprise; still later sonatas often shed both sets of repeats):

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

Like in small ternary form, the A section exhibits *exposition* function, and the A' section exhibits *recapitulation* function. The B section fulfills many of the functional roles of *contrasting middle*. However, the B section in a sonata movement has other, unique functional characteristics that require a distinct name. In sonata form, we call the function of the B section *development*. As in minuets, it is common and acceptable to refer to the A section as “the exposition,” the B section as “the development,” and the A' section as “the recapitulation,” as long as we retain the conceptual difference between formal functions (*exposition*, *development*, *recapitulation*) and formal containers (A, B, A').

34.2 Cadential goals

Sonata form is anchored around a few important cadences. They serve as signposts for the formal structure, as well as goals of the music leading into them.

As in small ternary form, the exposition tends to end with a PAC in a *secondary key* (V in a major-key movement, III in a minor-key movement). Rather than being simply a norm, though, this cadence is *essential* to the form. This PAC is called the *essential expositional closure*, or EEC.

Likewise, the recapitulation has a corresponding cadence, also familiar from small ternary form: a PAC in the home key, which tends to correspond thematically with the EEC. This I:PAC is called the *essential sonata closure*, or ESC.

The development section, like the contrasting middle in small ternary form, typically ends with a HC in the home key or a *dominant arrival* in the home key, which prepares the arrival of the recapitulation.

||: exposition **V:PAC** :||: development **I:HC** recapitulation **I:PAC** :||

The exposition and recapitulation each have an additional cadential goal that is not shared with other small-ternary-like forms. These goals each occur between the beginning of the formal unit and the cadential goal (EEC or ESC), and they often—though not always—involve a pause or stoppage of melodic or harmonic motion. Thus, each of these halfway cadences is called a *medial caesura* (MC). Both PACs and HCs, in the home key or in a secondary key, can function as medial caesurae.

34.3 Modules and rotation

Sonata theory incorporates formal modules similar to those found in pop/rock songs. A module is a formal unit that has definitive *internal characteristics* and definitive *locations in the movement*. That is, there are certain events or properties that tend to happen in each module type, and these modules tend to appear in a certain normative order. (In Hepokoski & Darcy’s book *Elements of Sonata Theory*, these modules are called “action spaces.” We will use the more generic term “module” to parallel our study of other types of musical forms besides sonatas.)

The exposition of a sonata presents these modules in order: *primary theme (P)*, *transition (TR)*, *secondary theme (S)*, and an optional *closing zone (C)*.

The development of a sonata restarts this *cycle*, or *rotation* (*cycle* is Summach’s term from our pop/rock unit; *rotation* is the term used by Hepokoski/Darcy), and progresses through it in order. Sometimes modules are omitted, but rarely are they re-ordered.

The recapitulation, as in other small-ternary forms, re-presents the modules of the exposition in the same order, but altered in order to reach the ESC in the home key.

34.4 Defaults and deformations

Sonata form is not a single recipe for structuring a movement. It is a set of norms that are almost always violated, or at least altered, in some way in a composition. Thus, we can talk about individual pieces being “in dialog with” sonata norms. That is, they incorporate enough of the definitive elements to be considered “in sonata form,” but they carry enough unique elements to cause some tension with the norms. Over time, some of the unique elements used by classical composers were adopted by others and became norms for a later generation. Thus, even the “typical” sonata movement is different at different times and places in history.

In general, though, for each element of sonata form, we can identify default properties of that element. Sometimes there are multiple possibilities that can be considered normative. For example, the most common cadence used for the MC of a classical sonata movement is V:HC. This is called the *first-level default*. The second most common MC cadence is a I:HC—the *second-level default*. Where multiple possibilities are normative, but one is more common or preferred over another, we use this language.

Non-default properties of a particular sonata movement are called *deformations*. For example, a II:IAC MC is not at all typical of classical sonatas. Thus, we would consider it a deformation. It does not mean that a II:IAC cannot function as an MC (though I can't think of an example). However, it means that a II:IAC is a purposeful move by the composer to contradict the norm. As such, any analysis should address this deformation and attempt to explain its musical and historical significance.

34.5 Further details

The remaining sonata resources on this website are largely in reference format. Rather than walk through the details in the manner of a typical textbook, they will provide you with the defining features of the elements described in as concise a manner possible. This concision will serve you well when referencing these resources quickly during analytical activities. However, it will also force you to wrestle with them in the context of real pieces in order to understand them fully. If you simply read these resources, you will not understand sonata form. You must make use of them while performing assigned analytical and listening tasks in order to assimilate the information and develop the skills necessary to apply them musically.

Hepokoski & Darcy's book, *Elements of Sonata Theory*, was listed as a recommended, but not required, resource for this course. If you purchased it, you may make use of it for more detailed explanations and more plentiful examples. It is probably not the best place to begin your study of a new concept, but it will be a valuable supplement to the online resources and in-class activities.

Sonata form: the exposition

A sonata exposition has three jobs: *establish the home key, move to and establish a secondary key with a cadence*, and *lay out the thematic cycle or rotation* that will serve as the foundation for the development and recapitulation (Hepokoski & Darcy's "expositional rotation").

In a typical sonata movement, this rotation, and the correlative harmonic scheme, follow a schematic pattern that plays out in the following order:

- Primary theme (P) – home key
- Transition (TR) – ending with the *medial caesura* (MC)
- Secondary theme (S) – secondary key (V or III), ending with the *essential expositional closure* (ESC)
- Closing space (C) – secondary key; optional
- Retransition (RT) – recapturing of dominant harmony in home key to prepare repeat of exposition

Such a structure is called a *two-part* exposition, because the medial caesura divides the exposition into half.

This video⁴¹ demonstrates a sample two-part exposition (W.A. Mozart, Sonata for piano in B-flat major, K. 333, movement I.) in Variations Audio Timeliner⁴².

Each of these modules and characteristic cadences are defined in what follows.

⁴¹<http://vimeo.com/53382539>

⁴²<http://variations.sourceforge.net/vat/>

34.6 Medial caesura (MC)

Hepokoski and Darcy (whose theory forms the basis of these reference materials) recommend that when analyzing a sonata exposition, “the first task be to locate and identify the treatment of the MC” (p. 24). It is an important event harmonically, in that it marks the point when the secondary key will take over definitively. It is also an important event thematically, because it marks the end of the first part of the exposition and signals the imminent arrival of the secondary theme. It is also an important event rhetorically, because it is typically a high-energy event that has been prepared by significant *energy gain* in the music that precedes it. Lastly, it is important because the type of cadence used as the MC, and how soon after the opening of the movement the MC occurs, are strong indicators of what kind of music will follow in the rest of the sonata movement.

The most common cadence for an MC is a half cadence, either in the home key (I:HC MC) or the secondary key (V:HC MC or III:HC MC). In the classical era (late eighteenth century), a I:HC MC will usually indicate a shorter, lighter sonata movement. A V:HC MC or III:HC MC will usually indicate a movement of medium length or longer. More formal complexity is likely to come with a V:HC MC or III:HC MC than a I:HC MC.

For a medium-long sonata movement, a V:HC MC or III:HC MC is the *first-level default* MC type, according to Hepokoski & Darcy. The I:HC MC is a *second-level default*. For shorter movements, the I:HC MC is the first-level default MC type.

A third-level default would be V:PAC MC or III:PAC MC. A fourth-level default would be a I:PAC MC. These are both considerably rarer than the first and second defaults, and they create a stronger halt in the musical progression.

The musical characteristics that typically surround an MC are: *energy gain* leading into the cadence (this happens in the TR module, which the MC ends); prominent arrival of a structural dominant; a pause or break in the musical texture (sometimes filled by a single voice or other greatly reduced texture—what H/D call “caesura fill”); and a continuous maintaining of energy between the harmonic cadence and the textural break.

Other common, but by no means required, features are: *fa-fi-sol* in the bass, leading into the cadence; prolongation or extension of the dominant arrival (what H/D call a “dominant lock”); and/or a thrice-repeated chord of arrival immediately receding the break (what H/D call “hammer blows”).

For an MC to be a real MC, it must be followed by a satisfactory S theme (see below). A cadence that otherwise could function as an MC, but is not followed by a satisfactory S theme, is considered a case of “medial caesura declined.” Any two-part exposition that declines a medial caesura must contain a “real” MC later. If it does not, it is a continuous, rather than a two-part, exposition (see below).

34.7 Essential expositional closure (EEC)

The EEC is “the first satisfactory PAC within the secondary key that goes on to differencing material” (Hepokoski/Darcy, p. 18). It is *not* optional, and it is *always* in the secondary key. The Closing module (C) immediately follows the EEC.

It is important to note both that it is the *first* satisfactory PAC, and that it goes on to *differing* material. Often the strongest PAC in the dominant is not the EEC. The EEC is a harmonic goal. Once it has been achieved, the process is complete. That harmonic goal may not coincide with the textural climax.

Also, the EEC comes at the *end* of a theme. Thus, if an S theme reaches a PAC but then repeats itself, the EEC comes at the end of the repeat.

Once the PAC has been achieved, any new material is *closing material* (*C*), not new S themes.

34.8 Continuous exposition (no MC)

A continuous exposition has no MC followed by an S theme. Instead, the TR module gives way to a succession of *Fortspinnung* modules. *Fortspinnung* refers to the “spinning out” of a series of related, fragmented melodic units. These are often, but not necessarily, taken from the P theme. *Fortspinnung* is often associated with TR in general (see below), but in a continuous exposition, the process gets out of control and fails to produce a satisfactory MC. Instead, the motives continue to “spin out” and maintain a high level of energy right up to the EEC, at which point it is too late for an MC or an S theme. Rather than a two-part exposition that follows the model

P TR ' S /C

the continuous exposition follows the model

P TR=>FS /C

(The apostrophe stands for the MC; the slash stands for the EEC.)

A continuous exposition may present no MC candidates, it may present the possibility of an upcoming MC that is evaded, or it may present an MC that fails to produce a satisfactory S theme (and thus is not really an MC). In each case, an EEC is achieved before any true MC that can produce an S theme.

Another type of continuous exposition occurs when an early PAC in the secondary key occurs with no preceding MC. This PAC is then followed by repeated restatements of the cadential material before a PAC that goes on to new material (the EEC).

In both cases, a clear EEC arrives without any clear MC or S theme. Such situations are continuous expositions.

34.9 Trimodular block (two MCs)

Sometimes, a composer sets up a two-part exposition, reaches a satisfactory MC, proceeds on to a new theme that sounds like a worthy S module, but that theme degenerates before it can achieve the EEC. In such a case, the degenerated S theme becomes like a new TR and leads into another MC, followed by an S theme that *can* reach a satisfactory EEC. Hepokoski and Darcy call such a situation a *trimodular block* (*TMB*). The three elements of the TMB are the failed S theme (TM1), the dissolution of the failed S (TM2) leading into a new MC, and a new, different S theme that “works” (TM3).

The two MCs tend to adhere to one of the following patterns (the first being by far the most common; H/D, p. 171):

- I:HC – V:HC
- I:HC – V:PAC
- V:HC – V:PAC

- V:HC – V:HC

The second MC is called a *post-medial caesura (PMC)*.

34.10 Primary theme (P)

The P theme has several functions: establish the home key (with or without a cadence), present the main thematic material that begins the expositional rotation, and begin the motion toward the MC and the ESC.

A P theme may exhibit any of Caplin’s *tight-knit* forms (sentence, period, hybrid, compound, or small ternary). Sometimes, it can even be a single phrase (antecedent or presentation).

A P theme may be harmonically closed (ending *on-tonic*) or open (ending *off-tonic*). A fully closed P theme will end with an authentic cadence, preferably a PAC. However, in the case of P themes that dissolve into TR space, P may simply consist of a presentation phrase or compound basic idea, with no closing cadence. The final cadence of a P module may be elided by the beginning of TR.

34.11 Transition (TR)

The TR module’s principal functional roles are to drive toward the MC. This is both a harmonic motion (often involving modulation, if the MC is in the secondary key) and a rhetorical motion, characterized by *energy gain*. An analysis of a TR module should center around the MC and how the composer approaches the MC.

Following are common techniques associated with TR function.

TR modules often begin with what Hepokoski & Darcy call a “tutti affirmation,” particularly in orchestral works. This is a noticeably louder restatement of at least the basic idea of P, before progressing to the MC. They also often exhibit motivic *Fortspinnung*—a repeated “spinning out” of fragments of a melodic motive, typically taken from the P theme. TR often features melodic or harmonic sequences. Anything else that can be associated with Caplin’s *continuation* function fits transition function, as well—fragmentation, liquidation, acceleration of surface or harmonic rhythm, etc.

We will follow Hepokoski & Darcy’s practice of identifying the beginning of TR at the beginning of a phrase. In general, once you hear TR function clearly projected, track back to the beginning of that phrase and label it the beginning of TR.

Hepokoski & Darcy identify several TR types that can be helpful models for identifying TR modules.

- Independent transition
- Developmental transition
- Dissolving restatement
- Dissolving consequent
- Dissolving-consequent restatement (or dissolving-continuation restatement)
- Dissolving P-codetta
- Dissolving continuation

- Dissolving hybrid
- Dissolving reprise

An independent TR begins with new thematic material. In other words, it is not P-based. A developmental TR, on the other hand, is P-based. After the end of P (or beginning at the P theme's elided cadence), a developmental TR theme will take ideas from P and work them into a new theme.

Dissolving TR modules all take some part of the P theme and dissolve, degenerate, or liquidate as the module gains energy and moves toward the MC. In the case of a dissolving restatement, P ends and then seems to begin again. This restatement of P dissolves into TR function, and we can subsequently reinterpret the whole theme as a dissolving-restatement type of TR.

In a dissolving consequent, continuation, or hybrid, the P module will consist of the opening phrase of a theme, and the closing phrase of the theme will begin as usual but degenerate into TR rhetoric. The overlap between TR and continuation function make this a particularly smooth transition. A dissolving-reprise TR does the same in the recapitulation (A') module of a small ternary or related form. A dissolving-consequent restatement presents a complete P theme, and then begins a restatement of the consequent or continuation phrase that dissolves into TR rhetoric.

A dissolving P-codetta will introduce post-cadential material to reinforce the cadence at the end of P, and that post-cadential material will dissolve into TR rhetoric.

34.12 Secondary theme (S)

The chief function of an S module is to bring about a PAC in the secondary key—the *essential expositional closure* (EEC). Because of its role in relation to this central harmonic event (and its corresponding cadence in the recapitulation, the ESC), the S module is of immense importance and interest in a sonata-form movement. Hepokoski and Darcy go so far as to say that “what happens in S makes a sonata a sonata” (p. 117). How S achieves the EEC, how the recapitulations S module achieves the ESC, and the relationship between the two are among the most defining features of a sonata movement. They are a major focus of a composer's attention, and they should be a major focus of our attention.

The melody of an S module is often straightforward, and typically less memorable than the P theme. This does not take away from its structural importance, however.

The S module in a major-mode sonata movement is typically in the key of the dominant (V). Later works by Beethoven, Schubert, and others play with this exposition, but it is always the first-level default. Early in sonata history it is the only option.

The S module in a minor-mode movement is typically in the mediant (III) or the *minor* dominant (V, or v if you want to emphasize the minor mode of the secondary key).

Following are several common types of secondary themes:

- *subito piano* S – sudden drop to low volume and/or sparse orchestration immediately after the MC; contrasts P
- the *galant* S – light, jaunty, energetic, galloping; contrasts P
- the *cantabile* S – lyrical, singing; contrasts P
- P-based S – begins with material from the P theme (Haydn's first-level default)

- “Contrasting derivation” – derived from P, but contrasting in quality
- *forte* S – often follow weak MCs, continue the energy increased during TR
- *learned* S – rare S type that uses fugal, canonic, or imitative textures; reminiscent of pre-*galant* musical styles

34.13 Closing zone (C)

The definitive characteristics of C are that it follows the EEC, and it is not S. C modules can present wholly new thematic material, or they can borrow from P or TR. They cannot, by definition, be S-based, since that would be a continuation of S. (Keep in mind that the EEC must go on to new material, otherwise the S module continues and the EEC has not been reached yet.)

The C module will always be in the secondary key. It is post-cadential, and the harmonic goal of the exposition has already been reached. If C goes somewhere else, it is not C.

The C module’s melodic material can be P-based, TR-based, wholly new, or a string of *codettas* (short phrase-length units containing flourishes and other stock gestures that each end with a repeat of the PAC in the secondary key).

34.14 Retransition (RT)

A retransition is like a *turnaround* in pop/rock or blues music. It is a dominant chord or arrival in the home key that prepares the return to the home key at the beginning of the repeat of the exposition. The difference between an RT and a turnaround is that an RT follows a modulation. When the RT follows a secondary key of V, it is like a *Ponte* schema, which turns I/V into V/I by repetition, melodic figuration, or the adding of a chordal seventh.

35 Sonata form: the recapitulation

The *recapitulation* is the goal of the sonata, coming after the *exposition* and the *development* (anything that precedes the exposition is *introduction* and anything that follows the recapitulation is *coda*). It answers the expectations set forth by the exposition, and it brings the *essential sonata closure*. Thus, the relationship between the exposition and the recapitulation is the key focus of a sonata analysis. In particular, in a two-part exposition, what happens between the MC and the EEC/ESC (in other words, S) is what “makes a sonata a sonata” (Hepokoski/Darcy, p. 117).

In light of the importance of this relationship, an analysis of a recapitulation should always take place in light of the exposition.

35.1 Recapitulatory rotation

The recapitulation typically follows the same pattern of modules set forth in the exposition: { P TR ’ S /C } for a two-part exposition, { P TR => FS /C } for a continuous exposition (the apostrophe stands for the MC, the slash stands for the EEC/ESC).

35.2 Essential sonata closure

The harmonic goal of the recapitulation (and the sonata movement as a whole) is the *essential sonata closure (ESC)*. The ESC will always be a I:PAC, and will typically occur at the same thematic point in the recapitulation as the EEC in the exposition. It is often the exact same music as in the exposition, but transposed from the secondary key to the home key.

35.3 Recomposition

The simplest exposition–recapitulation relationship occurs in a sonata with a I:HC MC in the exposition followed immediately by S in the dominant. In such a sonata, the composer can simply repeat P–TR verbatim in the recapitulation, and then repeat S–C verbatim, but transposed down a fifth. (Think a minuet that uses a modulating Prinner in the exposition and replaces it with a regular Prinner in the recapitulation.) In such a sonata, there is no recomposition. Every bar in the recapitulation directly corresponds to a bar in the exposition, at pitch or transposed by fifth.

Correspondence, referential, and altered passages

In most sonatas, however, some music from the exposition is recomposed in the recapitulation, often to “undo” the modulation that happened on the way to a V:HC MC. In such cases, we use the term *correspondence bars* (or *correspondence measures*) to refer to the passages that are the same (or the same transposed) in the exposition and the recapitulation. *Referential bars* make clear reference to specific bars in the exposition, but the material is changed in some non-trivial way. *Alterations* are passages in the recapitulation that have no clear reference or correspondence to passages in the exposition.

Such passages tend to happen in the following order in the recapitulation: correspondence bars (P and perhaps the beginning of TR or TR => FS), followed by alterations or referential bars (primarily in TR or TR => FS), and followed by correspondence bars (S and C, and sometimes the material immediately preceding the MC).

Crux

The point in the recapitulation at which alterations give way to renewed correspondence with the exposition is called the *crux*. This point, along with the MC and the ESC, must be determined before most of the rest of the analysis of the recapitulation can take place. Generally speaking, the crux will come before the beginning of S, with S and C comprised primarily of *correspondence bars*.

Typically there are no alterations *post-crux*, but when there are, they should not be overlooked in an analysis.

Haydn

Haydn’s sonatas tend to include far more recomposition in the recapitulation than other *classical* composers. Don’t let that throw you. The general cadential/harmonic structure of sonata form still holds.

One trick to look out for in Haydn (and to a lesser extent in Beethoven) is a *change in exposition type*: a two-part exposition becoming a continuous recapitulation, or a two-part exposition with trimodular block becoming a standard two-part exposition.

35.4 Hermeneutics

A sonata analysis only *begins* with the finding and labeling of these modules, keys, and events. Once you have successfully analyzed the sonata structure, move into interpretation (the scholarly term for the study of musical or textual interpretation is *hermeneutics*). Sonata hermeneutics begins with interpretive questions like:

- What expectations does the exposition set up for the recapitulation (and other passages such as the development and, if present, coda)?
- How does the recapitulation fulfill those expectations?
- How does the recapitulation thwart or mess with those expectations?
- What effects might the expected and unexpected elements in the recapitulation have on listeners?
- How do the unique elements of the piece in question relate to other pieces in its historical context?

When writing, presenting, or discussing a sonata analysis, don't simply catalog structure. Begin with questions like these, and provide structural details only in service of explaining your answers to those questions (and others that are raised by your engagement with the piece).

36 Form in pop/rock music

This document is a glossary of terms and concepts that we will use in our analysis of pop/rock music. Terms, concepts, definitions, and notational guidelines in this document are taken either from common convention; the published or unpublished work of Jason Summach, John Covach, Walter Everett, Mark Spicer, or Daniel Harrison; or some combination thereof.

36.1 Text

Line

A group of poetic feet. If the line is part of rhyming poetry, the last syllable/foot participates in a rhyme with another line. (Internal rhyme is also possible.)

Couplet

A pair of lines. If poetry is rhyming, the two lines making up a couplet typically rhyme with each other. They may also participate in a larger rhyme scheme (see quatrain below).

Quatrain

A pair of couplets (i.e., four lines). Common quatrain rhyme schemes are *aabb*, *abab*, *abcb*.

Stanza

A set of poetic lines that work together as a single narrative unit. Typically one or more quatrains (i.e., total number of lines are a multiple of four).

36.2 Formal Containers

Phrase

A phrase is a musical unit that typically lasts for four bars and includes one line of poetry for its lyrical content. Phrases are designated by lower-case letters.

Module

A *module* typically spans between 8 and 24 bars and includes 2–4 phrases. (Some auxiliary modules may contain a single phrase.) A module presents a single function (such as A, B, C, V, P, etc.) and presents a complete 2-, 3-, or 4-part pattern (see below). Modules typically set a stanza of lyrics (though occasionally a couplet). Modules are designated by upper-case letters according to function.

Module boundaries are also usually made apparent by poetic structure (end of a group of rhyming lines—couplet or stanza) or surface features of the song (clear rhythmic, harmonic, and melodic arrival; change in instrumentation or volume; return to beginning of a previously heard module; etc.).

All module definitions are based on Jason Summach’s (2012) dissertation, “Form in Top–20 Rock Music, 1955–89.”

Primary module

“A module that contains a song’s principal materials” (Summach, p. 322), such as the title text or the most memorable or climactic music. Primary modules exhibit strophe function (A) or chorus function (C). Formal cycles always end with the primary module for the song type (Summach, p. 50).

Secondary module

“A core module that directs attention towards or provides relief from the song’s primary modules” (Sumach, p. 322). Secondary modules exhibit bridge function (B), verse function (V), prechorus function (P), or postchorus function (Z).

Core module

Any primary or secondary module (Summach, p. 321).

Auxiliary module

A non-core module, such as I, J, O, or X (Summach, p. 321).

Cycle

"The characteristic succession of modules in a song form, ending with the song's primary module type" (Summach, p. 321). A cycle contains one or more modules, always in the same order (though sometimes with one or more modules omitted, especially toward the end of a song). A strophic song's cycle is {A}. A 32-bar song's cycle is {AABA}. A verse-chorus song's cycle is typically {VC} or {VPC}. Curly brackets {} are used to refer to cycles (to differentiate them from names of song form types).

36.3 Formal functions

Functions for Primary Modules

Strophe (A)

The primary function of a strophe module is "to present the primary lyric and musical content and to provide a point at which the song might satisfyingly end" (Summach, p. 58).

In strophic form (AAA), strophes are the only core modules, and thus do not participate in a functional progression. Functional progression takes place on the phrase level within the strophe. The strophe modules themselves tend to set a stanza of text each with music that is self-contained and harmonically closed.

In 32-bar form (AABA), the strophe's function as holding the *primary* text and music, and its function as being a stable point of departure and return, are elevated through contrast with the bridge module. In AABA songs, strophe function often involves the prolongation of tonic harmony. Strophes tend to be longer in strophic songs than in AABA songs (typically eight bars). In both forms, *srđc* is by far the most common internal pattern for strophes. For three-part strophes, the 12-bar blues progression is the most common pattern.

Chorus (C)

Chorus modules are lyric invariant and contain the primary lyrical material of the song. Chorus function is also typified by heightened musical intensity relative to the verse, including features like "a more dense or active instrumental texture; prominent background vocals; and/or a higher register melody" (Summach, p. 106). Choruses most frequently (but not exclusively) begin on-tonic.

Chorus modules are distinct from refrains primarily by virtue of their being modules in and of themselves, where refrains are contained within a module.

Functions for Secondary Modules

Bridge (B)

Bridge function shares many traits with the continuation function of classical form. Bridge modules tend to play a transitional role (neither the point from which to depart, nor the point of arrival) in the formal cycle, generating high expectation for the return of the primary module (A or C) by contrasting with it and temporarily withholding it. A bridge module "must be followed by [the primary module] in order for its function to be satisfied" (Summach, p. 79), though it is possible for a bridge module in VC form to lead into a final verse module. Bridge modules tend to emphasize non-tonic harmonies and commonly end on dominant harmony. Bridges typically exhibit a two-part structure.

In VC songs, bridge modules are more free to contrast verse and chorus modules without a strong need to build expectation for the return of the chorus than in AABA form. In an AABA song, building expectation for the return of the strophe and arriving on dominant harmony in preparation of that return are essential to bridge function.

Verse (V)

Verse modules are lyric variant and contain lyrics that supply “narrative or emotional context” to the chorus text (Summach, p. 106). Until the 1960s, verse modules tended to be harmonically closed. Beginning in the 1960s, verse modules became more and more likely to be harmonically open (Summach, p. 114). Verses (like strophes) tend to begin on-tonic.

Verse modules tend to have two-part internal structures (unlike strophes).

Prechorus (P)

Prechorus function is most significantly typified in energy gain. Prechorus modules originate historically in the *d* (departure) section of an *srdc* pattern. (Think of an *srdc* strophe becoming longer until *sr* forms its own two-part verse module (or two successive verse modules), *d* forms its own prechorus module, and *c* forms its own chorus module.) As a result, prechorus modules bear many of the functional characteristics of *d*—fragmentation, acceleration of harmonic rhythm, and movement away from tonic harmony—and harmonic openness.

Postchorus (Z)

A short module that follows a chorus and serves only to close the cycle (not to introduce or transition to the beginning of the next cycle) has postchorus function (Mark Spicer 2011, par. 9).

Functions for Auxiliary Modules

Introduction & mid-song introduction (I)

Introductions tend to be short and untexted (i.e., instrumental) and tend to present musical material from one or more core modules to come. Introduction modules transition from the unmeasured silence that precede the song to the musical activity of the first core module. This is often accomplished by the introduction of musical material in layers (e.g., one instrument at a time) or a more generic building of energy. Occasionally intros are incorporated that include non-core material. Such intros often correspond to an outro based on the same material, and together they create a “bookend” effect.

Multiple intro modules in a row based on different music are possible, and that option is more likely than to have no intro. Such a succession of intros would be labeled I1, I2, etc.

Mid-song intros function similarly, but in the middle of the song. They introduce the first module in the formal cycle.

Outro (O)

Outros function as a transition from song back to silence, and thus decrease energy. Often this is accomplished in the recording studio by way of a fadeout. (Even more often, no outro module is present, and the final core module brings the song to a close.) When an

outro module is present, it is almost always based on material from the last core module that preceded it. Non-core outros tend to draw material from a non-core intro (the above “bookend” effect). “Rock songs almost always end with material that has been heard earlier in the song: either a core module, a core-based auxiliary module, or a reprise of the introduction” (Summach, p. 47). Outros exhibit closing rhetoric (see below).

Coda (X)

A coda is a “song-ending module that presents new material” (Summach, p. 47)—in other words, an outro not based on music previously heard. Like outros, codas exhibit closing rhetoric (see below).

Janus module (J)

A transitional passage that closes a preceding module and simultaneously introduces the next module is called a Janus module (a term Summach coined based on the name of the Roman god who simultaneously looks both backward and forward). Janus modules typically overlap with or elide the ending of the preceding module. J modules often function like mid-song introductions (with the added overlap/elision with the previous module).

Closing rhetoric

Closing rhetoric involves common patterns and techniques that signal that the end of the song is likely coming soon. Typical patterns and techniques include immediate repetition of a core module (except for the first core module) or part of a core module, thinning out of the texture, late-song intensification, fadeout, and bringing a previously harmonically open module to a point of harmonic closure. Closing rhetoric is typically found in outros, codas, and (most commonly) the last core module of a song.

36.4 Functions for Standout Passages Within Modules

Refrain

“A lyric-invariant passage within a module that is otherwise lyric-variant” (Summach, p. 322). Like a climb (below), a refrain is too short to form its own module—typically a phrase or less. A refrain is most often the last line or so of a module’s text (*tail refrain*), and occasionally the material at the beginning of a module’s text (*head refrain*).

Climb

“A phrase with prechorus function, but of insufficient length to detach from the verse as a separate module” (Summach, p. 321). Always the last phrase of a verse module.

36.5 Song-level structures

Strophic form (AAA)

A song form containing three or more formal cycles, where the formal cycle is {A}—that is, a single module exhibiting the function of a strophe. Auxiliary modules may also be present (I, O, J, or X). Strophic form is more common in early rock-and-roll (1950s–1960s) than in the

1970s and beyond. In Christian worship music, the influence of hymnody makes strophic form more common in contemporary music than in popular music (prominent examples include Keith & Kristyn Getty, Stuart Townend, and Bob Kauflin).

32-bar song form (AABA)

A song form containing at least one complete formal cycle of {AABA} (though typically two complete cycles or one complete cycle followed by a partial cycle). A is the primary module. Auxiliary modules may also be present.

AABA form can be realized as AABA, AABA', AA'BA', or AA'BA". No matter the degree of alteration of the main strophe, if the general functional progression of AABA is present, it is 32-bar/AABA form. 32-bar/AABA form was most common prior to the advent of rock-and-roll and disappears almost entirely from the Billboard top-20 after the mid-1960s. It's most typical appearance has two four-bar phrases per eight-bar module, making the typical complete cycle 32 bars long, hence the common name 32-bar song form.

Verse-chorus form (VC, VCB)

A versatile song form that rapidly took over rock-and-roll in the 1960s and has dominated the genre ever since. A verse-chorus song's formal cycle will contain at least two core modules—verse (V) and chorus (C), with the chorus module being the primary module. Other possible modules in the cycle exhibit prechorus (P), bridge (B), and postchorus (Z) functions.

A full cycle containing all modules except for B would be {VPCZ}. These four functions always progress in this order, though not all need be present. Bridge modules are somewhat flexible. If a song has single bridge module, it tends to appear once, followed by the last chorus, or the last prechorus and chorus, of the song. Bridges often appear in place of the verse and/or prechorus modules in the last cycle, not as an extra element. Thus, songs that incorporate all five core module types rarely will place all five in a single cycle.

Common non-bridge cycles include {VC}, {VPC}, and occasionally (especially as the first cycle in a song) {VVC}, with Z potentially added to the end of any. Common cycles including bridge are {BC} and {BPC}, with Z potentially added to the end of either.

Simple verse-chorus form

A term coined by John Covach referring to songs in verse-chorus form where the harmonic progression underlying the verse is the same as that underlying the chorus.

Super-simple verse-chorus form

A term coined by Jay Summach (based on Covach's) referring to songs in verse-chorus form where the harmonic progression and the melody are both the same for verse and chorus (Summach, p. 322).

36.6 Module structures

Two-part (aa')

A module is two-part when the phrases that make up the module can be grouped into a first half and a second half. In two-part modules, the second half is usually based on the same

music as the first half, and thus it is labeled *aa'*. Often these two halves begin the same but have different endings, participating in an antecedent-consequent (weak => strong) relationship.

Two-part – ab

Very rarely a module's phrases can be grouped into two clear halves based on different music. Such a module is labeled *ab*.

Three-part – aa'b

A module containing three phrases is a three-part module. If the first two phrases are based on the same music, the module is labeled *aa'b* (12-bar blues progressions are the most common example of a three-part *aa'b* module).

Three-part – abb'

If the second and third phrases in a three-part module are based on the same music, the module is labeled *abb'*.

Four-part – srdc

A module composed of four phrases often contains a sentential structure (presentation => continuation => cadential/conclusion). In pop/rock music, such a structure typically states a basic musical idea in the first phrase, restates it in the second, provides contrasting material in the third phrase (often employing fragmentation, acceleration of harmonic rhythm, and movement away from tonic harmony), and concludes in the fourth phrase either with a return to the basic idea and tonic harmony or with still newer material that forms a strong melodic, rhythmic, and harmonic conclusion. Walter Everett has called such a four-phrase sentential structure in pop/rock music *srdc* (statement, restatement/response, departure, conclusion).

In conventional lettering, an *srdc* module could employ an *aaba* structure (with statement material returning as a restatement and again as the conclusion), or *aabc* structure (where the conclusion material is new). Occasionally *abcd* or *abca* are possible, but only if *b* is a clear response to *a*, not simply new material.

srdc structures tend to divide neatly into halves: *sr* and *dc*.

36.7 Harmony

On-tonic

A phrase or module is on-tonic when it begins with tonic harmony (I in root position).

Off-tonic

A phrase or module is off-tonic when it begins on a harmony other than tonic.

Harmonically closed

A phrase or module is harmonically closed when it ends with tonic harmony (I in root position).

Harmonically open

A phrase or module is harmonically open when it ends on a harmony other than tonic.

Turnaround

The use of a non-tonic chord (usually dominant) at the end of a harmonically closed unit to transition into the beginning of the following on-tonic unit.

36.8 Descriptors & rhetorical devices

Lyric-variant

A module or phrase is lyric-variant if each time it appears it brings (mostly) different lyrics.

Lyric-invariant

A module or phrase is lyric-invariant if each time it appears it brings (mostly) the same lyrics. Lyric invariance tends to come at points of formal closure (tail refrains at the ends of strophes, choruses at the end of a verse-chorus song's formal cycle).

Music-variant

A module or phrase is music-variant if each time it appears it brings (mostly) different music.

Music-invariant

A module or phrase is music-invariant if each time it appears it brings (mostly) the same music.

Chorusification

Jay Summach uses the term “chorusification” (p. 321) to describe a process where modules are stripped away from the formal cycle until only the chorus module (C) remains. For example, a song that begins with the cycle {VPC} may appear near the end of the song without the verse {PC} and then again without the prechorus {C}. This process is part of a goal-directed progression toward the end of the song, giving special emphasis to the chorus.

36.9 Analytical Notation

Capital letters

Modules are labeled with capital letters according to function. A module that functions as a strophe is labeled with an “A”; a module that functions as a bridge, “B”; etc.

Lower-case letters

Phrases are labeled with lower-case letters according to their musical content. If two phrases use more-or-less the same musical framework (harmony, melody, and rhythm), they receive the same letter. Letters are assigned in the same manner as poetic rhymes: the first phrase is *a* and any phrase that follows based on the same music is also *a* (primes are used for slight variations, such as new text or altered instrumentation); the next phrase with new musical material is *b*; and so on. These letters do *not* correspond to functions.

The single exception to this convention is when phrases within a module demonstrate a sentential progression (*srdc*), in which case the first phrase (statement) is labeled *s*; restatement/response, *r*; departure, *d*; conclusion, *c*.

Full-sized numerals

Full-sized numerals are attached to capital letters when there are two or more modules with the same function but different music. For example, if a song contains two different melodies that both function as verse themes, they are labeled “V1” (the one that appears first in the song) and “V2.”

Subscript numerals

Subscript numerals are attached to capital letters when there are two or more modules with the same function and music but different text. For example, if a song contains three verses, and they all have different lyrics but the same music, they are labeled “V1”, “V2”, and “V3”.

Timeline notation

Variations Audio Timeliner⁴³ does not support subscripts. Differentiate full-sized and subscript numerals in your written work. However, it is fine to use full-sized numerals for both purposes in your timelines.

⁴³<http://variations.sourceforge.net/vat/>

Part VI

Post-tonal music

37 Analyzing atonal music

Following are a few tips, terms, and common structures that will be helpful for analyzing early twentieth-century atonal music, such as that composed by members of the Second Viennese School (Schönberg, Berg, Webern).

37.1 Intervals

Always use *chromatic intervals* rather than diatonic intervals when analyzing and comparing pitch materials. (See *Intervals and dyads* resource.)

37.2 The 12-pitch-class cycle — clock face

Atonal composers often begin with highly organized set of pitch classes, and then deploy the pitch classes in a wide variety of registers. Thus, it is helpful to eliminate register as a factor in order to find which motives, chords, and fragments belong in the same category. To do so, take a clock face with the twelve pitch-classes (spelling does not matter) and mark all the pitch classes involved in the fragment. For example, a C-major scale is provided in the figures.

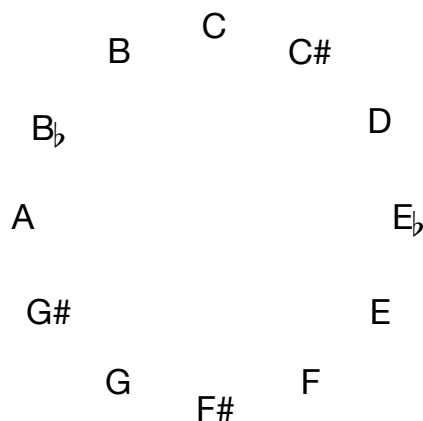


Figure 58: Circle of semitones on a clock face.

This will make it easy to find the interval patterns in a set of pitch classes, no matter how they are distributed in the various registers and instruments on the score.

37.3 Common pitch-class collections

Diatonic – The usual major and *natural*-minor collections (white key collection and all of its transpositions).

Pentatonic – The black key collection and all of its transpositions, prime form: (02479).

Octatonic – An eight-pitch-class scale that alternates i1 and i2 (semitones and whole-tones).

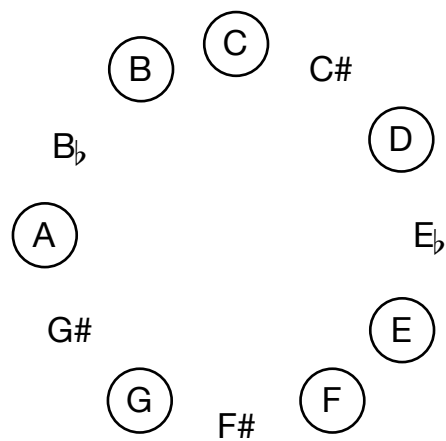


Figure 59: C-major scale on a clock face.

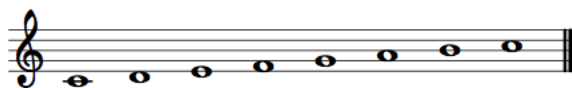


Figure 60: Diatonic collection (major scale).

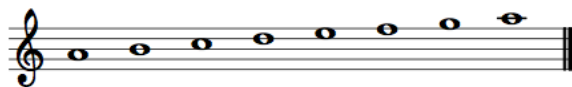


Figure 61: Diatonic collection (minor scale).

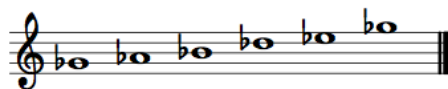


Figure 62: Pentatonic (black-key) collection.



Figure 63: Pentatonic collection, transposed to white-key collection.

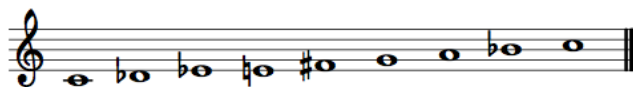


Figure 64: Octatonic collection.

Hexatonic – A six-pitch-class scale that alternates i1 and i3 (semitones and minor thirds/augmented seconds).

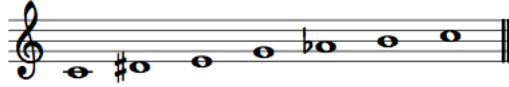


Figure 65: Hexatonic collection.

X-cell – The chromatic tetrachord, or a four-pitch-class chromatic cluster, prime form: (0123).

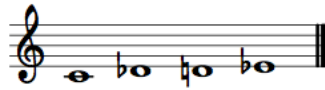


Figure 66: X-cell.

Y-cell – The whole-tone tetrachord, or a four-pitch-class whole-tone cluster, prime form: (0246). It is a subset of the whole-tone scale.



Figure 67: Y-cell.

Z-cell – A four-pitch-class collection that alternates i1 and i5 (semitones and perfect fourths), prime form: (0167). Two Z-cells a minor third apart form an octatonic scale.

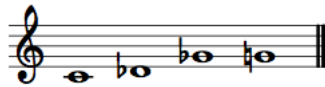


Figure 68: Z-cell.

French-sixth – The usual french-augmented-sixth-chord collection, but stripped of its tonal function, prime form: (0268). It is a subset of the whole-tone collection and octatonic collections. Like the Z-cell, two French-sixth chords a minor third apart form an octatonic scale.

Whole-tone scale – A six-pitch-class scale made up of successive whole tones, prime form: (02468T).

Acoustic scale – A seven-pitch-class scale that resembles the major scale, but with *fa* raised to *fi* and *ti* lowered to *te*, in order to match the seventh and eleventh partials of the natural harmonic series.

Dual-diatonic – An eight-pitch-class scale formed by the union of two diatonic collections separated by fifth—for example C major and G major: C – D – E – F – F# – G – A – B. It contains two diatonic scales, two Z-cells, and two Y-cells. It was used primarily by Bartók.

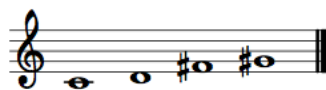


Figure 69: French-sixth collection.

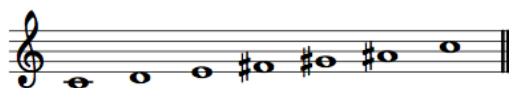


Figure 70: Whole-tone collection.

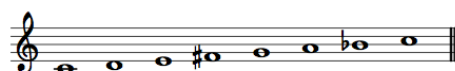


Figure 71: Acoustic scale.

37.4 Common *operations*

Transposition

Pitch transposition involves moving every pitch in a collection up or down by a specified interval.

Pitch-class transposition does the same thing. However, because of the cyclical nature of pitch classes, PC-transposition also corresponds to *rotation* of a collection of pitch classes around a clock face.

Transposition operations can be denoted by a capital “T” followed by a subscript indicating the number of semitones of the transposition. For pitch-class transpositions, use ordered pitch-class intervals (numbers 0–11). Transposing a collection or fragment up a whole step is labeled **T2**; up a tritone is **T6**, down a semitone is **T11** ($\text{mod}12(-1) = 11$).

Inversion

Melodic inversion occurs when all ascending melodic intervals in a melody are replaced with descending intervals of the same size, and all descending replaced with ascending of the same size. The following melodies are inversion of each other.

Pitch inversion occurs when all pitches are inverted, or flipped, around an axis of symmetry in pitch space (in other words, the axis of symmetry is a pitch). In the above melodic example, the axis is G4. Since the first pitch is G4, it remains unchanged. The next pitch

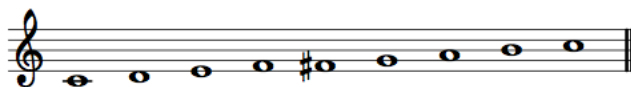


Figure 72: Dual-diatonic scale (*fa/fi*).

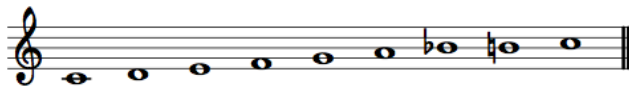


Figure 73: Dual-diatonic scale (*te/ti*).



Figure 74: Ascending melody.



Figure 75: Inversion of ascending melody.

(A4) is two semitones above G4; it is replaced with F4, two semitones below G4. B4 (i4 above G4) is replaced by E-flat4 (i4 below G4). And so on.

Pitch inversion can apply to a melody, but also to a simultaneity, or to a collection that a passage is based on.

In general, when two melodies, simultaneities, or collections can be related by pitch inversion, they are considered to be equivalent in some sense (but, obviously, not identical).

Pitch-class inversion occurs when all pitch classes of a collection are inverted, or flipped, around an axis of symmetry in pitch-class space (in other words, the axis of symmetry is a pitch class). Since pitch-class space is cyclical (once you go up 12 semitones, you are back where you started), the axis of symmetry is comprised of *two* pitch classes a tritone apart. This is most clearly seen on a clock face.

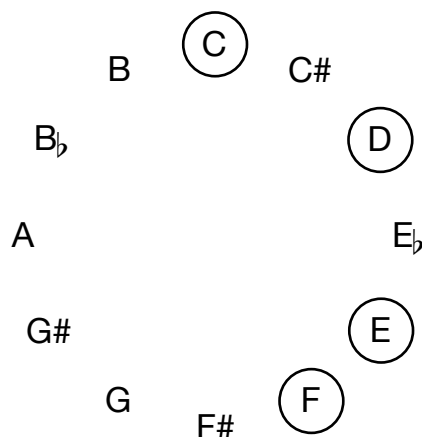


Figure 76: Diatonic tetrachord on the circle of semitones.

When the above set is inverted around the axis C/F-sharp, it becomes the following set:

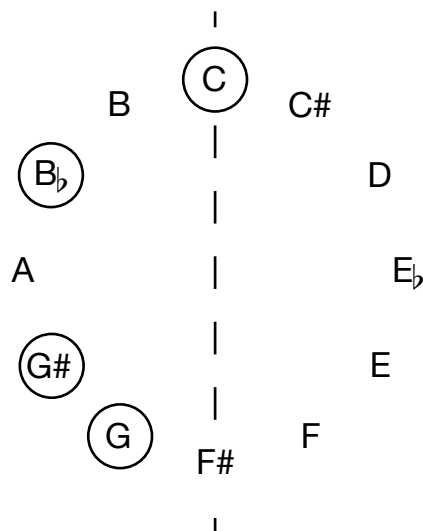


Figure 77: Diatonic tetrachord on the circle of semitones, inverted about the C/F-sharp axis.

When pitch classes are labeled by number ($C = 0$, C-sharp = 1, . . . $B = 11$), pitch class inversion can be calculated by determining a *sum* and finding the difference between that sum and each pitch class in the original collection. The difference is the pitch class for the new collection.

In the above example, the set $\{C, D, E, F\}$ is $\{0, 2, 4, 5\}$. Its inversion $\{G, G\text{-sharp}, B\text{-flat}, C\}$ is $\{7, 8, 10, 0\}$. When inverting the original around the C/F-sharp axis, C becomes C (0 becomes 0), D–B-flat ($2-10$), E–G-sharp ($4-8$), and F–G ($5-7$). All of these pitch-class pairs add to 0 or 12, which are equivalent modulo 12. Thus the inversion sum is 0, and the inversion is labeled **I0**.

Inverting about the C-sharp/G axis is **I2**. Inverting about the D/G-sharp axis is **I4**. Inverting about the E-flat/A axis is **I6**. Inverting about the E/B-flat axis is **I8**. Inverting about the F/B axis is **I10**. Odd number sums will place the axis between pitch classes (**I1** between C/C-sharp and F-sharp/G, for example).

Some atonal composers like to make use of sets that invert and/or transpose onto themselves. Sets that can be inverted around an axis of symmetry without changing any pitch classes are called *inversionally symmetrical*. Sets that can be transposed a certain interval without changing any of its pitch classes are called *transpositionally symmetrical* or *rotationally symmetrical*. The Z-cell and French-Sixth collections are sets that are both rotationally and inversionally symmetrical.

38 Analyzing twelve-tone music

The *pitch* material of a strict 12-tone work is entirely (or nearly entirely) derived from a single *12-tone row*. A row is an *ordered set* of the twelve pitch classes of the chromatic scale. Each of the 12 will appear exactly once, and order is paramount.

12-tone rows that can be related to each other by transposition, inversion, and/or retrograde operations are considered to be forms of the same row. Unless a row has certain properties that allow it to map onto itself when transposed, inverted, or retrograded, there will be 48 forms of the row: *prime* (**P**), *inversion* (**I**), *retrograde* (**R**), and *retrograde inversion* (**RI**) forms, transposed to begin on each of the 12 pitch classes.

Prime form

The prime form of the row is the main form to which all other forms are referenced. In some pieces, one form of the row will clearly dominate the texture. If that is not the case, choose the most salient row at the beginning of the work and label it **P**. If more than one row seem equally salient at the beginning, flip a coin. The decision of which to call “prime” is not always important, but the analysis of the piece depends on a single row form serving as a point of reference.

Any row form that is the same as, or a strict transposition of, that opening prime form is also a prime form. Once you have labeled the main prime form at the beginning of the piece, any subsequent row that is an exact transposition of that row is prime. Likewise, any row that exhibits the same succession of pitch-class intervals is also a prime form.

Since **P** can be transposed to any pitch-class level, we distinguish them with subscripts. There are multiple common systems for deciding the numbering. The simplest, which we will follow in this course, is to number the row by its starting pitch class. If the prime form begins on G (7), it is **P7**; on B (11), **P11**.

Retrograde form

A retrograde form of the row takes a prime form and exactly reverses the pitch classes. Its interval content, then, are the reverse of the prime forms. Retrograde forms are labeled **R** followed by a subscript denoting the *last* pitch class in the row. This will ensure that if two row forms are exact retrogrades of each other, they will have the same subscript.

For example, if a row has the exact reverse interval structure of the prime forms and ends on F-sharp (6), it is **R6**, regardless of its first pitch.

Inversion form

A row form that exactly inverts the interval structure of the prime form (for example, 3 semitones up becomes 3 semitones down—or 9 semitones up, modulo 12) is in inversion form. Inversion forms are labeled according to the first pitch class of the row form. An inversion-form row that begins on E-flat (3) is **I3**.

This label is not always the same as the inversion *operation* that produces it. (See the *Analyzing atonal music* resource.) If you begin with **P0**, the inversion operation and the resulting row form will have the same subscript. Otherwise, they will be different. Take care not to confuse them.

Retrograde inversion

The relationship of retrograde inversion (**RI**) and inversion (**I**) forms is the same as that between retrograde (**R**) and prime (**P**). Retrograde inversion forms reverse the pitch classes of inversion forms and are named for the *last* pitch class in the row form.

38.1 Interval progressions

Once you have determined (or decided) which row is *prime*, analyze its interval content in *ordered pitch-class intervals*. This will help you determine if subsequent row forms are **P**, **I**, **R**, or **RI** (or if they do not belong to the same row family).

For example, the row for Schoenberg's Op. 25 is:

[E, F, G, Db, Gb, Eb, Ab, D, B, C, A, Bb].

Its intervals (ascending pitch-class intervals, modulo 12) are:

1, 2, 6, 5, 9, 5, 6, 9, 1, 9, 1

(Notice that while no pitch class repeats in the row, several intervals appear more than once.)

The intervals of the inversion form of the row are the same size, opposite direction. You can calculate them by subtracting each of the prime-form intervals from 12:

11, 10, 6, 7, 3, 7, 6, 3, 11, 3, 11

Retrograde intervals are tricky (at first). Reversing pitch classes *changes the direction of each interval*. Thus C–A (9) becomes A–C (3). Thus to get the interval progression of the retrograde forms, reverse the intervals of the *inversion*:

11, 3, 11, 3, 6, 7, 3, 7, 6, 10, 11

(Test this out with the retrograde form of the row: Bb, A, C, B, ...)

To get the interval succession of the retrograde forms, invert the retrograde interval progression, or reverse the prime interval progression:

1, 9, 1, 9, 6, 5, 9, 5, 6, 2, 1

Take care in determining these first, and it will be easy to classify row forms as you go through a piece. Its interval progression will tell you the type, and the pitch class of the first or last note will give you the subscript. That subscript will tell you the transposition relationship between it and the other row forms of the same type.

39 Glossary of atonal musical terms

this glossary is far from complete, in the very early stages of being built

collection – The general term for treating multiple pitch classes as a single entity. Sets, set classes, scales, simultaneities, chords, and intervals are all specific kinds of collections.

interval class – The number of semitones between two *pitch classes*, counted as the shortest distance between them on a clock face. For instance, C and E make an interval class of 4. This is always the case, no matter which *pitch* is higher or lower, because interval class is concerned only with *pitch classes*. Interval classes are labeled **ic1**, **ic2**, ... **ic6**. (There are none smaller than **ic1** or larger than **ic6**.)

interval vector – The interval vector of a set class describes all of the interval classes present in a set class. There are six interval classes (1–6). The interval vector gives the number of each of those intervals in order from 1 to 6, within angle brackets. An interval

vector of means that the set has one ic1 (semitone/major seventh), no ic2s, one ic3 (minor third/major sixth), one ic4 (major third/minor sixth), no ic5s (perfect fourths), and two ic6s (tritones).

ordered pitch interval – The number of semitones from one pitch (not pitch class) to the next. Ascending intervals are denoted by positive numbers, descending intervals by negative numbers. Examples: B4–G5 would have an ordered pitch interval of 8 (eight ascending semitones). B3–G5 would be 20. B4–G4 would be –4.

ordered pitch-class interval – The number of *ascending* semitones from one pitch-class to another. G–B is four semitones, for an ordered PC interval of 4. B–G is eight ascending semitones, for an ordered PC interval of 8.

The ordered pitch-class interval is also the modulo12 version of the ordered pitch interval. For example, B4–G4 is –4 semitones (4 semitones down). $\text{mod}12(-4) = 8$. C3–D4 is 14 semitones. $\text{mod}12(14) = 2$.

pitch – A pitch class in a specific register, such as C4 (middle C).

pitch class – One of the twelve steps on the chromatic scale, summarized by a note name (C, D-sharp, B-flat, etc.) or a number 0–11 (C = 0, C-sharp = 1, ... B = 11). In atonal music, spelling rarely matters except to make performance easier, so enharmonically equivalent pitch classes are considered identical (C = B-sharp = D-double-flat = 0).

pitch-class set – An *unordered* collection of pitch classes, usually grouped into curly brackets: {C, E, G}, {D, E-flat, G}, or {4, 5, 9}.

pitch-class set class or simply **set class** – A category of pitch-class sets that are all related by transposition or inversion. For example, the 12 major triads are all related by transposition. While each major triad is a different pitch-class set, they all belong to the same set class (the same category of sets). Note that minor triads are upside-down major triads (minor third–major third, instead of major third–minor third). Thus since major and minor triads can be related by inversion, they belong to the same set class. Set classes are typically named according to their *prime form* (see *prime form* in this glossary).

prime form – Since set classes come in as many as 24 different forms (12 transpositions times 2 inversions), one of those forms is chosen as its name or referential form, for ease of categorization. That form is the prime form. The prime form is, in a nutshell, the inversion and rotation of the set class that keeps the pitch classes most tightly packed on and above C (0).

For help finding the prime form of a set, Jay Tomlin’s set theory calculator⁴⁴ can be helpful. This video⁴⁵ demonstrates how to use it.

simultaneity – Any collection of more than one pitch (class) that sound at the same time. This includes dyads/intervals, chords, clusters, and “salami slices” of contrapuntal textures.

unordered pitch-class interval – A regular *simple* chromatic interval: the number of half steps between two pitches. Compound intervals (larger than an octave) are typically reduced to their corresponding simple interval. They are labeled with a lower-case **i**: **i4** is a major third, for example.

⁴⁴<http://www.jaytomlin.com/music/settheory/>

⁴⁵<http://vimeo.com/63210462>

Part VII

Technology

40 Typesetting a a keyboard-style voice-leading exercise

In MuseScore, use the *voices* tool (the same is true for Finale and NoteFlight, though the specific process is a little different). This video⁴⁶ demonstrates the process.

In Lilypond, use the keyboard-style voice-leading template⁴⁷, as this video⁴⁸ demonstrates.

41 Using Variations Audio Timeliner

This video⁴⁹ explains the basics of using Variations Audio Timeliner⁵⁰ for annotating musical form on a recording. (I made this video before I got the hang of Vimeo. Both the embedded and the full-screen versions are hard to read. I recommend following the link below and watching—or downloading—from the main Vimeo page.)

42 Creating a musical graphic and importing it into a text document

This video⁵¹ demonstrates how to create a musical graphic in MuseScore, crop it on a Mac, and import it into a word processing document using Pages. The process is similar for other applications and platforms.

You can also use the Snippet creator⁵² plugin for MuseScore to create these graphics directly from the application.

⁴⁶<http://vimeo.com/61032934>

⁴⁷<http://kris.shaffermusic.com/musicianshipResources/Graphics/KBtypesettingDemo.ly>

⁴⁸<http://vimeo.com/61034943>

⁴⁹<http://vimeo.com/42041355>

⁵⁰<http://variations.sourceforge.net/vat/>

⁵¹<http://vimeo.com/64721244>

⁵²<http://musescore.org/en/project/snippetcreator>

Part VIII

Aural skills

43 Sight-singing tips

When singing a melody from sight, go through the following process before attempting to sing it.

First, identify the meter. The meter can be found by looking at the *top number* of the time signature. Then identify the beat value and the division value from looking at the bottom number. (Revisit *Meter and time signatures* if necessary.)

Next, identify the key. The key signature will give you two possibilities for key: one major and one minor. Then look at the first and last notes of the melody: these will often be tonic, especially the last note (this is not always true for excerpts of longer melodies, though). This will help you decide between the two possibilities presented by the key signature. Lastly, look for any accidentals. Raised pitches that would be *la* or *ti* in the minor key suggested by the signature will confirm that minor key as the key of the melody.

Then scan the rhythm for the fastest notes, and the pitches for the hardest passages. Choose a tempo that will make these passages comfortable.

Find the highest and lowest notes. When singing by yourself, you can sing in any key you like. Choose a key that will put the highest and lowest notes in your range.

Once you have key and tempo chosen, orient yourself to the key. Use the solfège patterns on pp. 51 and 89 of the Karpinski *Manual*.

After orienting yourself to the key, look for the hardest and trickiest passages. Sing through a couple of these licks out loud, perhaps adding or removing notes in order to figure them out, then sing them as written.

Be sure to sing the lowest and highest notes out loud before you begin the melody. This way you will know both the sound and the feel of those notes ahead of time, which will help you perform them and detect errors as you sing.

Finally, with a comfortable key and tempo, and at least a rough handle on the toughest licks, sing the melody straight through, while conducting the meter, without stopping.

44 Melodic dictation

This video⁵³ demonstrates my process when dictating/transcribing a melody in a small number of hearings:

- Get oriented to tonic, mode, meter, counting pulse.
- Memorize as much as possible.
- Transcribe what I remember after the first hearing before I forget it (usually beginning and end).
- Note any repetition patterns that can make it easier to figure the rest of the melody.
- Listen again, and try to memorize the whole thing.
- Transcribe everything I remember.
- Repeat the last two steps as necessary.
- Use one last listening to check for errors, paying special attention to rhythm, durations, and rests.

⁵³<http://vimeo.com/61037478>

Part IX

Text and music

45 Analyzing poetry

This resource created by Jonathan Sircy, Department of English, Charleston Southern University.

45.1 What is poetry?

We can distinguish *poetry* from *prose* by its

- preference for formal organization,
- intensely conveyed emotions and images,
- and concentrated use of language.

Poetry favors the concrete and particular over the vague and abstract. Poetic language isn't disconnected from normal communication. Rather, it conveys ideas and emotions with greater precision than everyday language.

45.2 How can we analyze poetry?

There are several ways to skin the poetic cat. What follows are four large categories with accompanying questions that can help us systematically interpret a poem. Not only are these categories not mutually exclusive, they are often complementary.

STRUCTURE:

If we pay attention to a particular poem's meter, tone, imagery, and figurative language, we are able to talk about a poem's *unity*. This attention to structure starts from the premise that each of the poem's parts work together organically (rather than, say, mechanically) to achieve a unified goal. If we were to put that goal into a single sentence, we would have the poem's *theme*, a succinct statement of the poem's central idea and emotions.

Chief question: What idea or emotion UNIFIES the poem's different parts?

Key terms: meter, tone, imagery, figurative language

Meter: the pattern of accented and unaccented syllables in a given poetic line

Tone: the speaker's attitude toward his subject, audience, or himself

Imagery: the poetic representation of any sense experience

Figurative language: the non-literal use of language to achieve an effect

HISTORICAL CONTEXT:

When we pay attention to a poem's structure, we pretend that it is an artifact that can be separated from the outside world. But every literary work had an author and an audience, and both are deeply influenced by a particular place and time. This not only affects the way we read poetic allusions but the way we interpret particular words.

Chief Question: How do the poem's words reflect the cultural context of the author and/or poet?

INTERTEXTUALITY:

Poems aren't just in conversation with history. They're in conversation with other poems. This means that a literary work—in its form and/or content—resembles other literary works. When we focus on formal similarities, we're concerned with genres, the different types or subcategories a poet has chosen (e.g. epic, lyric, satire). When we focus on similar content, we are either discussing *allusions*—intended references to another literary image—or *archetypes*, images or characters that appear so frequently they are less the domain of one author than part of a common literary heritage.

Chief question: How is this literary work like/unlike other literary works?

ETHICS:

Every poem interprets life and thus, explicitly or implicitly, provides us with a view of the world. Defenders of poetry have long maintained that poetry is uniquely able to delight AND instruct; in fact, it often instructs BY delighting. That means every literary work presents actions/beliefs for us to applaud or denounce. This is often the most difficult thing to interpret about a particular work of art, and we must keep in mind that a work may present objectionable actions or beliefs in order to criticize them.

Chief question: What actions or beliefs does the poem support?

46 Interpreting Scripture: introductory resources

46.1 Confessions and catechisms

During and after the Reformation, churches and denominations set out to explain their general understandings of Scripture and their distinctive views on important issues in *confessions of faith*. These confessions are very helpful overviews of what each tradition or denomination believes, as well as what holy men seeking to serve the church believe that Scripture teaches on the whole. If you want a summary of the whole teaching of Scripture to provide Biblical context for interpreting specific passages, a Reformed confession of faith is a good source of that summary.

Reformation churches also valued training all believers and their children in the ways of Scripture, and so each confession of faith is accompanied by a *catechism*—a series of questions and answers designed to help fathers train their families in the teachings of Scripture. These are very accessible, and are written with the intention that children would be able to memorize them. If you want a good summary of Biblical teaching to study as a family or to commit to memory, a Reformed catechism is a good source of that summary.

The historic confession and catechism for Southern Baptists are the *London Baptist Confession of Faith* of 1689⁵⁴ (also known as the *Charleston Confession of Faith* because it was the confession originally adopted by First Baptist Church in Charleston and the Charleston Baptist Association) and *The Baptist Catechism*⁵⁵.

Other Reformed confessions and catechisms can be found at www.reformed.org⁵⁶.

⁵⁴<http://wwwFOUNDERS.org/library/bcf/confession.html>

⁵⁵<http://wwwFOUNDERS.org/library/pcat.html>

⁵⁶<http://www.reformed.org/documents/index.html>

46.2 Different views on interpreting scripture

There are many Christians who believe the Bible to be the inspired Word of God who follow different principles of interpreting that inspired Word. Very generally, there are three broad groups of Christians who hold a high view of Scripture but hold to different principles of interpreting it: *Roman Catholic*, *Reformed*, and *Dispensational* (or *Fundamentalist*) Christians. Within these categories, there are differences between individuals; and there are individuals that do not fall into any one category. There are also individuals or churches that fall into one of those categories but would use a different name (or no name). However, these three categories are a helpful, general starting point.

(For purposes of full disclosure, I follow the Reformed principles of interpreting scripture.)

Roman Catholics, in a nutshell, believe that the ultimate standard for determining the correct interpretation of a passage of Scripture is the interpretation of the church of Rome. That is, though the Bible is the true and inspired Word of God, the Roman church (specifically the pope) is the final standard of God's truth. We will not talk much about Roman Catholic approaches to Scripture in class. However, if you would like more information about the Roman view, and the problems with it from a Protestant perspective, see Michael Horton's recent article, "Who's in Charge Here? The Illusions of Church Infallibility."⁵⁷

Reformed Christians believe that the ultimate standard for determining the correct interpretation of a passage of Scripture is Scripture itself. An interpretation is true if it is consistent with the whole teaching of Scripture, read in its proper contexts. That is, Scripture interprets Scripture. Also, Reformed Christians read the Old Testament through the lens of the New Testament, and read all of Scripture in light of its central person—Jesus Christ.

Dispensationalist or *Fundamentalist* Christians profess belief in a literal interpretation of all Scripture. It is important to note that Christians from all three groups interpret some passages literally and others not literally. The distinctive place where Dispensationalist Christians apply their literal interpretation regards the Old Testament and the people of Israel. Dispensationalists believe that the Old Testament should be taken literally, rather than read through the lens of the New Testament, and therefore that passages (particularly prophecies) about Israel, Jerusalem, the land of Israel/Canaan/Palestine, and the temple should be taken literally, not symbolically of a larger spiritual reality.

Personally, I find the Reformed view to be the most Biblical, and the rest of this article provides the basic Reformed principles of interpreting Scripture. If you would like to study the difference between the two Protestant views (Reformed and Dispensational) further, Ligon Duncan has an excellent explanation of the differences and the importance of them online as part of a seminary course on Biblical covenants. It is available both as an audio lecture⁵⁸ and a rough transcript (containing a helpful chart)⁵⁹.

46.3 Authority of scripture

When thinking about how to interpret Scripture (the fancy term is *hermeneutics*), it is important to start with the authority of Scripture. Evangelical Christians hold that Scripture

⁵⁷<http://www.whitehorseinn.org/blog/2012/06/13/whos-in-charge-here-the-illusions-of-church-infallibility/>

⁵⁸http://www.fpcjackson.org/resources/apologetics/covenant%20theology%20&%20justification/lignons_covtheology/mp3/10.29.1998_Dr_Ligon_Duncan_Covenant_Theology_Lecture17_Dispensationalism_Evaluation.mp3

⁵⁹http://www.fpcjackson.org/resources/apologetics/covenant%20theology%20&%20justification/lignons_covtheology/09.htm

alone (*sola scriptura*) is the authoritative word of God, given by inspiration of the Holy Spirit, ‘to be the rule of faith and life’ (Westminster Confession of Faith⁶⁰). It is holy, true, and without error in its original form (see the Chicago Statement on Biblical Inerrancy⁶¹), and its authority is derived from God himself, not from the church or any other human institution or standard of truth.

Reformed and Reformed Baptist Christians also believe the following (from the Westminster Confession):

All things in Scripture are not alike plain in themselves, nor alike clear unto all: yet those things which are necessary to be known, believed, and observed for salvation are so clearly propounded, and opened in some place of Scripture or other, that not only the learned, but the unlearned, in a due use of the ordinary means, may attain unto a sufficient understanding of them.

That is, everything necessary to salvation is not only included in Scripture, but is accessible and understandable, even to the unlearned. In fact, even many Protestants who do not consider themselves “Reformed,” but nonetheless are evangelicals who hold a high view of Scripture, agree with that point as well.

But while all things necessary for salvation are readily understandable, “all things in Scripture are not alike plain in themselves, nor alike clear unto all.” Peter speaks of this in his second epistle (ch. 3):

And count the patience of our Lord as salvation, just as our beloved brother Paul also wrote to you according to the wisdom given him, as he does in all his letters when he speaks in them of these matters. There are some things in them that are hard to understand, which the ignorant and unstable twist to their own destruction, as they do the other Scriptures.

Some Scripture is difficult to understand, but it is important to keep in mind what Peter says earlier in that same epistle. He writes that scripture is not subject to one’s own “private interpretation” (see II Peter 1:19–21). Simply because a passage poses interpretive difficulty does not mean that anything goes. Rather, Scripture remains singular in its meaning, and it always accomplishes the purpose for which God sends it forth (see Isaiah 55:11).

Here’s the issue of interpretation, then: If Scripture alone is the authoritative word of God, if it derives its authority from no other source outside itself except for God, if it is not subject to private interpretations, but on some matters is clearer than others, how are we to understand and interpret the unclear or difficult passages? (And how are we to be sure that we haven’t mistaken a difficult passage for an easy one?!) Is there a rule or standard against which we can measure our interpretations to be sure that we understand the word of God correctly?

46.4 The *analogia fidei*, or “rule of faith”

There are, of course, different views among Christians as to what that rule or standard is—the dogma of the church, the literal meaning of the text, etc. However, Reformed Christians take very seriously their belief that Scripture *alone* is the “rule of faith and life,”

⁶⁰http://www.reformed.org/documents/wcf_with_proofs/index.html

⁶¹<http://www.bible-researcher.com/chicago1.html>

and thus we have the Reformed principle of interpreting Scripture (often called the *analogia fidei* or “rule of faith”), articulated concisely by the Westminster Assembly:

The infallible rule of interpretation of Scripture is the Scripture itself: and therefore, when there is a question about the true and full sense of any Scripture (which is not manifold, but one), it must be searched and known by other places that speak more clearly.

Scripture interprets Scripture. Clear passages explain difficult passages, the New Testament explains the Old Testament, and “the supreme judge by which all controversies of religion are to be determined, and all decrees of councils, opinions of ancient writers, doctrines of men, and private spirits, are to be examined . . . can be no other but the Holy Spirit speaking in the Scripture” (WCF). To be sure, it is of immense importance and value to read every part of Scripture in its Scriptural context, its historical context, its proper literary genre, etc. But the ultimate arbiter of truth as revealed by God is the Holy Spirit, as he has spoken in Holy Scripture.

46.5 Christ-centered interpretation

Scripture gives us one general principle for interpreting scripture that should always be on our minds when reading God’s word. On the first Easter Sunday, rumors had begun to spread about Christ’s resurrection, but he had not yet appeared to all the disciples. In Luke 24:11ff., two of Christ’s disciples were walking on the road to Emmaus. The risen Jesus appears to them, but they don’t recognize him at first. The disciples tell Jesus what has just happened in Jerusalem (i.e., what happened to Jesus), and lament that “we had hoped that he was the one to redeem Israel.” Vv. 25–27 (ESV) recount Jesus’s reply:

And he said to them, “O foolish ones, and slow of heart to believe all that the prophets have spoken! Was it not necessary that the Christ should suffer these things and enter into his glory?” And beginning with Moses and all the Prophets, he interpreted to them in all the Scriptures [i.e., the Old Testament] the things concerning himself.

When Jesus explained the Scriptures to the disciples, Jesus explained what it revealed about himself. As Christians, that’s the lens we should look through when reading Scripture: the person and work of Jesus Christ. It all points to him. Even Genesis 1–2 points to Jesus Christ. And if we read or interpret any passage in the Old Testament without reference to Christ, we have missed the point.

46.6 Helpful resources

These are just some basic, though important, principles for interpreting Scripture. Following are a couple helpful introductory resources for understanding Reformed hermeneutics more deeply.

- “Hermeneutics 101: How to Interpret the Bible,” by Stephen Wellum – audio and handout⁶²

⁶²<http://www.sermonaudio.com/sermoninfo.asp?SID=323101931530>

- *The White Horse Inn* broadcast no. 1059, “The Road to Emmaus” - audio and supporting resources⁶³

⁶³<http://www.whitehorseinn.org/blog/2011/07/24/whi-1059-the-road-to-emmaus/>

Part X

Charts and handouts

